



# TeSys

> Control > Protect > Power > Active

**Catalog 2022**

Innovative and connected  
solutions for motor starters



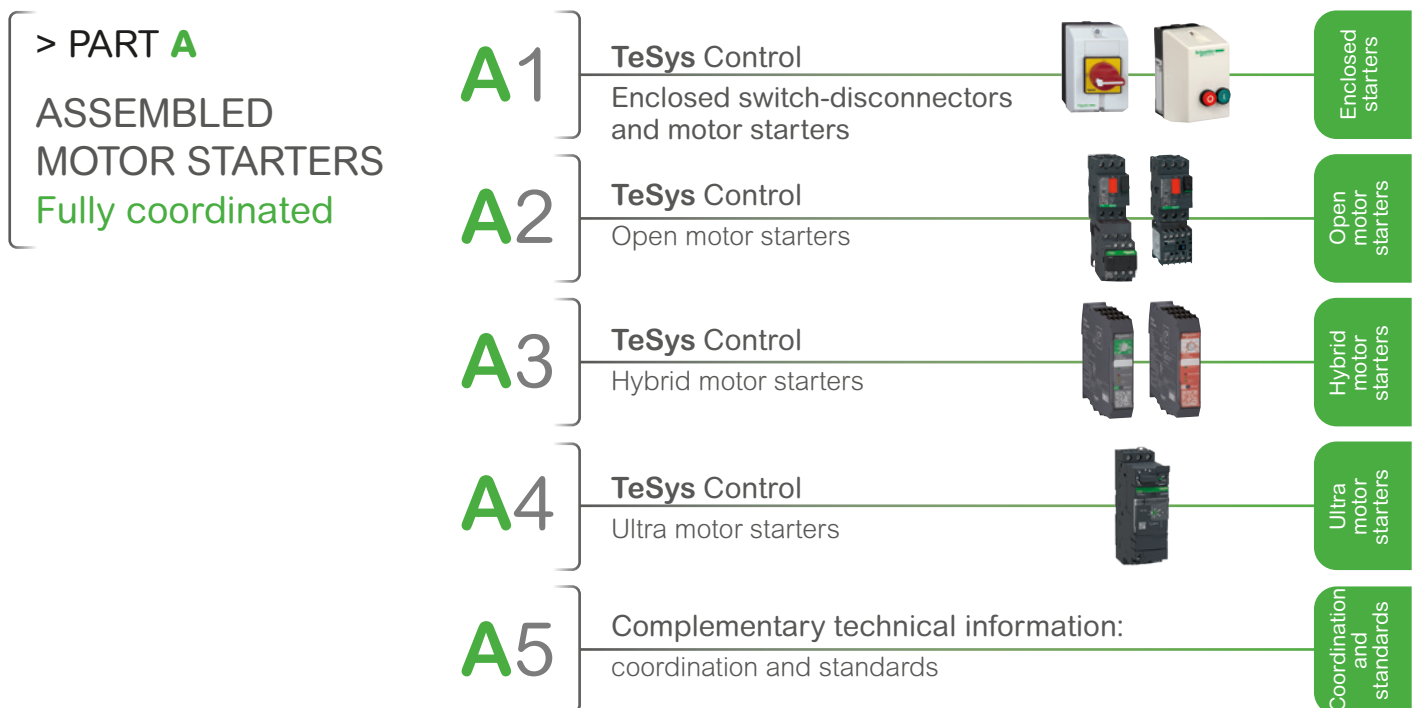
[se.com/tesys](https://se.com/tesys)

Life Is On

**Schneider**  
Electric

TeSys is an innovative motor control and management solution from the global market leader. TeSys offers connected, efficient products and solutions for switching and protection of motors and electrical loads in compliance with all major global electrical standards.

## > ARCHITECTURE of your TeSys catalogue



## TeSys components are classified by function:

### > TeSys Control

Components for controlling motors

### > TeSys Protect

Components for protecting motors

### > TeSys Power

Components for powering motors

### > TeSys Active

Connected components for motor circuits

> PART B

COMPONENTS

for conventional solutions:

**TeSys K** series

(ex-TeSys K, LRK)

- 0 to 16 A (AC-3)

**TeSys Deca** series

(ex-TeSys GV2, GV3, GV4,

TeSys D, LRD, LR9D)

- 9 to 150 A (AC-3)

**TeSys Giga** series

(ex-TeSys GV5, GV6,

TeSys LRG)

- 185 to 800 A (AC-3)

> PART C

COMPONENTS

for advanced solutions:

**TeSys Ultra** series

(ex-TeSys U)

- 0 to 38 A (AC-3)

**TeSys T** series

(ex-TeSys T)

- 0 to 800 A (AC-3)

**TeSys island** series

(ex-TeSys island)

- 0 to 80 A (AC-3)

**B1**

**Linergy BZ, HK Busbar systems**



Power busbar systems

**B2**

GV, LAD, U

Motor starter wiring systems



Wiring systems

**B3**

**TeSys Control**

Switch-disconnectors



Switch-disconnectors

**B4**

**TeSys Power**

Fuse carriers



Fuse carriers

**B5**

**TeSys Power**

Switch-disconnector fuses



Switch-disconnector fuses

**B6**

**TeSys Power**

Deca, Giga and Modular Motor circuit breakers



Motor circuit breakers

**B7**

**TeSys Control**

SK, K, Deca Control relays



Control relays

**B8**

**TeSys Control**

SK, K, SKGC, Deca, Modular and other Contactors



Contactors

**B9**

**TeSys Control**

Giga High power contactors



High power contactors

**B10**

**TeSys Control**

F High power contactors



High power contactors

**B11**

**TeSys Protect**

LRK, Deca, Giga Overload relays



Overload relays

**C1**

**TeSys Control**

Ultra motor management controller



Motor management devices

**TeSys Active**

T motor management system

**C2**

**TeSys Active**

Island motor starters



Control and monitoring island



# Start smart. Run smart. With TeSys motor controls.

Stay smart with the world's best-selling motor control solutions from the inventor of the world's first contactor - Schneider Electric™.

For almost a century, TeSys motor controls have driven the industry with innovations in motor protection, monitoring, and control.

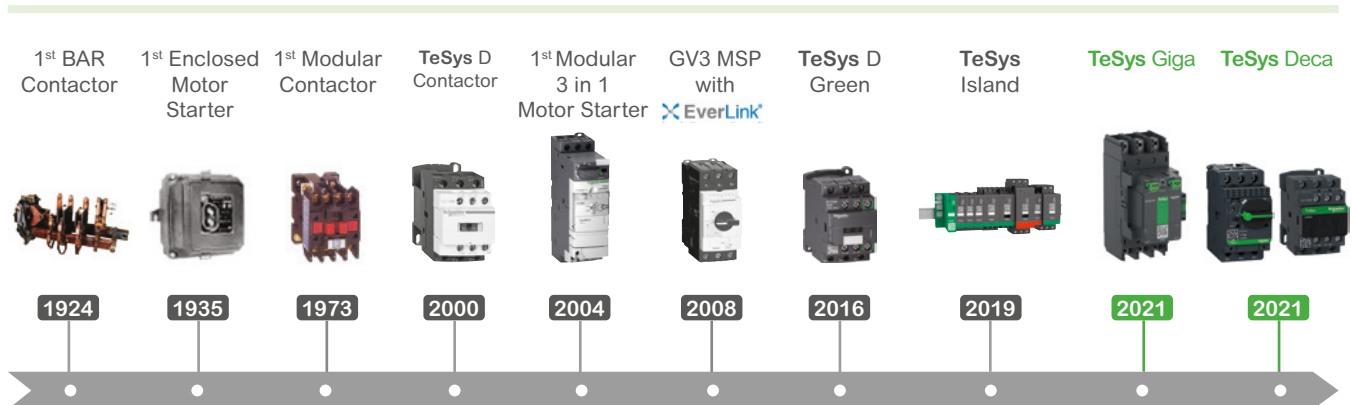
It started with the introduction of the industry's first BAR contactor in 1924, and today, the legacy of innovation is built into every TeSys motor control device.

Best-in-class safety and reliability, plug-and-play architecture, and flexible functionality mean TeSys motor control solutions can meet your requirements across a wide range of applications, from the most common to the most advanced.

Wherever you are and anywhere your projects come together, you can trust Schneider Electric and TeSys contactors, circuit breakers, relays, and switches for unmatched reliability, complete compatibility with international standards, and the robust support of the Schneider Electric global supply network.

Start smart, run smart and stay smart with TeSys motor controls.

## A Century OF INNOVATION AND LEADERSHIP



## Superior safety for all industries

TeSys motor controls come with all of the isolation, protection and emergency handling you need to comply with international codes. High-contrast covers identify safety-critical devices to prevent inadvertent manual operation. Every TeSys contactor is both mechanically linked and equipped with mirror contacts for safety applications and wherever auxiliary contact state reliability is critical.



### HVAC

Ensure 24/7 availability of your HVAC system with reliable products that can reach high ambient temperatures without derating.



### Conveying

Decentralize the control cabinet of your conveyor line and benefit from up to 80% space reduction.



### Genset

Make certain your generator starts even in the harshest conditions with robust TeSys solutions.



### Pumping

Optimize single or multi-drive boosters for industry or infrastructure with energy and cost-effective solutions.



### Packaging

Keep pace with the most demanding, high-end packing applications with solutions that can perform 30 million AC53a electrical cycles, like TeSys H.



### Oil and Gas

Keep your employees and assets safe and improve uptime in onshore and offshore applications: pipeline operations: LNG and natural gas processing: and refining and petrochemical applications.



### Water and Wastewater

Optimize the treatment and delivery of safer water by reducing energy usage and lowering operating costs.



### Food and Beverage

Serve your customers with environmentally friendly products to improve sustainability, efficiency, and flexibility, allowing you to adapt to changing customer habits.

## Online selection tool

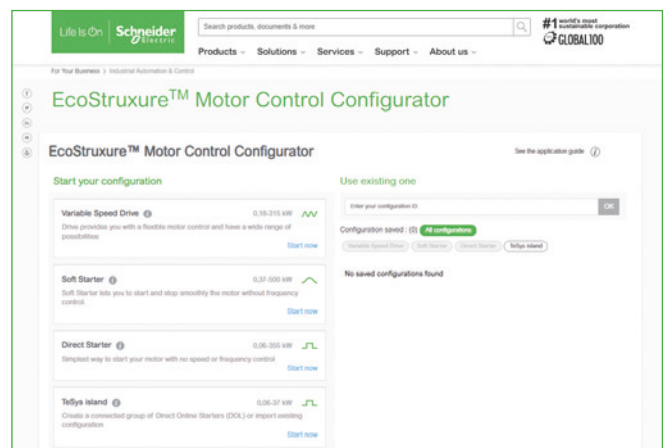
### EcoStruxure™ Motor Control Configurator

For Direct-On-Line and Star-Delta starters, motor circuit breakers with advanced protection, motor management relays, configurations for total coordination, drives, and soft starters.

No matter what kind of starting method you need, our online **EcoStruxure™ Motor Control Starter Configurator** will help you to quickly and easily select the optimal combination of components to ensure maximized motor safety, protection, and uptime.



Scan or click on the QR code



## EDITO

Welcome to your NEW TeSys catalog!

Your catalog continues to evolve, as it does year after year.

- The first evolution concerns the products, it will bring a **Premium design** to your control panels thanks to the main TeSys components that now present the **same visual homogeneity**.
- The **structuring of the components naming** is the second point of evolution, it answers the need to classify the products by function and by range in the selection tools, the catalog and the Schneider Electric website ([www.se.com](http://www.se.com)).
- The last new feature is the presence of a **product reference table at the end of the commercial part of each chapter** (before the information for designers). It allows you to quickly check the availability of a product variant and access its technical data sheet online.

NEW

## VISUAL ASPECT

The design of the TeSys core offer is evolving. Circuit breakers, contactors and several other components are now sharing a modern look giving the control panel a new and qualitative visual aspect.

Schneider Electric's identity is fully revealed by the green parts.



NEW

## TESYS FUNCTION NAMES

TeSys components are grouped by function name, for easier identification. These functions are related to motor, power, control and protection.

### > TeSys Power:

Components for powering motors



### > TeSys Control:

Components for controlling motors



### > TeSys Protect:

Components for protecting motors



TeSys Active gathers the devices providing built-in communication with motor monitoring and control functions.

### > TeSys Active:

Connected components for motor circuits





## TESYS COMPONENT SERIES NAMES

- Series names group conventional components (circuit breakers, contactors, relays, overcurrent relays) by current rating ranges.
  - 0 to 16 A > **TeSys K** Series
  - 9 to 150 A > **TeSys 'Deca'** Series
  - 115 to 800 A > **TeSys 'Giga'** Series.
- TeSys advanced components have a specific classification.
  - 0 to 38 A All-in-one starters > **TeSys 'Ultra'** Series
  - 0 to 80 A Motor Control/Protection/Monitoring system > **TeSys 'island'** Series.
- Other TeSys component names remain unchanged (TeSys F, TeSys B, TeSys T).



## TESYS COMPONENTS FULL NAMES AT A GLANCE

Old names	> NEW names: TeSys Function - Component Series	Complementary indications
TeSys Vario, mini Vario	TeSys Control – Switch-disconnectors	
TeSys DF TeSys LS TeSys GK	TeSys Power – Fuse carriers	DF type LS type GK type
TeSys GS	TeSys Power – Switch-disconnector fuses	
TeSys GV2 TeSys GV3 TeSys GV4	TeSys Power – <b>Deca</b> circuit breakers	Frame 2 Frame 3 Frame 4
TeSys GV5 TeSys GV6	TeSys Power – <b>Giga</b> circuit breakers	Frame 5 Frame 6
TeSys D	TeSys Control – <b>Deca</b> control relays TeSys Control – <b>Deca</b> contactors	
TeSys LRD, LR9D	TeSys Protect – <b>Deca</b> overload relays	
TeSys H	TeSys Control – <b>Hybrid</b> motor starters	
TeSys U	TeSys Control – <b>Ultra</b> motor starters	
TeSys island	TeSys Active – <b>island</b> motor starter	





# Part A

## ASSEMBLED MOTOR STARTERS

FULLY  
COORDINATED

### TeSys Control

Enclosed switch-disconnectors  
and motor starters

From 0.25 to 40 kW



A1/1

Enclosed  
starters

### TeSys Control

Open motor starters

From 0.06 to 315 kW



A2/1

Open  
motor  
starters

### TeSys Control

Hybrid motor starters

Up to 3 kW

From 9 A to 32 A



A3/1

Hybrid  
motor  
starters

### TeSys Control

Ultra motor starters

From 0.09 to 18.5 kW



A4/1

Ultra  
motor  
starters

Complementary technical  
information:

coordination and standards

A5/1

Coordination  
and  
standards



Enclosed switch-disconnectors	
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### Enclosed Motor Starter Solution Guide

The software to help you to select intuitively your enclosed motor starter solution.

The Enclosed Motor Starter Solution Guide software is available for both PC and iPad.



# TeSys Control

## Enclosed switch-disconnectors

### Introduction & selection table

Enclosed starters



### Range of pre-assembled casings with handle and their rotary switch

They can be fixed on a wall, a panel, or on the chassis of a machine. For simple isolation and/or control of an electrical circuit. Red/yellow handle provides a clear indication of the device safety function <sup>(1)</sup>, while black handle is usually dedicated to ON/OFF control.

<sup>(1)</sup> Conforming to IEC 60947-3 and IEC 60204.

### With numerous advantages to meet OEM's most common needs

- IEC or UL
- Multiple ratings and sizes
- IP65
- Additional poles
- Replaceable switch bodies

### Selection in 2 steps

**1** Identify your need (1 line one or more) in the **Selection criteria** area (example.: Load 5 kW– Emergency Stop - IEC)

**2** Choose your enclosed switch-disconnector in the **Solutions** area, note the radical of the product references

Selection criteria							
Ithe (A)	Load power (kW)	Circuit isolation	Emergency stop	IP55	IP65	IEC	UL & CSA
10...140	4...45 (400 V)	●			●	●	
10...140	4...45 (400 V)	●	●		●	●	
10...32	4...15 (400 V)	●	●	●		●	
32...175 (Ithe IEC) 20...115 (Ith UL)	10...50 HP (480 V)	●	●		●	●	●

Solutions			
VBF	VCF	VCFN	VC•GUN

See page

A1/3

A1/3

A1/3

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# TeSys Control

## Enclosed switch-disconnectors / Ready-to-use

### Product references



VCF0GE



VCF3GE



VCF5GEN



VCFN12GE



VBF0GE



VBF6GEN

## Control + Disconnection (IEC)

Enclosed switch-disconnectors, ready to be fixed on workshop wall or directly on the machine and wired to main supply circuit and to load.

Functions / Range / Specificities:

- Direct Control: ON/OFF of 3-phase motor (black handle) or ON/Emergency Stop (red handle)
- 23 IEC motor starters, for 3P motors from 4 to 45 kW (10 to 140 A)
- 6 UL motor starters for 3P motors from 5 to 30 HP (240 V)
- Padlockable handle (1 to 3 padlocks – not included)
- Sealable, lockable cover when handle in position 1 (up to 63 A rating).

Included:

- rotary switch-disconnector body
- handle.

### Enclosures for ON / Emergency Stop – IP65 – conforming IEC 60947-3, IEC 60204 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	With ground plate	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW					kg	mm
Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Yellow 60 x 60	10	4	V02	2	No	VCF02GE	0.500	90x146x131
						Yes	VCF02GEGP	0.560	90x146x131
		16	5.5	V01	2	No	VCF01GE	0.500	90x146x131
						Yes	VCF01GEGP	0.560	90x146x131
		20	7.5	V0	2	No	VCF0GE	0.500	90x146x131
						Yes	VCF0GEGP	0.560	90x146x131
Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shanks)	Yellow 90 x 90	25	11	V1	2	No	VCF1GE	0.500	90x146x131
						Yes	VCF1GEGP	0.560	90x146x131
		32	15	V2	2	No	VCF2GE	0.500	90x146x131
		50	22	V3	3	No	VCF3GE	0.930	157x180x152
		63	30	V4	3	No	VCF4GE	0.930	157x180x152
		100	37	V5	1	No	VCF5GEN	2.190	241x291x190.5
140	45	V6	1	No	VCF6GEN	2.190	241x291x190.5		

Protection of sensitive equipment: ground plate available for VCF02GE...VCF1GE – see page A1/5.

### Enclosures for ON / Emergency Stop – IP65 - conforming IEC 60947-3 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW				kg	mm
Red padlockable, either by 1 (Ø 8 shank) or by 3 padlocks (Ø 6 shank)	Yellow 60 x 60	10	4	VN12	2	VCFN12GE	0.422	82.5x131x106
		16	5.5	VN20	2	VCFN20GE	0.422	82.5x131x106
		20	7.5	V0	0	VCFN25GE	0.512	82.5x131x106
		25	11	V1	0	VCFN32GE	0.512	82.5x131x106
		32	15	V2	0	VCFN40GE	0.512	82.5x131x106

### Enclosures for ON/OFF F– IP65 – conforming IEC 60947-3, IEC 60204 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW				kg	mm
Black, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Black 60 x 60	10	4	V02	2	VBF02GE	0.500	90x146x131
		16	5.5	V01	2	VBF01GE	0.500	90x146x131
		20	7.5	V0	2	VBF0GE	0.500	90x146x131
		25	11	V1	2	VBF1GE	0.500	90x146x131
		32	15	V2	2	VBF2GE	0.500	90x146x131
		50	22	V3	3	VBF3GE	0.930	157x180x152
Black, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Black 90 x 90	63	30	V4	3	VBF4GE	0.930	157x180x152
		100	37	V5	1	VBF5GEN	2.190	241x291x190.5
		140	45	V6	1	VBF6GEN	2.190	241x291x190.5

(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.

(2) Number of add-on modules that can be attached.

(3) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

Note: For VCF and VBF enclosures from 02GE to 2GE, only one auxiliary contact block VZ7 or VZ20 can be mounted.

Dimensions:  
page A1/38

Schemes:  
page A1/39



# TeSys Control

Enclosed switches (UL) / Ready-to-use - Additional modules

## Product references

Enclosed starters



VC1GUN



VC3GUN



VC5GUN

### Control + Disconnection (UL)

#### ON / Emergency Stop – IP65

Conforming UL508 CSA22.2 n° 14, IEC 60947-3, IEC 60204 (1)

Operator	Rating	Standard power ratings of UL motors	Incorporated switch body	Possible attachments	Reference (2)	Weight	Overall dimensions (1)				
								IEC (lth)	UL		
Handle	Front plate Dim.	600 V									
		A	A	HP	HP	HP					
Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8)	Yellow 60 x 60	32	20	5	10	10	V1	2	VC1GUN	0.500	121x164x132.1
		40	25	5	10	15	V2	2	VC2GUN	0.500	121x164x132.1
		63	45	10	20	30	V3	2	VC3GUN	0.930	164x193x132.1
		80	63	15	30	40	V4	2	VC4GUN	0.930	164x193x132.1
Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8)	Yellow 90 x 90	125	100	25	50	50	V5	1	VC5GUN	2.190	241x291x190.5
		175	115	30	50	60	V6	1	VC6GUN	2.190	241x291x190.5

### Additional modules for VZ switch bodies

Enclosed switches include a VZ switch body. Additional modules can be plugged on 1 or 2 sides of the switch body to provide additional contacts or extra connectivity.

#### Common modules for enclosed switch disconnectors – with exceptions (3)

Description	Rating	Reference
Main pole module (mounted in enclosure)	A	
	10	VZ02 (not for VCxGUN starters)
	16	VZ01 (not for VCxGUN starters)
	20	VZ0 (not for VCxGUN starters)
	25	VZ1
	32	VZ2
	50	VZ3
	63	VZ4
Neutral pole modules with early make and late break contacts	10 to 32	VZ11
	50 and 63	VZ12
	100 and 140	VZ13
Earthing modules	10 to 32	VZ14
	50 and 63	VZ15
	100 and 140	VZ16
Description	Type of contacts	Reference
Auxiliary contact block modules with 2 auxiliary contacts	N/O + N/C (4)	VZ7
	N/O + N/O	VZ20

(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.

(2) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

(3) Not compatible with V6F5GEN, V6F6GEN, VC5GUN, VC6GUN, VCFN12GE, VCFN20GE.

(4) Late make N/O, early break N/C contacts.



VZ0 Main pole



VZ11 Neutral pole



VZ15 Earthing terminal

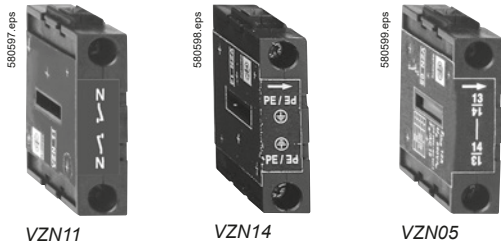


VZ20 Auxiliary contacts

# TeSys Control

Enclosed switch-disconnectors / Ready-to-use - Additional modules - Accessories

## Product references



VZN11

VZN14

VZN05

### Additional modules for switch bodies

#### Specific modules for VCFN12GE and VCFN20GE

Description	Rating	Reference
	<b>A</b>	
Main pole modules	10	VZN12
	16	VZN20
Neutral pole module with early make and late break contacts	10 and 16	VZN11
Earthing module	10 and 16	VZN14

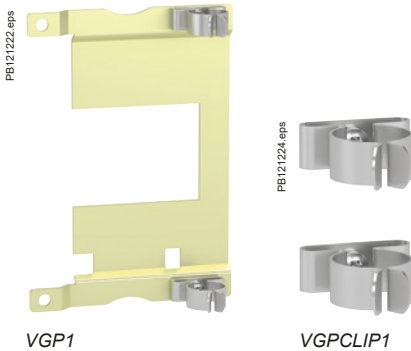
Description	Type of contacts	Reference
Auxiliary contact block modules	1 N/O late make contact	VZN05
	1 N/C early break contact	VZN06

### Accessories for enclosed switch-disconnectors

#### Ground plate and accessories for VCF02GE, VCF01GE, VCF0GE, VCF1GE

Metallic ground plate, for shielded cables connection. To be installed between back of enclosed switch-disconnectors, 2 fixing screws. Cable shield grounding ensured by 2 clamps, clamping from Ø11 to 14 mm

For switch body	Reference
Ground plate + 2 clamps + 2 screws	VGP1
2 clamps + 2 screws	VGPClip1



VGP1

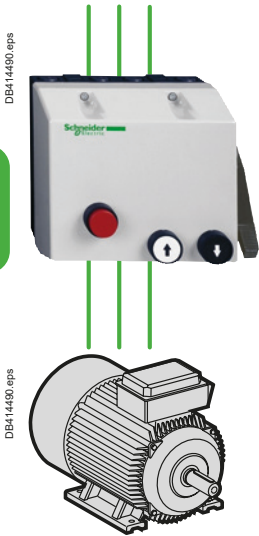
VGPClip1

# TeSys Control

## Enclosed standard starters

### Introduction & selection table

Enclosed starters



### Range of pre-assembled motor starters, with pushbuttons, selectors, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide an operator with an easy access with visual simplicity

#### Numerous advantages to meet OEM's most common needs

- IEC
- Multiple ratings and sizes
- IP55, IP65
- IK08, IK09
- Totally or partially pre-wired

#### Standard starters

They are used to isolate a circuit, to protect and/or to control a motor

#### Customized protection

Enclosed starter offer is available in fully pre-equipped and pre-wired enclosures, also in partially pre-equipped enclosures to be completed with protective components of the required rating

#### Accessories

Additional accessories provide reinforced sealing, padlock locking, additional contacts...

### Selection in 2 steps

**1** Identify your need (1 line one or more) in the **Selection criteria** area (example: Load 5 kW – ON/OFF control with overload protection)

**2** Choose your starter in the **Solutions** area by adding column contents, note the radical of the product references (example: LE1D + LRD)

#### Selection criteria

Load Power (kW) / 400V	Circuit isolation	Direct starter - ON/OFF	Reverser ON/REVERSE/OFF	Short circuit protection	Overload protection	Star - delta
0.25..7.5		●			●	
4 ... 30		●			●	
0.02... 30		●		●		
0.02... 30						
0.06... 11		●		●	●	
2.2 ... 15						
2.2 ... 30			●		●	
2.2 ... 15			●	●	●	
7.5...30		●			●	●
7.5...18.5		●	●	●	●	●

#### Solutions

Solutions				Protection device to be added by customer <i>(of appropriate rating)</i>	See page
					A1/7
LE1M35	LE1D			LRD	A1/8
		GV2PC GV3PC			A1/9 + A1/10
		GV2PC GV3PC			A1/9 + A1/10
		GV2MC GV3MP			A1/11
			LE4K LE4D	LR2K LRD	A1/12
			LE2K LE2D	LR2K LRD	A1/13
			LE8K LE8D		A1/14
			LE3D	LRD	A1/15
			LE6D	LRD	A1/16



# TeSys Control

## Enclosed standard starters / DOL / Ready-to-use

### Product references



LE1M35●●●●

### Control + Protection against Overloads

- Direct Control: ON/OFF of 3-phase motor
- Motor protection: motor OFF in case of overload – manual reset with the red pushbutton.
- Indication: yellow light activated with the contactor coil.
- The LE1M35 starter, combined with short-circuit protection components, provides type 1 or type 2 coordination, depending on the type of devices used.

#### Range:

- 10 IEC motor starters, for 3P motors from 0.25 to 7.5 kW (400V AC)
- Configurable pushbuttons: impulse or latched
- Conforming to IEC 60947-4-1 standard
- Degree of protection IP65, according IEC 60529
- Ambient air temperature in operation -5 to +40°C
- Operating position: same as K series contactors
- Material: self extinguishing ABS.

#### Included (standard version):

- 1 contactor LC1K●●<sup>(1)</sup>
- 1 thermal overload relay LR2K<sup>(2)</sup>
- 1 green Start button "I",
- 1 red Stop/Reset button "O/R",
- 1 yellow operating indicator
- earth + neutral terminals at bottom of enclosure.

For supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

### Direct-on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3					Setting range of thermal overload relay LR2K	Basic reference, to be completed by adding the voltage code <sup>(3) (4)</sup>	Overall dimensions <sup>(5)</sup> WxHxD
220 V	240 V	380 V	415 V	400 V			
kW	kW	kW	kW	A		mm	
0.12	0.12	0.25	0.25	0.54...0.8	LE1M35●●05	78x160x108	
0.18	0.18	0.37	0.37	0.8...1.2	LE1M35●●06	78x160x108	
0.25	0.25	0.55	0.55	1.2...1.8	LE1M35●●07	78x160x108	
0.37	0.37	1.1	0.75	1.8...2.6	LE1M35●●08	78x160x108	
0.55	0.55	1.5	1.5	2.6...3.7	LE1M35●●10	78x160x108	
1.1	0.75	2.2	2.2	3.7...5.5	LE1M35●●12	78x160x108	
1.5	1.1	3	3	5.5...8	LE1M35●●14	78x160x108	
2.2	2.2	4	4	8...11.5	LE1M35●●16	78x160x108	
3	3	5.5	5.5	10...14	LE1M35●●21	78x160x108	
3.7	4	7.5	7.5	12...16	LE1M35●●22	78x160x108	
Replacement contactor					LC1K●●A80	-	

### Coil voltage codes

Volts ~ 50/60 Hz	24	110	220	230	240	380	400	415	440
Code	B7	F7	M7	P7	U7	Q7	V7	N7	R7

(1) K contactor characteristic: refer to chapter B8.

(2) LR2K overload relay characteristics: refer to chapter B11.

(3) Remove the 2 last numbers if the thermal overload relay is not required.  
Example: LE1M35P7 instead of LE1M35P714.

(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

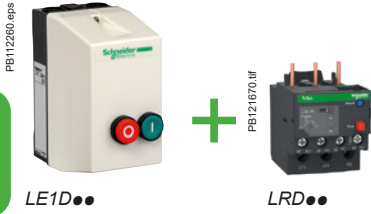


# TeSys Control

Enclosed standard starters / DOL / to be completed with Deca <sup>(1)</sup> overload relay

## Product references

Enclosed starters



### Control + Protection against Overloads

- ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red pushbuttons
- Motor protection against overload: manual reset with the red pushbutton or remotely.

Range:

- 8 direct-on-line starters for 3P motors from 4 to 30 kW (9 to 65 A AC-3)
- Choice of up to 12 AC coil voltages for control supply circuit (depending on starter rating).

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529:
  - IP65,
  - IK07 for LED09...D35,
  - IK09 for LE1D40A...D65A
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE1D09... D35 polycarbonate <sup>(2)</sup>
- LE●D40A... D65A steel sheet.

Included:

- 1 pre-wired LC1D contactor
- 2 Harmony XB5 pushbuttons.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

#### Direct on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Max. current lth up to	Basic reference, to be completed by adding the voltage code <sup>(3)</sup>	Weight kg	Overall dimensions <sup>(4)</sup> WxHxD mm
220 V	380 V	415 V	440 V	500 V	660 V				
kW	kW	kW	kW	kW	kW	A			
2.2	4	4	4	5.5	5.5	9	LE1D09●●	0.920	88x166x128.5
3	5.5	5.5	5.5	7.5	7.5	12	LE1D12●●	0.920	88x166x128.5
4	7.5	7.5	7.5	9	10	17	LE1D18●●	1.015	101x201x153.5
5.5	11	11	11	15	15	22	LE1D25●●	1.015	101x201x153.5
7.5	15	15	15	18.5	18.5	26.5	LE1D35●●	4.320	101x201x153.5
11	18.5	22	22	22	30	40	LE1D40A●●	4.820	200x300x158.5
15	22	25	30	30	33	50	LE1D50A●●	4.850	200x300x158.5
18.5	30	37	37	37	37	65	LE1D65A●●	4.850	200x300x158.5

#### Variants (pre-assembled)

Description	Available variants for starter	Suffix to be added to the starter reference <sup>(3)</sup>
No pushbuttons on cover	LE1D09...D65A●●	A04
1 blue Reset button "R"	LE1D09...D65A●●	A05
1 3-position stay put selector switch ("I"- "O"- "II") ("I": Automatic Start; "O": Stop; "II": Manual Start) 1 blue Reset button "R"	LE1D09...D25●●	A09
1 2-position stay put selector switch "O"- "I" ("O": Stop; "I": Manual Start) 1 blue Reset button "R"	LE1D09...D25●●	A13
Mounting of an LC1D09 contactor in an enclosure identical to LE1D18	LE1D09P7 LE1D09P7A13	T

#### Coil voltage codes <sup>(3)</sup>

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE1D09 to D35	B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE1D40A to D65A	-	-	-	FE7	-	-	P7	-	Q7	-	-	-

<sup>(1)</sup> LRD overload relay selection: product reference page A1/33, more details in chapter B11.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents ketones, alcohol, aromatic hydrocarbons).

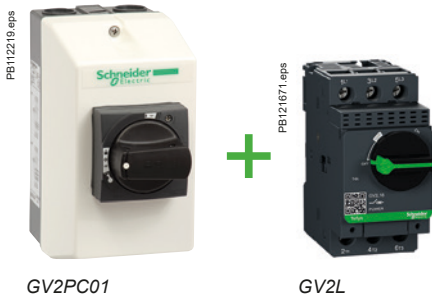
<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

# TeSys Control

Enclosed standard starters / DOL / to be completed with Deca <sup>(1)</sup> magnetic circuit breaker

## Product references



GV2PC01

GV2L



GV3PC02

GV3L

## Control + Isolation + Protection against Short circuits

2 solutions according to the required current rating.

GV2PC + GV2L > up to 23 A (Ithe)

GV3PC + GV3L > up to 55 A (Ithe)

The GV2L or GV3L circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
  - in ON or OFF position (PGV2PC01, GV3PC01),
  - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:

- GV2L - 12 ratings (3P motors from 0.09 to 11 kW - 400/415 V AC)
- GV3L - 3 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2
- Degree of protection according IEC 60529:
  - IP65, IK08 (for GV2PC),
  - IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue): 690V
- Material: GV2PC polycarbonate <sup>(2)</sup>, GV3PC steel sheet.

Included:

- GV rotary handle.

### Enclosures fitted with padlockable rotary handle

Composition	Type	Reference	Overall dimensions <sup>(3)</sup> WxHxD mm
<ul style="list-style-type: none"> <li>■ Insulating enclosure</li> <li>■ Black handle, padlockable in ON/OFF position</li> </ul>	Surface mounting For GV2L	<b>GV2PC01</b>	88x166x163
<ul style="list-style-type: none"> <li>■ Insulating enclosure</li> <li>■ Red handle on yellow background, padlockable in OFF position</li> </ul>	Surface mounting For GV2L	<b>GV2PC02</b>	88x166x163
<ul style="list-style-type: none"> <li>■ Metal enclosure</li> <li>■ Black handle, padlocking in ON/OFF position</li> <li>■ Circuit breaker/handle adapter</li> </ul>	Surface mounting For GV3L	<b>GV3PC01</b>	200x300x200
<ul style="list-style-type: none"> <li>■ Metal enclosure</li> <li>■ Red handle, padlocking in OFF position</li> <li>■ Circuit breaker/handle adapter</li> </ul>	Surface mounting For GV3L	<b>GV3PC02</b>	200x300x200

**GV2L, GV3L product references:** add code to product reference <sup>(4)</sup>

Ithe (A)	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2L codes	03	04	05	06	07	08	10	14	16	20	21	22
Ithe (A)	<b>35</b>	<b>41</b>	<b>55</b>									
GV3L codes	40	50	65									

<sup>(1)</sup> GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(4)</sup> Example: for Ithe 17 A, magnetic circuit breaker is GV2L20.



# TeSys Control

Enclosed standard starters / DOL / to be completed with Deca <sup>(1)</sup> thermal-magnetic circuit breaker

## Product references

Enclosed starters



GV2PC01



GV2P●●



GV3PC02



GV3P●●



## Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions according to the required current rating.

GV2PC + GV2P > up to 23 A (Ithe)

GV3PC + GV3P > up to 55 A (Ithe) The enclosure includes a rotary handle.

The GV2P or GV3P circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
  - in ON or OFF position (GV2PC01, GV3PC01),
  - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:

- GV2P - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC)
- GV3P - 2 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2
- Degree of protection according IEC 60529: IP65, IK08 (for GV2PC), IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690V
- Material: GV2PC polycarbonate <sup>(2)</sup>, GV3PC steel sheet.

Included:

- GV rotary handle.

### Enclosures fitted with padlockable rotary handle

Composition	Type	Reference	Overall dimensions <sup>(3)</sup> WxHxD mm
<ul style="list-style-type: none"> <li>■ Insulating enclosure</li> <li>■ Black handle, padlockable in ON/OFF position</li> </ul>	Surface mounting For GV2L	<b>GV2PC01</b>	88x166x163
<ul style="list-style-type: none"> <li>■ Insulating enclosure</li> <li>■ Red handle on yellow background, padlockable in OFF position</li> </ul>	Surface mounting For GV2L	<b>GV2PC02</b>	88x166x163
<ul style="list-style-type: none"> <li>■ Metal enclosure</li> <li>■ Black handle, padlocking in ON/OFF position</li> <li>■ Circuit breaker/handle adapter</li> </ul>	Surface mounting For GV3L	<b>GV3PC01</b>	200x300x200
<ul style="list-style-type: none"> <li>■ Metal enclosure</li> <li>■ Red handle, padlocking in OFF position</li> <li>■ Circuit breaker/handle adapter</li> </ul>	Surface mounting For GV3L	<b>GV3PC02</b>	200x300x200

### GV2P, GV3P product references: add code to product reference <sup>(4)</sup>

Ithe (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2P codes	01	02	03	04	05	06	07	08	10	14	16	20	21	22
Ithe (A)	35	41	55											
GV3P codes	40	50	65											

<sup>(1)</sup> GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

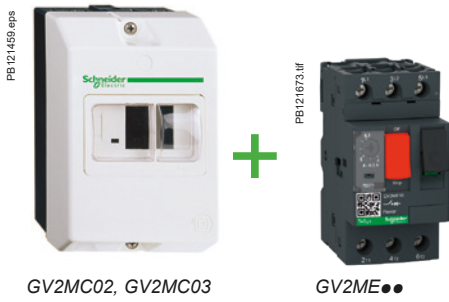
<sup>(3)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(4)</sup> Example: for Ithe 17 A, magnetic circuit breaker is GV2P20.

# TeSys Control

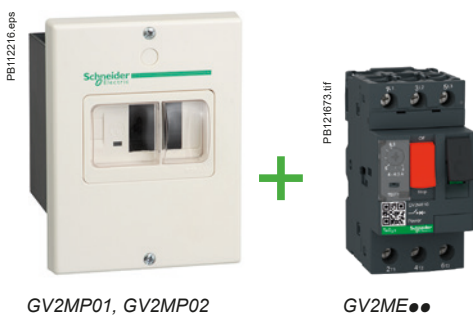
Enclosed standard starters / DOL / to be completed with Deca <sup>(1)</sup> thermal-magnetic circuit breaker (ref. GV2ME)

## Product references



GV2MC02, GV2MC03

GV2ME●●



GV2MP01, GV2MP02

GV2ME●●

## Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions, according to the enclosure installation mode:  
 GV2MC surface mounting enclosure for GV2ME circuit breaker  
 GV2MP flush mounting enclosure for GV2ME circuit breaker.  
 The GV2ME circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Short-circuit and adjustable overload protection
- Padlocking in OFF position.

Suitable circuit breakers:

- GV2ME - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material: polycarbonate <sup>(2)</sup>.

Included:

- GV2E01 or GV2E02 sealing kit (fixed on the front plate).

### Enclosures for thermal-magnetic circuit breakers GV2ME

Type	Degree of protection	Possible no. of side mounting auxiliary contact blocks on GV2ME		Reference	Weight kg	Overall dimensions <sup>(3)</sup> WxHxD mm
		LH side	RH side			
Surface mounting, double insulated with protective conductor. Sealable cover	IP41	1	1	GV2MC01	0.290	93x147x84
	IP55	1	1	GV2MC02	0.300	93x147x84
				or GV2MCK04 <sup>(4)</sup>	0.420	93x147x145.5
	IP55 for temperature < +5 °C	1	1	GV2MC03	0.300	93x147x84
Flush mounting, with protective conductor	IP41 (front face)	1	1	GV2MP01	0.115	106.5x140x83
	IP41 (front face – reduced flush mounting)	–	1	GV2MP03	0.115	106.5x140x98
	IP55 (front face)	1	1	GV2MP02	0.130	106.5x140x83
	IP55 (front face – reduced flush mounting)	–	1	GV2MP04	0.130	106.5x140x98

**GV2ME product references:** add code to product reference <sup>(5)</sup>

lthe (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2ME codes	01	02	03	04	05	06	07	08	10	14	16	20	21	22

**GV2MC, GV2MP enclosures with complementary circuit breaker and mushroom head pushbutton allow the construction of safety direct-on-line starters conforming INRS and VDE0113.**

Surface and flush mounting enclosures, mushroom heads, circuit breakers and undervoltage release cover a large number of applications.

<sup>(1)</sup> Characteristics of GV2ME circuit breakers and additives: refer to page A1/32.

<sup>(2)</sup> Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light

<sup>(4)</sup> Enclosure GV2MCK04 is fitted with a GV2K04 mushroom head Emergency stop pushbutton as standard.

<sup>(5)</sup> Example: for lthe 17 A, magnetic circuit breaker is GV2ME20.

# TeSys Control

Enclosed standard starters / DOL / to be completed with LR2K, Deca <sup>(1)</sup> overload relays

## Product references

Enclosed starters



### Control + Isolation + Protection against Short circuits and Overloads

- ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red pushbuttons  
Option: no pushbutton on cover
  - Circuit disconnection by side black handle
  - Protection against short circuits by NFC fuses type aM (to be ordered separately)
  - Motor protection against overload – manual reset with the red pushbutton or remotely. Option: cover with just a “Reset” blue pushbutton.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor <sup>(1)</sup>.

#### Ranges:

- 8 partially pre-equipped enclosures to build-up 3P motor starters from 2.2 to 15 kW (6 to 35 AAC-3)
- Choice of 5 coils for LE4K●●, 12 coils for LE4D●●, for control with different AC voltages.

#### Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529:
  - IP65, IK09 for LE4KIP65,
  - IK07 for LE4D,
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE4K and LE4D polycarbonate <sup>(2)</sup>.

#### Included:

- 1 fuse carrier with external side handle
- 1 pre-wired LC1K or LC1D contactor
- 2 Harmony XB5 pushbuttons.



### Direct-on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Max. current lth up to	Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code <sup>(3) (4)</sup>	Weight kg	Overall dimensions <sup>(5)</sup> WxHxD mm
220 V	380 V	415 V	440 V	500 V	660 V		Size	Type aM			
					690 V	A	A				
1.5	2.2	2.2	3	–	–	6	10 x 38	10	LE4K065●●	1.450	206x165x146
2.2	4	4	4	–	–	9	10 x 38	12	LE4K095●● or LE4D09●● <sup>(6)</sup>	1.450 1.960	206x165x146 217x348x175.5
2.2	4	4	4	5.5	–	9	10 x 38	12	LE4D09●●	1.960	217x348x175.5
3	5.5	5.5	5.5	7.5	–	12	10 x 38	16	LE4D12●●	1.960	217x348x175.5
4	7.5	9	9	10	–	18	10 x 38	20	LE4D18●●	2.200	217x348x175.5
5.5	11	11	11	15	–	25	10 x 38	25	LE4D25●●	2.200	217x348x175.5
7.5	15	15	15	18.5	18.5	26.5	14 x 51	32	LE4D35●●	5.190	217x348x175.5

#### Voltages code <sup>(4)</sup>

Volts	24	48	110	115	120	220	230	240	380	400	415	440
~ 50/60 Hz												
LE4D	B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE4K	–	–	–	–	–	M7	P7	U7	Q7	V7	–	–

Supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7): pre-wired control circuit between phases.

Other supply voltages: control circuit must be wired by the customer.

<sup>(1)</sup> LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> LE4D●●● (with P7 and V7 coil) with no pushbutton on cover: add “A04” to product reference (example: LE4D25V7A04).

LE4D●●● (with P7 and V7 coil) with overload “Reset” blue pushbutton only on cover: > add “A05” to full product reference.

<sup>(4)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(5)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(6)</sup> Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.

# TeSys Control

Enclosed standard starters / Reverser / to be completed with LR2K, Deca <sup>(1)</sup> overload relays

## Product references



LE2K09●●●



LR2K●●

## Reverse Control + Isolation + Protection against Overloads

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
    - by black I-II position spring return selector, red STOP/RESET pushbuttons for LE2K●● starters
    - by black ON ↑ , ON ↓ pushbuttons, red STOP/RESET pushbutton for LE2D●● starters
  - Motor protection against overload: manual reset with the red pushbutton or remotely.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

### Ranges:

- for 3P motors from 4 to 30 kW (9 to 65 A AC-3), in 11 ranges of reverser starters
- Choice of up to 7 AC coils voltages (depending on starter) for control supply circuit.

### Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07 for LE2D09●●●D35, IK09 for LE2K and LE●D40A●●●D65A,
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE2K and LE●D09●●●D35 polycarbonate <sup>(2)</sup>
- LE●D40A●●● D65A steel sheet.

### Included:

- 2 pre-wired LC1K or LC1D contactor
- 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.



LE2D12●●●



LRD●●

## Reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Maximum current lth up to	Basic reference, to be completed by adding the voltage code <sup>(3)</sup>	Weight	Overall dimensions <sup>(4)</sup> WxHxD
220 V	380 V	415 V	440 V	500 V	660 V	690 V				
kW	kW	kW	kW	kW	kW	kW	A		kg	
1.5	2.2	2.2	3	-	-	-	6	LE2K065●●	1.080	175x165x146
2.2	4	4	4	-	-	-	9	LE2K095●●	1.080	175x165x146
-	-	-	-	5.5	5.5	-	9	LE2D09●● <sup>(5)</sup>	2.100	101x201x153.5
-	-	-	-	5.5	5.5	-	9	LE2D09●●	2.100	101x201x153.5
3	5.5	5.5	5.5	7.5	7.5	-	12	LE2D12●●	2.100	101x201x153.5
4	7.5	7.5	7.5	9	10	-	17	LE2D18●●	2.410	101x201x153.5
5.5	11	11	11	15	15	-	22	LE2D25●●	2.570	101x201x153.5
7.5	15	15	15	18.5	18.5	-	26.5	LE2D35●●	4.100	101x201x153.5
11	18.5	22	22	22	30	-	40	LE2D40A●●	5.270	200x300x174
15	22	25	30	30	33	-	50	LE2D50A●●	5.470	200x300x174
18.5	30	37	37	37	37	-	65	LE2D65A●●	5.470	200x300x174

### Coil voltage codes <sup>(3)</sup>

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE2D40A to D65A	-	-	-	FE7	-	-	P7	-	Q7	-	-	-
LE2D09 to D35	B7	-	-	-	-	M7	P7	U7	Q7	V7	N7	-
LE2K	-	-	-	-	-	M7	P7	U7	Q7	V7	-	-

<sup>(1)</sup> LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(5)</sup> Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.



# TeSys Control

Enclosed standard starters / DOL / to be completed with LR2K, Deca <sup>(1)</sup> overload relays

## Product references

Enclosed starters



LE8K●●●●



LR2K●●



LE8D●●●●



LRD●●



## Reverse Control + Isolation + Protection against Short circuits and Overloads

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
  - LE8K●●starters, by white ↑, black ↓, red Stop/Reset pushbuttons
  - LE8D●● starters, by black I-II position spring return selector, red Stop/Reset pushbutton
  - Option: no pushbutton on cover
  - Circuit disconnection by side black handle
  - Protection against short circuits by NFC fuses type aM (to be ordered separately)
  - Motor protection against overload: manual reset with the red pushbutton or remotely. LE8D option: cover with just a "Reset" blue pushbutton.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of a the contactor.

### Ranges:

- 8 partially pre-equipped enclosures to build-up 3P motor reversers from 2.2 to 15 kW (6 to 35 A AC-3)
- Choice of 3 coils for control with different AC voltages.

### Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK09 for LE8KIP65, IK07 for LE8D
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE8K and LE8D09●●●D35 polycarbonate <sup>(2)</sup>.

### Included:

- 1 fuse carrier with external side handle
- 2 pre-wired LC1K or LC1D contactors
- 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.

## Reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Maximum current I <sub>th</sub> up to	Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code <sup>(3) (4)</sup>	Weight kg	Overall dimensions <sup>(5)</sup> WxHxD
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	Size		Type aM				
kW	kW	kW	kW	kW	kW	A	A					
1.5	2.2	2.2	3	-	-	6	10 x 38	10	LE8K065●●	1.600	206x165x146	
2.2	4	4	4	-	-	9	10 x 38	12	LE8D09●● <sup>(6)</sup>	3.550	217x348x182	
-	-	-	-	5.5	-	9	10 x 38	12	LE8D09●●	3.550	217x348x182	
3	5.5	5.5	5.5	7.5	-	12	10 x 38	16	LE8D12●●	3.550	217x348x182	
4	7.5	9	9	10	-	17	10 x 38	20	LE8D18●●	3.700	217x348x182	
5.5	11	-	-	-	-	22	10 x 38	25	LE8D25●●	4.670	217x348x182	
7.5	15	15	15	18.5	18.5	26.5	14 x 51	32	LE8D35●●	5.800	217x348x182	

### Voltage codes <sup>(4)</sup>

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE8 K, LE8 D	-	-	-	-	-	-	P7	-	Q7	V7	-	-

<sup>(1)</sup> LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> LE8K●●●●●, LE8D●●●●● (with P7 and V7 coil) with no pushbutton on cover: add "A04" to product reference (example: LE8K065P7A04, LE8D25V7A04) LE4D●●●● (with P7 and V7 coil) with only one pushbutton on cover: overload "Reset" blue pushbutton > add "A05" to full product reference.

<sup>(4)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(5)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(6)</sup> Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.



# TeSys Control

Enclosed standard starters / Star-delta / to be completed with Deca <sup>(1)</sup> overload relays

## Product references



### Star-delta Control + Protection against Overload

- Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Option: no pushbutton on cover
- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- Delay of 40 ms ±15 ms at changeover by LAD S2 timer on delta contactor to provide sufficient time for star contactor to break.
- Motor protection against overload: manual reset with the red pushbutton or remotely.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:

- 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW.
- Choice of 7 coils for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: polycarbonate <sup>(2)</sup>.

Included:

- 3 pre-wired LC1D contactors
- 2 Harmony XB5 pushbuttons.

#### Star-delta starters

Standard power ratings of squirrel cage motors Mains voltage - delta connection				Basic reference, to be completed by adding the voltage code <sup>(3)</sup> <sup>(4)</sup>	Weight	Overall dimensions <sup>(5)</sup> WxHxD
220 V	380/400 V	415 V	440 V			
kW	kW	kW	kW		kg	
4	7.5	7.5	7.5	LE3D09●●	3.650	186x348x175.5
5.5	11	11	11	LE3D12●●	3.650	186x348x175.5
11	18.5	22	22	LE3D18●●	3.750	186x348x175.5
11	22	26	26	LE3D35●●	5.160	186x348x175.5

#### Voltage codes <sup>(4)</sup>

Volts ~ 50/60 Hz	24	220	230	240	380	400	415
LE3 D	B7	M7	P7	U7	Q7	V7	N7

<sup>(1)</sup> LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> LE3D●●●● (with P7 and V7 coil) with no pushbutton on cover: add "A04" to product reference (example: LE3D18P7A04).

<sup>(4)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(5)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



# TeSys Control

Enclosed standard starters / Star-delta / to be completed with Deca <sup>(1)</sup> overload relays

## Product references

Enclosed starters



LE6D●●●●



LRD●●

### Star-delta Control + Disconnection + Protection against Short circuits and Overloads

- Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Options: no pushbutton, "Reset" pushbutton only
- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- Delay of 40 ms ±15 ms at changeover by LAD S2 timer on delta contactor to provide sufficient time for star contactor to break.
- Circuit disconnection by side black handle
- Protection against short circuits by NFC fuses type aM (to be ordered separately)
- Motor protection against overload: manual reset with the red pushbutton or remotely.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:

- 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW choice of 7 coils for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: polycarbonate <sup>(2)</sup>.

Included:

- 1 fuse carrier with external side handle
- 3 pre-wired LC1D contactors
- 2 Harmony XB5 pushbuttons.



Star-delta starters								
Standard power ratings of squirrel cage motors				Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code <sup>(3)</sup>	Weight	Overall dimensions <sup>(4)</sup> WxHxD
Mains voltage - delta connection				Size	Type			
220 V	380/400 V	415 V	440 V		aM		kg	
kW	kW	kW	kW					
4	7.5	7.5	7.5	10 x 38	20	LE6D09●●	3.900	217x348x175.5
5.5	11	11	11	10 x 38	25	LE6D12●●	3.900	217x348x175.5
11	18.5	22	22	14 x 51	40	LE6D18●●	4.850	217x348x175.5

Voltage codes			
Volts	24	230	400
~ 50/60 Hz			
LE6 D	B7	P7	V7

<sup>(1)</sup> LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

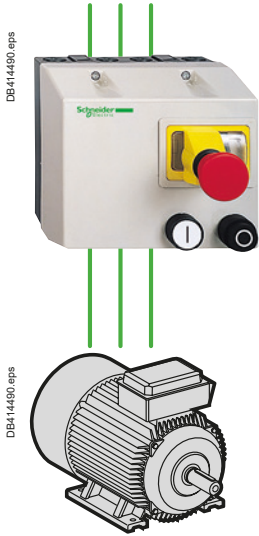
<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

# TeSys Control

## Enclosed safety starters

### Introduction & selection table



Range of pre-assembled safety motor starters, with mushroom pushbuttons, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide the operator with safety machine controls complying with IEC 60204-1.

#### With numerous advantages to meet OEM's most common needs

- IEC
- Multiple ratings and sizes
- IP55
- IK07
- Pre-wired

#### Safety starters

They provide similar functions as standard starters but also include emergency stops to comply with IEC 60204-1 machine safety standards.

Enclosed starters

### Selection in 2 steps

**1** Identify your need (on a single line) in the **Selection criteria** area (example: Load 5 kW – Visible circuit isolation, ON/OFF control with short circuit / overload protection)

**2** Choose your **Solutions** by adding column contents, note the radical of the product references (example: LG1D)

Selection criteria						
Load Power (kW) / 400 V supply	Direct starter ON/OFF	Reverser ON/REVERSE/OFF	Short circuit / overload protection	Power circuit isolation	Visible isolation by rotary switch	Isolated control circuit by transfo
0.06...4	●		●	●		
4 ... 9						
0.06... 4	●		●	●	●	
4... 9						
0.06... 4	●		●	●		●
0.06... 5.5		●	●	●		
0.06 ... 4		●	●	●		●
0.06 ... 15	●		●	●		

Solutions						See page	
LG7K							A1/18
LG7D							A1/18
	LG1K						A1/19
	LG1D						A1/19
		LJ7K					A1/20
			LG8K				A1/21
				LJ8K			A1/22
					GV2MCK04 GV2ME GV2AX		A1/23

# TeSys Control

## Enclosed safety starters / DOL / Ready-to-use

### Product references

Enclosed starters



LG7K06



LG7K09, LG7D

### For Control + Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable (from LG7K09) with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (LG7K06: with additional undervoltage release module). Switching back on power supply after tripping must be a deliberate action.

Range:

- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate <sup>(1)</sup>.

Included:

- 1 GV2ME thermal magnetic circuit breaker (with mushroom emergency stop with LG7K06) <sup>(2)</sup>
- 1 LC1K or LC1D pre-wired contactor
- 1 Harmony emergency stop pushbutton (from LG7K09)
- 2 Harmony XB5 pushbuttons.
- 1 GVAX undervoltage release module (from LG7K09).

Additional GVAX enclosed undervoltage release module for LG7K06 – to be ordered separately.

Additional GV2SN enclosed indicator light – to be ordered separately.

#### Non-reversing starters (with pushbutton control of isolation)

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code <sup>(3)</sup>	Weight	Overall dimensions <sup>(4)</sup> WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	<b>LG7K06</b>	1.300	175x165x177
0.06	0.09	0.12	0.25...0.40	<b>LG7K06</b>	1.300	175x165x177
–	0.18	0.18	0.40...0.63	<b>LG7K06</b>	1.300	175x165x177
0.12	0.25	0.37	0.63...1	<b>LG7K06</b>	1.300	175x165x177
0.25	0.55	0.55	1...1.6	<b>LG7K06</b>	1.300	175x165x177
0.37	0.75	1.1	1.6...2.5	<b>LG7K06</b>	1.300	175x165x177
0.75	1.5	1.5	2.5...4	<b>LG7K06</b>	1.300	175x165x177
1.1	2.2	3	4...6.3	<b>LG7K06</b>	1.300	175x165x177
1.5	4	4	6...10	<b>LG7K09</b>	1.450	175x165x177
3	5.5	5.5	9...14	<b>LG7D12</b>	1.600	175x165x177
4	7.5	9	13...18	<b>LG7D18</b>	1.630	175x165x177
4	9	9	17...23	<b>LG7D18</b>	1.630	175x165x177

#### Voltage codes <sup>(3)</sup>

Volts ~ 50/60 Hz	24	220/230	230	380/400	400	400/415 for LG7K)
<b>LG7K, LG7D</b>	B7	M7	P7	Q7	V7	N7

<sup>(1)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(2)</sup> **LG7K09, D12, D18**: the Emergency Stop function is performed by an undervoltage trip module acting on the circuit breaker. This circuit breaker is always pre-wired for use on 380/400/415 V 50 Hz supply.

For a 60 Hz supply, please consult your Regional Sales Office.

<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



LG1K065

## For Control + Visible Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (with additional undervoltage release module). Switching back on power supply after tripping must be a deliberate action.

Range:

- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529 : IP55, IK07
- Ambient air temperature in operation -5 to + 40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate <sup>(1)</sup>
- Enclosure cannot be opened when energized in position "I".

Included:

- 1 GV2ME thermal magnetic circuit breaker
- 1 LC1K (LG1K starters) or LC1D (LG1D starters) pre-wired contactor
- Switch with rotary red/yellow handle for isolation and emergency
- 2 Harmony XB5 pushbuttons.

Additional GVAX●● undervoltage release module – to be ordered separately.  
Additional GV2SN●● indicator light – to be ordered separately.

### Non-reversing starters (with rotary operator for control of isolation) Enclosure cannot be opened when energised in position "I".

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code <sup>(2)</sup>	Weight	Overall dimensions <sup>(3)</sup> WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	<b>LG1K065●●02</b>	0.970	175x165x165
0.06	0.09	0.12	0.25...0.40	<b>LG1K065●●03</b>	0.970	175x165x165
–	0.18	0.18	0.40...0.63	<b>LG1K065●●04</b>	0.970	175x165x165
0.12	0.25	0.25	0.63...1	<b>LG1K065●●05</b>	0.970	175x165x165
0.25	0.55	0.55	1...1.6	<b>LG1K065●●06</b>	0.970	175x165x165
0.37	0.75	1.1	1.6...2.5	<b>LG1K065●●07</b>	0.970	175x165x165
0.75	1.5	1.5	2.5...4	<b>LG1K065●●08</b>	0.970	175x165x165
1.1	2.2	3	4...6.3	<b>LG1K065●●10</b>	0.970	175x165x165
1.5	4	4	6...10	<b>LG1K095●●14</b>	1.120	175x165x165
3	5.5	5.5	9...14	<b>LG1D122●●16</b>	1.270	175x165x165
4	7.5	9	13...18	<b>LG1D182●●20</b>	1.290	175x165x165
4	9	9	17...23	<b>LG1D182●●21</b>	1.290	175x165x165

#### Voltage codes <sup>(2)</sup>

Volts ~ 50/60 Hz	220/230	230	380/400	400	400/415 (for LG1K)
LG1K, LG1D	M7	P7	Q7	V7	N7

<sup>(1)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(2)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(3)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



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LJ7K06

Enclosed starters

## For Control + Isolation + Short circuit / Overload Protection, with isolated 24 V control circuit

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
  - Emergency stop <sup>(1)</sup>
  - Electrical circuit isolation, lockable on LJ7K09 with up to 3 padlocks
  - Short circuit protection
  - Overload protection
  - Protection against voltage drops for LJ7K09. For LJ7K06, a GVAX●● undervoltage trip may be added
  - Possible signaling with GV2SN●● indicator (to be ordered separately).
- Switching back on power supply after tripping must be a deliberate action.

Range:

- 9 pre-equipped enclosed safety starters from 0.06 to 4 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (U<sub>e</sub>) 690 V
- Operating position: same that as contactors
- Material: polycarbonate <sup>(2)</sup>.

Included:

- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn),
- 1 LC1K pre-wired contactor
- 2 Harmony XB5 pushbuttons
- 1 Integral transformer: 400/24 V, 25 VA
- 1 GVAX undervoltage release module (with LJ7K09).

Additional GVAX●● undervoltage release module for LJ7K06 - to be ordered separately.

Additional GV2SN●● indicator light – to be ordered separately.

- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

### Non-reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

Standard power ratings of 3-phase motors 50 Hz in category AC-3	Circuit breaker	Dust and damp protected starter	Weight	Overall dimensions <sup>(5)</sup> WxHxD
380/400 V	Setting range of thermal trips	Reference <sup>(3) (4)</sup>	kg	
kW	A			
0.06	0.16...0.25	LJ7K06Q702	2.270	175x165x177
0.09	0.25...0.40	LJ7K06Q703	2.270	175x165x177
0.25	0.63...1	LJ7K06Q705	2.270	175x165x177
0.55	1...1.6	LJ7K06Q706	2.270	175x165x177
0.75	1.6...2.5	LJ7K06Q707	2.270	175x165x177
1.5	2.5...4	LJ7K06Q708	2.270	175x165x177
2.2	4...6.3	LJ7K06Q710	2.270	175x165x177
4	6...10	LJ7K09Q714	2.270	175x165x146

### Variants (pre-assembled) <sup>(4)</sup>

Description	Variants available for starter	Suffix to be added to the starter reference <sup>(6)</sup>
With Emergency Stop No control pushbuttons	LJ7K06Q705...K09Q714	A04
With padlocking facility (fitted as standard on LJ7 K09)	LJ7K06Q705...K06Q710	A29
Without circuit breaker <sup>(8)</sup> (or undervoltage release voltage)	LJ7	<sup>(7)</sup>
Without circuit breaker <sup>(8)</sup> With Emergency Stop No control pushbuttons	LJ7K09Q7	A04
Without circuit breaker <sup>(8)</sup> Without Emergency Stop (if the emergency stop is on the machine)	LJ7K09Q7	A39
Without circuit breaker <sup>(8)</sup> Without Emergency Stop No control pushbuttons	LJ7K09Q7	A04A39

<sup>(1)</sup> LJ7K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.

LJ7K09: the Emergency Stop function is performed by an undervoltage trip GVAX385, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

<sup>(2)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> In the reference, the voltage code Q7 (380/400 V) indicates the power supply voltage to which the starter will be connected, it being assumed that the contactor has a ~ 24 V coil (see control circuit scheme).

<sup>(4)</sup> Some combinations of variants / control voltage may not be available. Please consult us.

<sup>(5)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

<sup>(6)</sup> Example: LJ7K06Q705A04.

<sup>(7)</sup> Delete the last 2 digits of the selected starter reference. Example: LJ7K06Q705 becomes LJ7K06Q7.

<sup>(8)</sup> Circuit breaker to be ordered separately. References GV2ME: see chapter B6 "Circuit breakers".

# TeSys Control

## Enclosed safety starters / Reverser / Ready-to-use

### Product references



LG8K06



LG8K09

### For Control + Isolation + Short circuit / Overload Protection

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 "Safety of machinery" standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop <sup>(1)</sup>
- Electrical circuit isolation, lockable on LG8K09 and LG8K12 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LG8K09, LG8K12. For LG8K06, a GVAX●● undervoltage trip may be added.
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:

- 10 pre-equipped enclosed safety inverter starters from 0.06 to 5.5 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1 <sup>(1)</sup>
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate <sup>(2)</sup>.

Included:

- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 "Stop" black pushbutton + 1 2-position spring return selector switch "I – II"
- 1 GVAX undervoltage release module with LG8K09, LG8K12 (to be ordered separately for LG8K06).

### Reversing starters (with pushbutton control of isolation)

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code <sup>(3)</sup>	Weight	Overall dimensions <sup>(4)</sup> WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	<b>LG8K06●●02</b>	1.640	175x165x177
0.06	0.09	0.12	0.25...0.40	<b>LG8K06●●03</b>	1.640	175x165x177
–	0.18	0.18	0.40...0.63	<b>LG8K06●●04</b>	1.640	175x165x177
0.12	0.25	0.25	0.63...1	<b>LG8K06●●05</b>	1.640	175x165x177
0.25	0.55	0.55	1...1.6	<b>LG8K06●●06</b>	1.640	175x165x177
0.37	0.75	1.1	1.6...2.5	<b>LG8K06●●07</b>	1.640	175x165x177
0.75	1.5	1.5	2.5...4	<b>LG8K06●●08</b>	1.640	175x165x177
1.1	2.2	3	4...6.3	<b>LG8K06●●10</b>	1.640	175x165x177
1.5	4	4	6...10	<b>LG8K09●●14</b>	1.640	175x165x177
3	5.5	5.5	9...14	<b>LG8K12●●16</b>	1.640	175x165x177

#### Voltage codes <sup>(3)</sup>

Volts ~ 50/60 Hz	220/230	380/400	400/415
	M7	Q7	N7

<sup>(1)</sup> **LG8K06**: the mushroom head type Emergency Stop acts mechanically on the circuit breaker. **LG8K09, LG8K12**: the Emergency Stop function is performed by an undervoltage trip, acting on the circuit breaker.

This circuit breaker is always supplied pre-wired for use on 380/400/415 V 50 Hz. For a 60 Hz supply, please consult your Regional Sales Office.

<sup>(2)</sup> Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



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LJ8K06

PB111999.eps



LJ8K09



## For Control + Isolation + Short circuit /Overload Protection, with isolated 24 V control circuit

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 "Safety of machinery" standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop <sup>(1)</sup>
- Electrical circuit isolation, lockable on LJ8K09 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LJ8K09. For LJ8K06, a GVAX●● undervoltage trip may be added
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:

- 9 pre-equipped enclosed safety inverter starters from 0.06 to 4 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate <sup>(2)</sup>.

Included:

- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 Integral transformer: 400/24 V, 25 VA
- 1 "Stop" black pushbutton + 1 2-position spring return selector switch "I – II"
- 1 GVAX undervoltage release module with LJ8K09 (to be ordered separately for LJ8K06).
- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

### Reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

Standard power ratings of 3-phase motors 50 Hz in category AC-3 380/400 V	Circuit breaker	Dust and damp protected starter	Weight	Overall dimensions <sup>(5)</sup> WxHxD
	Setting range of thermal trips	Reference <sup>(3) (4)</sup>		
kW	A		kg	
0.06	0.16...0.25	LJ8K06Q702	2.650	175x165x177
0.18	0.40...0.63	LJ8K06Q704	2.650	175x165x177
0.25	0.63...1	LJ8K06Q705	2.650	175x165x177
0.55	1...1.6	LJ8K06Q706	2.650	175x165x177
0.75	1.6...2.5	LJ8K06Q707	2.650	175x165x177
1.5	2.5...4	LJ8K06Q708	2.650	175x165x177
2.2	4...6.3	LJ8K06Q710	2.650	175x165x177
4	6...10	LJ8K09Q714	2.650	175x165x146

### Variants (pre-assembled) <sup>(4)</sup>

Description	Variants available for starter	Suffix to be added to the starter reference
Without circuit breaker <sup>(7)</sup> (or undervoltage release voltage)	LJ8	<sup>(6)</sup>

**(1)** LJ8K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker. LJ8K09: the Emergency Stop function is performed by an undervoltage trip GVAX385, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

**(2)** Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

**(3)** In the reference, the voltage code Q7 (380/400 V) indicates the power supply voltage to which the starter will be connected, it being assumed that the contactor has a ~ 24 V coil (see control circuit scheme).

**(4)** Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

**(5)** Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

**(6)** Delete the last 2 digits of the selected starter reference. Example: LJ8K09Q714 becomes LJ8K09Q7.

**(7)** Circuit breaker to be ordered separately. References GV2ME: see chapter B6 "Circuit breakers".



# TeSys Control

Enclosure for safety starters / DOL / to be completed with ref. GV2ME, GVAX

## Product references



GV2MCK04



GV2ME●●



GVAX●●●

GV2MCK04 enclosure is fitted with a mushroom pushbutton. It allows, with addition of a circuit breaker and undervoltage trip, the construction of a safety direct-on-line starter conforming INRS and VDE0113.

Enclosures characteristics:

- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material : polycarbonate (1).

### Enclosure

#### Enclosure for thermal-magnetic circuit breakers GV2ME

Type	Degree of protection	Possible no. of side mounting auxiliary contact blocks on GV2ME		Reference	Weight kg	Overall dimensions WxHxD
		LH side	RH side			
Surface mounting, double insulated with protective conductor. Sealable cover	IP55	1	1	<b>GV2MCK04</b>	0.420	93x147x145.5

#### GV2ME circuit breaker, GVAX undervoltage trip

Product references: page A1/32.

(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).





# TeSys Control

Enclosures, components,  
for customer assemblies  
Spare parts



# TeSys Control

## Enclosures / To be completed with switch bodies

### Product references

Enclosed starters

PB121229.eps



VCFXGE4

PB121230.eps



VBFXGE2



PB121728.eps



V0

PB121232.eps



V4

### Empty enclosures with rotary handle

#### IP65 enclosure with red padlockable handle operator and yellow front plate (for mounting a main or Emergency Stop switch-disconnector)

lthe	For switch body	Nb. of possible add. module attachments	Reference <sup>(1)</sup>	Weight
<b>A</b>				
<b>kg</b>				
10...32	VN12, VN20 V02...V2	2	VCFXGE1	0.340
10...32	V02...V2	4	VCFXGE4	0.660
50...63	V3 - V4	3	VCFXGE2	0.660
100.... 140	V5 - V6	1	VCFXGE6	1.04

#### IP65 enclosure with black padlockable handle and black front plate (for mounting a main switch-disconnector)

10...32	VN12, VN20 V02...V2	2	VBFXGE1	0.340
10...32	V02...V2	4	VBFXGE4	0.660
50...63	V3-V4	3	VBFXGE2	0.660
100.... 140	V5 - V6	1	VBFXGE6	1.04

### Switch bodies to fit VCFX, VBFX enclosures <sup>(2)</sup>

#### Standard applications

Description	Rating	Reference	Weight
<b>A</b>			
<b>kg</b>			
3-pole switch-disconnectors	10	VN12	0.110
	16	VN20	0.110

#### High performance applications

Description	Rating	Reference	Weight
<b>A</b>			
<b>kg</b>			
3-pole switch-disconnectors	10	V02	0.200
	16	V01	0.200
	20	V0	0.200
	25	V1	0.200
	32	V2	0.200
	50	V3	0.500
	80	V4	0.500
	125	V5	0.900
175	V6	0.900	

<sup>(1)</sup> Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(2)</sup> For characteristics of switch-disconnectors, please consult your Regional Sales Office.

# TeSys Control

## Enclosures for DOL starters / To be completed with ref. GV2ME, LC1K

### Product references



LE1GVMEK, LE1GVMEKA59

#### Empty enclosures with sealing device

Composition	Reference
Insulating enclosure with GV2E01 sealing device	LE1GVMEK
Insulating enclosure with GV2E01 sealing device, neutral terminal	LE1GVMEKA59

#### Direct-on-line starters characteristics

(based on LE1GVMEK enclosure + GV2ME circuit breaker + LC1K contactor assemblies)

Functions / range / specificities:

- Circuit Isolation
- Protection against short circuit
- Motor protection: motor OFF in case of overload – manual reset with the black pushbutton.
- ON/OFF motor control
- Functions can be completed with optional components: remote control, signaling.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection IP55 , according IEC 60529
- Ambient air temperature in operation -5 to +40°C
- Operating position: same as K series contactors
- Material: polycarbonate <sup>(1)</sup>.

■ 6 ratings of direct-on-line starters from 0.37 to 5.5 kW (400 V AC) can be realized, based the combinations of circuit breaker + contactor to be ordered separately:

- GV2ME thermal magnetic circuit breaker, of the required rating (see below)
- LC1K contactor, of the required rating (see below)
- optional accessories (indicating light, On pushbutton, sealing kit...).

#### Circuit breakers + contactors - Type 1 coordination <sup>(2)</sup>

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic current 13 Irth	For customer assembly	
400/415 V	440 V	500 V			Motor circuit breaker Reference	Contactor Reference to be completed with the coil voltage code <sup>(3)</sup>
kW	kW	kW	A	A		
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC1K0610●●
0.55	0.55	0.55	-	-	-	-
-	-	0.75	-	-	-	-
0.75	0.75	-	1.6...2.5	33.5	GV2ME07	LC1K0610●●
-	1.1	1.1	-	-	-	-
1.1	-	1.5	2.5...4	51	GV2ME08	LC1K0610●●
1.5	1.5	2.2	-	-	-	-
2.2	2.2	-	4...6.3	78	GV2ME10	LC1K0610●●
-	3	3	-	-	-	-
3	-	4	6...10	138	GV2ME14	LC1K0910●●
4	4	5.5	-	-	-	-
5.5	5.5	7.5	9...14	170	GV2ME16	LC1K1210●●

#### Coil voltage codes

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
---	BW3	-	-	-	-	-

BW3 coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.

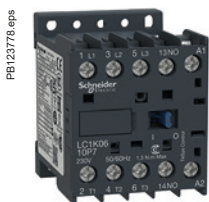
<sup>(1)</sup> Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

<sup>(2)</sup> Extract from Coordination tables see chapter A6.

<sup>(3)</sup> Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.



GV2ME●●



LC1K0610●●



# TeSys Control

## Empty enclosures for standard starters

### Product references

Enclosed starters

PB112264.eps



DE1DS1A04

PB112269.eps



DE1DS1A05

PB112269.eps



DE1DS1

PB112276.eps



DE1DS1A13

#### Empty enclosures for starters without isolating device

Head(s) mounted on cover	Designed for use with	Reference
Without	LE1D09 and D12	DE1DS1A04
	LE1D18...D35	DE1DS2A04
	LE2D09...D35	DE1DS2A04
1 flush blue head "R"	LE1D09 and D12	DE1DS1A05
	LE1D18...D35	DE1DS2A05
	LE2D09...D35	DE1DS2A05
1 flush green head "I" 1 projecting red head "O"	LE1D09 and D12	DE1DS1
	LE1D18...D35	DE1DS2
1 flush blue head "R" 1 switch with 2 fixed positions	LE1D09 and D12	DE1DS1A13
	LE1D18...D35	DE1DS2A13

# TeSys Control

## Empty enclosures for safety starters

### Product references

PB11091 eps



DE1KS217A06

PB11090 eps



DE1KS217A06A37

### Empty enclosures for security starters

Designed for use with	Head(s) mounted on cover	Add-on blocks	Reference
LG7	Without		DE1KS217A04

1 flush white head "I"  
1 projecting black head "O"

DE1KS217A06

1 flush white head "I"  
1 projecting black head "O"  
1 head emergency stop

Padlocking devices

DE1KS217A06A37

Enclosed starters

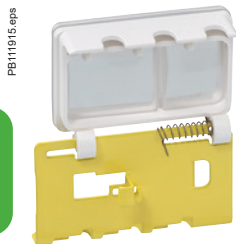


# TeSys Control

## TeSys Control accessories for standard and safety starters

### Product references

Enclosed starters



GV2V01



GV2K011



GV2K021



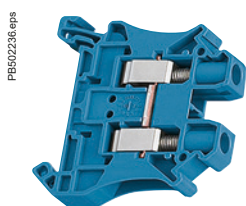
GV2K031



GV2K04



GV2E01 – GV2E02



NSYTRV62BL



NSYTRAC22BL



GV2CP21

Accessories					
Description		Sold in lots of	Unit reference	Weight kg	
Padlocking device <sup>(6)</sup> for GV2ME operator (padlocking is only possible in the "O" position)	1 to 3 padlocks Ø 4 to 8 mm	1	GV2V01	0.075	
Mushroom head Spring return <sup>(2)</sup> pushbutton Ø 40 mm, red, IP55		1	GV2K011	0.052	
Emergency stop Latching <sup>(2)</sup>	Key release, key n° 455	1	GV2K021	0.160	
	Turn to release	1	GV2K031	0.115	
	Turn to release, padlockable	1	GV2K04 <sup>(1)</sup>	0.120	
Sealing kit	For enclosures and front plate	IP 55 for temperature between +5 °C and +40 °C	10	GV2E01	0.012
		IP 55 for temperature between -20 °C and +40 °C	10	GV2E02	0.012
Linery passthrough neutral terminal block – 6 mm <sup>2</sup> 41 A single-level 1x1 screw		50	NSYTRV62BL	0.015	
End cover for Linery screw single-level terminal block		50	NSYTRAC22BL	0.003	

<sup>(1)</sup> Circuit breaker to be ordered separately. Commercial references of GV2ME01 to M22: see chapter B6 "Circuit breakers".

<sup>(2)</sup> Supplied with IP55 GV2E01 sealing kit. To be fitted with enclosure GV2M●01.

<sup>(3)</sup> Padlockable in "O" position using Ø 4 to 8 mm shank padlocks.

### Separate front plate for GV2ME

Provides a sealing cover to GV2ME circuit breaker, on any kind of front panel.

Front plate			
Description		Reference	Weight kg
For direct control, through a panel, of a chassis mounted GV2ME	IP55	GV2CP21	0.800



# TeSys Control

## TeSys Control accessories for standard and safety starters

### Product references



PB121233.eps

ZB5AA331



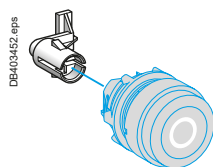
PB121234.eps

ZB5AL432



PB121235.eps

LAD9091



PB403452.eps



PF141188.eps

ZB5AD●



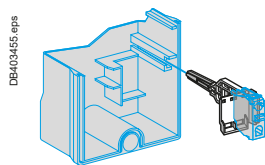
PB121236.eps

ZENL1111



PB121237.eps

LAD90909



PB403455.eps

### Heads for Start and Stop/Reset pushbuttons

Description	For use on	Unit reference
Flush, green "I" <sup>(1)</sup>	LE1, LE3, LE4, LE6 D09...D35	ZB5AA331
Projecting, red "O" <sup>(1)</sup>	LE●D09...D35	ZB5AL432
Adaptation kit for head ZB5AL432	LE1D09 and D12	LAD9091
	LE1D18...D35, LE2D09...D35	LAD91810
	LE3, LE4, LE6 and LE8 D09...D35	LAD9T4

### Heads for Reset pushbuttons

Flush, blue "R" <sup>(2)</sup>	LE●D09...D35	ZB5AA0
		+ ZBA639 <sup>(3)</sup>
Adaptation kit for head ZB5AA0 + ZBA639	LE1D09 and D12	LAD9092
	LE1D18...D35, LE2D09...D35	LAD91810
	LE3, LE6, LE4 and LE8D09...D35	LAD9T4

### Heads for selector switches

3-position stay put	LE1D09...D35●●A09	ZB5AD3
2-position stay put	LE1D09...D35●●A13	ZB5AD2
3-position spring return to centre	LE2D09...D35 LE8D09...D35	ZB5AD5

### Contact blocks

1 N/O spring return	LE●D09...D35	ZENL1111
1 N/C spring return	LE●D09...D35	ZENL1121
Mounting for contact block	LE1D09 and D12	LAD90909
	LE1D18...D35, LE2, LE3, LE4, LE6 and LE8D09...D35	LAD91809

<sup>(1)</sup> Remember to order adaptation kit LAD9091 or LAD91810 or LAD9T4, depending on size.

<sup>(2)</sup> Remember to order adaptation kit LAD9092 or LAD91810 or LAD9T4, depending on size.

<sup>(3)</sup> Sold in lots of 10.

Enclosed starters

# TeSys Control

Deca circuit breakers ref. GV2ME, undervoltage trips

## Product references

Enclosed starters

PB121673.tif



GV2ME●●

### Thermal magnetic circuit breakers, with screw clamp terminals

#### GV2ME with pushbutton control

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Setting range of thermal trips (2)	Magnetic tripping current I <sub>d</sub> ± 20 %	Reference
400/415 V			500 V			690 V					
P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)			
kW	kA	%	kW	kA	%	kW	kA	%	A	A	
-	-	-	-	-	-	-	-	-	0.1...0.16	1.5	GV2ME01
0.06	*	*	-	-	-	-	-	-	0.16...0.25	2.4	GV2ME02
0.09	*	*	-	-	-	-	-	-	0.25...0.40	5	GV2ME03
0.12	*	*	-	-	-	0.37	*	*	0.40...0.63	8	GV2ME04
0.18	*	*	-	-	-	-	-	-	-	-	-
0.25	*	*	-	-	-	0.55	*	*	0.63...1	13	GV2ME05
0.37	*	*	0.37	*	*	-	-	-	1...1.6	22.5	GV2ME06
0.55	*	*	0.55	*	*	0.75	*	*	-	-	-
-	-	-	0.75	*	*	1.1	*	*	-	-	-
0.75	*	*	1.1	*	*	1.5	3	75	1.6...2.5	33.5	GV2ME07
1.1	*	*	1.5	*	*	2.2	3	75	2.5...4	51	GV2ME08
1.5	*	*	2.2	*	*	3	3	75	-	-	-
2.2	*	*	3	50	100	4	3	75	4...6.3	78	GV2ME10
3	*	*	4	10	100	5.5	3	75	6...10	138	GV2ME14
4	*	*	5.5	10	100	7.5	3	75	-	-	-
5.5	15	50	7.5	6	75	9	3	75	9...14	170	GV2ME16
-	-	-	-	-	-	11	3	75	-	-	-
7.5	15	50	9	6	75	15	3	75	13...18	223	GV2ME20
9	15	40	11	4	75	18.5	3	75	17...23	327	GV2ME21
11	15	40	15	4	75	-	-	-	20...25	327	GV2ME22 (3)

GV2ME technical characteristics: see in chapter B6.

#### Undervoltage trip, INRS (can only be mounted on GV2ME) Safety device for dangerous machines conforming to INRS and VDE0113

Side (1 block on RH side of circuit breaker GV2 ME)	Voltage	Frequency	Reference
	110...115 V	50 Hz	GVAX115
		60 Hz	GVAX116
		127 V	60 Hz
	220...240 V	50 Hz	GVAX225
		60 Hz	GVAX226
	380...400 V	50 Hz	GVAX385
		60 Hz	GVAX386
	415...440 V	50 Hz	GVAX415
		60 Hz	GVAX385

GVAX technical characteristics: see in chapter B6.

(1) As % of I<sub>cu</sub>.

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) Maximum rating which can be mounted in enclosures GV2MC or MP, please consult your Regional Sales Office.

\* > 100 kA.

PB121677.eps



GVAX●●●

# TeSys Control

## LR2K, Deca thermal overload relays

### Product references



LR2K●●

#### Thermal overload relays - selection table

LR2K thermal overload relays can be mounted on all 3P LC1K contactors with screw clamp connectors.

**Class 10 A (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In)**

Relay setting range	Fuses to be used with selected relay Maximum rating Type			Reference
	aM	gG	BS88	
A	A	A	A	
0.11...0.16	0.25	0.5	–	LR2K0301
0.16...0.23	0.25	0.5	–	LR2K0302
0.23...0.36	0.5	1	–	LR2K0303
0.36...0.54	1	1.6	–	LR2K0304
0.54...0.8	1	2	–	LR2K0305
0.8...1.2	2	4	6	LR2K0306
1.2...1.8	2	6	6	LR2K0307
1.8...2.6	4	8	10	LR2K0308
2.6...3.7	4	10	16	LR2K0310
3.7...5.5	6	16	16	LR2K0312
5.5...8	8	20	20	LR2K0314
8...11.5	10	25	20	LR2K0316
10...14	16	32	25	LR2K0321
12...16	20	40	32	LR2K0322

LRD thermal overload relays can only be mounted on LC1D contactors of same size ratio and with screw clamp connectors.


Relay setting range (A)	Fuses to be used with selected relay			For use with contactor LC1	Reference
	aM (A)	gG (A)	BS88 (A)		
<b>Class 10 A<sup>(1)</sup> for connection by screw clamp terminals or connectors</b>					
0.10...0.16	0.25	2	–	D09...D38	LRD01
0.16...0.25	0.5	2	–	D09...D38	LRD02
0.25...0.40	1	2	–	D09...D38	LRD03
0.40...0.63	1	2	–	D09...D38	LRD04
0.63...1	2	4	–	D09...D38	LRD05
1...1.6	2	4	6	D09...D38	LRD06
1.6...2.5	4	6	10	D09...D38	LRD07
2.5...4	6	10	16	D09...D38	LRD08
4...6	8	16	16	D09...D38	LRD10
5.5...8	12	20	20	D09...D38	LRD12
7...10	12	20	20	D09...D38	LRD14
9...13	16	25	25	D12...D38	LRD16
12...18	20	35	32	D18...D38	LRD21
16...24	25	50	50	D25...D38	LRD22
23...32	40	63	63	D25...D38	LRD32
30...38	40	80	80	D32 and D38	LRD35




LRD●●

Enclosed starters

DE1DS1	KZ16	LE1D18N7A04	LE1M35N705
DE1DS1A04	KZ18	LE1D18P7	LE1M35N706
DE1DS1A05	KZ20	LE1D18P7A04	LE1M35N707
DE1DS1A13	KZ21	LE1D18P7A05	LE1M35N708
DE1DS2	KZ27	LE1D18P7A13	LE1M35N710
DE1DS2A04	KZ28	LE1D18Q7	LE1M35N712
DE1DS2A05	KZ30	LE1D18Q7A09	LE1M35N714
DE1DS2A13	KZ50	LE1D18R7	LE1M35N716
DE1KS217A04	KZ52	LE1D18U7	LE1M35N721
DE1KS217A06	KZ62	LE1D18V7	LE1M35N722
DE1KS217A06A29	KZ65	LE1D18V7A04	LE1M35P7
DE1KS217A06A37	KZ66	LE1D18V7A05	LE1M35P705
DE1KS217A29	KZ67	LE1D18V7A13	LE1M35P706
DE1KS217A29A37	KZ77	LE1D25B7	LE1M35P707
DE1KS217A37	KZ93	LE1D25F7	LE1M35P708
DE2DS2	LAD90909	LE1D25M7	LE1M35P710
DK1FB005	LAD9091	LE1D25M7A09	LE1M35P712
GC2530M5D	LAD9092	LE1D25N7	LE1M35P714
GV2CP21	LAD91809	LE1D25P7	LE1M35P716
GV2E01	LAD91810	LE1D25P7A04	LE1M35P721
GV2E02	LAD9T4	LE1D25P7A05	LE1M35P722
GV2E03	LC1KV7A80	LE1D25P7A13	LE1M35Q7
GV2K011	LE1D09B7	LE1D25Q7	LE1M35Q705
GV2K021	LE1D09E7	LE1D25Q7A09	LE1M35Q706
GV2K031	LE1D09F7	LE1D25R7	LE1M35Q707
GV2K04	LE1D09M7	LE1D25U7	LE1M35Q708
GV2MC01	LE1D09M7A04	LE1D25V7	LE1M35Q710
GV2MC02	LE1D09M7A13	LE1D25V7A04	LE1M35Q712
GV2MC03	LE1D09N7	LE1D25V7A13	LE1M35Q714
GV2MCK04	LE1D09N7A04	LE1D35B7	LE1M35Q716
GV2ME01	LE1D09P7	LE1D35E7	LE1M35Q721
GV2ME02	LE1D09P7A04	LE1D35F7	LE1M35Q722
GV2ME03	LE1D09P7A05	LE1D35M7	LE1M35R705
GV2ME04	LE1D09P7A09	LE1D35N7	LE1M35R706
GV2ME05	LE1D09P7A13	LE1D35P7	LE1M35R708
GV2ME06	LE1D09P7A13T	LE1D35P7A04	LE1M35R710
GV2ME07	LE1D09P7A95	LE1D35P7A05	LE1M35R714
GV2ME08	LE1D09P7T	LE1D35Q7	LE1M35R716
GV2ME10	LE1D09Q7	LE1D35R7	LE1M35R721
GV2ME14	LE1D09Q7A04	LE1D35U7	LE1M35R722
GV2ME16	LE1D09Q7A05	LE1D35V7	LE1M35U706
GV2ME20	LE1D09Q7A13	LE1D40AFE7	LE1M35U707
GV2ME21	LE1D09R7	LE1D40AP7	LE1M35U708
GV2ME22	LE1D09U7	LE1D40AQ7	LE1M35U710
GV2MP01	LE1D09U7A13	LE1D50AFE7	LE1M35U712
GV2MP02	LE1D09V7	LE1D50AP7	LE1M35U714
GV2MP03	LE1D09V7A04	LE1D50AP7A04	LE1M35U716
GV2MP04	LE1D09V7A09	LE1D50AQ7	LE1M35U721
GV2PC01	LE1D09V7A13	LE1D65AP7	LE1M35U722
GV2PC02	LE1D12E7	LE1D65AP7A04	LE1M35V7
GV2SN23	LE1D12F7	LE1D65AQ7	LE1M35V706
GV2SN24	LE1D12M7	LE1GVMEK	LE1M35V707
GV2SN33	LE1D12M7A04	LE1GVMEKA59	LE1M35V708
GV2SN34	LE1D12M7A09	LE1M35B705	LE1M35V710
GV2V01	LE1D12N7	LE1M35B706	LE1M35V712
GV3PC01	LE1D12P7	LE1M35B707	LE1M35V714
GV3PC02	LE1D12P7A04	LE1M35B710	LE1M35V716
GVAX115	LE1D12P7A05	LE1M35B712	LE1M35V721
GVAX116	LE1D12P7A13	LE1M35B714	LE1M35V722
GVAX225	LE1D12Q7	LE1M35B716	LE2D09M7
GVAX226	LE1D12R7	LE1M35F710	LE2D09N7
GVAX385	LE1D12U7	LE1M35M7	LE2D09P7
GVAX386	LE1D12U7A09	LE1M35M705	LE2D09Q7
GVAX415	LE1D12V7	LE1M35M706	LE2D09U7
KAD1PZ	LE1D12V7A04	LE1M35M707	LE2D09V7
KCC1Y	LE1D12V7A05	LE1M35M708	LE2D12B7
KZ101	LE1D12V7A09	LE1M35M710	LE2D12N7
KZ103	LE1D12V7A13	LE1M35M712	LE2D12Q7
KZ106	LE1D18E7	LE1M35M714	LE2D12U7
KZ13	LE1D18F7	LE1M35M716	LE2D12V7
KZ14	LE1D18M7	LE1M35M721	LE2D18M7
KZ15	LE1D18N7	LE1M35M722	LE2D18N7

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LE2D18P7	LE4D12V7A05	LG1K065Q703	LG7K06P708
LE2D18V7	LE4D18B7	LG1K065Q704	LG7K06P710
LE2D25M7	LE4D18F7	LG1K065Q705	LG7K06Q7
LE2D25N7	LE4D18M7	LG1K065Q706	LG7K06Q702
LE2D25P7	LE4D18N7	LG1K065Q706A37	LG7K06Q704
LE2D25V7	LE4D18P7	LG1K065Q707	LG7K06Q705
LE2D35P7	LE4D18Q7	LG1K065Q707A37	LG7K06Q706
LE2D35V7	LE4D18U7	LG1K065Q708	LG7K06Q706A29
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LE2D65AQ7	LE4D25B7	LG1K065Q710A37	LG7K06Q708
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LE2K065M7	LE4D25M7	LG1K065V704	LG7K06Q710
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LE3D09N7	LE4D35N7	LG1K095Q7	LG7K09N714
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LE3D09Q7	LE4D35V7	LG7D12B716	LG7K09V714
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LE3D09V7A04	LE4K065V7	LG7D12M716	LG8K06M7
LE3D12B7	LE6D09B7	LG7D12N716	LG8K06M702
LE3D12M7	LE6D12B7	LG7D12P716	LG8K06M704
LE3D12N7	LE6D12P7	LG7D12Q716	LG8K06M705
LE3D12P7	LE6D12V7	LG7D12V716	LG8K06M706
LE3D12P7A04	LE6D18B7	LG7D18B720	LG8K06M707
LE3D12Q7	LE6D18P7	LG7D18B721	LG8K06M710
LE3D12U7	LE6D18V7	LG7D18M7	LG8K06N705
LE3D12V7	LE8D09V7	LG7D18M720	LG8K06N706
LE3D18B7	LE8D12P7	LG7D18M721	LG8K06N707
LE3D18M7	LE8D12Q7	LG7D18P720	LG8K06Q7
LE3D18N7	LE8D12V7	LG7D18Q7	LG8K06Q702
LE3D18P7	LE8D18V7	LG7D18Q720	LG8K06Q703
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LE3D18V7	LG1D122M716	LG7K06B704	LG8K06Q707
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LE3D35N7	LG1D122Q7	LG7K06B707	LG8K06Q708
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LE3D35Q7	LG1D182M720	LG7K06B710A04	LG8K06Q710
LE3D35U7	LG1D182M721	LG7K06M7	LG8K09M7
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LE4D09Q7	LG1K065M706	LG7K06M706	LJ7K06Q703
LE4D09R7	LG1K065M707	LG7K06M707	LJ7K06Q705
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LE4D09V7	LG1K065M708	LG7K06M707A39	LJ7K06Q705A29
LE4D09V7A04	LG1K065M710	LG7K06M708	LJ7K06Q706
LE4D12B7	LG1K065M710A37	LG7K06M708A04	LJ7K06Q706A04
LE4D12E7	LG1K065N705	LG7K06M708A29	LJ7K06Q707
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LE4D12M7	LG1K065N708	LG7K06M710A04	LJ7K06Q707A29
LE4D12N7	LG1K065N710	LG7K06M710A29	LJ7K06Q708
LE4D12P7	LG1K065P703	LG7K06N704	LJ7K06Q708A04
LE4D12P7A04	LG1K065P707	LG7K06N705	LJ7K06Q708A29
LE4D12P7A05	LG1K065P708	LG7K06N706	LJ7K06Q710
LE4D12Q7	LG1K065P710	LG7K06N707	LJ7K06Q710A04
LE4D12V7	LG1K065Q7	LG7K06N710	LJ7K09Q7
LE4D12V7A04	LG1K065Q702	LG7K06P704	LJ7K09Q714

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# TeSys Control

## Enclosed switch-disconnectors and motor starters

### Product references

Enclosed  
starters

LJ7K09Q714A04	V6	VCD0	VVE4
LJ7K09Q7A04A39	VBD0	VCD01	VZ0
LJ8K06Q702	VBD01	VCD02	VZ01
LJ8K06Q704	VBD02	VCD1	VZ02
LJ8K06Q705	VBD1	VCD2	VZ1
LJ8K06Q706	VBD2	VCDN12	VZ10
LJ8K06Q707	VBDN12	VCDN20	VZ11
LJ8K06Q707A04	VBDN20	VCF0	VZ12
LJ8K06Q708	VBF0	VCF01	VZ13
LJ8K06Q710	VBF01	VCF01GE	VZ14
LJ8K09Q7	VBF01GE	VCF01GEGP	VZ15
LJ8K09Q714	VBF02	VCF02	VZ16
LR2K0301	VBF02GE	VCF02GE	VZ17
LR2K0302	VBF0GE	VCF02GEGP	VZ17L127
LR2K0303	VBF1	VCF0GE	VZ17L69
LR2K0304	VBF1GE	VCF0GEGP	VZ18
LR2K0305	VBF2	VCF1	VZ2
LR2K0306	VBF2GE	VCF1GE	VZ20
LR2K0307	VBF3	VCF1GEGP	VZ26
LR2K0308	VBF3GE	VCF1YZ	VZ27
LR2K0310	VBF4	VCF2	VZ28
LR2K0312	VBF4GE	VCF2GE	VZ29
LR2K0314	VBF5	VCF3	VZ3
LR2K0316	VBF5GEN	VCF3GE	VZ30
LR2K0321	VBF6	VCF4	VZ31
LR2K0322	VBF6GEN	VCF4GE	VZ4
LRD01	VBFXGE1	VCF5	VZ45
LRD02	VBFXGE2	VCF5GEN	VZ7
LRD03	VBFXGE4	VCF6	VZ8
LRD04	VBFXGE6	VCF6GEN	VZ9
LRD05	VC1GUN	VCFN12GE	VZN05
LRD06	VC2GUN	VCFN20GE	VZN06
LRD07	VC3GUN	VCFN25GE	VZN08
LRD08	VC4GUN	VCFN32GE	VZN11
LRD10	VC5GUN	VCFN40GE	VZN12
LRD12	VC6GUN	VCFXGE1	VZN14
LRD14	VCCD0	VCFXGE2	VZN17
LRD16	VCCD01	VCFXGE4	VZN19
LRD21	VCCD02	VCFXGE6	VZN20
LRD22	VCCD1	VGP1	VZN26
LRD32	VCCD2	VGPCLIP1	VZN30
LRD35	VCCDN12	VN12	Z01
NSYTRAC22BL	VCCDN20	VN20	ZB5AA331
NSYTRV62BL	VCCF0	VVD0	ZB5AD2
V0	VCCF01	VVD1	ZB5AD3
V01	VCCF02	VVD2	ZB5AD5
V02	VCCF1	VVD3	ZB5AL432
V1	VCCF2	VVD4	ZENL1111
V2	VCCF3	VVE0	ZENL1121
V3	VCCF4	VVE1	
V4	VCCF5	VVE2	
V5	VCCF6	VVE3	

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## Technical Data for Designers

### Contents

Switch-disconnectors .....	A1/38 to A1/40
Direct-on-line starters .....	A1/41, A1/43 to A1/49
.....and A1/51	
Star-delta starters .....	A1/42 and A1/50
Starters for safety applications .....	A1/52 to A1/55

# TeSys Control

## Enclosed switch-disconnectors

### Dimensions

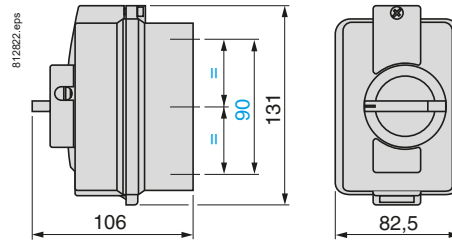
Enclosed starters

Ref.



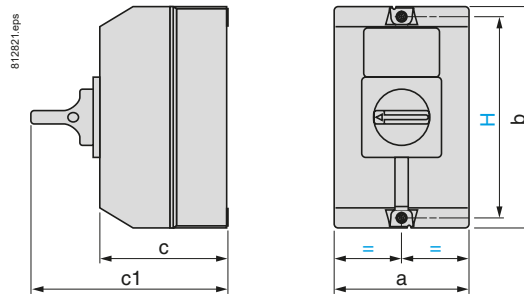
#### Dimensions

##### VCFN12GE to VCFN40GE



Cable glands: 2x ISO 20 top and bottom, 2x ISO 16 rear.

##### VCF or VBF02GE to 4GE, VCF●●GEGP and VCF●GEGP, VCFX or VBFXGE1 to GE4

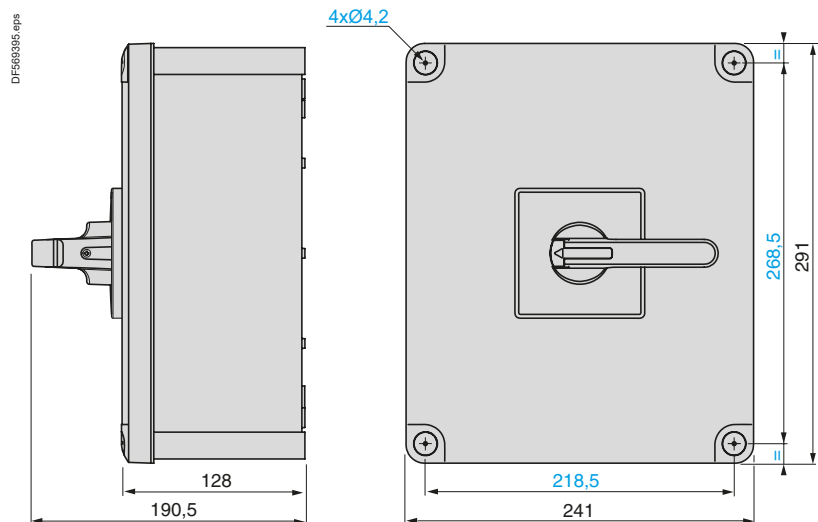


	a	b	c	c1	H
V●F02GE to V●F2GE, V●FXGE1 VCF●●GEGP and VCF●GEGP <sup>(1)</sup>	90	146	85	131	130
V●F3GE and V●F4GE <sup>(2)</sup>	157	180	107	152	164
V●FXGE2 and V●FXGE4 <sup>(2)</sup>	157	180	107	152	164

<sup>(1)</sup> Cable glands: 2x ISO 16 rear, 4x ISO 20/25 top and bottom.

<sup>(2)</sup> Cable glands: 4x ISO 25/32 rear, 4x ISO 25/32 top and bottom.

##### VCF or VBF5GEN and 6GEN

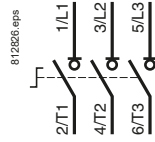




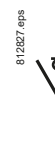
#### Schemes

##### Switch-disconnectors

###### Enclosed or switch bodies



###### Main pole module



###### Neutral pole module



##### Auxiliary contact blocks

###### VZ7



###### VZ20



###### VZN05



###### VZN06



# TeSys Control

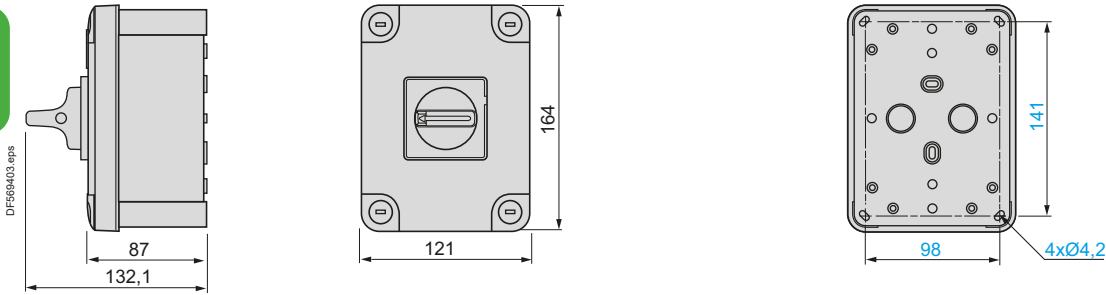
## Enclosed switch-disconnectors / UL - CSA

### Dimensions, schemes

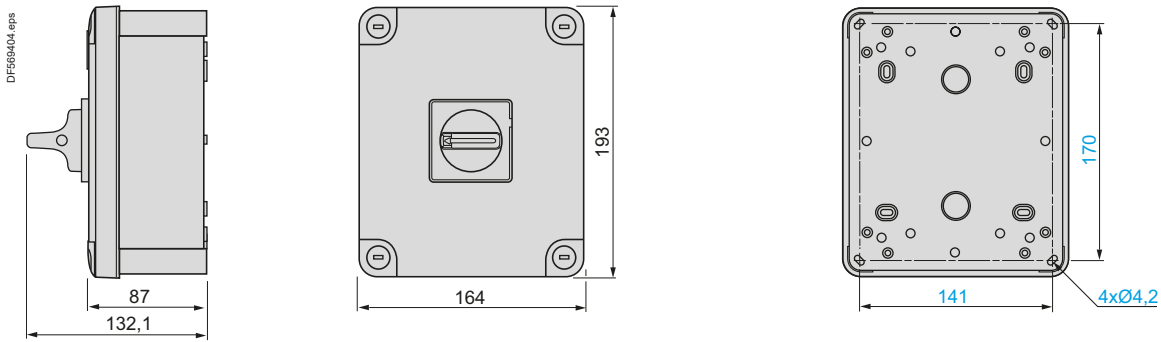
Enclosed starters

#### Dimensions

##### VC1GUN and VC2GUN

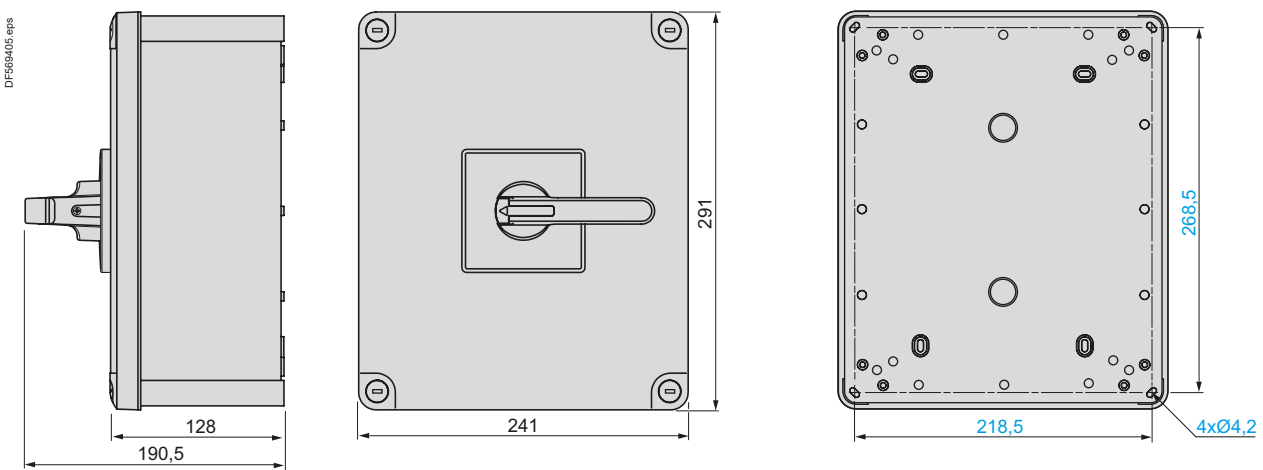


##### VC3GUN and VC4GUN



Ref.

##### VC5GUN and VC6GUN



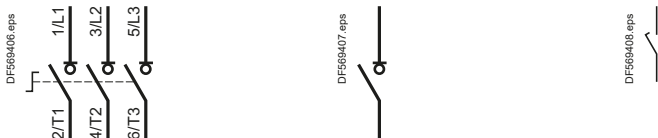
#### Schemes

##### Switch-disconnectors

Enclosed switch-disconnectors or switch bodies

Main pole module

Neutral pole module



##### Auxiliary contact block modules

VZ7

VZ20



References:  
page A1/4

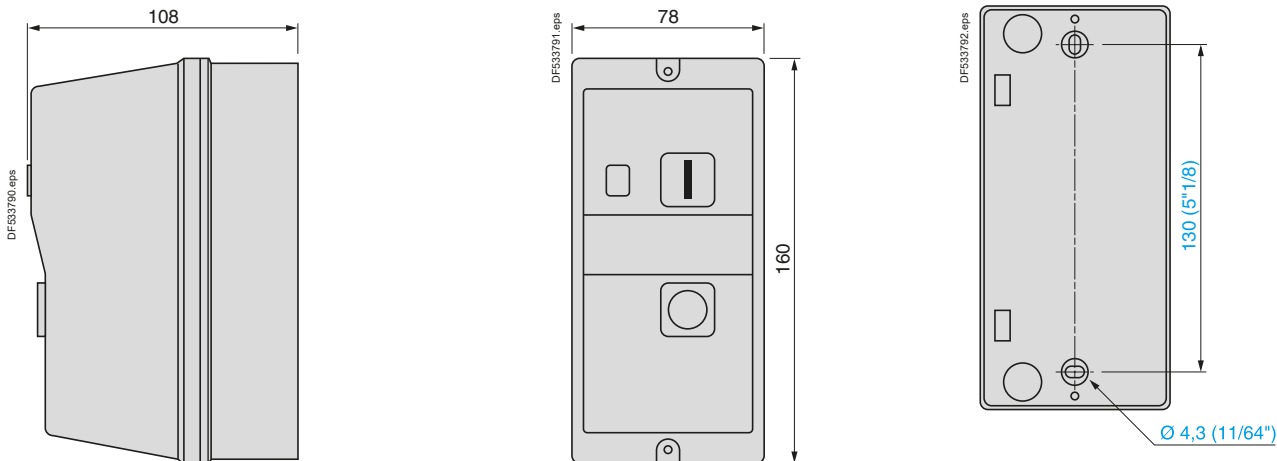
# TeSys Control

## Enclosed standard starters / DOL

### Dimensions, schemes

#### Dimensions

##### LE1M35 <sup>(1)</sup>



#### Knock-outs or blanking plugs for cable glands

Enclosure type	At top		At bottom	
	PG	ISO	PG	ISO
LE1 M	2 x 13 to 2 x 21	2 x 20 or 2 x 25	2 x 13 to 2 x 21	2 x 20 or 2 x 25

(1) Can be mounted on machine panel or frame. Knock-outs for 4 x 13 P cable glands.

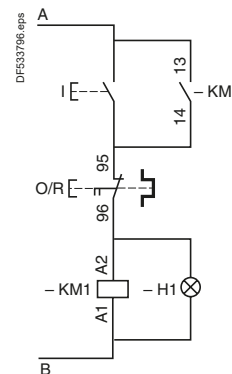
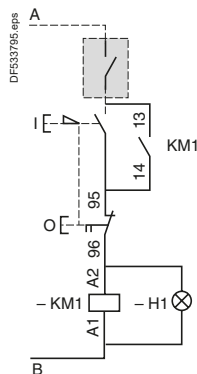
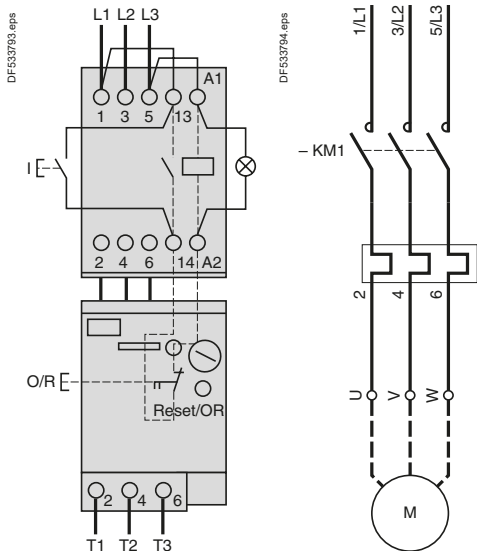
#### Schemes

##### LE1M35

#### Choice of type of control built into the product

##### Control by latching pushbuttons

##### Control by spring return pushbuttons



#### Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	For customer assembly	
Other voltages	All voltages (440 V max)	For customer assembly	

References:  
page A1/7

# TeSys Control

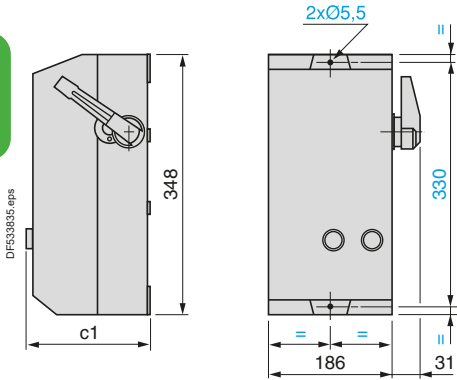
## Enclosed standard starters / Star-delta

### Dimensions, schemes

Enclosed starters

#### Dimensions

##### LE6D09...D18



	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

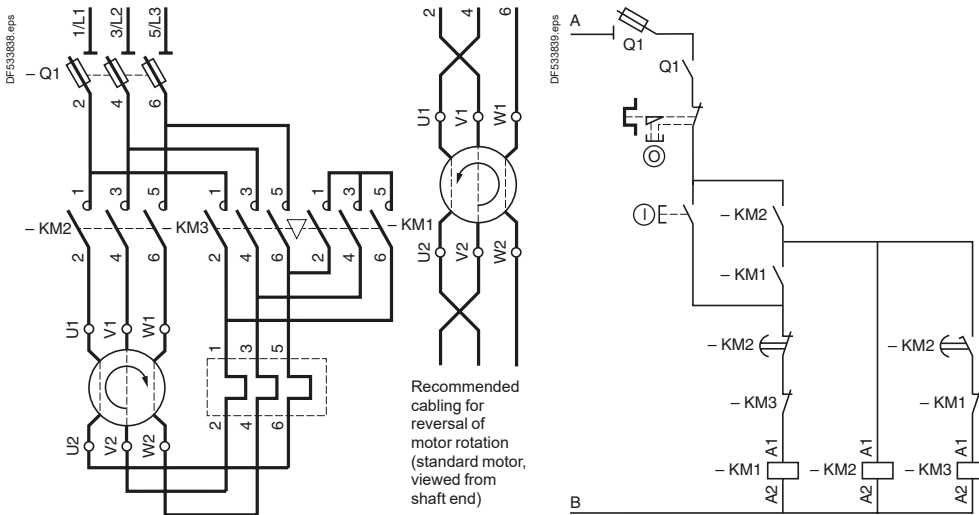
#### Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE6D09...D18	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40

Ref.

#### Schemes

##### LE6D09...D18



#### Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	All voltages (600 V max)	For customer assembly	

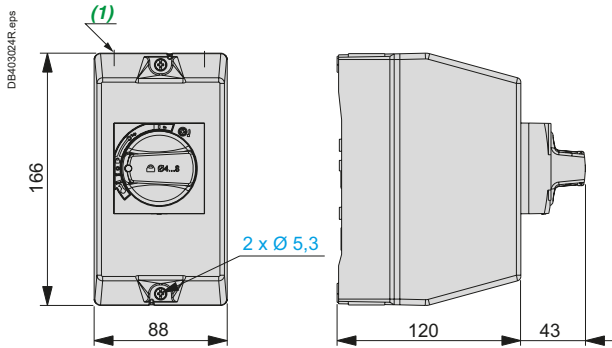
# TeSys Control

## Enclosed standard starters / DOL

### Dimensions, schemes

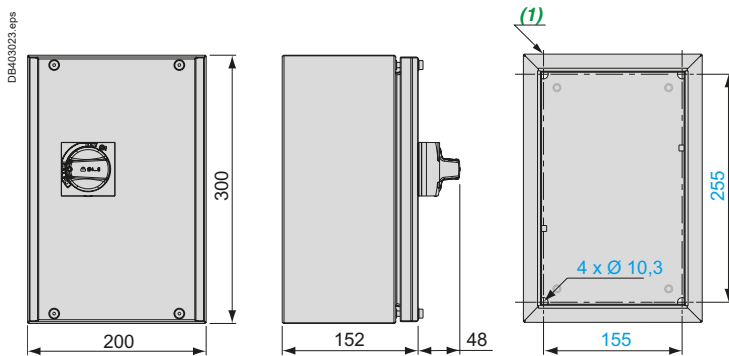
#### Dimensions

##### GV2PC●●



(1) Top face: 2 knock-outs for ISO20 cable glands.  
Bottom face: 2 knock-outs for ISO20 cable glands.

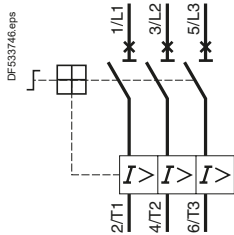
##### GV3PC●●



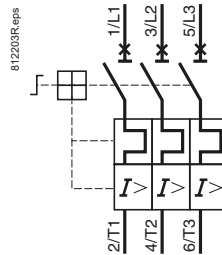
(1) Top face: 1 blanking plug for ISO32 cable gland.  
Bottom face: 2 blanking plugs for ISO32 cable gland + 1 blanking plug for ISO20 cable gland.

#### Schemes

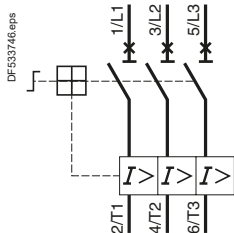
##### GV2L



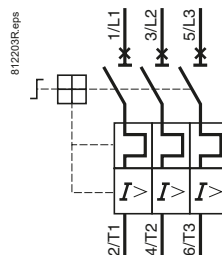
##### GV2P



##### GV3L



##### GV3P



# TeSys Control

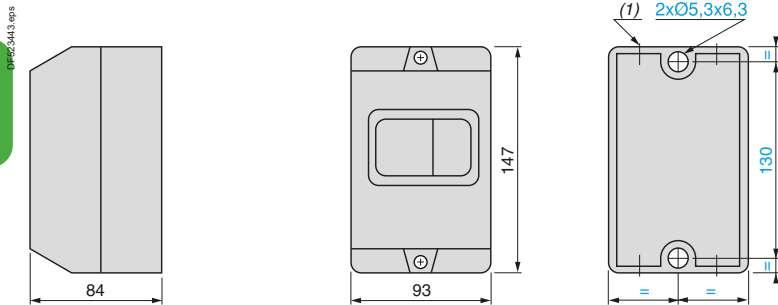
## Enclosed standard starters / DOL

### Dimensions, mounting

Enclosed starters

#### Dimensions

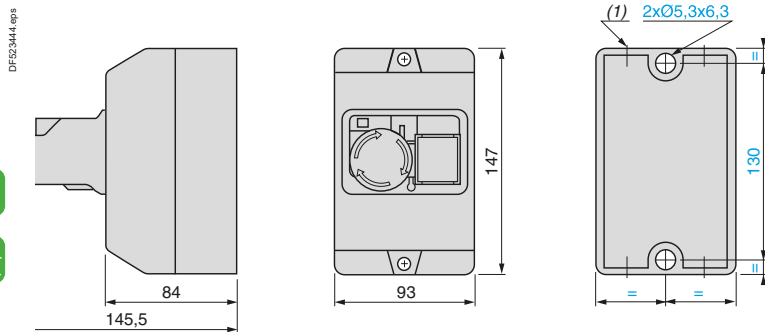
##### Surface mounting enclosure GV2MC0●



(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.  
Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.

##### Surface mounting enclosure GV2MCK04

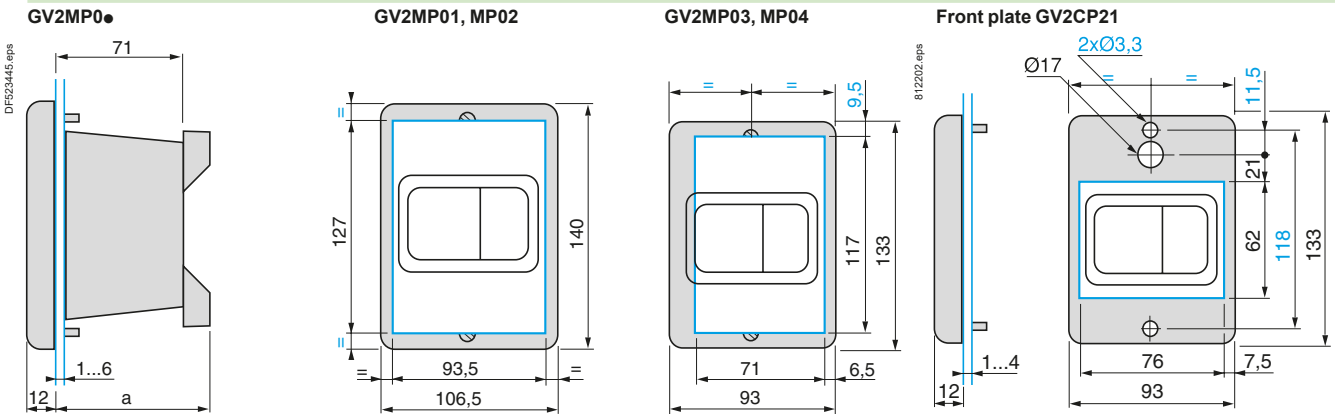
Ref.



(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.  
Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.

#### Mounting

##### Flush mounting enclosures GV2MP0● (panel cut-out)



GV2	a
MP01, MP02	—
MP03, MP04	86

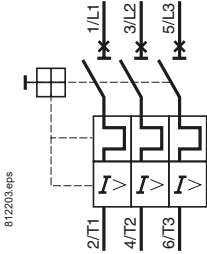
# TeSys Control

## Circuit breaker and auxiliaries / accessories

### Schemes

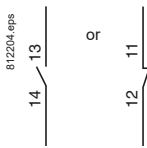
#### Schemes

##### GV2ME●●

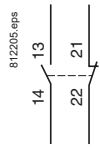


##### Instantaneous auxiliary contacts

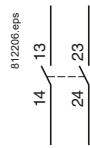
###### GVAE1



###### GVAE11

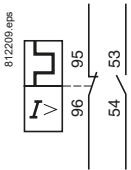


###### GVAE20

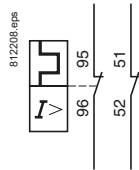


##### Instantaneous auxiliary contacts and fault signalling contacts

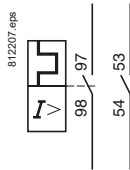
###### GVAD0110



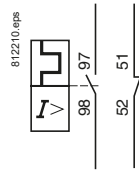
###### GVAD0101



###### GVAD1010

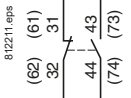


###### GVAD1001



##### Instantaneous auxiliary contacts

###### GVAN11



###### GVAN20



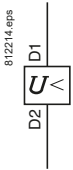
##### Short-circuit signalling contacts

###### GVAM11

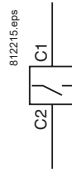


##### Undervoltage trips

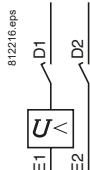
###### GVAU●●●



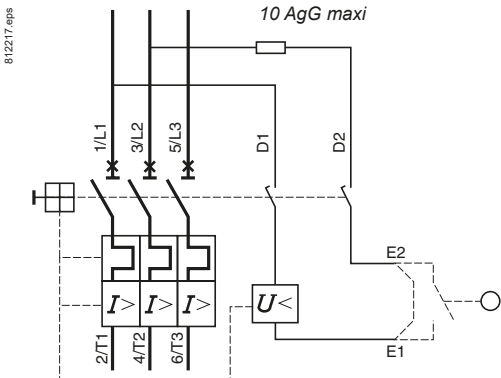
###### GVAS●●●



###### GVAX●●●



##### Wiring diagram for undervoltage trip used on potentially dangerous machines, conforming to INRS



# TeSys Control

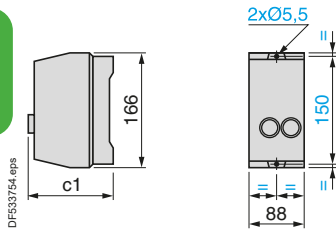
## Enclosed standard starters / DOL, Reverser

### Dimensions

Enclosed starters

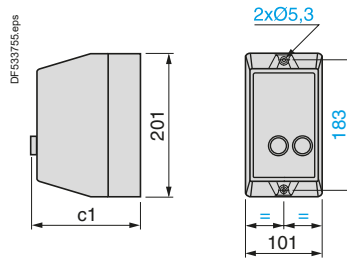
#### Dimensions

##### LE1D09 and D12



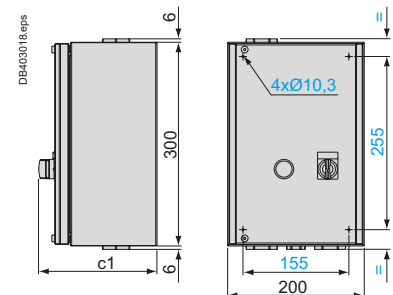
	c1
Standard version	128.5
Variant A04	120
Variant A05	128.5
Variant A09	120
Variant A13	120

##### LE1D09●●T LE1D18...D35 and LE2D09...D35



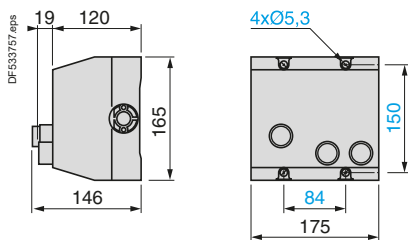
	c1	
	LE1D	LE2D
Standard version	153.5	160
Variant A04	145	145
Variant A05	153.5	153.5
Variant A09	160	–
Variant A13	160	–

##### LE1D40A...D65A LE2D40A...D65A



	c1	
	LE1D	LE2D
Standard version	158.5	174
Variant A04	150	150
Variant A05	158.5	158.5

##### LE2K06 and K09



Ref.



#### Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE1D09 and D12	–	2 x 20	–	2 x 20
LE1D18...D35 and LE2D09...D35	–	2 x 20 or 2 x 25	–	2 x 20 or 2 x 25
LE1 and LE2D40A...D65A	–	1 x 32	–	1 x 20 and 2 x 32
LE2K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20



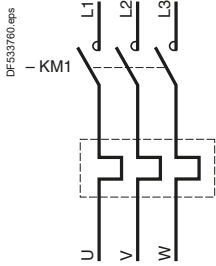
# TeSys Control

## Enclosed standard starters / DOL, Reverser

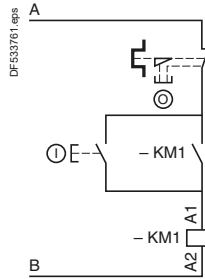
### Schemes

#### Schemes

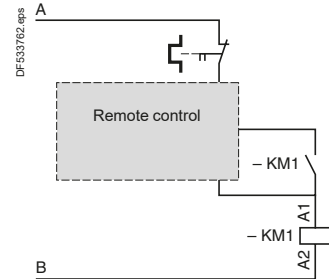
##### LE1D09...D65A



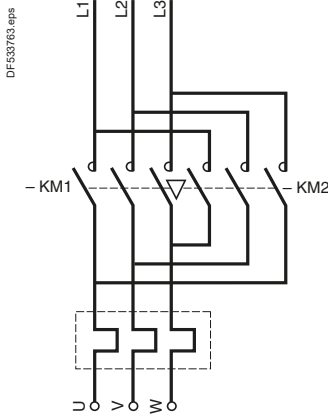
##### LE1D09...D65A



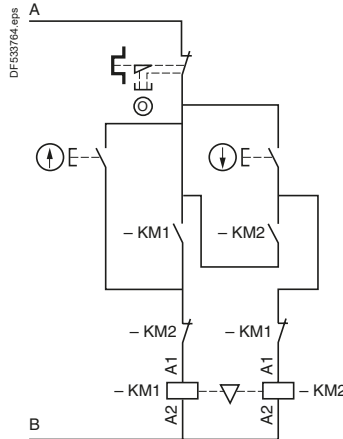
##### LE1D09...D65A with variant A04 or A05



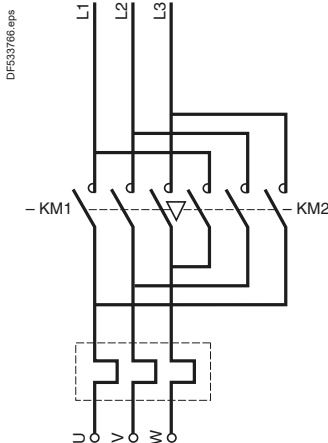
##### LE2K06, K09



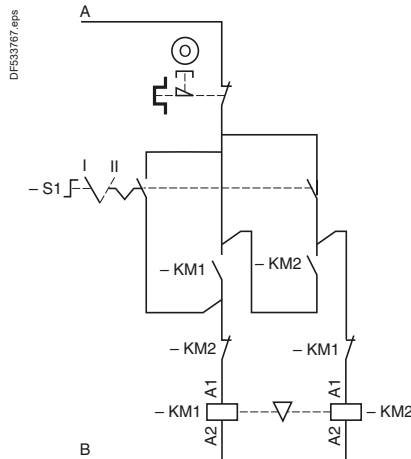
##### LE2K06, K09



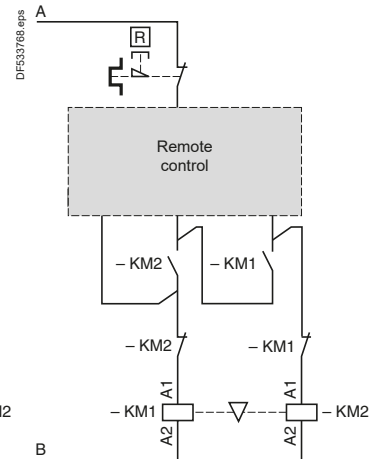
##### LE2D09...D65A



##### LE2D09...D65A



##### LE2D40A...D65A with variants A04 or A05



#### LE1D09...D65A, LE2D09...D65A Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
Other voltages	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

#### LE2K06, K09 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V	L3	L1
Other voltages	Other voltages (440 V max)	For customer assembly	

References:  
pages A1/8 and A1/13

Dimensions:  
page A1/46

Enclosed starters

Ref.

# TeSys Control

## Enclosed standard starters / DOL, reverser

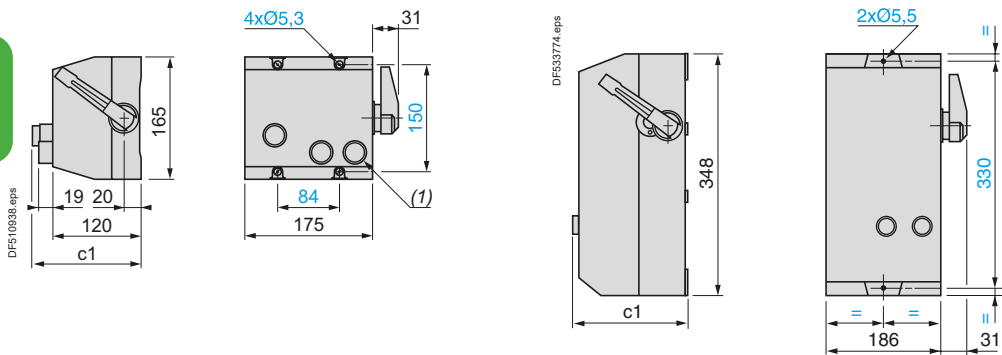
### Dimensions

#### Dimensions

##### LE4K06 and K09, LE8K06 and K09

##### LE4D09...D35, LE8D09...D35

Enclosed starters



	c1	
	LE4K	LE8K
Standard version	146	146
Variant A05	–	139

(1) For LE8 only.

	c1	
	LE4D	LE8D
Standard version	175.5	182
Variant A04	167	167
Variant A05	175.5	175.5

#### Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE4 and LE8D09...D35	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40
LE4 and LE8K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20

Ref.



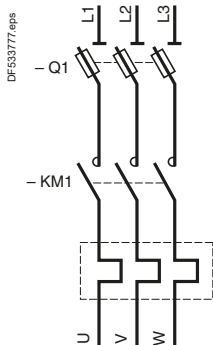
# TeSys Control

## Enclosed standard starters / DOL, Reverser

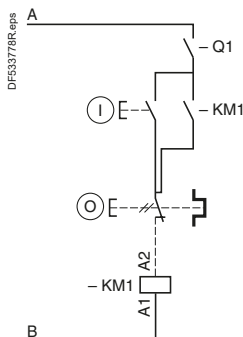
### Schemes

#### Schemes

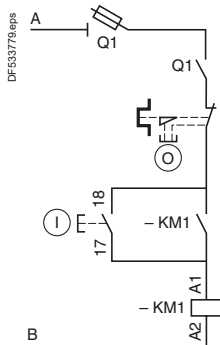
##### LE4K06, K09 LE4D09...D35



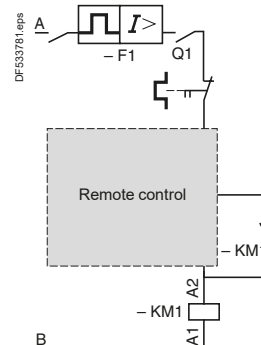
##### LE4K06, K09



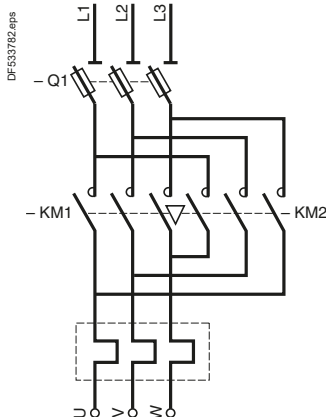
##### LE4D09...D35



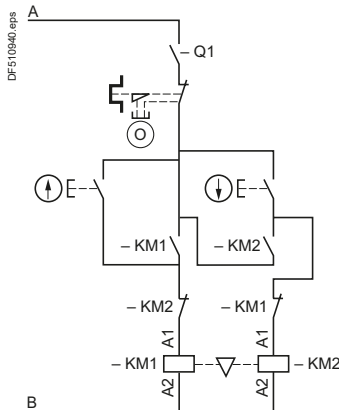
##### LE4D09...D35 with variant A04 or A05



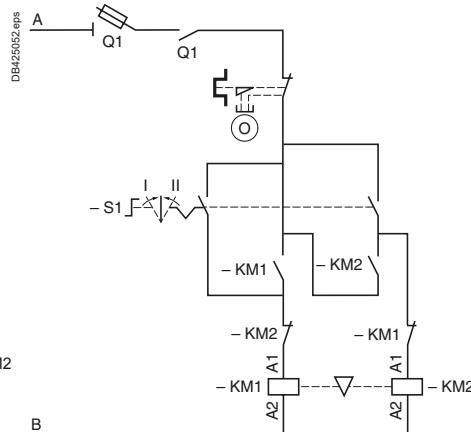
##### LE8K06, K09 LE8D09...D35



##### LE8K06, K09



##### LE8D09...D35



#### LE4D09 and D12, LE8D09 and D12 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

#### LE4D18...D35, LE8D18...D35 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

#### LE4K06, K09, LE8K06, K09 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V	L3	L1
Other voltages	Other voltages (440 V max)	For customer assembly	

# TeSys Control

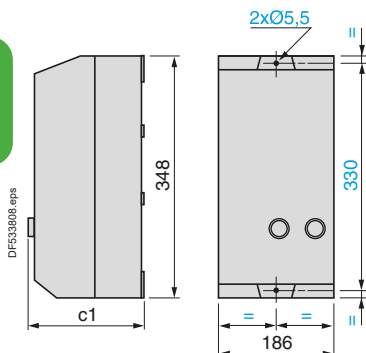
## Enclosed standard starters / Star-delta

### Dimensions, schemes

Enclosed starters

#### Dimensions

##### LE3D09...D35



	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

#### Knock-outs or blanking plugs for cable glands

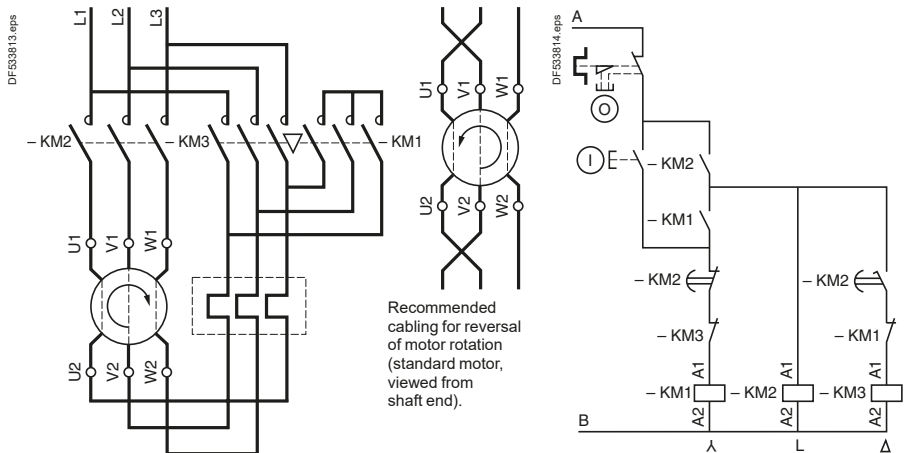
Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE3D09...D35	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40

Ref.

#### Schemes

##### LE3D09...D35

##### LE3D09...D35



**Note:** in accordance with current installation regulations, short-circuit protection must be provided by fuses or a circuit breaker.

#### Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L 1
	Other voltages	Terminal 1	Terminal 2
Other voltages	All voltages (600 V max)	For customer assembly	

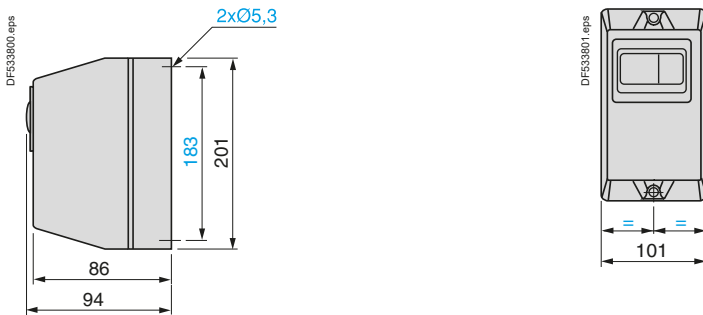
# TeSys Control

## Enclosures for DOL starters

### Dimensions, schemes

#### Dimensions

##### LE1GVMEK

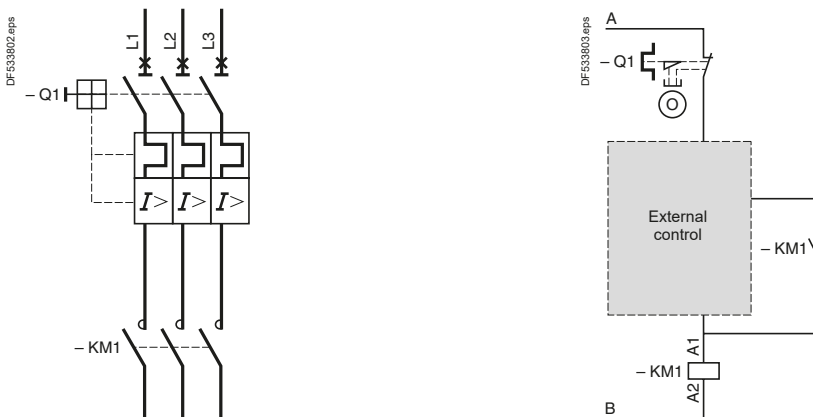


#### Knock-outs or blanking plugs for cable glands

Enclosure type	At top	At bottom
LE1GV	ISO 2 x 20 or 2 x 25	ISO 2 x 20 or 2 x 25

#### Schemes

##### LE1GVMEK



#### Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	For customer assembly	
Other voltages	All voltages (440 V max)	For customer assembly	

Enclosed starters

Ref.

# TeSys Control

## Enclosed safety starters / DOL

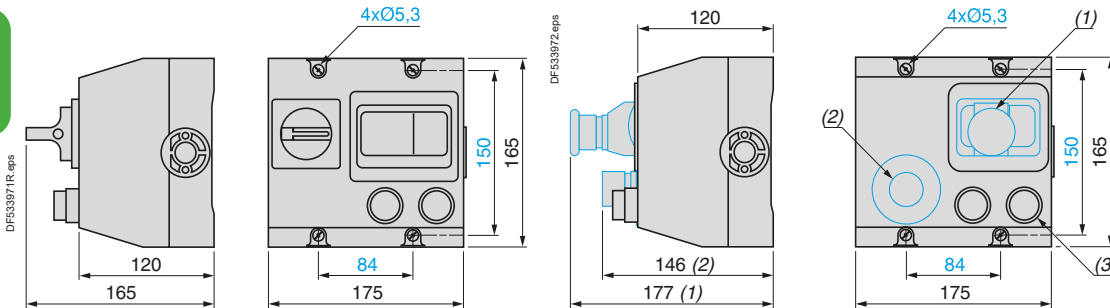
### Dimensions

Enclosed starters

#### Dimensions

**LG1K06, K09**  
**LG1D12, D18**

**LG7K06, K09, LG7D12, D18**  
**LG8K06, K09, K12**



- (1) Emergency Stop for starters LG●K06.
- (2) Emergency Stop for starters LG●K09, K12, D12 et D18.
- (3) Only for LG7.

#### Knock-outs or blanking plugs for cable glands

Type of enclosure	At top	At bottom
LG1K and LG1D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG7K and LG7D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG8K	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P

Ref.

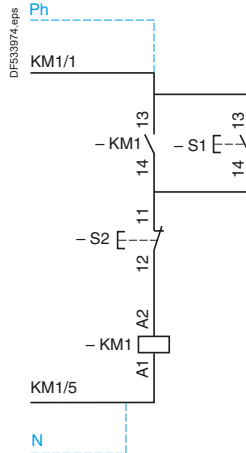
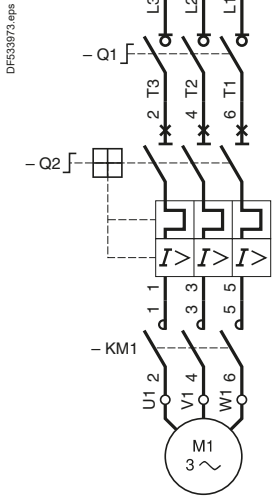


#### Schemes

**LG1K06, K09, D12, D18**

**LG1K06, K09, D12, D18**

380/400 V, code Q7 or 400/415 V, code N7  
220/230 V, code M7

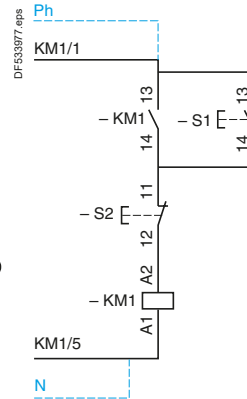
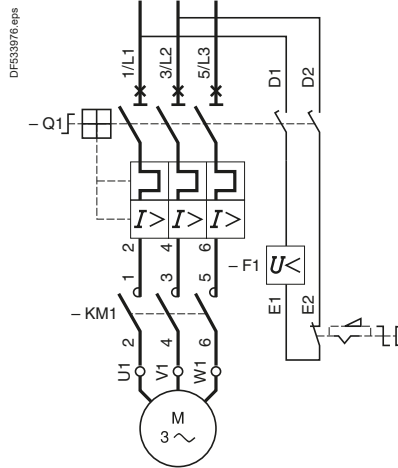
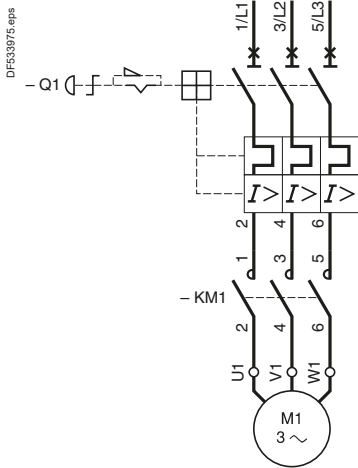


**LG7K06**

**LG7K09, D12, D18**

**LG7K06, K09, D12, D18**

380/400 V, code Q7 or  
400/415 V, code N7  
220/230 V, code M7

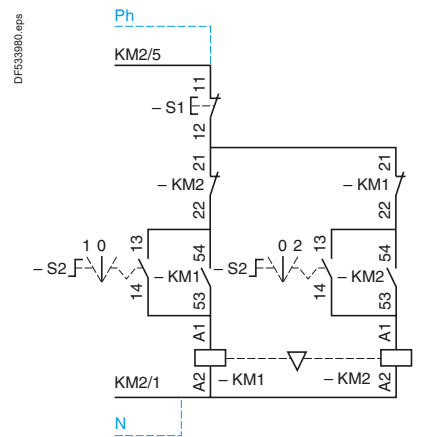
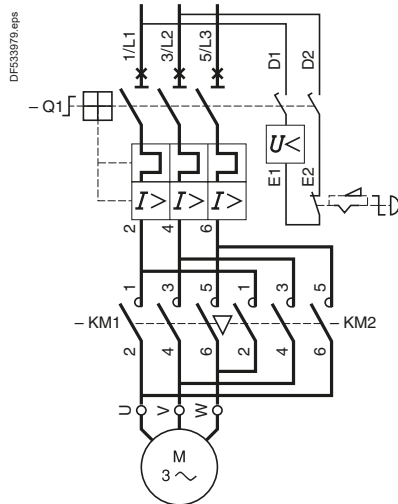
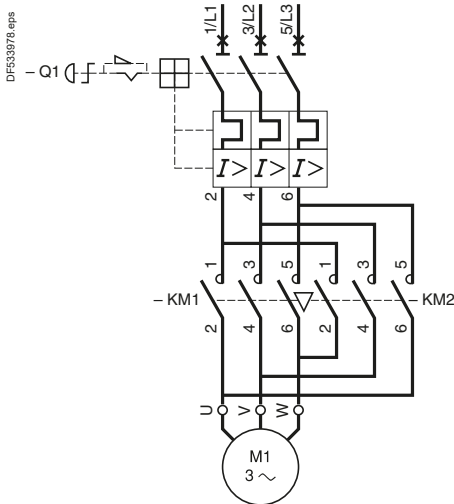


**LG8K06**

**LG8K09, K12**

**LG8K06, K09, K12**

380/400 V, code Q7 or  
400/415 V, code N7  
220/230 V, code M7



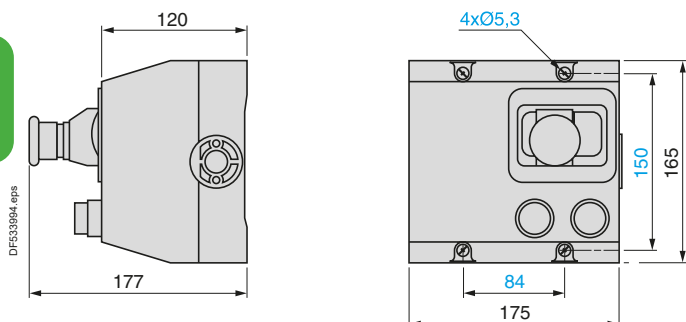
# TeSys Control

## Enclosed safety starters / DOL, Reverser

### Dimensions

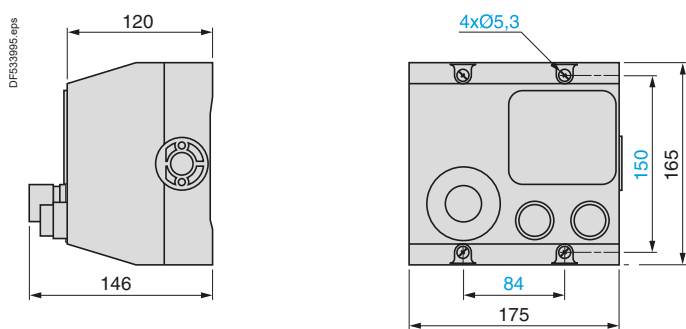
#### Dimensions

##### LJ7K06, LJ8K06



Enclosed starters

##### LJ7K09, LJ8K09



Ref.



Cut-outs or blanking plugs for cable glands at the top and at the bottom 2 x 13 P and 2 x 16 P.



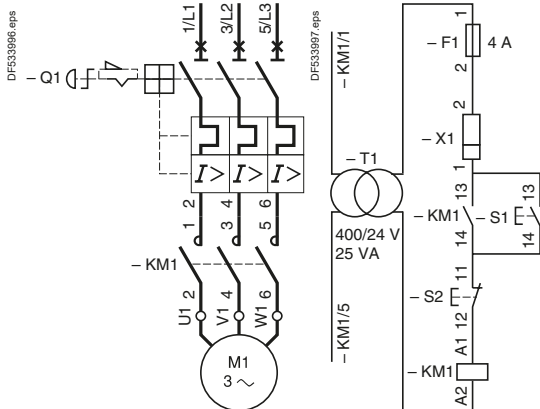
# TeSys Control

## Enclosed safety starters / DOL, Reverser

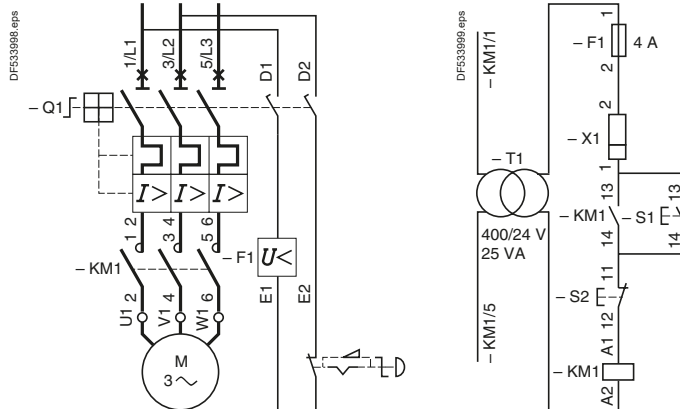
### Schemes

#### Schemes

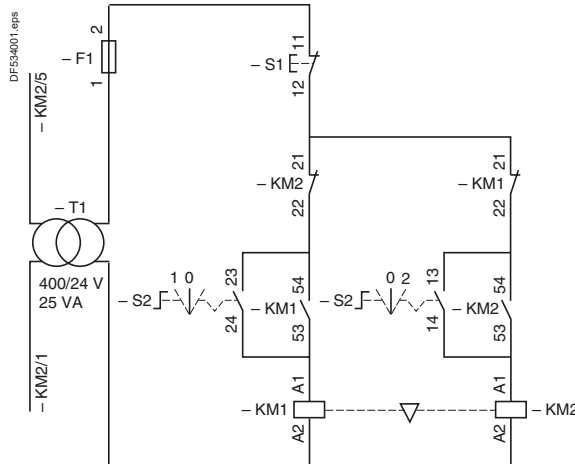
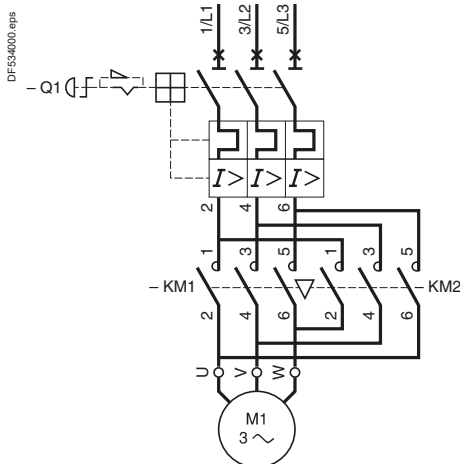
##### LJ7K06



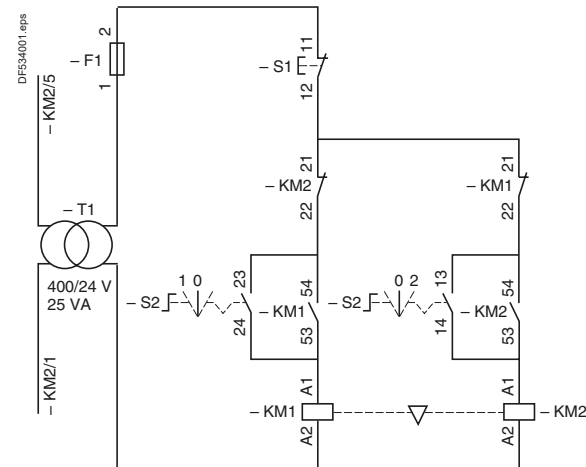
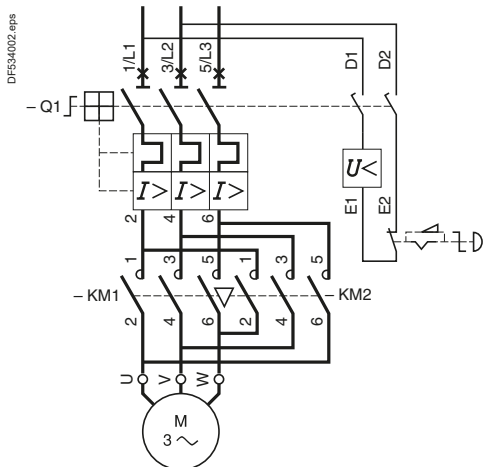
##### LJ7K09



##### LJ8K06



##### LJ8K09





Direct-on-line and reversing starters			
Composition	Range		Page
Motor circuit breaker + contactor (direct-on-line) Coordination type 1	Up to 4 kW		A2/2
Motor circuit breaker + 2 contactors (reversing) Coordination type 1	Up to 5.5 kW		A2/3
Motor circuit breaker + contactor (direct-on-line) Coordination type 1	Up to 15 kW		A2/4
Motor circuit breaker + 2 contactors (reversing) Coordination type 1	Up to 15 kW		A2/5
Motor circuit breaker + contactor (direct-on-line) Coordination type 2 to be assembled by customer	Up to 30 kW		A2/6
Motor circuit breaker + 2 contactors (reversing) Coordination type 2 to be assembled by customer	Up to 30 kW		A2/7
Star-delta starters			
3 contactors + 1 time delay aux. block	Up to 132 kW		A2/8
Star-delta starters for customer assembly			
Separated components and mounting kits for suggested motor starter components combinations - on plate or mounting rail	Up to 132 kW		A2/10
Separated components for suggested motor starter combinations - on chassis	Up to 315 kW		A2/14

# TeSys Control

Direct-on-line starters - with overload protection - up to 5.5 kW

## Product references

### D.O.L. starters, non-reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1K,
- 1 combination block GV2AF01.

Open motor starters

#### Characteristics

Starter type		GV2	ME06K1	ME07K1	ME08K1	ME10K1	ME14K1
Breaking capacity (I <sub>q</sub> ) <sup>(1)</sup>	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	50	50
		440 V	kA	50	50	50	15
		500 V	kA	50	50	50	10 (4 kW) 6 (5.5 kW)

#### References



GV2ME08K1●●

#### D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed <sup>(2)</sup>		
kW	kW	kW	A	A				kg
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC1K06	GV2ME06K1●●	0.460
0.55	0.55	0.55						
–	–	0.75						
0.75	0.75	–	1.6...2.5	33.5	GV2ME07	LC1K06	GV2ME07K1●●	0.460
–	1.1	1.1						
1.1	–	1.5	2.5...4	51	GV2ME08	LC1K06	GV2ME08K1●●	0.460
1.5	1.5	2.2						
2.2	2.2	–	4...6.3	78	GV2ME10	LC1K06	GV2ME10K1●●	0.460
–	3	3						
3	–	4	6...10	138	GV2ME14	LC1K09	GV2ME14K1●●	0.460
4	4	5.5						

#### Add-on blocks

Description	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	10	GV2AF01

<sup>(1)</sup> The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

<sup>(2)</sup> Please consult your Regional Sales Office.

<sup>(3)</sup> Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
☰ <sup>(4)</sup>	BW3	–	–	–	–	–

<sup>(4)</sup> Coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.

### D.O.L. starters, reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole reversing contactor LC2K,
- 1 combination block GV2AF01.

#### Characteristics

Starter type	GV2	ME06K2	ME07K2	ME08K2	ME10K2	ME14K2
Breaking capacity (I <sub>q</sub> ) <sup>(1)</sup> Conforming to IEC 60947-4-1	400/415 V	kA	50	50	50	50
	440 V	kA	50	50	50	15
	500 V	kA	50	50	50	10 (4 kW) 6 (5.5 kW)

#### References



#### D.O.L. starters, reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactors Reference to be completed <sup>(2)</sup>		
kW	kW	kW	A	A				kg
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC2K06	GV2ME06K2●●	0.460
0.55	0.55	0.55						
–	–	0.75						
0.75	0.75	–	1.6...2.5	33.5	GV2ME07	LC2K06	GV2ME07K2●●	0.460
–	1.1	1.1						
1.1	–	1.5	2.5...4	51	GV2ME08	LC2K06	GV2ME08K2●●	0.460
1.5	1.5	2.2						
2.2	2.2	–	4...6.3	78	GV2ME10	LC2K06	GV2ME10K2●●	0.460
–	3	3						
3	–	4	6...10	138	GV2ME14	LC2K09	GV2ME14K2●●	0.460
4	4	5.5						

#### Add-on blocks

Description	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	10	GV2AF01

<sup>(1)</sup> The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

<sup>(2)</sup> Please consult your Regional Sales Office.

<sup>(3)</sup> Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
⋯ <sup>(4)</sup>	BW3	–	–	–	–	–

<sup>(4)</sup> Coil: low consumption (1.5 W), wide range (0.7...1.3 U<sub>c</sub>) with integral suppression device as standard.

**Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



# TeSys Control

Direct-on-line starters - with overload protection - up to 15 kW

## Product references

### D.O.L. starters, non-reversing, from 0.06 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

#### Characteristics

Starter type	GV2	DM102 to DM110	DM114	DM116	DM132		
Breaking capacity (I <sub>q</sub> ) <sup>(1)</sup>	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	15	10
		440 V	kA	50	15	8	6
		500 V	kA	50	6	6	4

#### References

##### D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed <sup>(2)</sup>		
kW	kW	kW	A	A				kg
0.06	0.06	–	0.16...0.25	2.4	GV2ME02	LC1D09●●	GV2DM102●● <sup>(4)</sup>	0.596
0.75	0.75	–	1.6...2.5	33.5	GV2ME07	LC1D09●●	GV2DM107●● <sup>(4)</sup>	0.596
–	1.1	1.1						
1.1	–	1.5	2.5...4	51	GV2ME08	LC1D09●●	GV2DM108●● <sup>(4)</sup>	0.596
1.5	1.5	2.2						
2.2	2.2	–	4...6.3	78	GV2ME10	LC1D09●●	GV2DM110●● <sup>(4)</sup>	0.596
–	3	3						
3	–	4	6...10	138	GV2ME14	LC1D09●●	GV2DM114●● <sup>(4)</sup>	0.596
4	4	5.5						
5.5	5.5	7.5	9...14	170	GV2ME16	LC1D12●●	GV2DM116●●	0.601
15	15	18.5	24...32	416	GV2ME32	LC1D32●●	GV2DM132●●	0.651

##### Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	┌ rail	10	GV2AF3
	Mounting plate LAD 311	10	GV2AF4

<sup>(1)</sup> The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

<sup>(2)</sup> Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- <sup>(5)</sup>	BD	–	–

<sup>(3)</sup> Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

<sup>(4)</sup> Type 2 coordination also possible, see page A5/11.

<sup>(5)</sup> Only available for GV2DM. Coil with integral suppression device as standard.

**Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).

Open motor starters

PB121676.eps



GV2DM102●●

### D.O.L. starters, reversing, from 0.12 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2 ME,
- 1 3-pole reversing contactor LC2 D,
- 1 combination block GV2AF3.

#### Characteristics

Starter type	GV2	DM202 to DM210	DM214	DM216	DM220	DM221	DM222	DM232	
Breaking capacity (I <sub>q</sub> ) <sup>(1)</sup>	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	15	15	15	10
		440 V	kA	50	15	8	8	6	6
		500 V	kA	50	10	6	6	4	4

#### References

##### D.O.L. starters, reversing<sup>(2)</sup>

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed <sup>(3)</sup>		
kW	kW	kW	A	A				kg
0.12	–	–	0.40...0.63	8	GV2ME04	LC2D09●●	GV2DM204●●	0.963
0.18	0.18	–	–	–	–	–	–	–
0.25	0.25	–	0.63...1	13	GV2ME05	LC2D09●●	GV2DM205●●	0.963
0.37	0.37	–	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2ME06	LC2D09●●	GV2DM206●●	0.963
0.55	0.55	0.55	–	–	–	–	–	–
–	–	0.75	–	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2ME08	LC2D09●●	GV2DM208●●	0.963
1.5	1.5	2.2	–	–	–	–	–	–
9	11	11	17...23	327	GV2ME21	LC2D25●●	GV2DM221●●	1.063
15	15	18.5	24...32	416	GV2ME32	LC2D32●●	GV2DM232●●	1.073

##### Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	┌ rail	10	GV2AF3
	Mounting plate LAD 311	10	GV2AF4

<sup>(1)</sup> The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

<sup>(2)</sup> Type 2 coordination also possible, see page B6/21.

<sup>(3)</sup> See page B8/22.

<sup>(4)</sup> Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- <sup>(6)</sup>	BD	–	–

<sup>(5)</sup> Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

<sup>(6)</sup> Coil with integral suppression device as standard.

**Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



GV2DM202●●

Open motor starters



# TeSys Control

Direct-on-line starters - with overload protection - up to 30 kW

## Product references

### D.O.L. starters, non-reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:

- 1 motor circuit breaker GV2P,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

#### Characteristics

Starter type	GV2	P02 to P110	P14	P16	P20	P21	P22	P32	
Breaking capacity (I <sub>q</sub> ) <sup>(1)</sup>	Conforming to IEC 60947-4-1	400/415 V	kA	130	130	130	50	50	50
		440 V	kA	130	130	50	20	20	20
		500 V	kA	130	50	42	10	10	10

#### References

##### D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3		Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Weight	
400/ 415 V	440 V	500 V	A	Motor circuit-breaker Reference	Contactor Reference to be completed <sup>(2)</sup>	kg	
0.06	0.06	–	0.16...0.25	2.4	GV2P02	LC1D09●●	0.686
–	0.09	–	0.25...0.40	5	GV2P03	LC1D09●●	0.686
0.09	0.12	–	–	–	–	–	–
0.12	–	–	0.40...0.63	8	GV2P04	LC1D09●●	0.686
0.18	0.18	–	–	–	–	–	–
0.25	0.25	–	0.63...1	13	GV2P05	LC1D09●●	0.686
0.37	0.37	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2P06	LC1D09●●	0.686
0.55	0.55	0.55	–	–	–	–	–
–	–	0.75	–	–	–	–	–
0.75	0.75	–	1.6...2.5	33.5	GV2P07	LC1D09●●	0.686
–	1.1	1.1	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2P08	LC1D09●●	0.696
1.5	1.5	2.2	–	–	–	–	–
2.2	2.2	–	4...6.3	78	GV2P10	LC1D09●●	0.736
–	3	3	–	–	–	–	–
3	–	4	6...10	138	GV2P14	LC1D09●●	0.736
4	4	5.5	–	–	–	–	–
5.5	5.5	7.5	9...14	170	GV2P16	LC1D25●●	0.741
–	7.5	9	–	–	–	–	–
7.5	9	–	13...18	223	GV2P20	LC1D25●●	0.736
9	11	11	17...23	327	GV2P21	LC1D25●●	0.741
11	–	15	20...25	327	GV2P22	LC1D25●●	0.741
15	15	18.5	24...32	416	GV2P32	LC1D32●●	0.741
18.5	–	–	30...40	560	GV3P401 <sup>(5)</sup>	LC1D50A●●	1.725
–	18.5	22	30...40	560	GV3P401 <sup>(5)</sup>	LC1D65A●●	1.730
22	–	–	37...50	700	GV3P501 <sup>(5)</sup>	LC1D50A●●	1.725
–	22	30	37...50	700	GV3P501 <sup>(5)</sup>	LC1D65A●●	1.730
30	37	–	48...65	910	GV3P651 <sup>(5)</sup>	LC1D65A●●	1.730

##### Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	└ rail	10	GV2AF3

- (1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/11.  
 (2) See page B8/22.  
 (3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):
- | Volts              | 24 | 220 | 230 |
|--------------------|----|-----|-----|
| ~ 50/60 Hz         | B7 | M7  | P7  |
| --- <sup>(6)</sup> | BD | –   | –   |
- (4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.  
 (5) Circuit breaker supplied without downstream EverLink® power terminal block, which is required for vertical mounting. For side by side mounting, use a GV3P circuit breaker with terminal blocks and the GV3S set of S-shape busbars (see page B8/42).  
 (6) Coil with integral suppression device as standard.

**Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).

Open motor starters

PB121702.tif



GV2P●● + LC1D09 + GV2AF3

PB121675.eps



PB121684.eps



GV3P651 + LC1D65A●●



# TeSys Control

Reversing starters - with overload protection - up to 30 kW

## Product references

### D.O.L. starters, reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:

- 1 motor circuit breaker GV2P,
- 1 3-pole reversing contactor LC2D,
- 1 combination block GV2AF3.

#### Characteristics

Starter type	GV2	P02 to P10	P14	P16	P20	P21	P22	P32	
Breaking capacity (Iq) <sup>(1)</sup>	Conforming to IEC 60947-4-1	400/415 V	kA	130	130	130	50	50	50
		440 V	kA	130	130	50	20	20	20
		500 V	kA	130	50	42	10	10	10

#### References

##### D.O.L. starters, reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Weight
400/ 415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed <sup>(2)</sup>	
kW	kW	kW	A	A			kg
0.06	0.06	–	0.16...0.25	2.4	GV2P02	LC2D09●●	1.053
–	0.09	–	0.25...0.40	5	GV2P03	LC2D09●●	1.053
0.09	0.12	–	0.40...0.63	8	GV2P04	LC2D09●●	1.053
0.12	–	–	0.63...1	13	GV2P05	LC2D09●●	1.053
0.18	0.18	–	–	–	–	–	–
0.25	0.25	–	–	–	–	–	–
0.37	0.37	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2P06	LC2D09●●	1.053
0.55	0.55	0.55	–	–	–	–	–
–	–	0.75	–	–	–	–	–
0.75	0.75	–	1.6...2.5	33.5	GV2P07	LC2D09●●	1.053
–	1.1	1.1	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2P08	LC2D09●●	1.073
1.5	1.5	2.2	–	–	–	–	–
2.2	2.2	–	4...6.3	78	GV2P10	LC2D09●●	1.153
–	3	3	–	–	–	–	–
3	–	4	6...10	138	GV2P14	LC2D09●●	1.153
4	4	5.5	–	–	–	–	–
5.5	5.5	7.5	9...14	170	GV2P16	LC2D25●●	1.163
–	7.5	9	–	–	–	–	–
7.5	9	–	13...18	223	GV2P20	LC2D25●●	1.153
9	11	11	17...23	327	GV2P21	LC2D25●●	1.163
11	–	15	20...25	327	GV2P22	LC2D25●●	1.163
15	15	18.5	24...32	416	GV2P32	LC2D32●●	1.163
18.5	–	–	30...40	560	GV3P401 <sup>(5)</sup>	LC2D50A●●	2.750
–	18.5	22	30...40	560	GV3P401 <sup>(5)</sup>	LC2D65A●●	2.760
22	–	–	37...50	700	GV3P501 <sup>(5)</sup>	LC2D50A●●	2.750
–	22	30	37...50	700	GV3P501 <sup>(5)</sup>	LC2D65A●●	2.760
30	37	–	48...65	910	GV3P651 <sup>(5)</sup>	LC2D65A●●	2.760

##### Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	└ rail	10	GV2AF3

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/11.

(2) See page B8/22.

(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- <sup>(6)</sup>	BD	–	–

(4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

(5) Circuit breaker supplied without downstream EverLink® power terminal block, which is required for vertical mounting. For side by side mounting, use a GV3P circuit breaker with terminal blocks and the GV3S set of S-shape busbars (see page B8/42).

(6) Coil with integral suppression device as standard.

**Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



GV2P●● + LC1D09 + GV2AF3



GV3P651 + LC2D65A●●



# TeSys Control

## Star-delta starters - up to 132 kW <sup>(1)</sup>

### Product references

Open motor starters

FB123608.eps



LC3D32A●●



#### Plate mounted starters without isolating device

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.

Standard power ratings of squirrel cage motors				Auxiliary contacts available on each contactor						Star delta mechanical interlock	Basic reference, to be completed by adding the voltage code <sup>(2) (3)</sup>	Weight
Mains voltage - delta connection				line	delta		star					
220/230 V	380/400 V	415 V	440 V	KM2	KM3	KM1						
kW	kW	kW	kW								kg	
4	7.5	7.5	7.5	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D09A●●	1.530
5.5	11	11	11	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D12A●●	1.530
11	18.5	22	22	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D18A●●	1.730
15	25	30	30	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D32A●●	2.030
37	75	75	75	-	1	1	- <sup>(4)</sup>	-	- <sup>(4)</sup>	Without	LC3D80●●	5.200
										With	LC3D80●●A64	5.400
63	110	110	110	-	1	1	- <sup>(4)</sup>	-	- <sup>(4)</sup>	Without	LC3D115●● <sup>(5)</sup>	11.800
										With	LC3D115●●A64 <sup>(5)</sup>	12.100
75	132	132	147	-	1	1	- <sup>(4)</sup>	-	1 <sup>(4)</sup>	Without	LC3D150●● <sup>(5)</sup>	12.100
										With	LC3D150●●A64 <sup>(5)</sup>	12.100

#### Rail mounted starters (35 mm rail) without isolating device

Standard power ratings of squirrel cage motors				Auxiliary contacts available on each contactor						Star delta mechanical interlock	Basic reference, to be completed by adding the voltage code <sup>(2) (3)</sup>	Weight
Mains voltage - delta connection				line	delta		star					
220/230 V	380/400 V	415 V	440 V	KM2	KM3	KM1						
kW	kW	kW	kW								kg	

Maximum operating rate: 12 starts/hour. Maximum starting time: 30 seconds.

4	7.5	7.5	7.5	-	-	-	-	-	1	With	LC3K09●●	0.740
---	-----	-----	-----	---	---	---	---	---	---	------	----------	-------

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds

4	7.5	7.5	7.5	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D090A●●	1.530
5.5	11	11	11	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D120A●●	1.530
11	18.5	22	22	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D180A●●	1.730
15	25	30	30	-	-	-	- <sup>(4)</sup>	-	1	With	LC3D320A●●	2.030

<sup>(1)</sup> Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current (see pages B11/4 and B11/5).

<sup>(2)</sup> Standard control circuit voltages:

Volts ~ 50/60 Hz	24	36	42	48	110	220	230	240	380	400	415	440
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#### Star-delta starters LC3K09

Code	B7	C7	D7	E7	F7	M7	P7	U7	-	-	-	-
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#### Star-delta starters LC3D09A...D150, LC3D090A...D320A

Code	B7	-	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7
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For other voltages, please consult your Regional Sales Office.

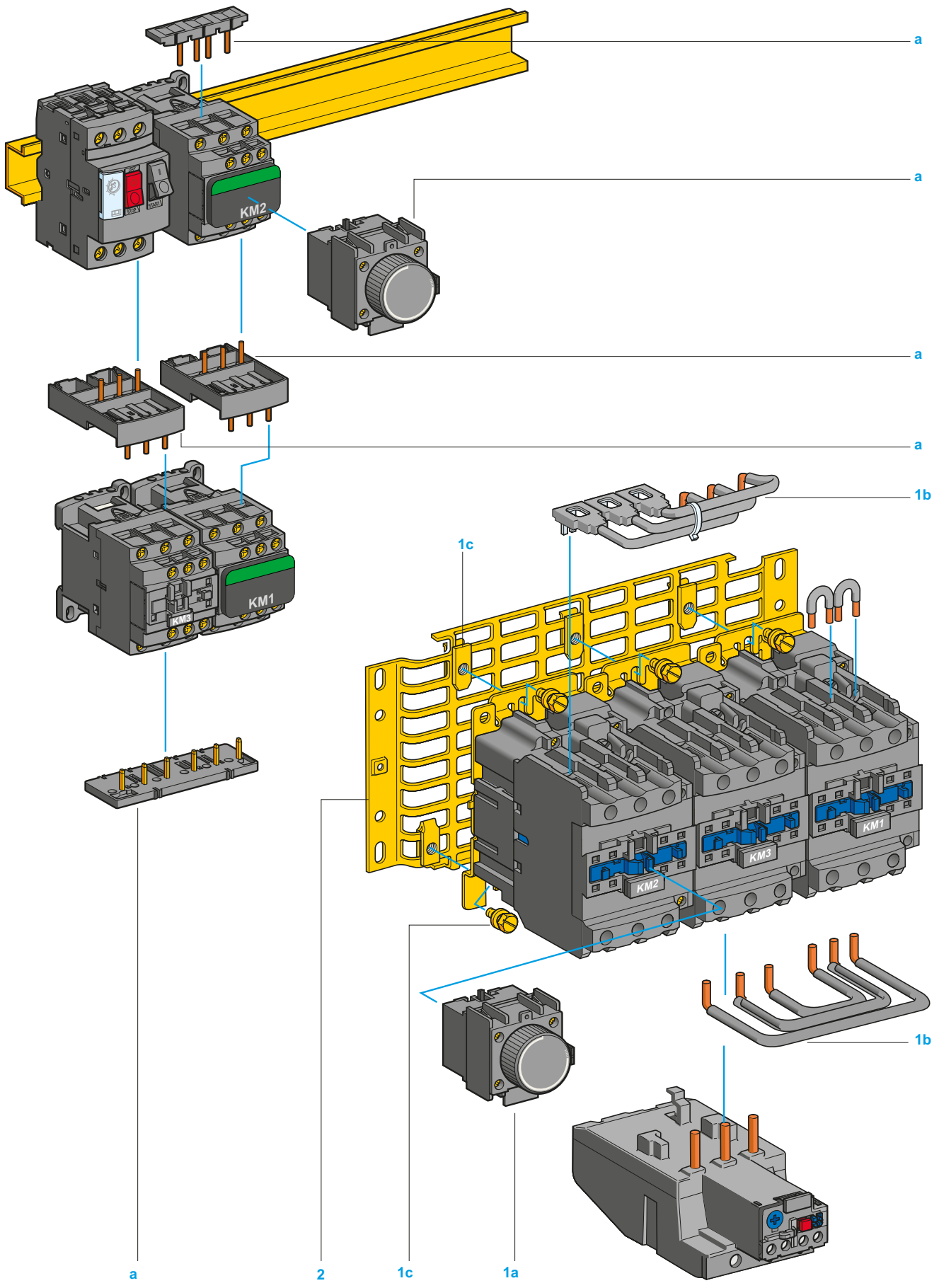
<sup>(3)</sup> Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

<sup>(4)</sup> One auxiliary contact block type LADN can also be fitted, see page B8/36.

<sup>(5)</sup> These starters consist of contactors LC1D115 or D150 without connectors.



Open motor starters



### Star-delta starters without mechanical interlock, for customer assembly on plate or on mounting rail <sup>(2)</sup>

#### Starters for direct combination with a circuit breaker

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds

Standard power ratings of squirrel cage motors <sup>(3)</sup>		Thermal-magnetic motor circuit breaker <i>References in italics are available in CEE zone only</i>	Contactors (basic references, to be completed by adding the voltage code) <sup>(4)</sup>		
Mains voltage-delta connection			line	delta	star
400/415 V	440 V				
kW	kW		KM2	KM3	KM1
7.5	7.5	GV2ME20 or GV2ME20AP	LC1D09●●	LC1D09●●	LC1D09●●
–	9	GV2ME20 or GV2ME20AP	LC1D12●●	LC1D12●●	LC1D09●●
9	11	GV2ME21 or GV2ME21AP	LC1D12●●	LC1D12●●	LC1D09●●
11	–	GV2ME22 or GV2ME22AP	LC1D12●●	LC1D12●●	LC1D09●●
15	15	GV2ME32 or GV2ME32AP	LC1D18●●	LC1D18●●	LC1D09●●

#### Separate component

Description	Illustration item no.	Reference
Mounting kit comprising: power circuit connections and 1 time delay contact block LADS2	a	LAD912GV

#### Starters for mounting separately from upstream protection

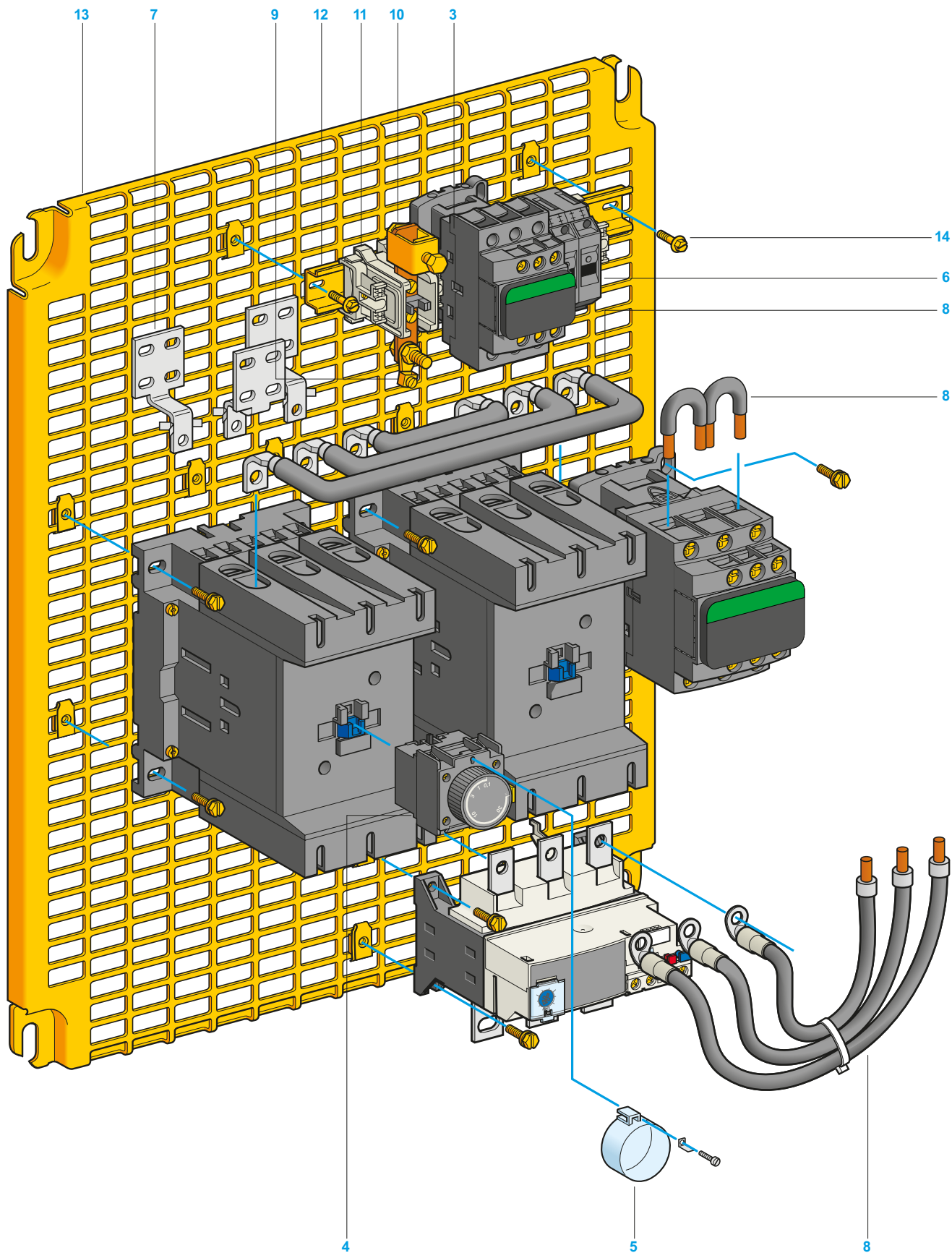
Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.

Standard power ratings of squirrel cage motors <sup>(3)</sup>				Contactors (basic references, to be completed by adding the voltage code) <sup>(4)</sup>			Separate components (see below)
Mains voltage - delta connection				line	delta	star	
220/230 V	380/400 V	415 V	440 V	line	delta	star	Component types
kW	kW	kW	kW	KM2	KM3	KM1	
4	7.5	7.5	7.5	LC1D09●●	LC1D09●●	LC1D09●●	D09
5.5	11	11	11	LC1D18●● <sup>(6)</sup>	LC1D12●●	LC1D09●●	D12
11	18.5	22	22	LC1D25●● <sup>(7)</sup>	LC1D25●● <sup>(7)</sup>	LC1D09●●	D18
15	25	30	30	LC1D32●●	LC1D32●●	LC1D18●●	D32
18.5	37	37	37	LC1D40A●●	LC1D40A●●	LC1D40A●●	D40
30	55	59	59	LC1D50A●●	LC1D50A●●	LC1D40A●●	D50
37	75	75	75	LC1D80●●	LC1D80●●	LC1D50A●●	D80
63	110	110	110	LC1D115●●	LC1D115●●	LC1D80●●	D115 <sup>(5)</sup>
75	132	132	147	LC1D150●●	LC1D150●●	LC1D115●●	D150 <sup>(5)</sup>

#### Separate components

Description	Illustration item no.	For components type <sup>(5)</sup>	Reference	Without timer LADS2
Mounting kit comprising: - 1 time delay contact block LADS2 (D09...D80) <sup>(3)</sup> , - power circuit connections (D09...D80), - screws and clamps for fixing contactors to the plate (D40...D80).	1 a	LC1D09 to D38 <sup>(8)</sup>	LAD91217	LAD91218
	1 b	LC1D09 to D38 <sup>(9)</sup>	LAD93217	LAD93218
	1 c	D40 and D50	LA9D5017	–
		D80	LA9D8017	–
Equipment mounting plates	2	LC1D09 to D38 D80	LA9D12974 LA9D80973	

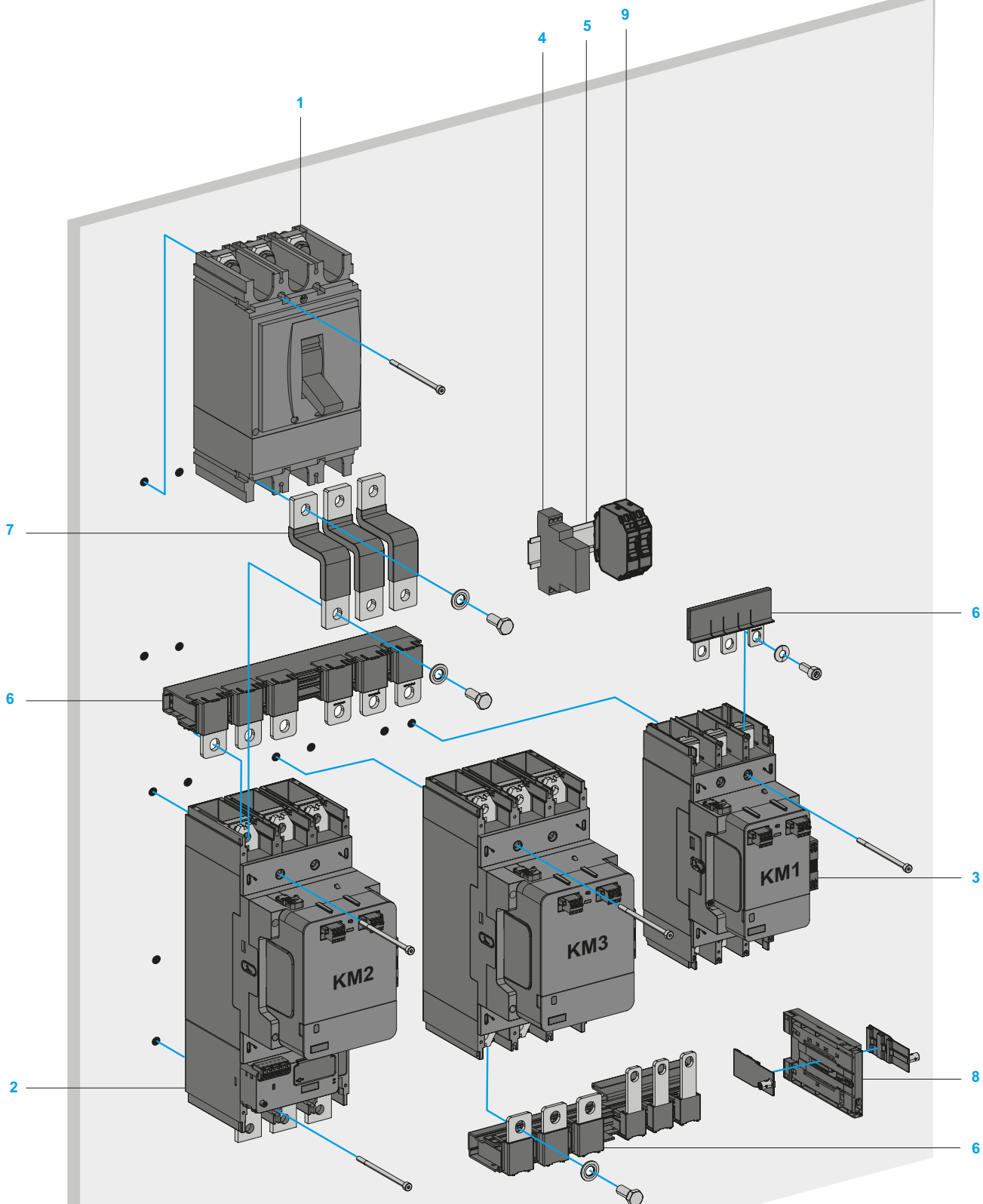
- <sup>(1)</sup> Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.
- <sup>(2)</sup> For mounting, assembly and cabling: please refer to installation instructions supplied with the equipment.
- <sup>(3)</sup> See comments on page A2/22.
- <sup>(4)</sup> See page B8/22.
- <sup>(5)</sup> For D115 and D150 components, see illustration and separate parts on pages A2/12 and A2/13.
- <sup>(6)</sup> A D12 component is adequate for the application, but use of a D18 is recommended. (connection capacity, correct use of power connection kit and connections).
- <sup>(7)</sup> A D18 component is adequate for the application, but use of a D25 is recommended. (connection capacity, correct use of power connection kit and connections).
- <sup>(8)</sup> For assembly of 3 contactors of the same physical size (depth).
- <sup>(9)</sup> For assembly of 3 contactors with star contactor physically smaller (depth).



Starters for mounting separately from upstream protection						
Separate components (continued)						
Description	Illustration item no.	For use on	No.	Sold in lots of	Unit reference	Weight kg
Instantaneous auxiliary contact blocks 1 N/O	1	D115 (star)	1	1	LADN10	0.020
Control relay	3	D115, D150	1	1	CAD32	0.320
Time delay auxiliary contact blocks	4	D115, D150	1	1	LADT2	0.060
Lead sealing kit for time delay auxiliary contact blocks	5	D115, D150	1	1	LA9D901	0.005
Thermal magnetic circuit breaker for control circuit (200...415 V)	6	D115, D150	2	6	GB2CB05	0.060
Set of 3 connectors for wider terminations (optional)	7	D115, D150	1	1	LA9FG980	0.200
Set of power connections with fixing accessories	8	D115	1	1	LA9D11517	0.800
		D150	1	1	LA9D15017	1.050
Spare volt free terminals	9	D115, D150	1	10	DZ3HA3	0.007
			2	10	DZ3GA3	0.006
Lug-connector terminal block	10	D115, D150	1	10	AB1BC9535	0.236
End stop	11	D115, D150	3	100	AB1AB8M35	0.005
Mounting rail ┌ 35 mm	12	D115, D150	1	10	NSYDPR25	0.210
Pre-slotted mounting plate	13	D115, D150	1	1	AM3PA65	1.950
Screw with captive washer	14	D115, D150	12	100	AF1VA618	0.006
			2	100	AF1VA410	0.002

<sup>(1)</sup> Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.







### Star-delta starters with mechanical interlock for customer assembly on back-panel

Maximum operating rate: 30 starts/hour.

Maximum starting time: 30 seconds.

For selection of TeSys Giga Contactors <sup>(2)</sup>, overload relay <sup>(3)</sup> and circuit breaker <sup>(3)</sup> at different operating voltages, please refer to coordination tables pages A5/29, A5/38 and A5/39.

For Star-delta 'Power' and 'Control' circuit diagrams, please refer to page A2/26.

#### Separate components <sup>(4)</sup>

Description	Illustration item no.	For use on	No.	Sold in lots of	Unit reference
Circuit breakers	1	G115...G500	1	1	GV5P220...GV6P500
			1	1	NSX250...NSX630
			1	1	NS800...NS1000
Electronic thermal overload relays	2	G115...G500	1	1	LR9G115... LR9G500 <sup>(4)</sup>
Auxiliary contact blocks 1NO + 1NC	3	G115...G500	3	-	LAG8N113P (Supplied with the contactor)
Timer	4	G115...G500	1	1	RE17RMMWS
Mounting Rail	5	G115...G500	1	10	NSYSDR200
Sets of power connections	6	G115...G500 (LDY) <sup>(5)</sup>	1	1	LA9GQQ330
		G115...G500 (LDY) <sup>(5)</sup>	1	1	LA9GSS330
		G115...G500 (LDY) <sup>(5)</sup>	1	1	LA9GTT330
		LD: G265...G500 <sup>(5)</sup> Y: G115...G225 <sup>(5)</sup>	1	1	LA9GSQ331
Flexible terminal extensions for MCCB	7	G115...G225	1	1	LA9G3111
		G265...G500	1	1	LA9G3112
Mechanical interlock kit	8	G115...G500	1	1	LA9G970
		G265...G500 # G115...G225	1	1	LA9G971
Thermal magnetic circuit breaker for 5 A control circuit	9	G115...G500	2	6	GB2CB10

<sup>(1)</sup> Protection shall be provided by a thermal-magnetic circuit breaker or by a magnetic circuit breaker and an overload relay combination.

<sup>(2)</sup> The contactors are supplied with wide band AC/DC coils with 1 NO + 1 NC auxiliary contact block. Please refer to pages B9/10 to B9/13 for the complete references of the contactors.

<sup>(3)</sup> The protection device settings should be adjusted according to motor characteristics and conditions of use.

<sup>(4)</sup> Please refer to pages B11/11 to B11/14 for details on **LR9G** electronic overload relays.

<sup>(5)</sup> L- Line contactor/ D- Delta contactor/ Y- Star contactor.




# TeSys Control

## Open pre-cabled motor starters

### Product references

Open  
motor  
starters

AB1AB8M35	GV2ME06K1BW3	LC3D09AB7
AB1AB8P35	GV2ME06K2BW3	LC3D09AP7
AB1BC15035	GV2ME06K2M7	LC3D115F7A64
AB1BC9535	GV2ME07K1BW3	LC3D115M7A64
ACMGV1084	GV2ME07K2BW3	LC3D115P7
ACMGV763	GV2ME08K1BW3	LC3D115P7A64
ACMGV973	GV2ME08K1P7	LC3D120AP7
AE3FX122	GV2ME10K1BW3	LC3D12AB7
AF1CD061	GV2ME14K1B7	LC3D12AP7
AF1CD081	GV2MP01	LC3D150M7A64
AF1VA410	GV2MP02	LC3D150P7
AF1VA618	GV2MP03	LC3D150P7A64
AF1VC820	GV2MP04	LC3D180AB7
AM3PA65	LA9D11517	LC3D180AP7
CAD32	LA9D115604	LC3D18AB7
GB2CB05	LA9D115692	LC3D18AF7
GB2CB10	LA9D11570	LC3D18AP7
GK2AX50	LA9D115704	LC3D18AU7
GV2AF01	LA9D12974	LC3D320AG7
GV2AF3	LA9D15017	LC3D320AP7
GV2AF4	LA9D5017	LC3D32AB7
GV2DM102BD	LA9D730	LC3D32AF7
GV2DM107BD	LA9D80973	LC3D32AP7
GV2DM107P7	LA9D901	LC3D80B7
GV2DM108B7	LA9GQQ330	LC3D80B7A64
GV2DM108BD	LA9GSS330	LC3D80E7A64
GV2DM108P7	LA9GTT330	LC3D80F7
GV2DM110BD	LA9GSQ331	LC3D80F7A64
GV2DM114B7	LA9G3111	LC3D80M7
GV2DM114BD	LA9G3112	LC3D80P7
GV2DM116BD	LA9G970	LC3D80P7A64
GV2DM132B7	LA9G971	LC3D80U7A64
GV2DM204B7	LAD31	LC3K09P7
GV2DM205BD	LAD91217	LC4D12AP7
GV2DM206BD	LAD91218	LC4D12AV7
GV2DM208BD	LAD93217	LC4D25AB7
GV2DM221M7	LAD93219	LC4D25AP7
GV2DM221P7	LADN10	NSYDPR25
GV2DM232P7	LADN22	NSYSNM6
GV2MC01	LADT2	NSYSNM8
GV2MC02	LAG8N113P	NSYSDR200
GV2MC03	LC3D090AB7	RE17RMMWS
GV2MCK04	LC3D090AP7	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Contents

Non-reversing / Reversing starters ..... A2/18 to A2/21

Star-delta starters ..... A2/22 to A2/26

# TeSys Control

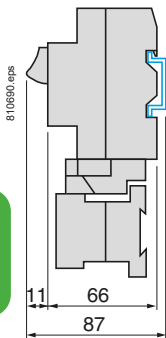
## Open pre-cabled motor starters

### Dimensions, mounting

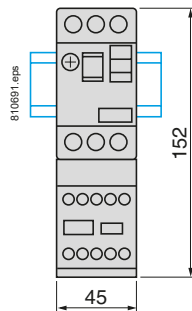
Open motor starters

#### GV2ME●●K●●

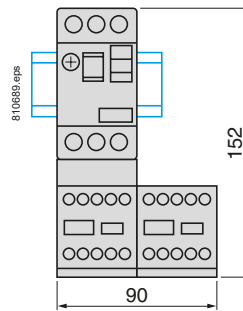
On mounting rail NSYSDR200



GV2ME●●K1●●

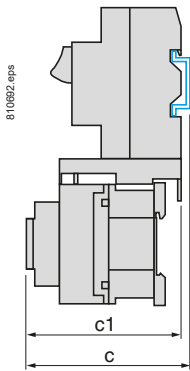


GV2ME●●K2●●

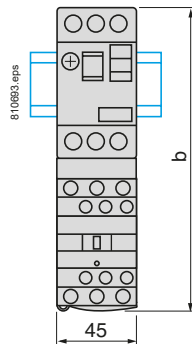


#### GV2DM●●●●

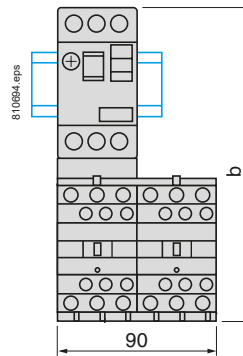
On mounting rail NSYSDR200



GV2DM1●●●●



GV2DM2●●●●



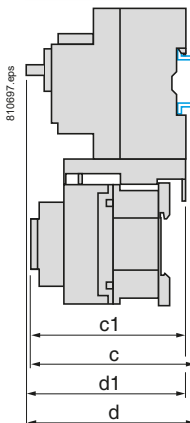
Ref.  
⚡

GV2DM●●●● contactor with AC or DC coil on mounting rail NSYSDR200

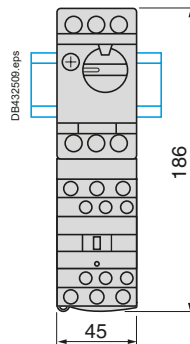
GV2	DM●02●● to DM●20●●	DM●21●● to DM●32●●
b	177	187
c	106	113
c1	96	103

#### GV2P●● + LC●D09 + GV2AF3

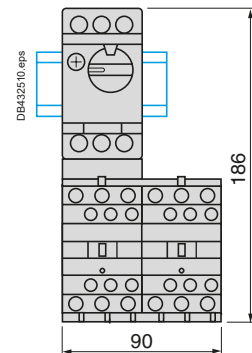
On mounting rail NSYSDR200



GV2P●● + LC1D●● + GV2AF3



GV2P●● + LC2D●●●● + GV2AF3



LC1D, LC2D contactor with AC or DC coil on mounting rail

GV2	P02 to P08	P10 to P32
c	111	118
c1	101	108
d	107	107
d1	97	97

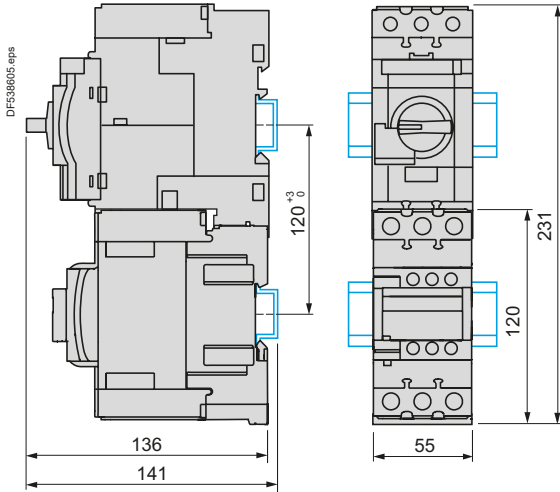
# TeSys Control

## Open pre-cabled motor starters

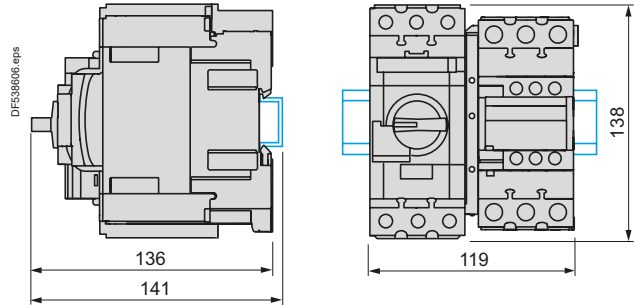
### Dimensions, mounting

#### GV3P●●1 + LC1D40A...D65A (for customer assembly)

##### Vertical mounting <sup>(1)</sup>

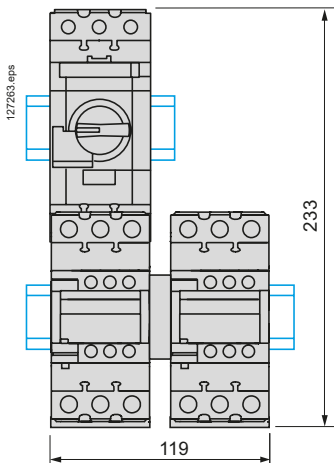


##### Side by side mounting with S-shape busbar system GV3 S <sup>(2)</sup>

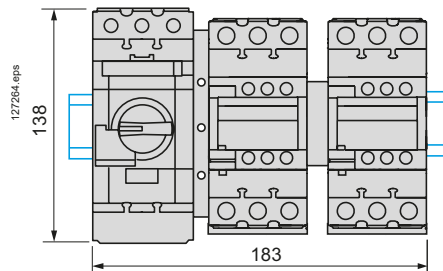


#### GV3P●●1 + LC2D40A...D65A (for customer assembly)

##### Vertical mounting <sup>(1)</sup>



##### Side by side mounting with S-shape busbar system GV3 S <sup>(2)</sup>



- (1)** For several side-by-side motor starters, the maximum current allowed is equal to the nominal current under 400 V.  
 Example: 55 A for a 30 kW motor under 400 V, for a GV3 P65 circuit breaker and a LC1 D65A contactor association.
- (2)** The maximum current allowed is equal to 90 % of maximum current. Example: 45 A for a LC1 D50A contactor.

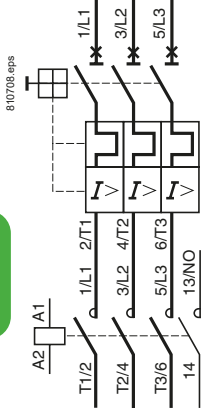
# TeSys Control

## Open pre-cabled motor starters

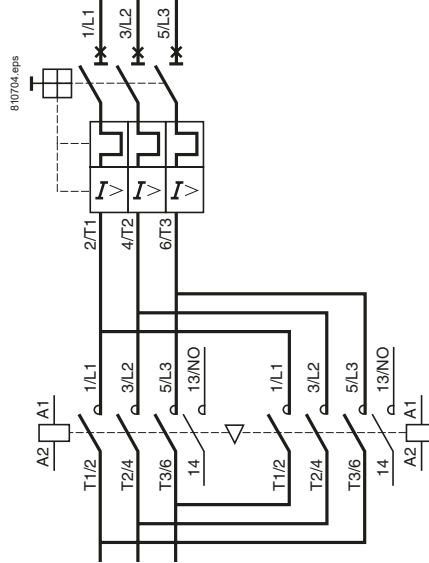
### Schemes

Open motor starters

#### GV2ME●●K1●●

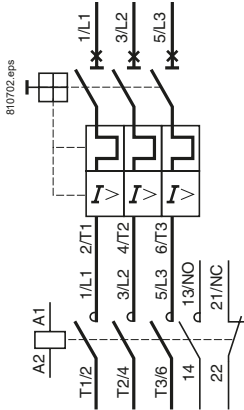


#### GV2ME●●K2●●

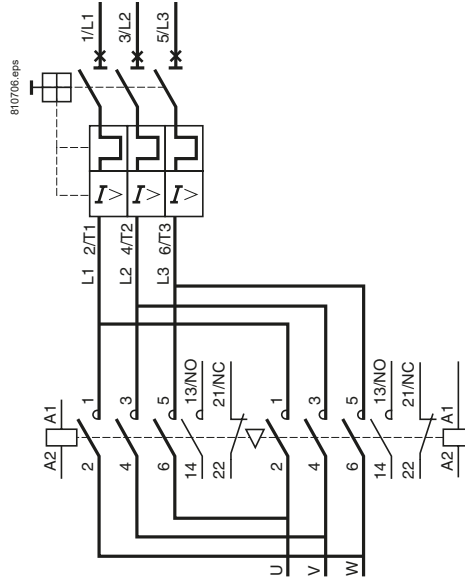


Ref.

#### GV2DM1●●●●



#### GV2DM2●●●●

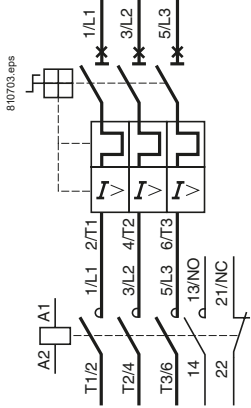


# TeSys Control

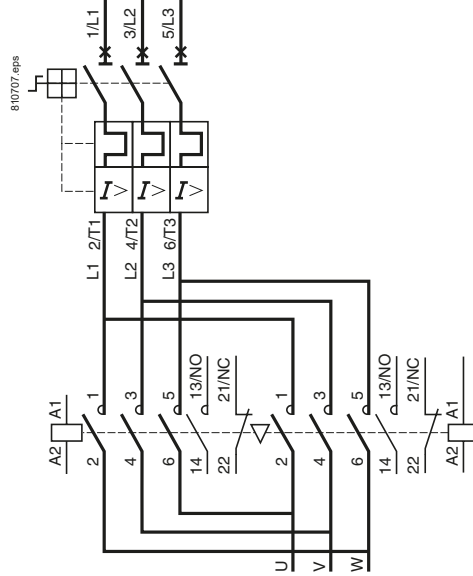
## Open pre-cabled motor starters

### Schemes

#### GV2P●● + LC1D●●●●

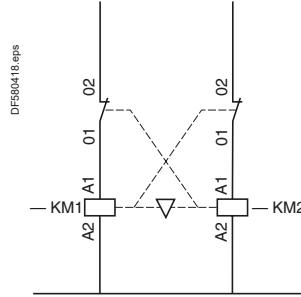
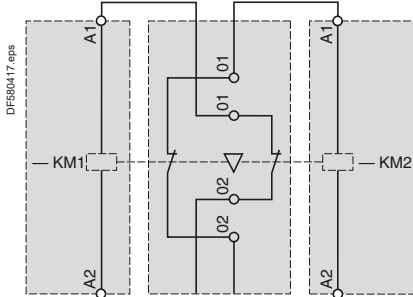


#### GV2P●● + LC2D●●●●

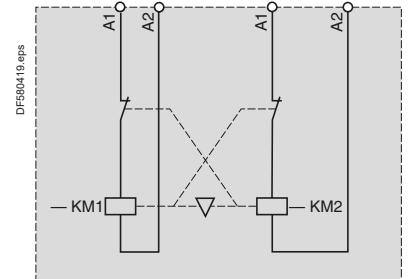


#### Mechanical interlock with integral electrical contacts

Control circuit ~



Control circuit ⋯



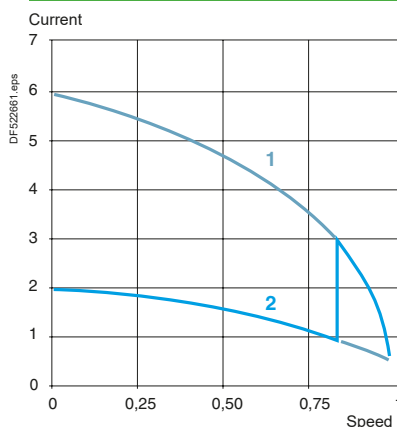
Open motor starters

Ref.

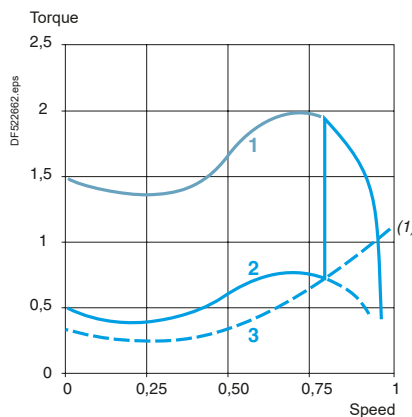




### Star-delta starting



- 1 Starting in direct delta connection
- 2 Starting in star connection



- 1 Starting in direct delta connection
- 2 Starting in star connection
- 3 Resistive torque of the machine

This method of starting is applicable to motors on which all 6 stator terminals are accessible and whose delta connection voltage corresponds to the mains voltage.

Star-delta starting should be used for motors starting on no-load or having a low load torque and gradual build-up:

- the starting torque in star connection is reduced to one third of the direct starting torque, i.e. about 50 % of the rated torque.
- the starting current in star connection is about 1.8 to 2.6 times the rated current.

The transition from star to delta connection must occur when the machine has run up to speed. A too rapid build-up in load torque would cause the stabilised run-up speed to be too low and would therefore eliminate any advantage in this method of starting: this is the case with certain machines whose load torque depends on the machine speed (a characteristic of centrifugal machines, for example).

All star-delta starters are supplied with a special LADS2 or LA2KT2 time delay relay which imposes a delay on the delta contactor during the transition period in order to allow the star contactor sufficient breaking time.

For ratings D115 and D150, this function is performed by a time delay auxiliary contact block LADT2 and a control relay.

(1) Motor manufacturers generally specify machine load torques.  
Example: maximum resistive torque on completion of star-delta start (expressed as a proportion of the rated torque).



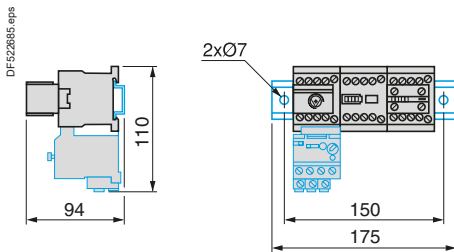
# TeSys Control

## Star-delta starters

### Dimensions, mounting

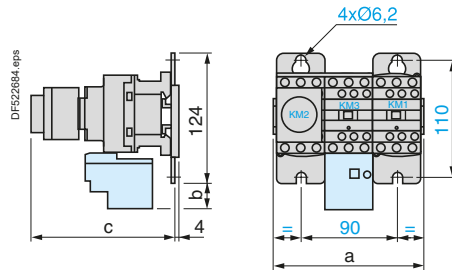
#### Dimensions

##### LC3K plate mounted, pre-assembled



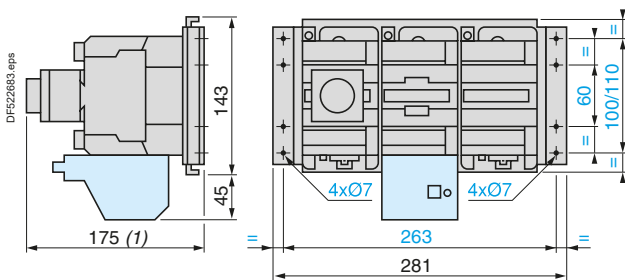
On starters LC3D09A to D18A, a connection block is mounted on the upper part of contactor KM2, increasing the overall height of the product by 6.5 mm.

##### LC3D09A...D32A pre-assembled or 3 x LC1D09A...D32A (customer assembly) + components



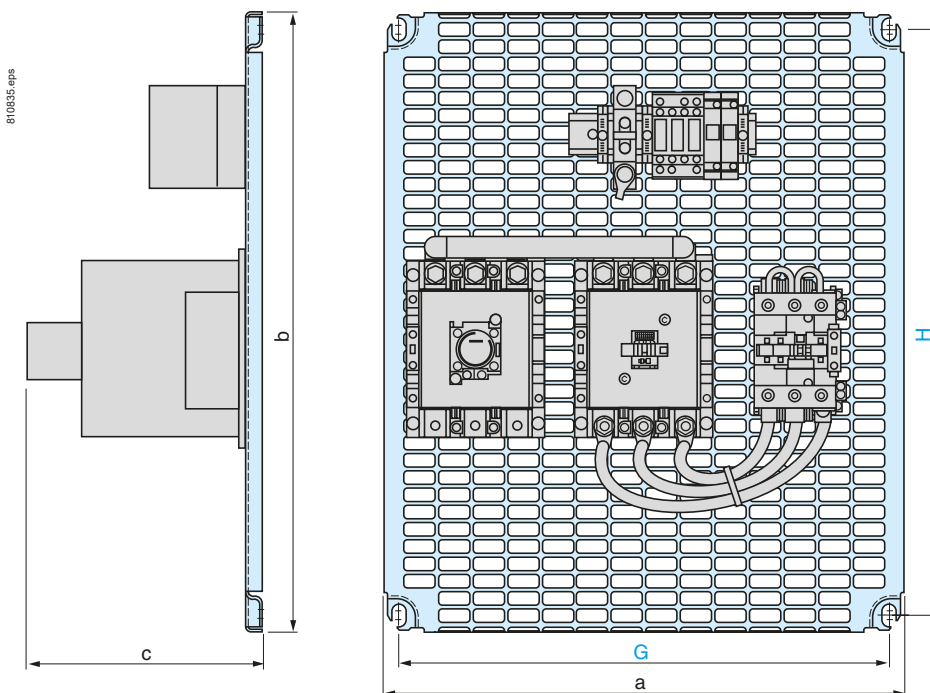
LC3	D09A	D12A	D18A	D32A
a	143	143	144	165
b	26.5	26.5	26.5	32.5
c	with LADS	139	139	145
	with LADS and sealing cover	143	143	149

##### LC3D80 pre-assembled or 3 x LC1D80 (customer assembly) + components



(1) +4 mm with sealing cover

##### LC3D115, D150 pre-assembled or 3 x LC1D115...D150 (customer assembly) + components



		a	b	c	G	H
LC3D115 or 3 x LC1D with components	D115	450	555	205	425	525
LC3D150 or 3 x LC1D with components	D150	450	555	205	425	525

References:  
pages A2/8 to A2/13

Introduction:  
page A2/22

Schemes:  
page A2/24

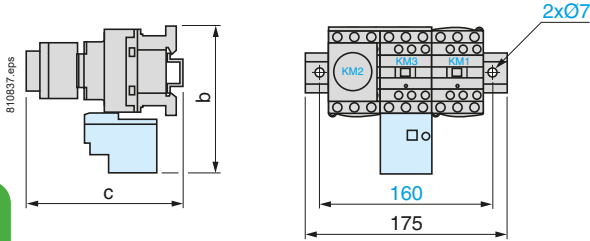
# TeSys Control

## Star-delta starters

### Dimensions, mounting, schemes

#### Dimensions

LC3D090A à D320A on NSYS DR mounting rail, pre-assembled



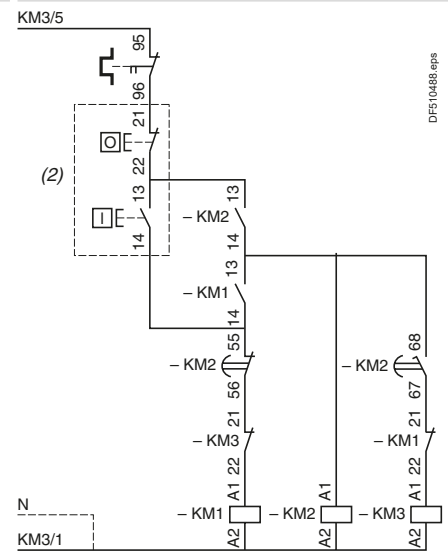
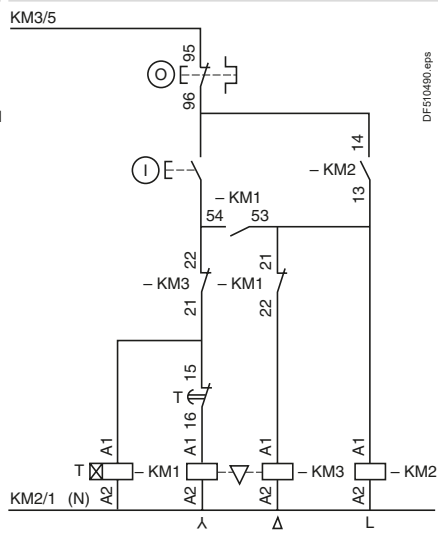
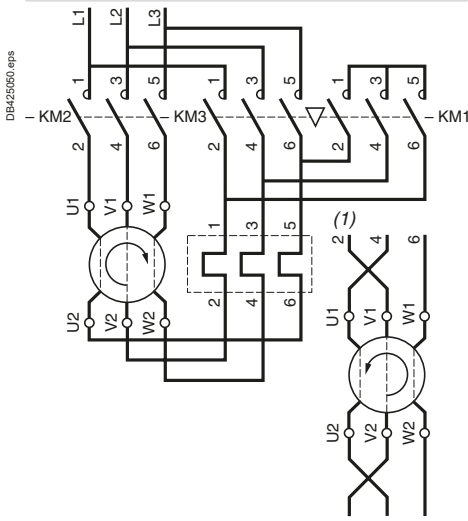
LC3	D090A à D180A	D320A
b	153	137
c	with LADS	145
	with LADS and sealing cover	149

#### Schemes

LC3K, LC3D09A to D80  
LC3D090A to D320A

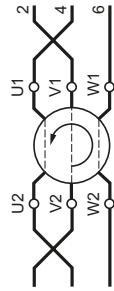
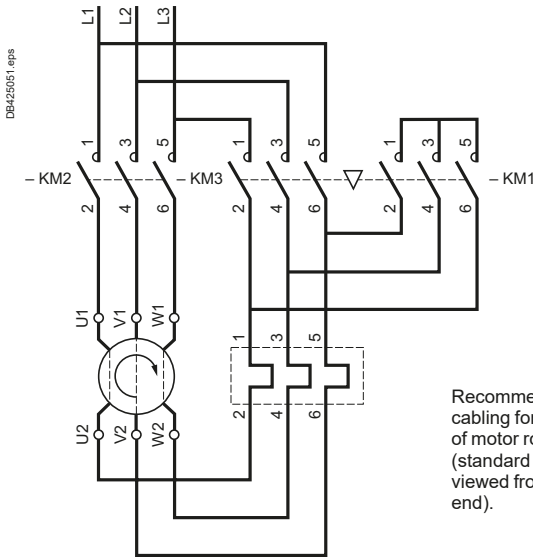
LC3K

LC3D

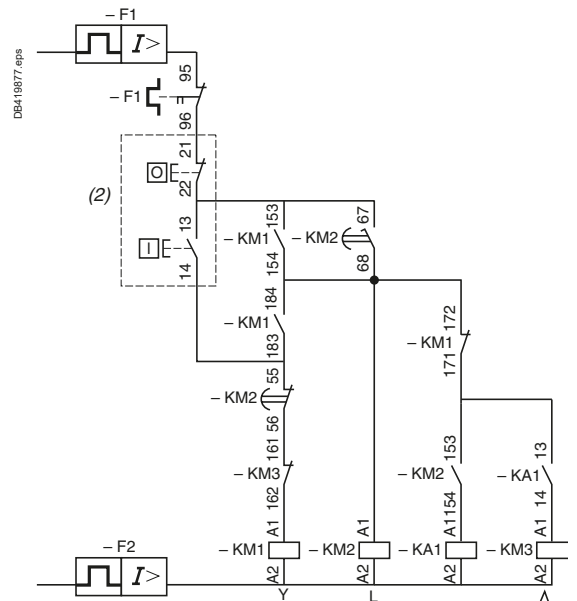


**Note:** LC3D09A to D18A: Mechanical interlock between KM3 and KM1.

LC3D115 and D150



Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).



(1) Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

(2) Remote control.

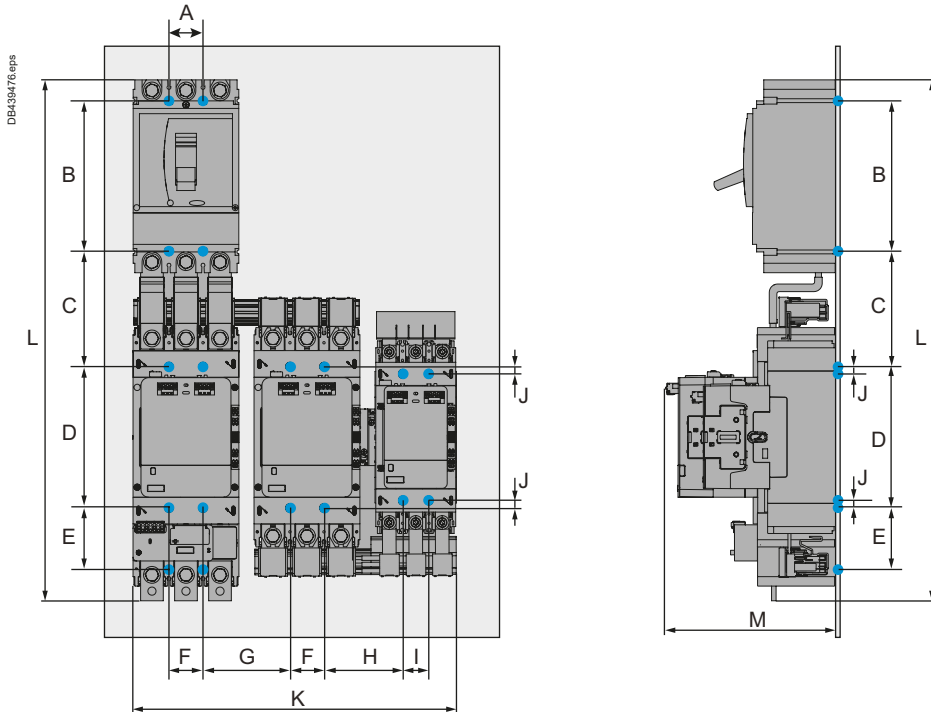
# TeSys Control

## Star-delta starters

### Dimensions, mounting

#### Dimensions

Star-delta starters with mechanical interlock for customer assembly on back-panel



Circuit Breaker	Line & Delta Contactor	Star Contactor	Overload relay											Overall width	Overall height	Overall depth
				A	B	C	D	E	F	G	H	I	J			
NSX250	LC1G115 ...225	LC1G115 ...225	LR9G115/ LR9G225	35	125	87	166	79.15	35	92.7	92.7	35	0	364	523	193
NSX400/ NSX630	LC1G115 ...225	LC1G115 ...225	LR9G115/ LR9G225	45	200	118	166	79.15	35	92.7	92.7	35	0	364	565.5	193
NSX400/ NSX630	LC1G265 ...500	LC1G115 ...225	LR9G500	45	200	118	187	81.85	45	115	103.85	35	10.5	428	670	225
NSX400/ NSX630	LC1G265 ...500	LC1G265 ...500	LR9G500	45	200	118	187	81.85	45	115	115	45	0	463	670	225
NS800	LC1G265 ...500	LC1G115 ...225	LR9G500	199	200	217	187	81.85	45	115	103.85	35	10.5	428	804.6	225
NS800	LC1G265 ...500	LC1G265 ...500	LR9G500	199	200	217	187	81.85	45	115	115	45	0	463	804.6	225

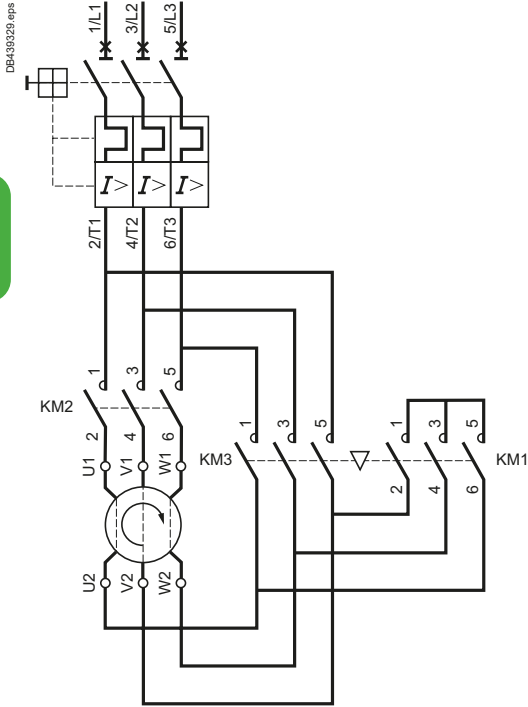
**Note:** All dimensions are in mm.

Open motor starters

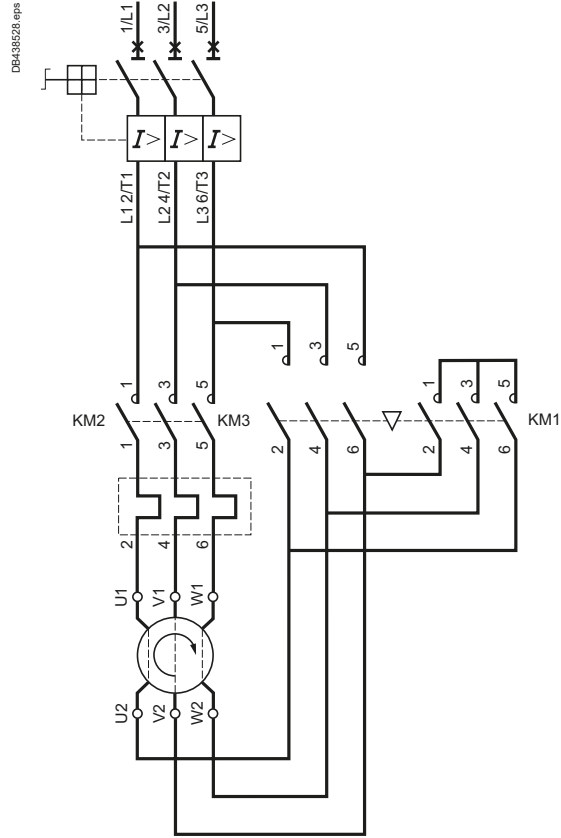
Ref.  
i  
↕

### Star-Delta motor 'Power' circuit diagram

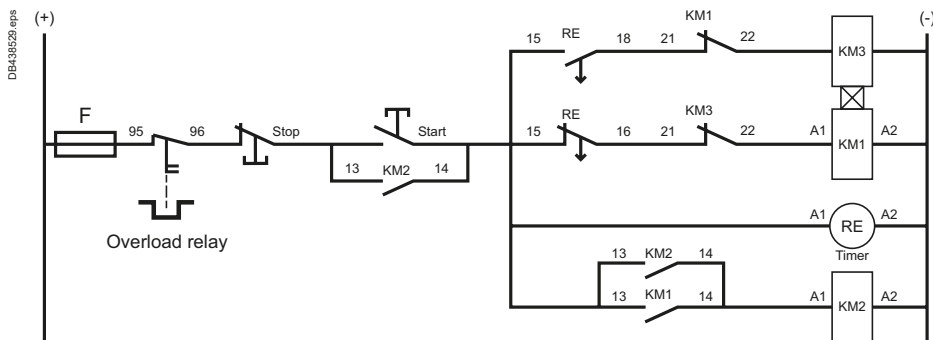
Thermal magnetic circuit breaker + contactors



Magnetic circuit breaker + contactors + overload relay



### Star-Delta Motor 'Control' circuit diagram



Recommended timing relay (RE): Zelio Timer ref. **RE17RMWS** (12...240 V AC/DC 50/60 Hz – 8 AAC/DC contacts)

Introduction

A3/2

TeSys Hybrid motor starters

Type of product	Range		Page
<p><b>Ultra-compact starters IEC ratings</b> Standard starters, screw or spring terminals, direct-on-line or reverse</p> <p>Safety starters, screw or spring terminals, direct-on-line or reverse</p>	<p>Up to <b>3 kW</b> AC53a Up to <b>9 A</b> AC51</p>		A3/6
<p><b>Ultra-compact starters UL ratings</b> Standard starters, screw or spring terminals, direct-on-line or reverse</p> <p>Safety starters, screw or spring terminals, direct-on-line or reverse</p>	<p>Up to <b>3 hp</b> AC53a Up to <b>9 A</b> AC51</p>		A3/7
<p>TeSys Deca Circuit breakers for a group of starters Selection of magnetic motor circuit breakers TeSys GV2L – rotary knob TeSys GV2LE – rocker lever</p>	<p>Up to <b>32 A</b></p>		A3/8

Hybrid  
motor  
starters

Technical Data for Designers

A3/11

# The most compact 3 KW / 400 V starter in the world

Hybrid motor starters



## Up to 75 % of space reduction

- Ultra-compact 22.5 mm starter
- Reversing starter in the same width
- Maximum space savings for group starter architecture

## Long electrical durability

- Suitable for high demanding application
- 30 000 000 of AC53a electrical cycles

> With printed QR code, referring directly to the product data sheet.

## Easy Design

- Wide range setting motor protection
- Automatic, manual or remote reset after thermal trip
- Wide range of control voltage

## Easy to integrate

- Direct mounting installation on DIN rail
- Control terminals on the upper side
- Power terminal on the lower side

## Standard version

- 2 ratings:
  - 2.4 A 400 V AC53a
  - 6.5 A 400 V AC53a
- 2 control voltages:
  - 24 V DC
  - 110 V / 230 V AC
- 2 terminal types:
  - Screw clamps
  - Spring
- Can provide up to 3 functions:
  - Forward running
  - Reverse running
  - Overload protection



Hybrid motor starters



## Safety version

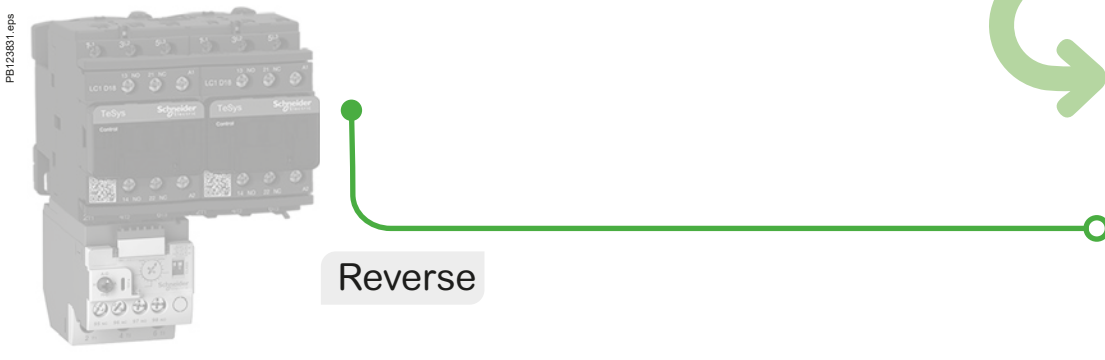
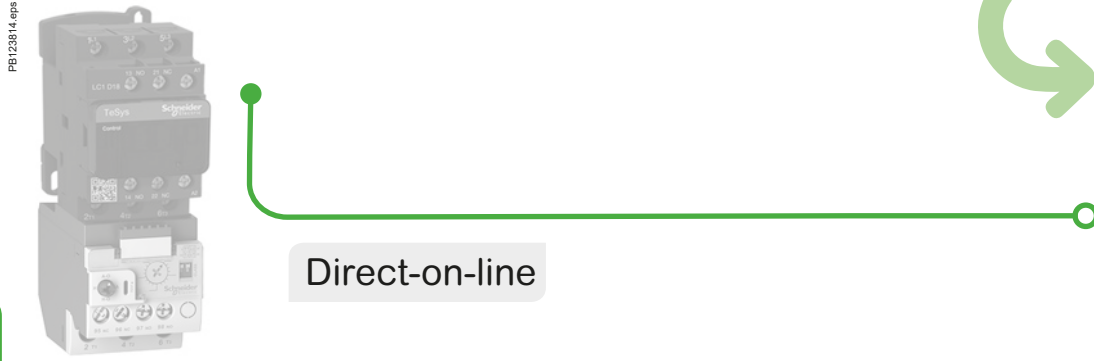
- Safe Torque Off embedded:
  - SIL3 according to IEC61508-1
  - Ple according to ISO13849-1
- ATEX:
  - As associated devices for motor protection

> Hybrid motor starters are a solution dedicated to low footprint applications, in industries as food and beverage, logistics, and durable goods.



Hybrid motor starters

Conventional ..... OR ..... Hybrid Standard starter



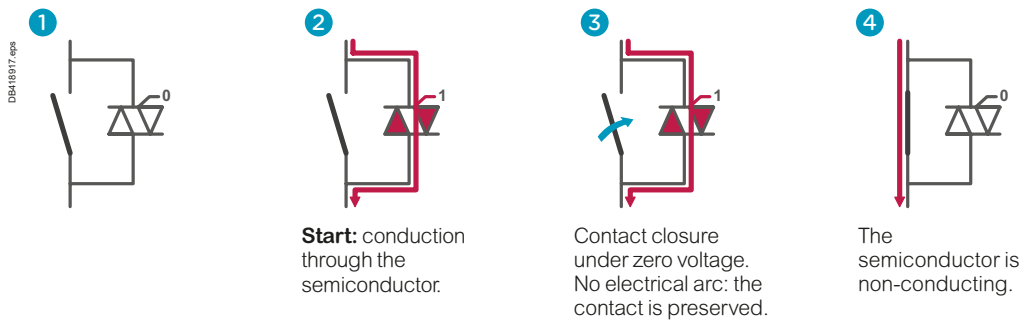
> How does the hybrid technology work ?

Hybrid technology:

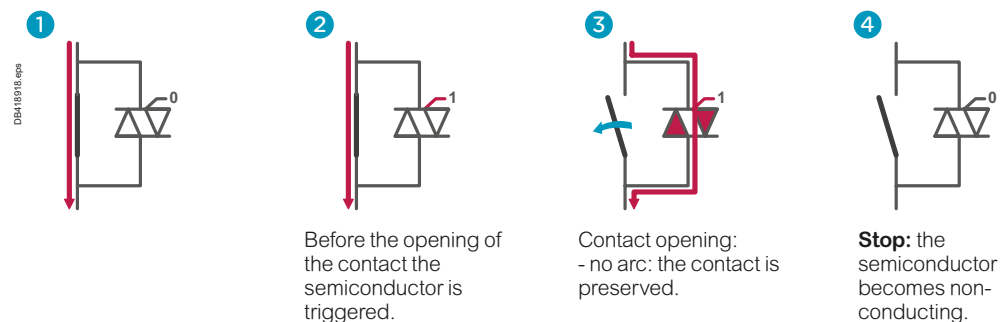
Each contact is coupled with a power semiconductor for switching

> Higher number of on/off switches, extended durability.

> Closing

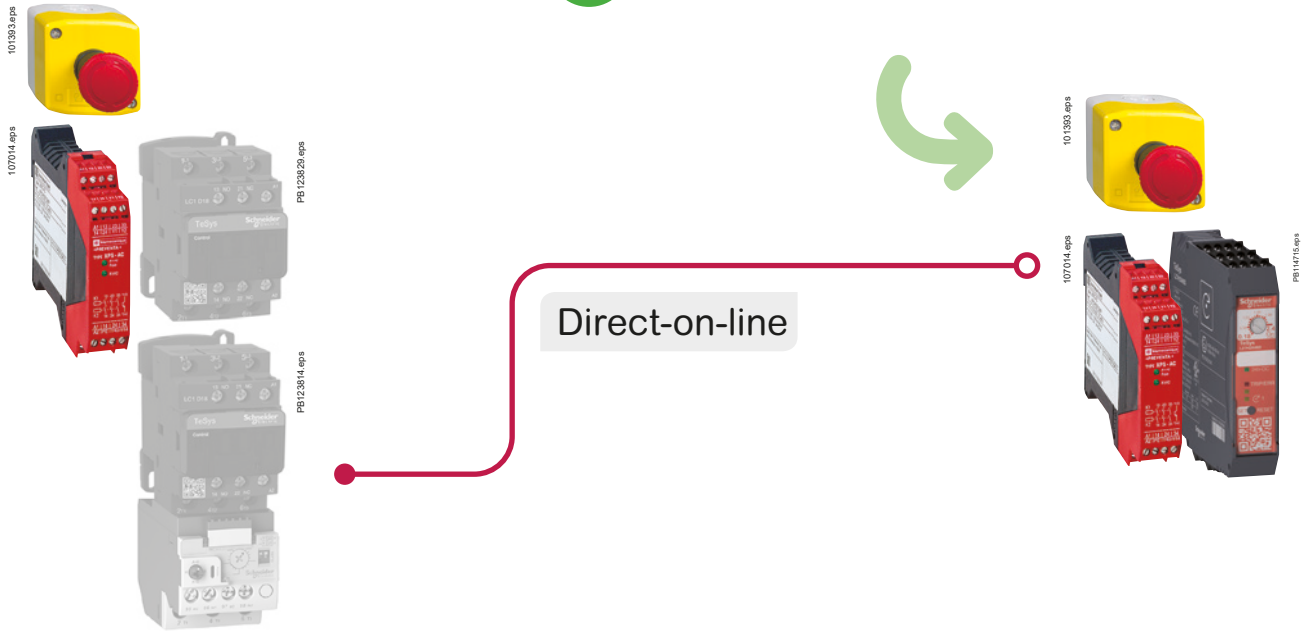


> Opening



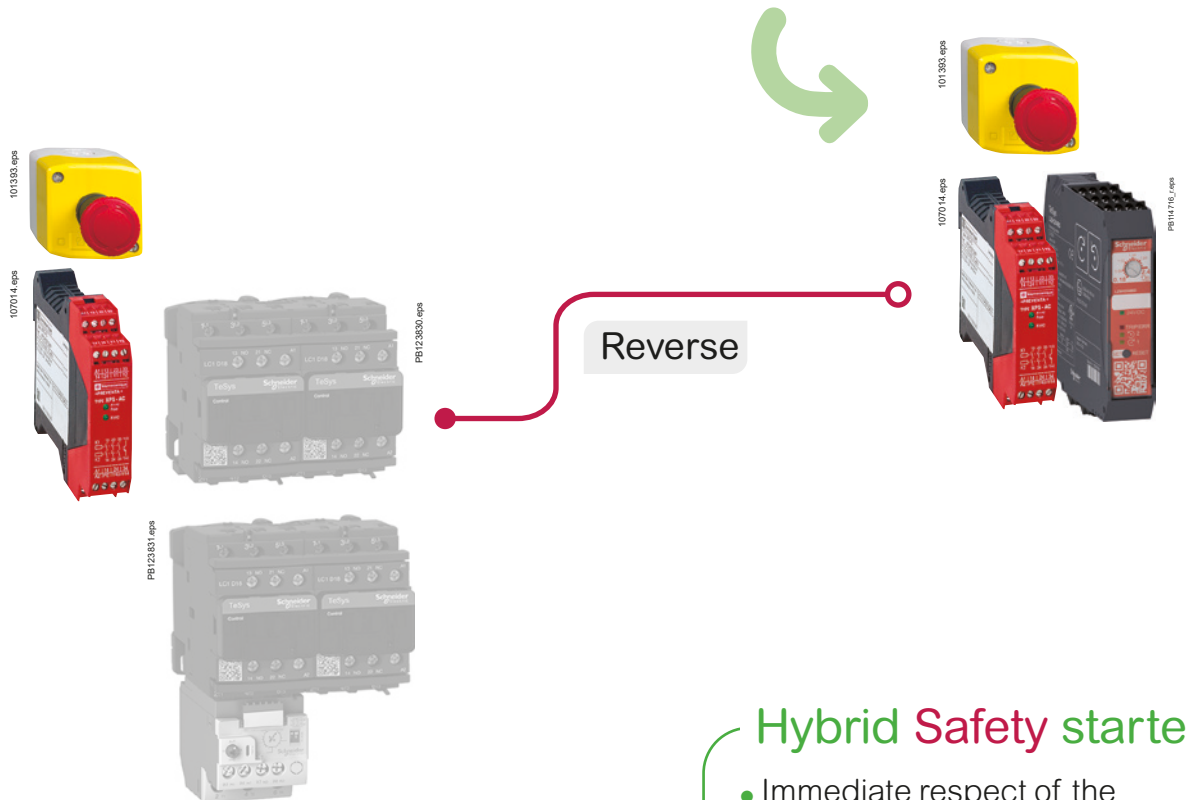


Conventional ..... OR ..... Hybrid Safety starter



Direct-on-line

Hybrid motor starters



Reverse

Hybrid Safety starter

- Immediate respect of the highest safety standards
- Simplified design of your safety electrical architecture
- Quicker panel implementation

# TeSys Control

## DOL/Reverser, Standard/Safety Hybrid starters

### Product references (per IEC ratings)

PB114711.eps



LZ1H2X4BD

Hybrid motor starters

### Starters for asynchronous motors - AC53a utilization category:

#### Standard starters hybrid per IEC ratings

Starters	3- phases motor: max power (KW) for various voltage							Current range	Commercial references <sup>(1)</sup>
	220 V	230 V	380 V	400 V	415 V	440 V	500 V		
<b>Direct-on-line</b>									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ1H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ1H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ1H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ1H6X53●●
<b>Reverse</b>									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ2H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ2H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ2H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ2H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

PB114715.eps



LZ7H2X4BD



#### Safety starters hybrid per IEC ratings

Starters	3- phases motor: max power (KW) for different tensions							Current range	Commercial references <sup>(1)</sup>
	220 V	230 V	380 V	400 V	415 V	440 V	500 V		
<b>Direct-on-line</b>									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ7H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ7H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ7H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ7H6X53●●
<b>Reverse</b>									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ8H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ8H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ8H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ8H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

### Starters for resistive load AC51 utilization category:

Starters	Resistive load current A	Application	Commercial references <sup>(1)</sup>
		Safety	LZ7H2X4●●
	9	Standard	LZ1H6X5●●
		Safety	LZ7H6X5●●
Spring terminals	2.4	Standard	LZ1H2X43●●
		Safety	LZ7H2X43●●
	9	Standard	LZ1H6X53●●
		Safety	LZ7H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

# TeSys Control

## DOL/Reverser, Standard/Safety Hybrid starters

### Product references (per UL ratings)

PB114713.eps



LZ1H2X43BD

### Starters for asynchronous motors - AC53a utilization category:

Standard starters hybrid per UL ratings					
Starters	3-phases motor in HP			Current range A	Commercial references <sup>(1)</sup>
	208 V	220 V - 240 V	440 V - 480 V		
<b>Direct-on-line</b>					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ1H2X4●●
	1	1.5	3	1.5...6.5	LZ1H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ1H2X43●●
	1	1.5	3	1.5...6.5	LZ1H6X53●●
<b>Reverse</b>					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ2H2X4●●
	1	1.5	3	1.5...6.5	LZ2H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ2H2X43●●
	1	1.5	3	1.5...6.5	LZ2H6X53●●

<sup>(1)</sup> Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

Hybrid motor starters

PB114716.eps



LZ8H6X5BD

Safety starters hybrid per UL ratings					
Starters	3-phases motor in HP			Current range A	Commercial references <sup>(1)</sup>
	208 V	220 V - 240 V	440 V - 480 V		
<b>Direct-on-line</b>					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ7H2X4●●
	1	1.5	3	1.5...6.5	LZ7H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ7H2X43●●
	1	1.5	3	1.5...6.5	LZ7H6X53●●
<b>Reverse</b>					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ8H2X4●●
	1	1.5	3	1.5...6.5	LZ8H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ8H2X43●●
	1	1.5	3	1.5...6.5	LZ8H6X53●●

<sup>(1)</sup> Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).



### Starters for resistive load AC51 utilization category:

Starters	Resistive load current	Application	Commercial references <sup>(1)</sup>
	A		
Screw terminals	2.4	Standard	LZ1H2X4●●
		Safety	LZ7H2X4●●
	9	Standard	LZ1H6X5●●
		Safety	LZ7H6X5●●
Spring terminals	2.4	Standard	LZ1H2X43●●
		Safety	LZ7H2X43●●
	9	Standard	LZ1H6X53●●
		Safety	LZ7H6X53●●

<sup>(1)</sup> Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

# TeSys Control

## Deca Magnetic circuit breakers for group protection

### Selection table



- Magnetic motor circuit breakers:
- GV2L: rotary knob type - Ue = 500 V
  - GV2LE: rocker lever type - Ue = 415 V.

#### Selection of the circuit breaker Type 1 coordination according to IEC/EN 60947-4-2

Max A	Iq kA	Number of H		Reference Circuit breaker	
		2.4 A	6.5 A	Rotary	Rocker
0.4	50.0	1	–	GV2L03	GV2LE03
0.63	50.0	1	–	GV2L04	GV2LE04
1	50.0	1	1	GV2L05	GV2LE05
1.6	50.0	1	1	GV2L06	GV2LE06
2.5	35.0	1	1	GV2L07	GV2LE07
4	12.5	1	1	GV2L08	GV2LE08
6.3	8.0	2	1	GV2L10	GV2LE10
10	7.0	4	1	GV2L14	GV2LE14
14	5.0	5	2	GV2L16	GV2LE16
18	4.0	7	2	GV2L20	GV2LE20
25	4.0	10	3	GV2L22	GV2LE22
32	3.0	13	4	GV2L32	GV2LE32

Hybrid  
motor  
starters



GV2L + LZ2H2X4BD



# TeSys Control


## Hybrid motor starters

### Product references

LZ1H2X43BD  
LZ1H2X43FU  
LZ1H2X4BD  
LZ1H2X4FU  
LZ1H6X53BD  
LZ1H6X53FU  
LZ1H6X5BD  
LZ1H6X5FU  
LZ2H2X43BD  
LZ2H2X43FU  
LZ2H2X4BD  
LZ2H2X4FU  
LZ2H6X53BD  
LZ2H6X53FU  
LZ2H6X5BD  
LZ2H6X5FU

LZ7H2X43BD  
LZ7H2X43FU  
LZ7H2X4BD  
LZ7H2X4FU  
LZ7H6X53BD  
LZ7H6X53FU  
LZ7H6X5BD  
LZ7H6X5FU  
LZ8H2X43BD  
LZ8H2X43FU  
LZ8H2X4BD  
LZ8H2X4FU  
LZ8H6X53BD  
LZ8H6X53FU  
LZ8H6X5BD  
LZ8H6X5FU

Hybrid  
motor  
starters

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

## Technical Data for Designers

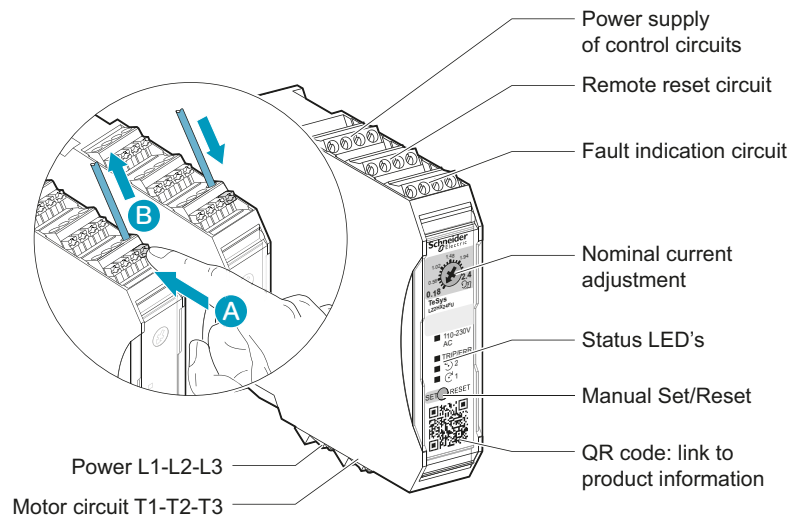
### Contents

Description .....	A3/12 to A3/13
Characteristics.....	A3/14 to A3/15
Curves .....	A3/16 to A3/17
Dimensions and schemes .....	A3/18

## Identification of terminals / Indicators / Setting means and procedure

### Setting procedure

DB418503.eps



STEP	ACTION
1	Lift the cover on the front of the Hybrid motor starter to access the SET/RESET button.
2	Press and hold down the SET/RESET button for at least 6 seconds. After 6 seconds the 110-230 V AC or 24 V DC LED flashes once.
3	After the LED has flashed once, release the SET/RESET button.
4	Turn the potentiometer to select a nominal current, and then fine-tune the position until the LEDs indicate the exact nominal current.
5	Press the SET/RESET button to save the selected nominal current. The 110-230 V AC or 24 V DC LED comes on and the other LEDs go off.
6	Drop the cover back over the front of the Hybrid motor starter.

## Protection functions

### The protection of three - phase motors is ensured against potential faults

- Thermal overload: the motor currents exceed the set value.
- Phase unbalanced: the motor currents differ from each other by more than 33 %
- Phase loss: power missing on one or several phases
- Stall and jam: motor current exceeding 45 A for more that 2 s during starting or running phase - No motor is connected - Motor current is lower that the minimum configurable current for more than 2 seconds, on at least two phases.

For all this detected situations, the Hybrid motor starter will switch off, activate its TRP/ERR LED and fault signaling contact.

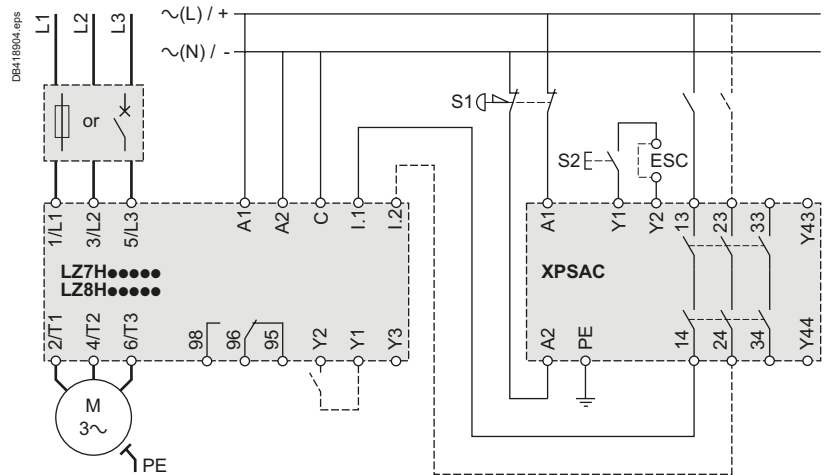
Please refer to the "Instruction sheet and User Guide" for more information.



**Electrical diagrams for Safety chain applications**

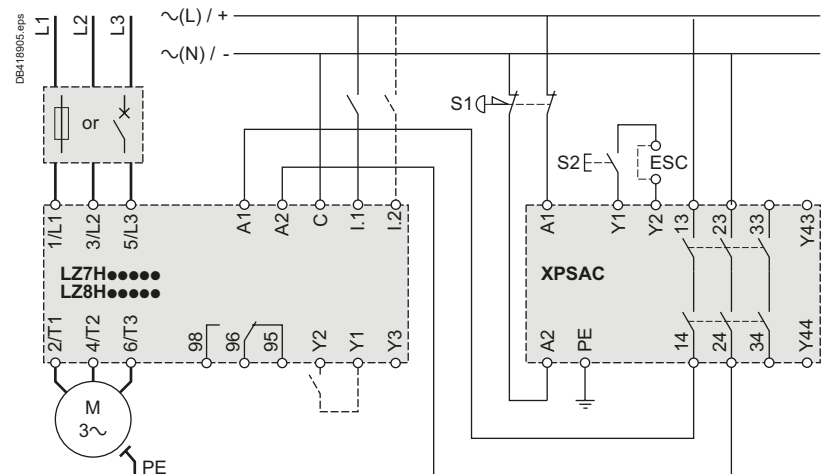
**Preferred**  
 Electrical life time: 30000000 AC53a electrical cycles

Safety Chain Application for Monitoring Emergency STOP Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAF Safety Processing Device.



**Possible but non-recommended**  
 Electrical life time: 10000 AC53 a electrical cycles

Safety Chain Application for Monitoring Emergency Stop Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAC Safety Processing Device.



Hybrid motor starters

Ref.



# TeSys Control

## Hybrid motor starters

### Characteristics

Hybrid motor starters

- Ref.
- i
- 
- 
- 

Environment			
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 2	V	500
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-2	kV	6 (24 V DC control voltage); 4 (110 V - 230 V AC control voltage)
Conforming to standards			IEC / EN 60947-4-2
Product certifications			CE, CUL, ATEX ( for failsafe product), CCC, UKCA
Degree of protection	Conforming to IEC / EN 60947-1		IP20
Environment category	Conforming to IEC / EN 60947-1		E
Climatic withstand			Conforming to IEC/EN 60068-2-30
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation (see derating curves)	°C	-25...+70
Maximum operating altitude	without derating	m	2000
	with derating	m	No
Operating positions (see derating curves)	Vertical axis (horizontal DIN rail)		Yes
	Horizontal axis (vertical DIN rail)		Not authorised
Shock resistance	Conforming to IEC/EN 60068-2-27	gn	30 Starter OFF
1/2 sine wave = 18 ms		gn	30 Starter ON
Vibration resistance	Conforming to IEC/EN 60068-2-6	gn	5 Starter OFF
10...150 Hz		gn	5 Starter ON
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	Air discharge: 8 kV
		kV	Contact discharge: 6 kV
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3		
	80 - 1 GHz	V/m	20
	1.0 - 6 GHz	V/m	10
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	3
Immunity to conducted high frequency disturbances	Conforming to IEC/EN 61000-4-6	V	10
Radiated emission and conducted	Conforming to CISPR 11 and EN 55011		Class A
Surge	Conforming to IEC/EN 61000-4-5	kV	1 symmetrical
		kV	2 asymmetrical
Control circuit characteristics			
Rated voltage	~ 50/60 Hz	V	110 - 230
	---	V	24
Voltage limits	~ 50/60 Hz	V	85...253
	---	V	19.2...30
Voltage dips		ms	3
Short time interruptions		ms	3
Power circuit characteristics			
			<b>LZ●2X4●●</b>
			<b>LZ●6X5●●</b>
Power dissipation for corresponding Rated Operating Current (see derating curve)		W	0.88 ... 4.1
Rated Operating Current	AC51 conforming to IEC/EN 60947-4-3	A	0.18 - 2.4
	AC53a conforming to IEC/EN 60947-4-2	A	0.18 - 2.4
Electrical life	AC51	Op	30 000 000 <sup>(1)</sup>
		Op	10 000 <sup>(2)</sup>
	AC53A	Op	30 000 000 <sup>(1)</sup>
		Op	10 000 <sup>(2)</sup>
Maximum Operating rate	AC51	Op/h	7200
	AC53A		See curves
Time to restart after overload trip	Manual or remote mode	mn	2
	Automatic	mn	20
Power and control terminal Characteristics			
	<b>Terminal type</b>		<b>Screw M3</b>
			<b>Push in</b>
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.25...2.5
	2 conductors	mm <sup>2</sup>	0.25...0.75
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	0.25...2.5
	2 conductors	mm <sup>2</sup>	0.25...1.5
Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.25...2.5
	2 conductors	mm <sup>2</sup>	0.25...0.75
Screwdriver		mm	flat screwdriver: 3 mm
Tightening torque		N.m	0.5..0.6
<b>(1) With ON/OFF control through control inputs (I<sub>1</sub>, I<sub>2</sub> terminals) (2) With ON/OFF control through power supply (A<sub>1</sub>, A<sub>2</sub> terminals).</b>			
References: pages A3/6 and A3/7	Description: pages A3/12 and A3/13	Curves: pages A3/16 and A3/17	Dimensions, schemes: page A3/18

# TeSys Control

## Hybrid motor starters

### Characteristics

#### System conditons

Database for failure rates		SN 29500
System type		Type B
Standard used		IEC 61508
Beta factor		1 %
Mean time to failure (MTTF) at an ambient temperature 40 °C		39.3 (LZ7H or LZ8H 24 V DC) 39.1 (LZ7H or LZ8H 110/230 V AC)

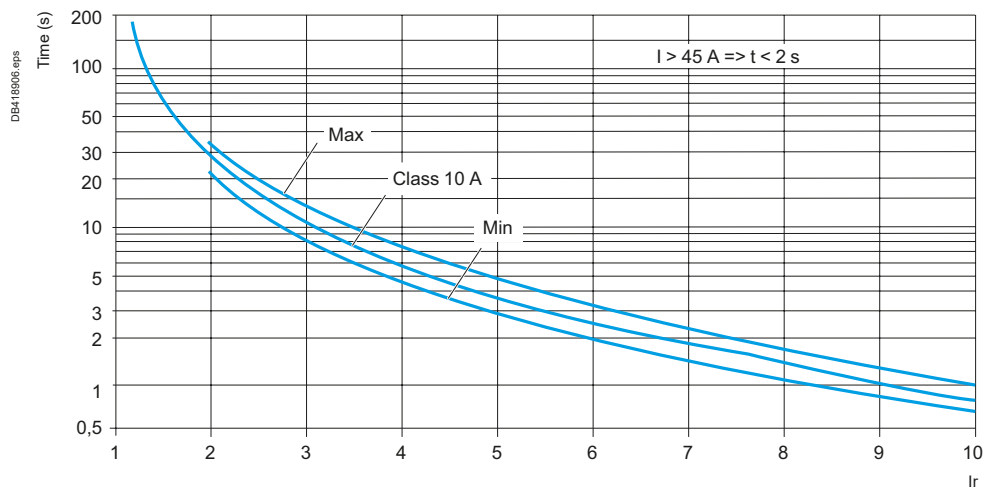
#### Safe torque-off

		LZ7H or LZ8H 24 V DC	LZ7H or LZ8H 110/230 V AC
Ambient temperature	°C	40	40
Mean time to failure (MTTF)		517	289
Switch-off time		80	100
$\lambda_{sd}$ [FIT] safe, detectable		664	638
$\lambda_{su}$ [FIT] safe, undetectable		968	935
$\lambda_{dd}$ [FIT] dangerous, detectable		218	388
$\lambda_{du}$ [FIT] dangerous, undetectable		2.67	6.82
SFF [%] Safe failure fraction		99	99
DCS [%] Diagnostic coverage safe		40.7	40.6
DC [%] Diagnosctic coverage		98	98
PFH Probability of dangerous failure per hour		$2.67 \times 10^{-9}$	$6.82 \times 10^{-9}$
Safety level		IEC/CEI 61508-1: SIL 3 ISO 13849-1: Category 3 PL e EN 60954-1: Category 3	

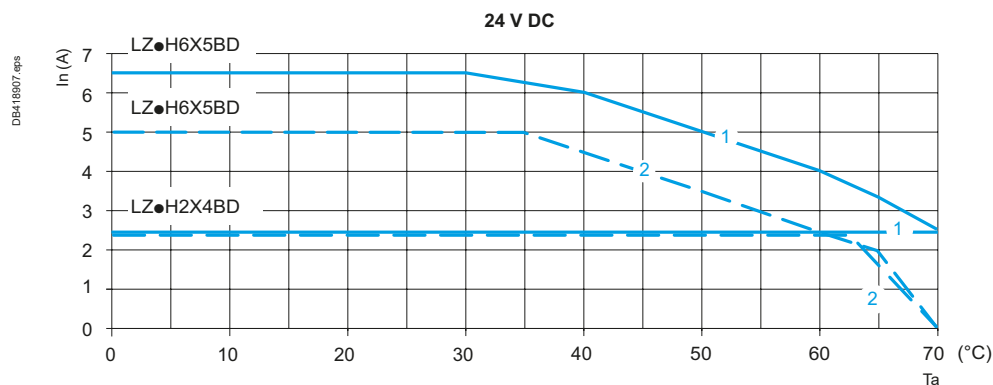
#### Motor overload protection

		LZ7H or LZ8H 24 V DC	LZ7H or LZ8H 110/230 V AC
Ambient temperature	°C	40	40
Mean time to failure (MTTF)		447	273
Time to trip		As for Class 10 A, IEC/CEI 60947-4-2	
$\lambda_{sd}$ [FIT] safe, detectable		637	636
$\lambda_{su}$ [FIT] safe, undetectable		870	841
$\lambda_{dd}$ [FIT] dangerous, detectable		239	402
$\lambda_{du}$ [FIT] dangerous, undetectable		17	17
SFF [%] Safe failure fraction		99	99
DCS [%] Diagnostic coverage safe		42.3	43.1
DC [%] Diagnosctic coverage		93	95
Safety level		IEC/CEI 61508-1: SIL 2	

#### Overload protection tripping curve at 20 °C

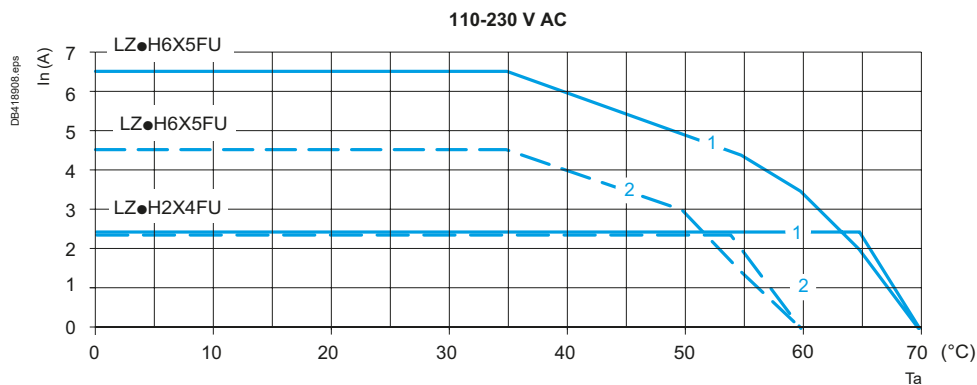


#### Derating curves: maximum load current (In)



#### Derating according:

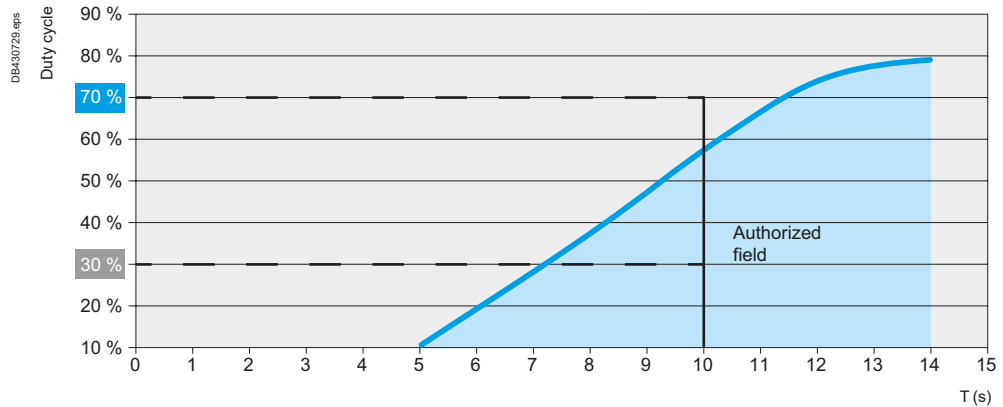
- motor starter control power supply
- ambient temperature ( $T_a$ )
- distance between devices 1: 20 mm, with spacing  
2: without spacing.



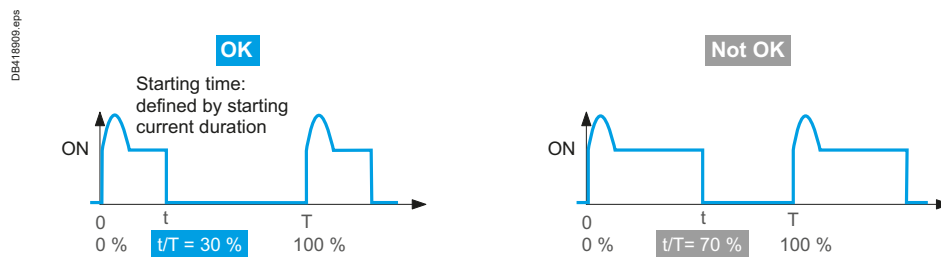
#### Minimum duty cycle $t/T$ (%) versus cycle duration $T$ (s)

Due to the effect of the peak current on the H monitoring circuit during the starting time, a stop/start sequence should not occur before a certain amount of time. The diagrams below show the minimum duty cycle according to the total period for 2 typical starting time values.

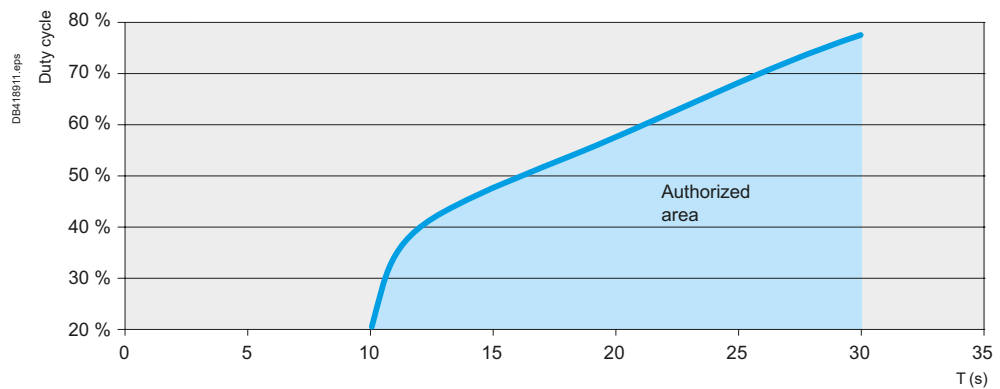
#### With a starting time = 100 ms



#### Example for starting time of 100 ms with period $T = 10$ s.

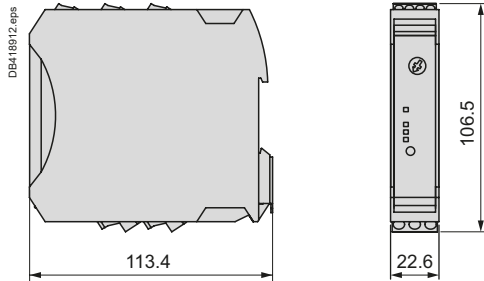


#### With a starting time = 150 ms

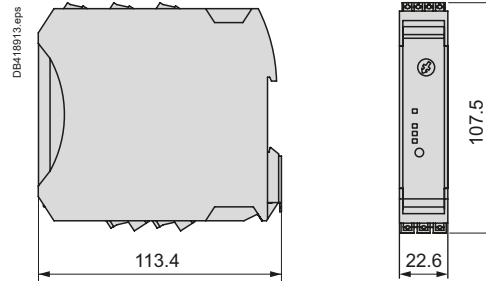


#### Dimensions mm

##### LZ●H●●●●●

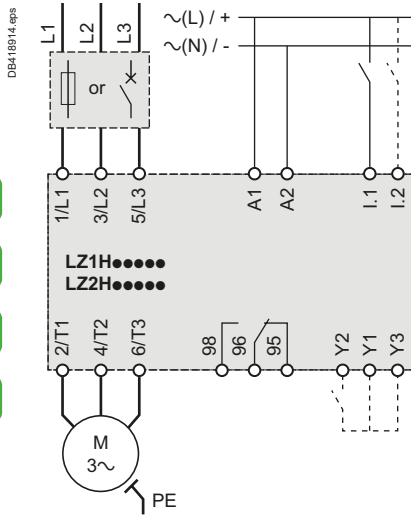


##### LZ●H●●●3●●

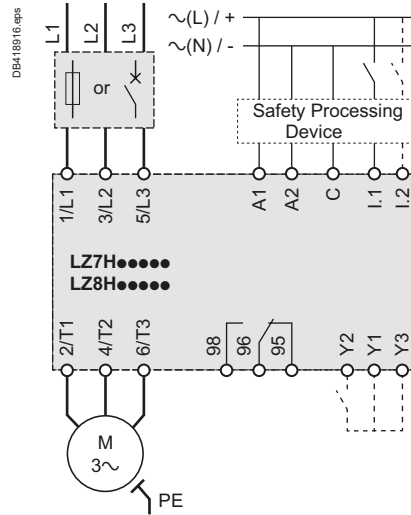


#### Wiring diagrams

##### Motor control by standard starter



##### Motor control by safety starter



#### Power terminals


T1, T2, T3 Motor connection  
L1, L2, L3 Power inputs

#### Control terminals

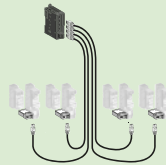
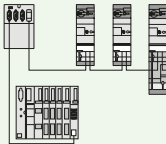

A1, A2 Auxiliary power unit  
I.1 Control input, direction 1  
I.2 Control input, direction 2  
(LZ2H and LZ8H only)  
C Control inputs common point  
(LZ7H and LZ8H only)  
Y1 Reset mode, common point  
Y2 Reset mode, remote, manual  
Y3 Reset mode, automatic  
98, 96, 95 Trip or error signaling contact

**Introduction** A4/2

**TeSys Ultra - Power bases, control modules, connectors**

Type of product	Range		Page
Standard power base, basic control functionalities Direct and reversing	Up to 18.5 kW		A4/10

**TeSys Ultra - Communication components**

Parallel type cabling system Principle and components			A4/16
Bus type cabling systems Principle, panorama and components			A4/21
TeSys LUFPP communication gateway			A4/30

**TeSys Ultra - Accessories**

Short circuit current limiter			A4/31
Handles and accessories for rotary control			A4/32
Handles and accessories for integration into a MCC drawer			A4/33
TeSys Ultra with Altistart U01 Soft starters and Variable speed controllers			A4/34

Ultra  
motor  
starters

**Technical Data for Designers** A4/43

# From traditional solution to ...

Ultra motor starters

Motor circuit breaker:  
GV2L



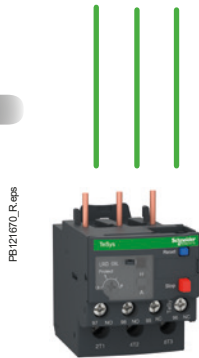
Magnetic protection  
> short-circuit protection

Contactor:  
D

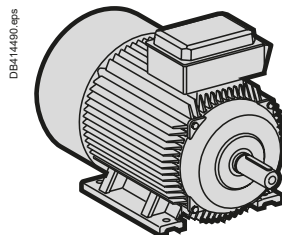


Control  
> Start /Stop  
Status monitoring  
> signaling  
> alarm monitoring

Protection relay:  
LRD



Thermal protection  
> overload





## ...Ultra motor starter

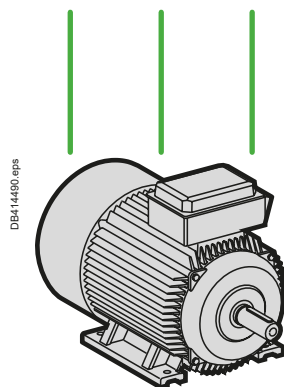


Ultra motor starters

### Ultra motor starter

> All basic or advanced protection and control functions in one block and more...

- > Overload indication and alarm
- > Status report, remote control via communication bus



**Ultra motor starters**  
can be used in **80 %**  
of motor protection and control applications.



# 1 All in one

- Optimising space in enclosures.
- Total coordination (No contact welding on short circuit).
- Reduces installation times.

# 2 Simplicity of choice

- Controlled power.
- Protection functions ensured.
- Signaling functions, communication with PLC ensured.

# 3 Universal mounting

- On DIN rail or grid.

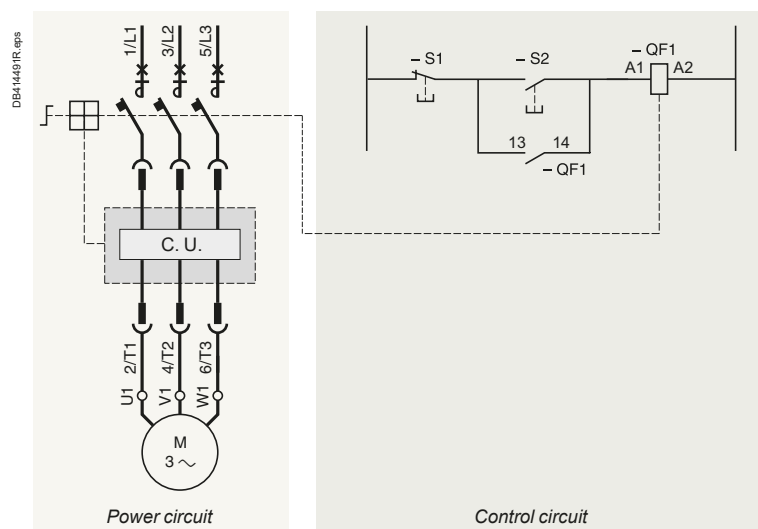
# 4 Conventional projet design

- Conventional control scheme with start , stop push buttons.

# 5 Electrically simple

Basic scheme of a Ultra starter-controller

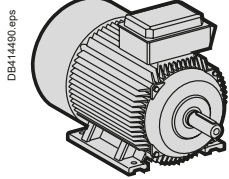
- Protection and power control functions acting on a single set of contact (QF1).
- The control unit (CU) monitors the voltage and current. In case of fault, it releases the coil, causing tripping.
- The coil is controlled by manual orders from an operator. Automatic control from a PLC is achieved with other diagrams.



# TeSys Control

## Ultra motor starters

### Introduction



#### Motor up to

- 7.5 kW / 1-phase 230 V / 50-60 Hz.
- 18.5 kW / 3-phase 400-440 V / 50-60 Hz.
- 18.5 kW / 3-phase 500 V / 50-60 Hz.
- 22 kW / 3-phase 690 V / 50-60 Hz.
- Non-reversing or reversing.

## Common characteristics

### Short-circuit protection

- I<sub>sc</sub>:
  - 50 kA at ≤ 400 V
  - 10 kA at 500 V
  - 4 kA at 690 V.
- Up to 690 V AC.

### Overload protection

- From 0.15 to 38 A, 6 setting ranges (tripping 14.2 x I setting).
- Test button.
- Adjustment lock.
- Coil choice: 24 V, 48...72 V, 110...240 V DC/AC.

### 3 power contacts

- For non-reversing (reversing with reverser block).
- I<sub>max</sub>, for 12 A power base (direct - reversing):
  - 12 A at up to 500 V / 50 Hz
  - 9 A > 500 V, up to 690 V.
- I<sub>max</sub>, for 38 A power base (direct - reversing):
  - 38 A at up to 500 V / 50 Hz
  - 21 A > 500 V, up to 690 V.

### 1 NO contact

### 1 NC contact

- 5 A / max. 690 V AC or 250 V CC.

### Other monitoring contacts

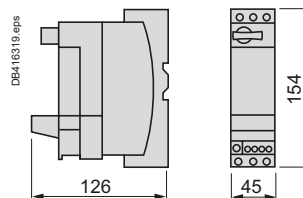
- 5 A / max. 690 V AC or 250 V DC.

### Communication modules

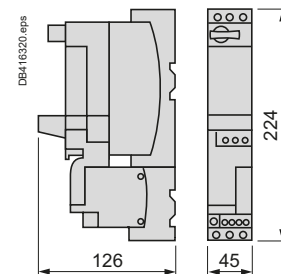
- Modbus,
- Ethernet,
- CANopen,
- DeviceNet,
- Advantys stb,
- Profibus DP,
- AS-interface.

### Dimensions

- Base:



- Base + reverser block:



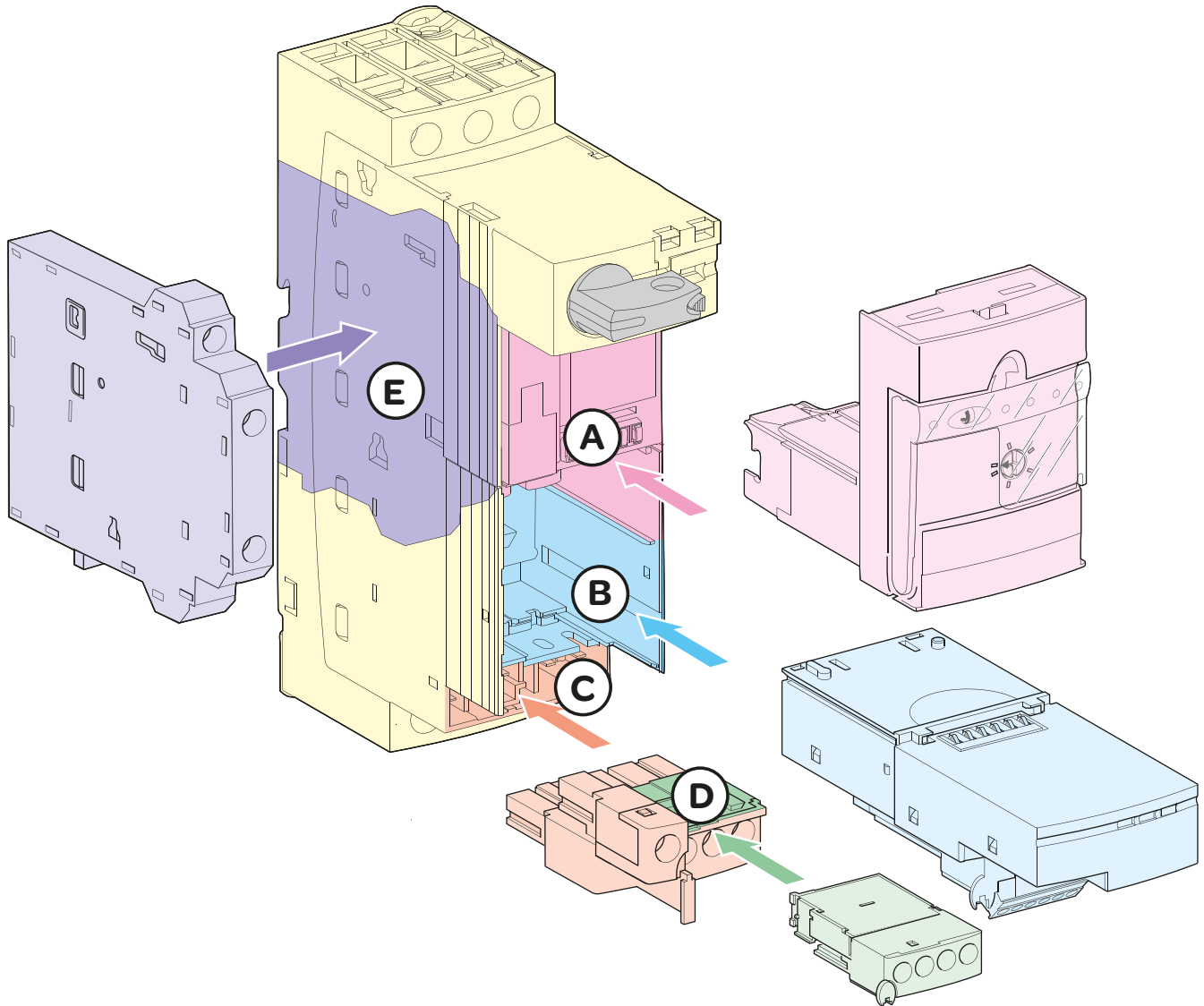
# TeSys Control

## Ultra motor starters

### Introduction

DB-41483.eps

Ultra motor starters



## The modularity principle

- Power base
- A Cavity for control unit
- B Cavity for auxiliary module
- C Cavity for control terminal block
- D Cavity for additional contact block or shutter
- E Space for additional block fastening

### Power Base

This is the basic constituent of the motor starter, it is composed of the power contacts, the control coil, the opening / closing mechanism of the protection device and the control pad.

### Additional lateral block

Composed of the protection device signaling contacts.

### Control unit

Composed of the power base management processor and setting knobs.

### Auxiliary module

Depending on its type, it integrates load status contacts or a communication processor or an alarm processor.

### Control terminal block

It is composed of two terminals "coil control", 1 NO auxiliary contact, 1 NC auxiliary contact. It can be eventually connected to an auxiliary communication module via a dedicated cable.

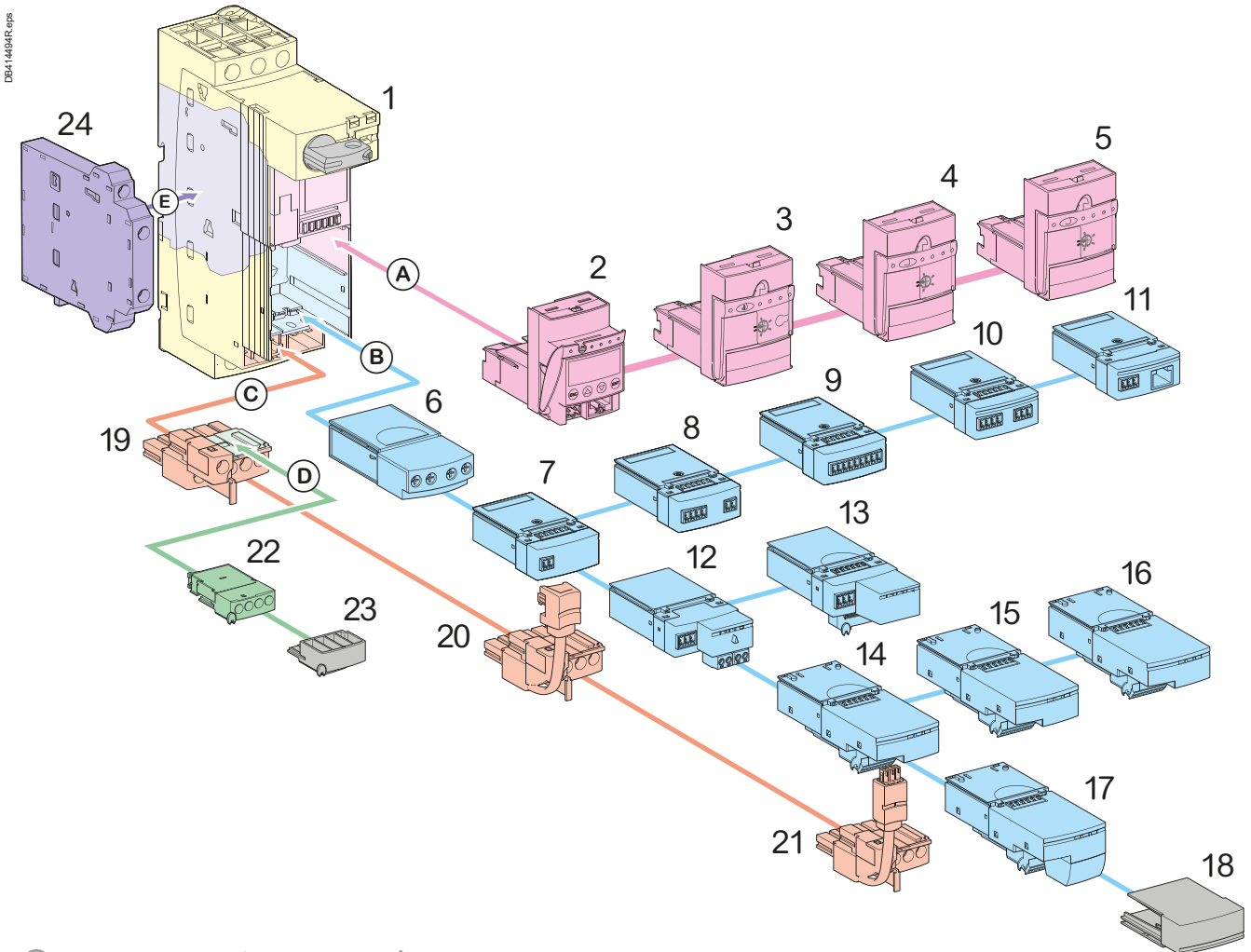
### Additional block

It includes protection device additional signaling contacts. By default, this is a simple shutter.

# TeSys Control

## Ultra motor starters

### Introduction



Ultra motor starters

## Components overview

### Power base

- 1- LUB  
Non reversing power base - 1 rotation direction

### Control units

- 2- LUCM  
Multifunctional control unit
- 3- LUCB/LUCC/LUCD  
Advanced control units
- 4- LUCA  
Standard control unit
- 5- LUCL  
Magnetic protection control unit

### Auxiliary module

- 6- LUFN  
Auxiliary contacts module

### Load monitoring auxiliary modules

- 7- LUFW10  
Overload alarm module
- 8- LUFDH11  
Overload alarm module with manual reset
- 9- LUFDA01/LUFAD10  
Overload alarm module with automatic reset/remote reset
- 10- LUFV2  
Motor load indication module

### Communication auxiliary modules

- 11- L UFC00  
Telefast parallel liaison module, with RJ45 connector
- 12- ASILUFC5/ASILUFC51  
AS-Interface c. m.
- 13- LULC033  
Modbus c. m.
- 14- LULC07 Profibus DP c. m.
- 15- LULC08 CANopen c. m.
- 16- LULC09 DeviceNET c. m.
- 17- LULC15 Advantys STB c. m.

### Shutters

- 18- LU9C1  
Shutter for module cavity
- 23- Shutter for contacts additional block cavity

### Control terminal blocks

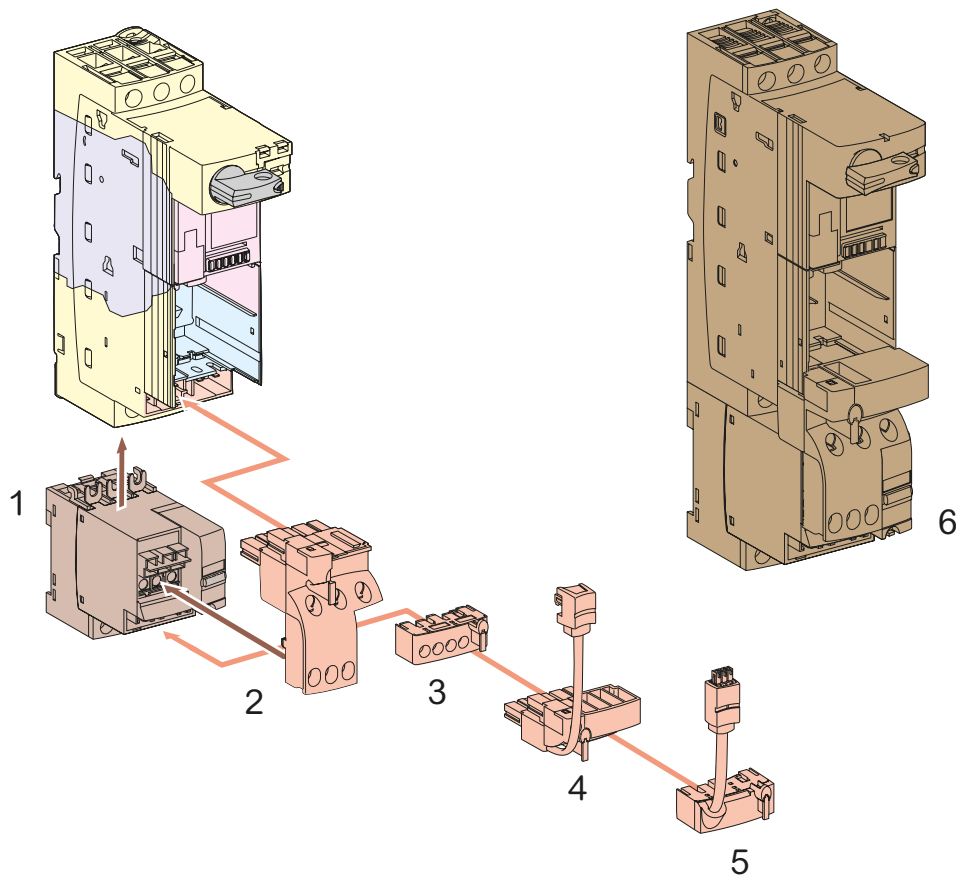
- 19- LU9BN11  
Terminal block for imbedded auxiliary contacts
- 20- LU9BN11C  
Coil terminal block with its connecting cable
- 21- LU9BN11L  
Coil terminal block with its connecting cable

### Additional contacts blocks

- 22- LUA1  
Additional contacts
- 24- LUA8  
side-mounting additional contacts

DB41445R.eps

Ultra motor starters



## Additional components overview

### Reverser block

- 1- LU2MB0●●  
vertical-mounting reverser block

### Evolving reversing power base

- 6- Pre-assembled reversing power base LU2B12

### Control terminal blocks

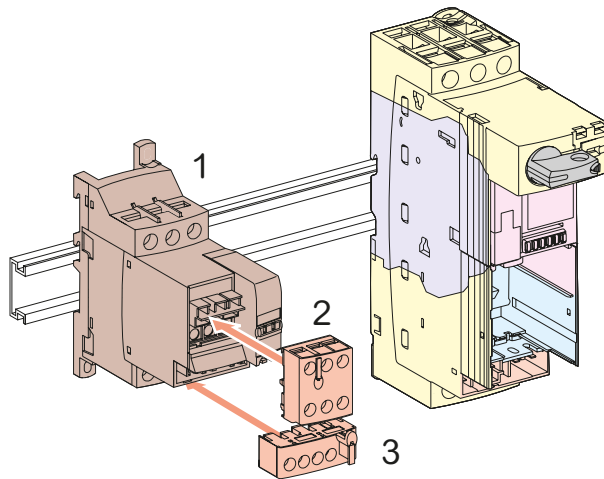
- 2- LU9MR1C  
Base/block assembling connector, with terminal block for imbedded auxiliary contacts
- 3- LU9M1  
Coil terminal block for wired control
- 4- LU9MRC  
Coil terminal block with its connecting cable for communicating control (only compatible with a selection of com. modules).
- 5- LU9MRL  
Coil terminal block with its connecting cable for communicating control (only compatible with a selection of com. modules).

# TeSys Control

## Ultra motor starters

### Introduction

DB414497 eps



Ultra  
motor  
starters

## Additional components overview

### Reverser block

- 1- LU6MB0●●  
Side-mounting reverser block

### Terminal blocks for electrical remote control

- 2- LU9MR1  
Terminal block for 2 direction control (pulse or maintained control)
- 3- LU9M1  
Terminal block for power base coil interlocking.  
With direction of rotation monitoring contacts

# TeSys Control

## Ultra motor starters - Power bases

### Product references



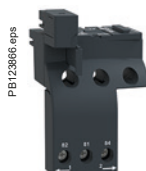
1 direction:  
LUB12, LUB32, LUB38



1 direction:  
LUB120, LUB320, LUB380  
\*LU9BN11: Terminal block  
for embedded auxiliary  
contacts to be ordered  
separately.



2 direction:  
LU2B12●●, LU2B32●●,  
LU2B38●●



LU9MR1C



LU2MB0●●



LU6MB0●●



LU9M1



LU9MR1

### Power bases

Ultra starters are composed with separate elements: power component + control units + auxiliary components.

The power base includes the electro mechanical parts. It is selected according to:

- Motor power to be handled
- Number of direction of rotation to be controlled: 1 or 2
- Type of control to be achieved: Basic or Advanced.

#### Basic control

- 1- direction rotation control
- 2 - direction rotation control
- Overload + Short circuit protection
- Main power monitoring
- Status signaling contacts

#### Advanced control

- Functions of basic control
- + Digital display of electrical values
- + Overload alarms
- + Network/bus communication

Function	Max motor standard power (400 V) kW	Lip_in (400 V) A	References	
			Basic ctrl	Advanced ctrl
1-direction rotation	5.5	12	LUB12	LUB120
	15	32	LUB32	LUB320
	18.5	38	LUB38	LUB380
2-direction rotation	5.5	12	LU2B12●● <sup>(1)</sup>	LUB120 + reverser block ass.
	15	32	LU2B32●● <sup>(1)</sup>	LUB320 + reverser block ass.
	18.5	38	LU2B38●● <sup>(1)(2)</sup>	LUB380 + reverser block ass.

(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

(2) With BL or FU code only.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

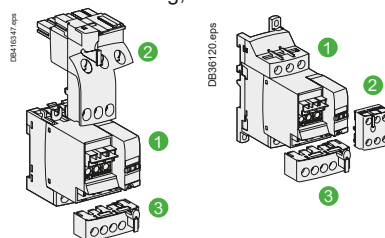
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### Reverser blocks - assemblies

A reverser block assembly has to be added to the power base (LUB120 to 380) to build an 'Advanced control' with '2-direction of rotation' Ultra starter.

Reverser blocks with 2 mounting possibilities:

- vertical mounting– mounted aspect: refer to LU2B12, 32, 38
- side mounting, on a Din rail.



Vertical mounting Side mounting

Blocks	References	
	Vertical mounting	Side mounting
1 Reverser block	LU2MB0●● <sup>(1)</sup>	LU6MB0●● <sup>(1)</sup>
2 Aux. contacts connector	LU9MR1C	LU9MR1
3 Coil supply connector	LU9M1	LU9M1

(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

### Main technical characteristics

#### Power bases

1-direction power base overall dimensions (HxWxD) : 154 x 45 x 126 mm

2-direction power base (assembly with vertical mounting reverser block) overall dimensions (HxWxD): 224 x 45 x 126 mm

Power bases are delivered with protective blanking plates.

3 power poles, for connections of a 1-phase or 3-phase motor

Screw clamp power terminals, for up to 2 x 6 mm<sup>2</sup> conductors

Screw clamp control terminals, for up to 2 x 1.5 mm<sup>2</sup> conductors

LUB12,32,38 imbedded terminals:

- coil supply,
- NO (13-14) contact (for control push button)
- NC (21-22) contact (for control push button).

Additional signaling contact modules provide more possibilities.

#### Reversing assemblies

LU2MB0, LU6MB0:

3 power poles, for connections of a 1-phase or 3-phase motor,

screw clamp power terminals, for up to 2 x 6 mm<sup>2</sup> conductors

LU9 connectors: screw clamp control terminals, for up to 2 x 1.5 mm<sup>2</sup> conductors

LU2MB0●●, LU6MB0●● provide terminals for power circuits.

LU9MR1C, LU9MR1 provide signalling contact terminals (82-81-84) that indicate the direction of rotation.

LU9M1 provides coil supply terminals (A2-A1-A3) and 2 NO contact terminals (A1-B1, A3-B3) for direction control.



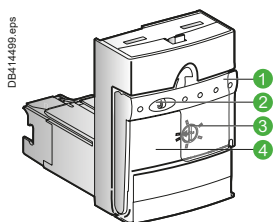
# TeSys Control

## Ultra motor starters - Control units

### Product references



LUCA, LUCB, LUCC, LUCD, LUCL series.  
Ex.: LUCA05BL



LUCA.....

- 1 Extraction and locking handle.
- 2 Sealing of locking handle.
- 3 Ir adjustment dial.
- 4 Locking of settings by sealing the transparent cover.

Ultra starters are composed with separate elements: power component + control units + auxiliary modules. The control unit includes electronic components and the current adjustment dial. The control unit is selected according to:

- Motor power to be handled.
- Type of protection: thermal+magnetic or magnetic only.

### Control units for power bases with basic control

#### LUCA - thermal + magnetic (standard) units

- Protection against overload: 14.2 x Ir (setting current).
- Protection against short circuit: 13 x Ir max (max setting current).
- Protection against missing or unbalanced phases.
- Protection against insulation fault (protection of equipment only).
- Class 10 tripping.
- Frequency 50...60 Hz.

#### LUCL - magnetic units

- Protection against short circuits.
- To be used when a standard power base is connected to a motor drive or a soft starter, as they provide the overload protection.

**Note:** both LUCA and LUCL units can be used in the advanced power bases LUB120 and LUB320.

Maximum standardized power ratings of 3 phases motors 50/60 Hz			Setting range	Lip in mounting on the power base - Rating	Control unit product reference <sup>(1)</sup>	
400/440 V	500 V	690 V			Thermal + magnetic	Magnetic
kW	kW	kW	A	A	LUCA	LUCL
0.09	-	-	0.15...0.6	12 and 32	LUCAX6●●	LUCLX6●●
0.25	-	-	0.35...1.4	12 and 32	LUCA1X●●	LUCL1X●●
1.5	2.2	3	1.25...5	12 and 32	LUCA05●●	LUCL05●●
5.5	5.5	9	3...12	12 and 32	LUCA12●●	LUCL12●●
7.5	9	15	4.5...18	32	LUCA18●●	LUCL18●●
15	15	18.5	8...32	32	LUCA32●●	LUCL32●●
18.5	18.5	22	9.5...38	38	LUCA38●● <sup>(2)</sup>	LUCL38●● <sup>(2)</sup>

<sup>(1)</sup> Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

<sup>(2)</sup> With BL or FU code only.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

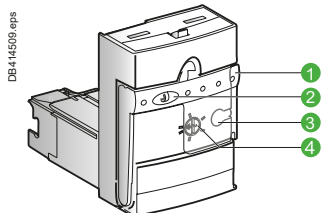
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# TeSys Control

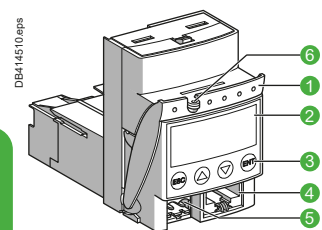
## Ultra motor starters - Control units

### Product references



LUCB●●●●, LUCC●●●●, LUCD●●●● control units

- 1 Extraction and locking.
- 2 Handle sealing of locking.
- 3 Handle
- 4 Ir adjustment dial test push button.



LUCM●●BL control unit

- 1 Extraction and locking handle.
- 2 Built-in LCD display (2 lines, 12 characters).
- 3 4 button keyboard.
- 4 RJ45 connector for RS485 Modbus communication
- 5 Connector for external 24 V DC power supply.
- 6 Sealing of locking handle.

Ultra motor starters



### Control units for power bases with advanced control

#### LUCB, LUCC, LUCD control and diagnostic units

Motor protection, fault diagnostic.

Protection against

- overload: 14.2 x Ir (setting current).
- Simulation of an overload by depressing the test push button.
- short circuit: 13 x Ir max (max setting current).
- missing or unbalanced phases.

Overload alarm management:

- locally: with one of the LUF family module
- Remotely: with LULC031, LULC033, LULC07, LULC08, LULC09 or LULC15 (thermal alarm only) communication module.

Reset:

- manual
- automatic, with a communication module.

#### LUCM multifunctional control unit

Motor protection, operational values display and diagnostic.

To be associated with 24 V DC coil only.

LUCM●●BL: tripping class 5 to 30, single phase, three phase

Same functions as LUCB●●●● with complementary functions:

- in working mode: display of electrical values, setting parameters and events
- in configuration mode: display of protection and alarm settings.

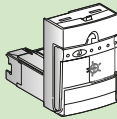
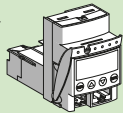
These functions are available for local display on a display panel, and for remote display via a RJ45 Modbus connector.

**LUCM is not compatible with LUB38.**

*Note: a 24 V DC power supply is required during the configuration process.*



LUCM12BL

Maximum standardized power ratings of 3 phases motors 50/60 Hz				Lip_in mounting on the power base - Rating	DBA14469 eps 	Protection type: - overload - short-circuit - Main power fault - alarm			DBA14504 eps 
400/440 V	500 V	600 V	Setting range			Multifunctional			
kW 1P 3P	kW 3P	kW 3P	A	A	Class 10 3P	Class 10 1P	Class 20 3P	Class 5...30 1 - 3P	
- 0.09	-	-	0.15...0.6	12 and 32	LUCB6●●	LUCC6●●	LUCD6●●	LUCM6BL	
0.09 0.25	-	-	0.35...1.4	12 and 32	LUCB1X●●	LUCC1X●●	LUCD1X●●	LUCM1XBL	
0.55 1.5	2.2	3	1.25...5	12 and 32	LUCB05●●	LUCC05●●	LUCD05●●	LUCM05BL	
2.2 5.5	5.5	9	3...12	12 and 32	LUCB12●●	LUCC12●●	LUCD12●●	LUCM12BL	
4 7.5	9	15	4.5...18	32	LUCB18●●	LUCC18●●	LUCD18●●	LUCM18BL	
7.5 15	15	18.5	8...32	32	LUCB32●●	LUCC32●●	LUCD32●●	LUCM32BL	
18.5 18.5	22	9.5...38	38		LUCB38●● <sup>(1)</sup>		LUCD38●● <sup>(1)</sup>		

Cial. ref. of the control unit: replace dots by the coil code.

*Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.*

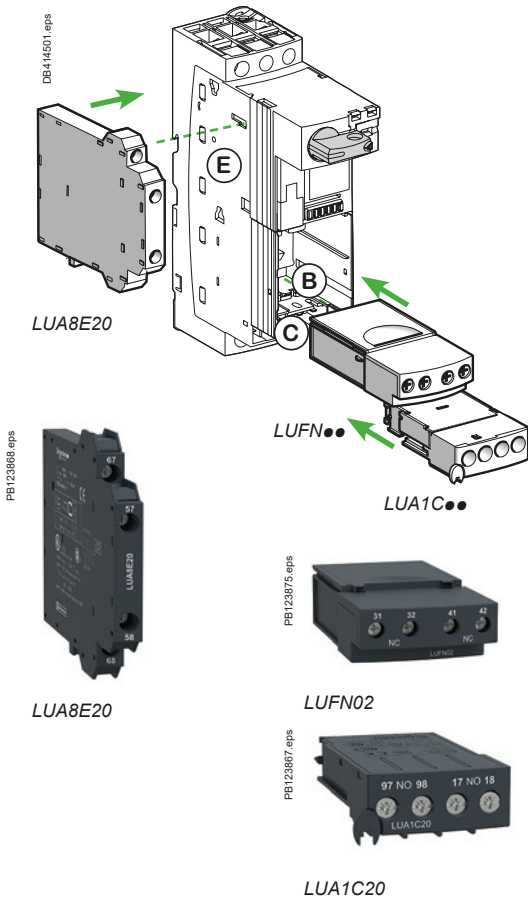
Coil voltage (V)	24---	24~	48...72 --- and 48~	110...220 --- and 110...240~
Coil code	BL	B	ES	FU

<sup>(1)</sup> With BL or FU code only.

# TeSys Control

## Ultra motor starters - Signaling Modules/Blocks - Function modules

### Product references



### Signaling module and blocks

They provide dry contacts of Normally Open (NO) or Normally Closed (NC) type for signaling purpose. The monitored status can be either the motor running status or the protection device status, depending on the commercial reference of the module or block.

#### Common electrical characteristics

Standard operating voltage: 24...250 V AC/DC.  
Maximum current: 5 A.

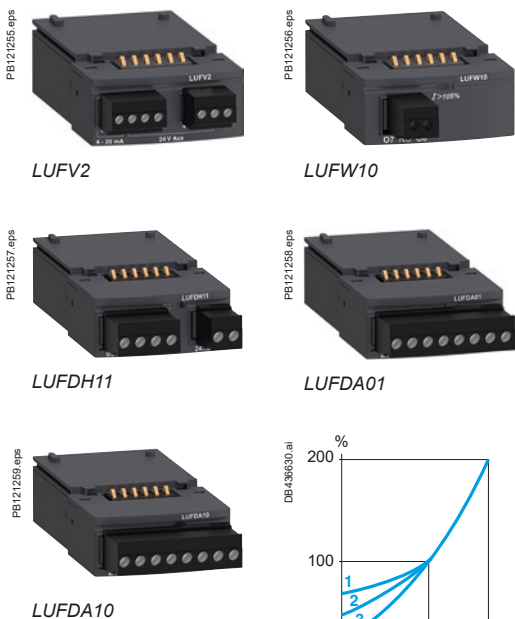
#### Compatibility - Positioning

The signaling module and blocks can be used in any power base. LUA8E20 is clipped on the E side of the power base. LUFN11, LUFN02, LUFN02 inserted into B cavity. LUA1C20, LUA1C11 inserted into C cavity.

**Note:** B and C cavities may be already used for reverser-starter, communication.

Signaling module and blocks	Output	References
Module	1 NO + 1 NC	LUFN11
Motor running status: ON / OFF	2 NC	LUFN02
	2 NO	LUFN20
Block	2 NO	LUA1C20
Protection status: OPEN / CLOSED (OF) STANDBY / TRIPPED (SD)	1 NO + 1 NC	LUA1C11
	2 NO	LUA8E20
Side block	2 NO	LUA8E20
Protection status: OPEN / CLOSED (OF)		

Ultra motor starters



### Function modules

They provide analog output or dry contacts of Normally Open (NO) or Normally Closed (NC) type for measurement or signaling purpose.

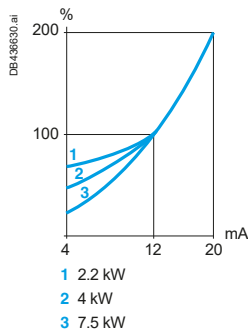
#### Common electrical characteristics

Standard operating voltage: 24...250 V AC/DC.  
Maximum current: 5 A.

#### Compatibility - Positioning

The function modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

Function modules	Output type	References
Electrical value: average current in each phase. The signal is the image of the percentage of $I_n$ . External 24 V DC power supply needed	Analog: 4-20 mA	LUFV2
Contact closes if average current in the phases = 105 % of $I_n$	1 NO	LUFW10
Contacts change state if tripping is caused by overload	1 NO + 1 NC	LUFDH11
Contact opens if overload tripping is reset with control pad or remotely	1 NC	LUFDA01
Contact closes if overload tripping is reset with control pad or remotely	1 NO	LUFDA10



LUFV2 typical response curve

Characteristics: pages A4/50 to A4/54

Schemes: pages A4/64 to A4/66

# TeSys Control

## Ultra motor starters - Communication modules

### Product references



LUFC00

PB121260.eps

Ultra motor starters



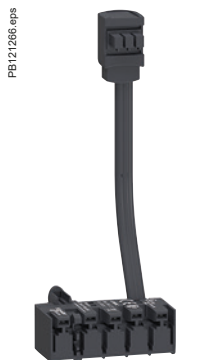
LULC033



LULC07



LU9BN11C



LU9MRC

PB121261.eps



ASILUFC51



LULC15



LU9BN11L



LU9MRL

PB121262.eps

### Auxiliary parallel wiring module <sup>(1)</sup>

#### Auxiliary parallel wiring module for Modicon Telefast system

##### Inputs

They collect the FWD, REV controls from an automation process. An RJ45 parallel port is used, for connection to the 24 V DC outputs of a PLC.

##### Outputs

They give the position of the control pad and the state of the poles. They provide 24 V DC controls to the LUB120, 320 or 380 power base coil via the LU9BN11C adapter (A2, A1) or to the LU2B12, 32, 38 power base coil with a LU9MRC adapter (A2, A1, A3).

#### Compatibility - Positioning

The parallel wiring module can only be used in any Ultra power base, with **LUC●●● control unit with coil voltage**

Compatible with:

- Modicon TM3 (map I/O controllers for RJ45 M221, M241, M25)
- Modicon STB modules (I/O for automation island)
- Modicon Telefast (interfaces RJ45/HE10).

The parallel wiring module is inserted in cavity B.

*Note: the parallel wiring module must be connected to a LU9G02 or LU9G03 Telefast distribution*

*Note: more details on parallel wiring page A4/16.*

Designation	References
Ultra power base parallel wiring module	LUFC00

### Communication modules

#### Communication modules

These modules send the control pad position and pole state to a communicating system (PLC, monitoring system,...)

They collect the Forward, Reverse motor controls from an automation process.

The status and controls are coded according to an industrial communication protocol, depending on the communication module.

Bus cable connection, external power supply by crew clamp terminals.

Connector for coil control (to A1-A3-A2) via a prewired connection (LU9BN● for 1-direction control, LU9MR● for 2-direction control)

#### Compatibility - Positioning

The communication modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

Designation	References
Ultra Modbus communication module	LULC033
Ultra AS-Interface communication module	ASILUFC51
Ultra Profibus DP communication module	LULC07
Ultra CANopen communication module	LULC08
Ultra DeviceNet communication module	LULC09
Ultra Advantys STB communication module	LULC15

*Note: Ethernet communication can be achieved with LULC033 + ConneXium Port (ref. TCSEQM113M13M)*

*Note: more details on bus-type communication page A4/21.*

### Prewired connectors

They provide the necessary electrical link between a parallel or communication module and the coil supply connector, on the power base or reverser block. Thus, ON-OFF (1 direction) or FORWARD-REVERSE (2 direction) controls can be achieved.

Prewired connection	References	Compatibility with modules
1 direction    Short cable	Side connection    LU9BN11C	LUFC00, LULC033, ASILUFC51
	Bottom connection    LU9BN11L	LULC07, 08, 09, 15
2 direction    Long cable	Side connection    LU9MRC	LUFC00, LULC033, ASILUFC51
	Bottom connection    LU9MRL	LULC07, 08, 09, 15

Introduction: pages A4/16 to A4/19, A4/21 to A4/23

Characteristics: pages A4/24 to A4/29, A4/51 to A4/55

Schemes: pages A4/66 to A4/69



# TeSys Control

## Ultra motor starters - Parallel-type cabling systems

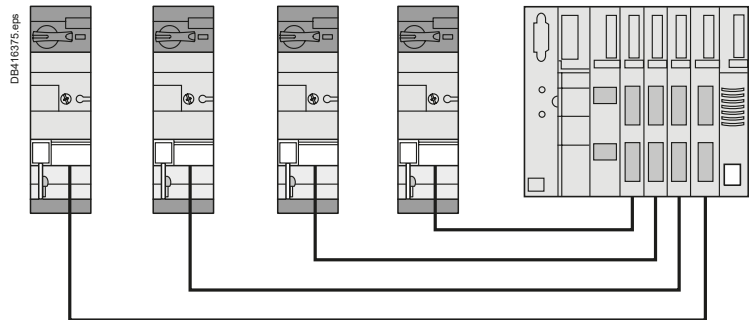
### Introduction

PB 106098 eps



Ultra motor starters

#### Point-to-point wiring

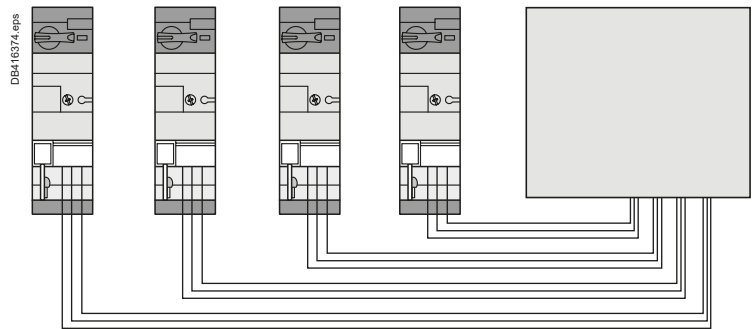


- The control inputs and signaling outputs of the starter are grouped in a single socket, usually RJ45. They are individually connected to PLC outputs and inputs.
- The wires run in parallel in a multicore cable equipped with a multipin connectors, RJ45 in the case of Telefast type system.
- 3 parallel wiring systems are available:
  - Modicon TM3, based on a RJ45 I/O module for M221, M241, M25 PLC
  - Modicon STB, based on I/O modules for automation island
  - Modicon Telefast: RJ45 / HE10 interfaces.
- Simple way of proximity wiring. Quick cabling. It is suitable for machine control panels when a large number of Ultra starter-controller are installed.

### Informations

- The control and signaling terminals of the starters are connected to the output and input terminals of a PLC. No specific connectors or cables are required.
- Conventional wiring mode, without optimization of the cabling time. May be suitable when a very small number of starters is used, with a very small number of links.

#### Parallel cabling systems



# TeSys Control

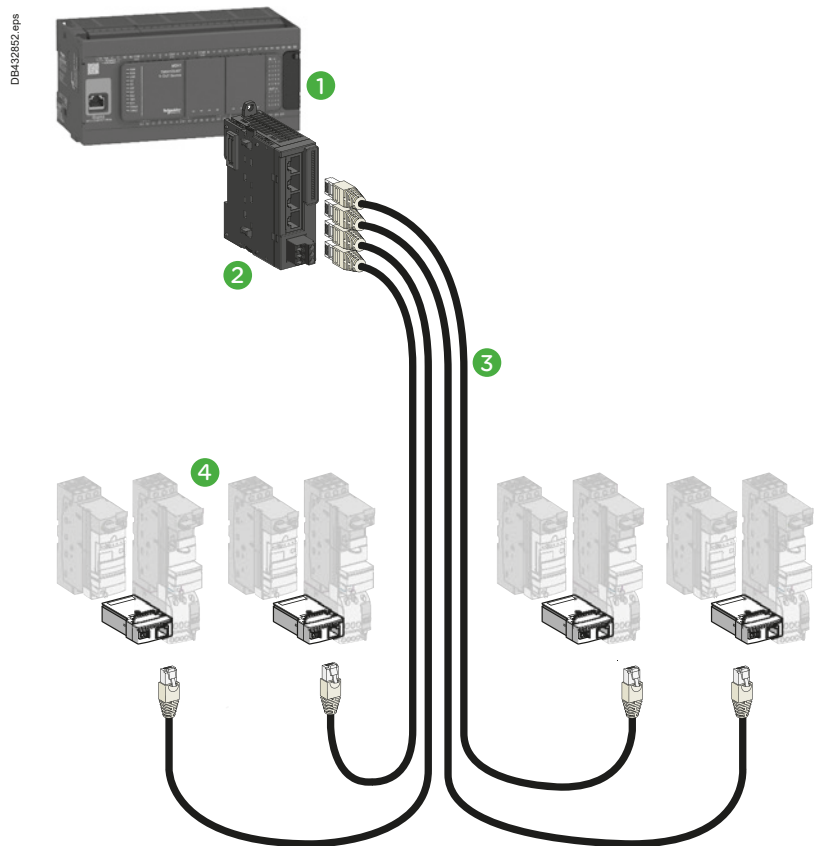
## Ultra motor starters - Parallel-type cabling systems

### Introduction

#### Integration in the Modicon TM3 wiring system

The Ultra starter-controller are directly connected to a I/O module equipped with RJ45 connectors.

- 1 Modicon M221, M241, M251 PLC's
- 2 TM3XTY I/O module for 4 starters
- 3 LU9R●● cables with RJ45 connectors,
- 4 LUFC00 module for TeSys Control parallel connection (1 or 2 direction of rotation).



Ultra  
motor  
starters

# TeSys Control

## Ultra motor starters - Parallel-type cabling systems

### Introduction

#### Integration in the Modicon Advantys STB system

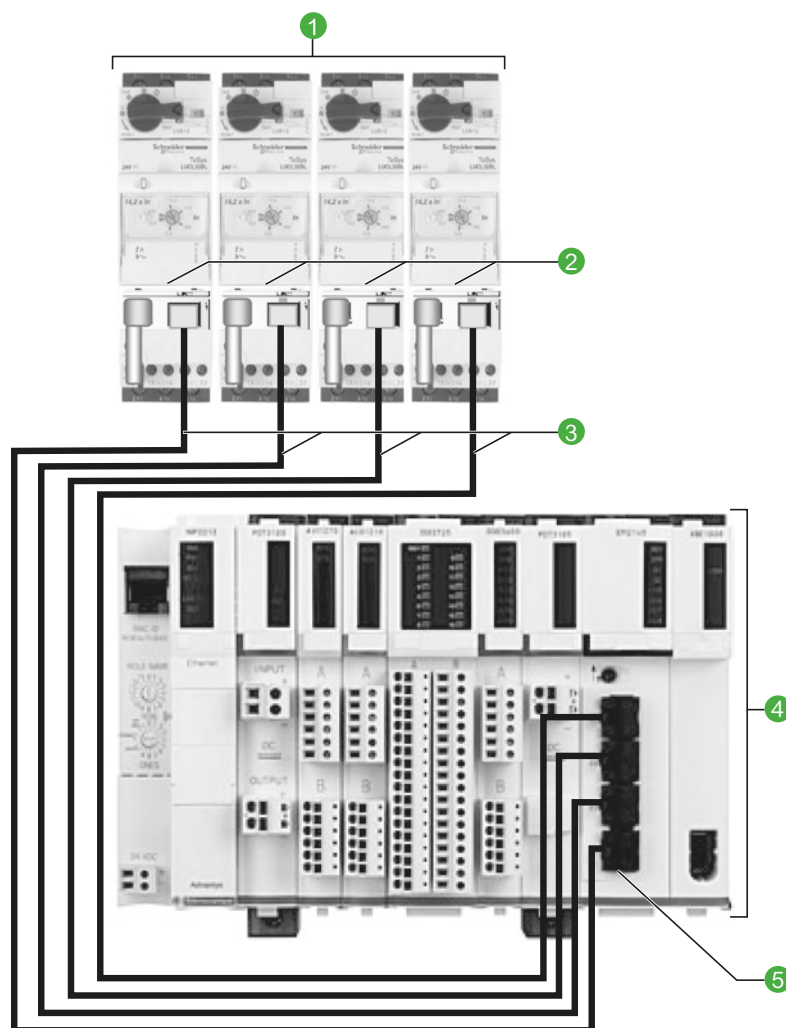
Advantys STB is a solution for remote I/O modules.

These communicate with the Modicon PLCs range thanks to a serial liaison, using the Advantys STB protocol.

In this example an Advantys I/O module is used to facilitate wiring.

Each of its four terminals receives a preassembled RJ45 cable connected to a Ultra starter-controller.

- 1 Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC●●●●BL control modules)
- 2 TeSys Control module for parallel RJ45 wiring: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
- 3 RJ45 cables (2 connectors):  
≤ 3 m: LU9R●●  
> 3 m: 490 NTW000●● (5, 12, 40 or 80 m)
- 4 PLC: Modicon range
- 5 I/O Modicon Advantys module: STB EPI 2145K





# TeSys Control

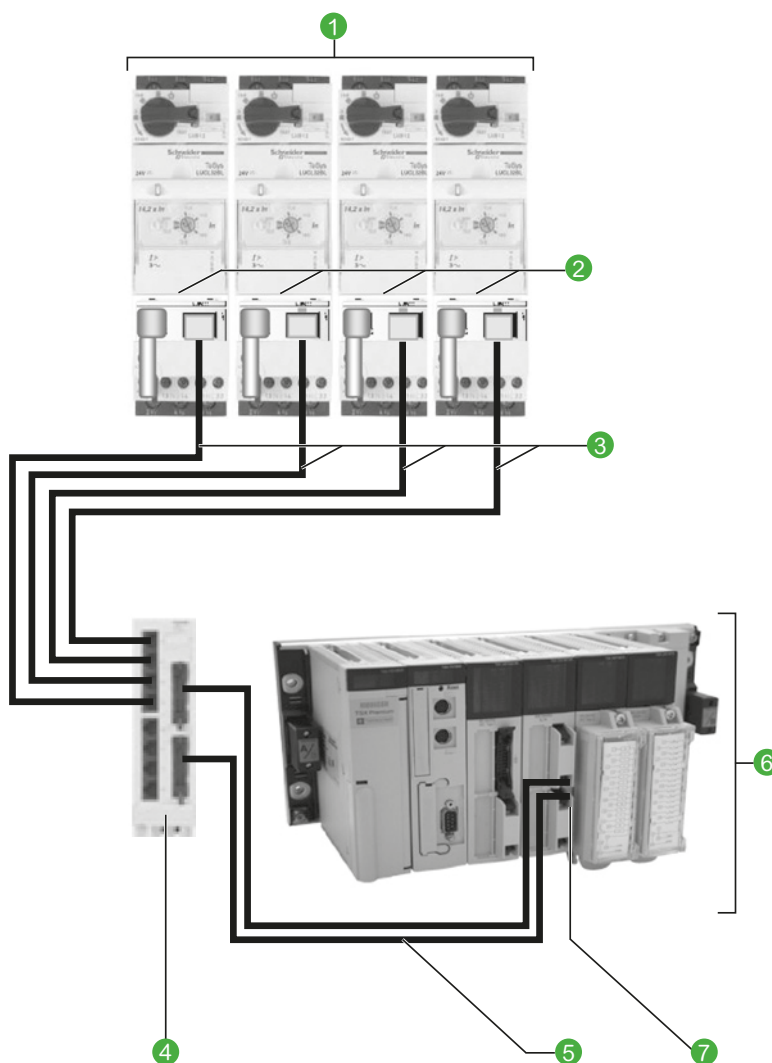
## Ultra motor starters - Parallel-type cabling systems

### Introduction

#### Integration in the Modicon Telefast system

The wiring hubb **LU9G0** facilitates the connection to Modicon Premium PLCs. It adapts RJ45 connectors to HE10 available on the Telefast I/O modules. Connection: up to 8 Ultra per hubb.

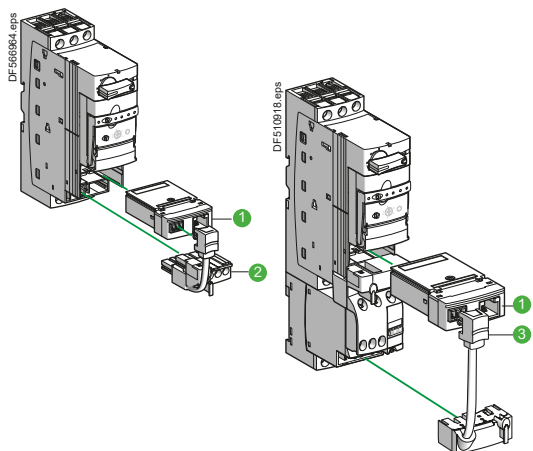
- 1 Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC...BL control units)
- 2 TeSys Control module for parallel wiring RJ45: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
- 3 RJ45 cables (2 connectors):  
≤ 3 m: LU9R...  
> 3 m: 490 NTW000... (5, 12, 40 or 80 m)
- 4 Telefast RJ45 / HE10 splitter box: LU9G02 or LU9G03 (different Ultra connection capacities)
- 5 HE10 cables (2 connectors): TSXCDP...
- 6 PLC: Modicon Premium range
- 7 I/O module: TSX DMY 28FK



# TeSys Control

## Ultra motor starters - Parallel-type cabling systems

### Product references



Components for connection of a starter - 1 direction of rotation	
Designation	Reference
1 Parallel connection module, RJ45 output 2 coil control inputs, 3 signal outputs	LUFC00
2 Pre wired connector, one direction of rotation, for LUB120, 320 or 380 power base coil connection and one contact for emergency stop	LU9BN11C

Components for connection of a starter - 2 directions of rotation	
Designation	Reference
1 Parallel connection module, RJ45 output	LUFC00
3 Pre wired connector, 2 directions of rotation, for LU2B12, 32 or 38 power base coil connection and one contact for emergency stop	LU9MRC

Ultra motor starters

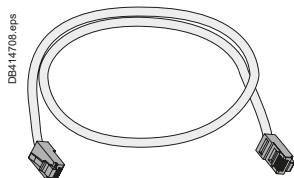


LU9G02



LU9G03

Telefast RJ45/ HE10 splitter box	
Designation	Reference
Splitter box Connection to U: 4 RJ45 connectors: for 1 to 4 U, 1 or 2 directions 4 RJ45 connectors: for 1 to 4 U, 1 direction Connection to PLC: 1 x HE10 connector - 20 channels, for pole status, alarms 1 x HE10 connector - 20 channels, for control. 24 V DC auxiliary power supply required	LU9G02
Splitter box Connection to U: 8 RJ45 connectors: for 1 to 8 U, 1 or 2 directions Connection to PLC: 1 x HE10 connector - 20 channels, for pole status, alarms 1 x HE10 connector - 20 channels, for control. 24 V DC auxiliary power supply required.	LU9G03



RJ45 cables.

RJ45 connection cables, with 2 RJ45 connectors	
0.3 m	LU9R03
1 m	LU9R10
3 m	LU9R30

HE10 connection cables, with 2 HE10/20 way connectors	
Section: AWG 22 / 0.324 mm <sup>2</sup>	
0.5 m	TSXCDP053
1 m	TSXCDP103
2 m	TSXCDP203
3 m	TSXCDP303
5 m	TSXCDP503
Section: AWG 28 / 0.080 mm <sup>2</sup> (flat cable)	
1 m	ABFH20H100
2 m	ABFH20H200
3 m	ABFH20H300

Cable with stripped wires (PLC side) 1 x HE10/20 ways connector (Splitter box side)	
Section: AWG 22 / 0.324 mm <sup>2</sup>	
3 m	TSXCDP301
5 m	TSXCDP501

# TeSys Control

## Ultra motor starters - Bus-type cabling systems

### Introduction

PB105992.eps



## > Application functionality, topology

### 1 Geographically expanded process

Many motors are scattered on the site, the process control requires individual control to ensure safety and proper operation. Ultra is a suitable communicating actuator. The integration of a bus communication module in the starter-controller saves space in the control board and simplifies wiring, compared to solutions based on conventional components (circuit breaker + contactor).

### 2 Application: automatic motor control / monitoring

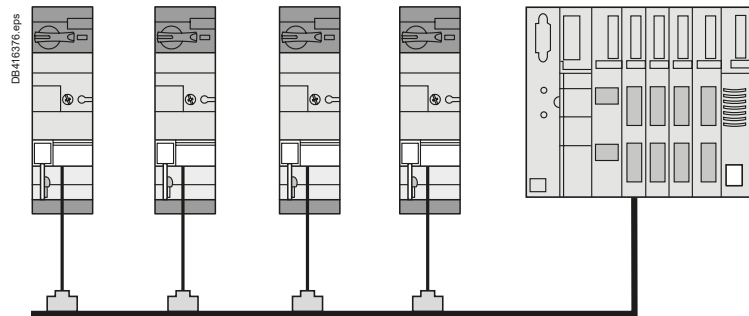
Thanks to a communication bus, starter-controllers are part of an automation system controlled by a PLC and (or) various communicating controllers. These equipment can then share the status and alarm information related to each motor control and perform specific treatments.

### 3 Bus-type connection

This type of connection allows different topologies (star, ring ...) and supports various protocols dialogue. It is therefore recommended for geographically expanded process, in order to to simplify wiring and ensure multiple-controller management.

Ultra motor starters

- The bus wiring interconnects Ultra starters controllers and components of the installation via a single the cable.
- Commands and status are coded according to the selected protocol and transmitted on the communication bus.
- This wiring is simple, usually a shielded (or not) pair of wires, suitable for monitored automation, regardless of the number of Ultra and their locations.



### Available Ultra status and controls via a communication module

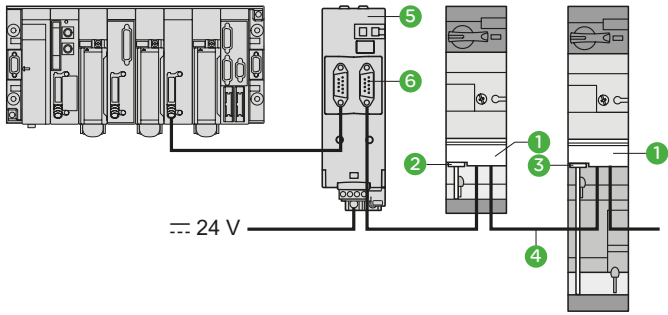
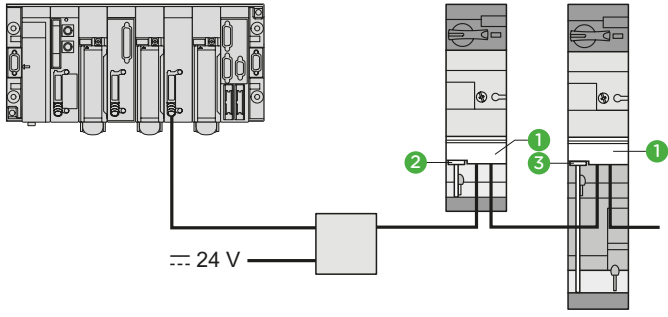
Control unit	LUCA	LUCB LUCC LUCD	LUCM
Starter status (ready, running, fault)	■	■	■
Start and Stop commands	■	■	■
Thermal overload alarm		■	■
Remote reset via the bus		■	■
Indication of motor load		■	■
Fault signalling and differentiation		■	■
Remote programming and monitoring of all functions			■
"Log" function			■
"Monitoring" function			■
Alarms (overcurrent, ...)			■



# TeSys Control

## Ultra motor starters - Bus-type cabling systems

### Introduction

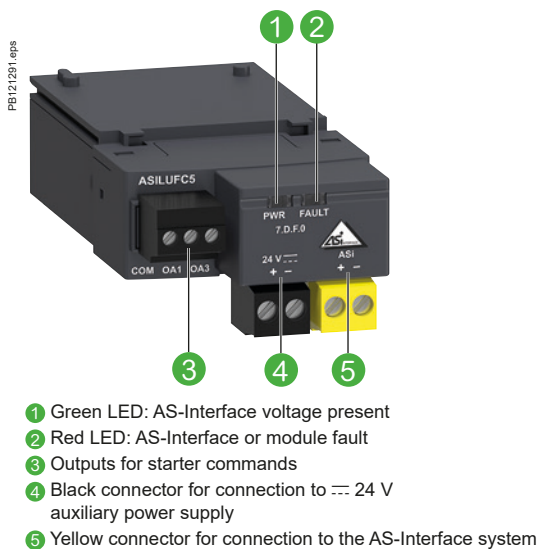
Network	Architecture	Component references
<p><b>Profibus-DP (Decentralized Peripherals)</b></p> <p>is used for connecting actuators and sensors to a central controller for applications in industrial production. The standard bus provides a number of diagnostic means</p> <p>Details page <a href="#">A4/28</a></p>		<ul style="list-style-type: none"> <li>① LULC07</li> <li>② LU9BN11L</li> <li>③ LU9MRL</li> <li>④ LU9RPB010 LU9RPB100 LU9RPB400</li> <li>⑤ LU9AD7</li> <li>⑥ LU9GC7</li> </ul>
<p><b>DeviceNet</b></p> <p>Details page <a href="#">A4/29</a></p>		<ul style="list-style-type: none"> <li>① LULC09</li> <li>② LU9BN11L</li> <li>③ LU9MRL</li> </ul>

Ultra motor starters

# TeSys Control

## Ultra motor starters - AS-Interface communication modules

### Product references



The ASILUFC5 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via DeviceNet bus. The LULC09 communication module is slave type.

### Module Specifications

#### I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors
- 1 x 24 V DC output - 0.5 A local auxiliary command.

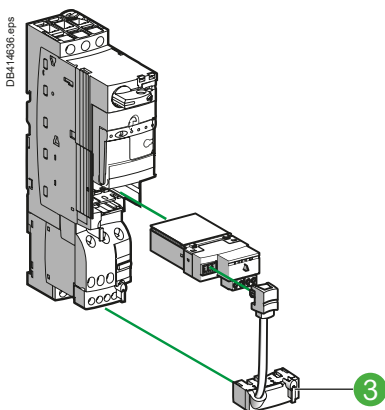
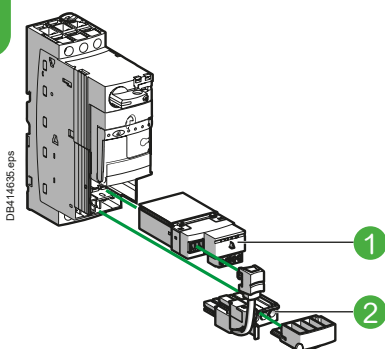
#### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For AS-Interface bus.

#### Signaling

- Module Status - Error - 24 V, by LED.

Ultra motor starters



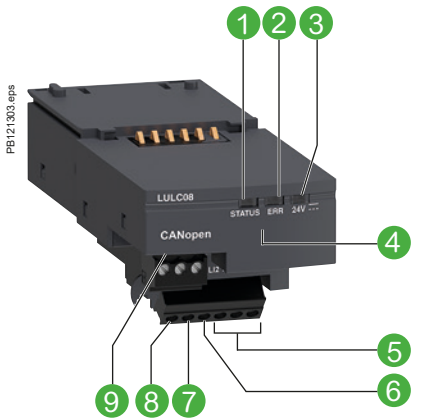
### Tesys Control components

Description	Mark	Max number of slaves	References
AS-Interface communication module	1	31	ASILUFC5
		62	ASILUFC51
Pre-wired connector: coil - LUB powerbase	2	-	LU9BN11C
Pre-wired connector: coil - LU2B powerbase	3	-	LU9MRC

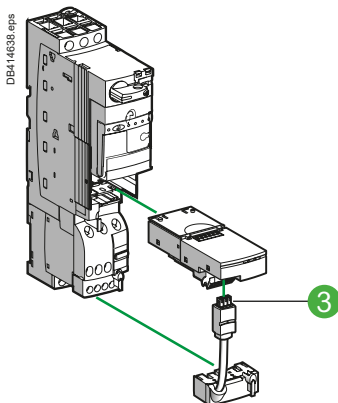
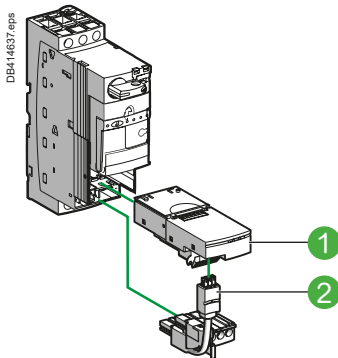
# TeSys Control

## Ultra motor starters - CANopen communication module

### Product references



- 1 LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating 24 V supply ON for outputs OA1, OA3 and LO1
- 4 SUB-D connector for bus link
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter commands



The LULC08 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via CANopen bus. The LULC08 communication module is slave type.

### Module Specifications

#### I/O terminal block

- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

#### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For CANopen bus.

#### Signaling

- Module Status - Error - 24 V, by LED.

### Tesys Control components

Description	Item	References
CANopen communication module	1	LULC08
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

### Compatibility of CANopen communication module with control units

LUCA ●●BL / B ●●BL / C ●●BL / D ●●BL	All versions marketed after 2T0481 <sup>(1)</sup>
LUCM●●BL	All versions ≥ V3.2
LUCMT1BL	All versions ≥ V3.2

(1) This "date code" is made up as follows:  
 2T or 2C: factory code.  
 04, 05, 06 and so on: year of manufacture.  
 08: week.  
 1: 1st day of the week.

### How to get information on the design of a CANopen architecture and the choice of network accessories

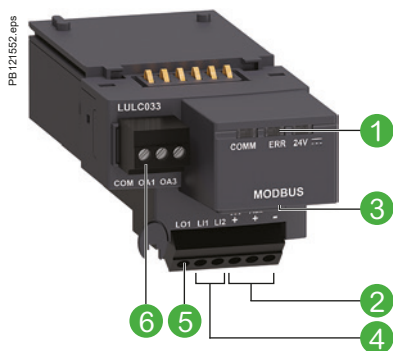
Consult the library of downloadable documents on [schneider-electric.com](http://schneider-electric.com) by searching on the name of the communication protocol.

# TeSys Control

## Ultra motor starters - Modbus communication module

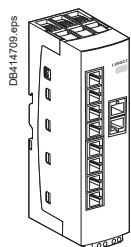
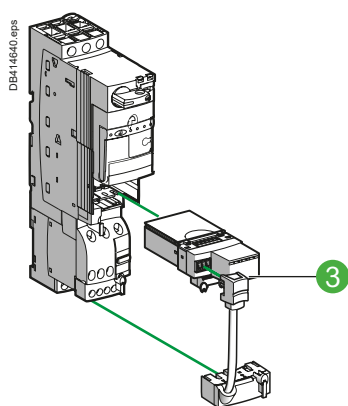
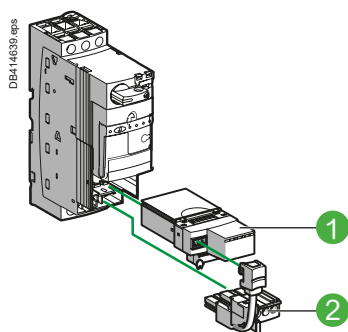
### Product references

#### LULC033



- 1 Module status signalling LED
- 2 24 V supply connection
- 3 RJ45 connector for RS485 Modbus link
- 4 2 discrete inputs
- 5 1 discrete output
- 6 Outputs for starter commands

Ultra motor starters



LULC033 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via Modbus.

### Module Specifications

#### I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors (on LULC033 only)
- 1 x 24 V DC output - 0.5 A local auxiliary command.

#### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- RJ45, For Modbus line.

#### Signaling

- Module Status - Error - 24 V, by LED.

### Tesys Control components

Description	Item	Bin. input	References
Modbus communication module	1	2	LULC033
Pre-wired connector: coil - LUB powerbase	2	-	LU9BN11C
Pre-wired connector: coil - LU2B powerbase	3	-	LU9MRC

### Modbus hub

Description	Length (m)	References
Modbus communication distributor	-	LU9GC3
Cables fitted with 2 x RJ45 connectors	0.3	VW3A8306R03
	1	VW3A8306R10
	3	VW3A8306R30
Tees derivations	0.3	VW3A8306TF03
	1	VW3A8306TF10

Description	References
RS 485 line terminator	VW3A8306R

### Compatibility of Modbus communication modules

Communication modules (software version)		LULC033 from V2.1	LULC033 from V2.2
Power base	LUB●● / LU2B●2	■	■
	LUTM●●BL	■	■
Control unit	LUCA●●BL		■
	LUCB●●BL		■
	LUC●●BL		■
	LUCD●●BL		■
	LUCM●●BL		■ <sup>(1)</sup>
	LUCBT●●BL	■	
	LUCDT●●BL	■	
	LUCMT●●BL	■	

(1) Except LUCM●●BL V1.04 and V1.06.

### How to get information on the design of a Modbus architecture and the choice of network accessories

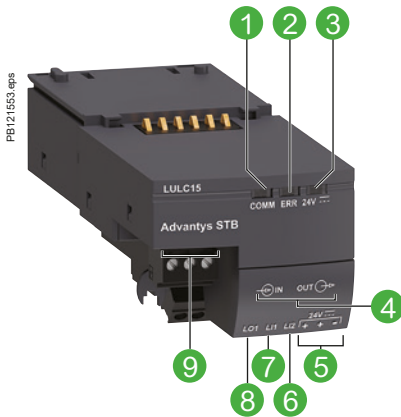
Consult the library of downloadable documents on [schneider-electric.com](http://schneider-electric.com) by searching on the name of the communication protocol.



# TeSys Control

## Ultra motor starters - Advantys STB communication module

### Product references



- 1 Two-colour LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating that 24 V supply is ON
- 4 Bus connectors
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter commands

Communication module LULC15 allows direct connection of Ultra starter-controllers and controllers on an Advantys STB island, between two segments or at the end of a segment. The starter-controller will then be able to make use of the services provided by Advantys STB: self-addressing, autobaud, fallback positions.

### Module Specifications

#### I/O terminal block

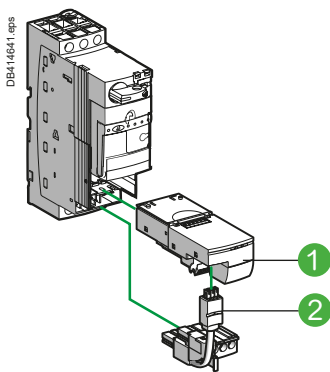
- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors (on LULC033 only)
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

#### Connectors

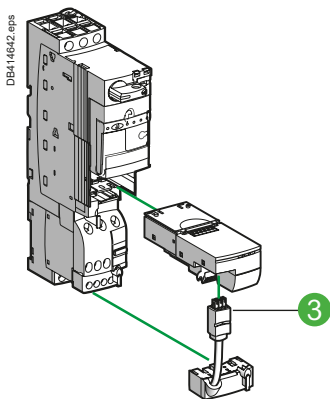
- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For Advantys STB bus.

#### Signaling

- Com - Error - 24 V, by LED.



LUB + LULC15 + LU9BN11L



LU2B + LULC15 + LU9MRL

### Tesys Control components

Description	Item	References
Advantys STB communication module	1	LULC15
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

### Cables

Description	Length (m)	References
Cables fitted with connectors, one straight and one elbowed	0.3	LU9RCD03
	1	LU9RCD10
	5	LU9RCD50
Cables fitted with two straight connectors	0.3	LU9RDD03
	3	LU9RDD30

### Compatibility of Advantys STB communication module with control units

LUCA●●BL / B●●BL / C●●BL / D●●BL	All versions marketed after 2T0481 <sup>(1)</sup>
LUCM●●BL	All versions ≥ V3.2
LUCMT1BL	All versions ≥ V3.2

(1) This "date code" is made up as follows:  
 2T or 2C: factory code.  
 04, 05, 06 and so on: year of manufacture.  
 08: week.  
 1: 1st day of the week.

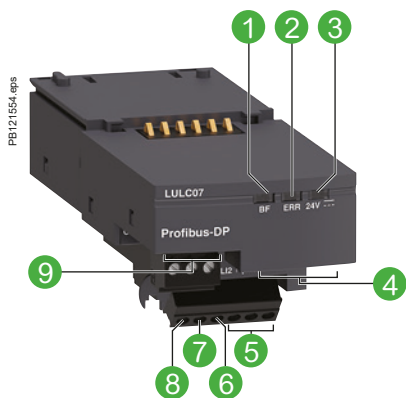
### How to get information on the design of a Advantys STB architecture and the choice of network accessories

Consulter la librairie des documents téléchargeables sur le site [schneider-electric.com](http://schneider-electric.com) en faisant une recherche sur le nom du protocole de transmission.

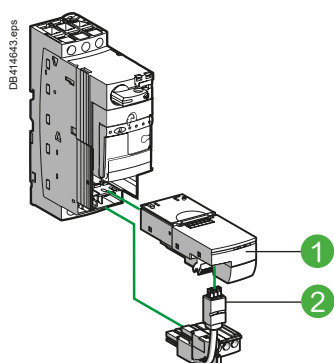
# TeSys Control

## Ultra motor starters - Profibus DP communication module

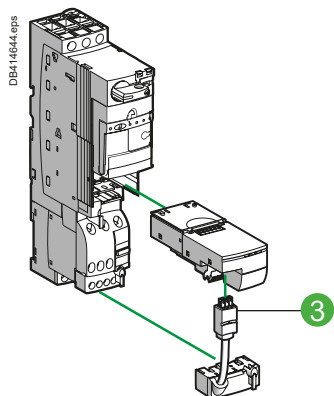
### Product references



- 1 Two-colour LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating 24 V supply ON for outputs OA1, OA3 and LO1
- 4 SUB-D connector for bus link
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter-controller commands (non-reversing and reversing)



LUB + LUC...BL + LULC07 + LU9BN11L



LU2B + LUC...BL + LULC07 + LU9MRL

When used in conjunction with the power base and control unit, communication module LULC07 allows Ultra starter-controllers to be controlled via Profibus DP (Deported Periphery) bus. Communication module LULC07 is of the slave type.

### Module Specifications

#### I/O terminal block

- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A auxiliary command.

#### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For Profibus DP bus.

#### Signaling

- Com - Error - 24 V, by LED.

### TeSys Control components

Description	Item	References
Profibus DP communication module	1	LULC07
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

### Components for connection to the bus and to the installation

The 24 V DC -Aux supply to Profibus DP modules LULC07 must pass through power supply module LU9GC7.

LULC07 modules must be connected to the LU9GC7 splitter box in order to be powered.

The number of Ultra starter-controllers that can be powered by an LU9GC7 module is limited by the maximum current (1.5 A) which it can deliver.

The 24 V supply for the inputs/outputs must be provided separately..

Description	Length (m)	References
Profibus DP power supply module	-	LU9GC7
Profibus DP connector	-	LU9AD7
Profibus DP cables 2-wire	100	TSXPBSCA100
	400	TSXPBSCA400
Profibus DP cables 4-wire	10	LU9RPB010
	100	LU9RPB100
	400	LU9RPB400

### How to get information on the design of a Profibus DP architecture and the choice of network accessories

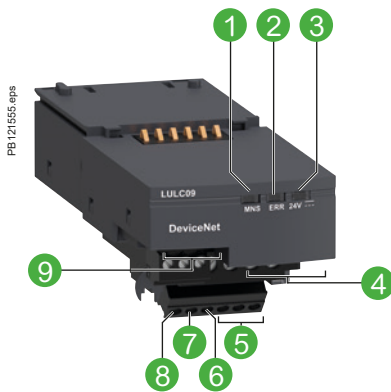
Consult the library of downloadable documents on [schneider-electric.com](http://schneider-electric.com) by searching on the name of the communication protocol.



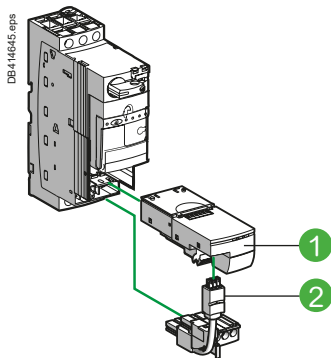
# TeSys Control

## Ultra motor starters - DeviceNet communication module

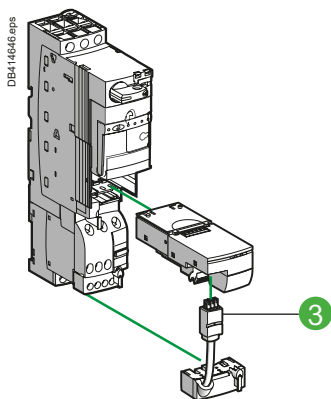
### Product references



- 1 LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating  $\overline{\text{24 V}}$  supply ON for outputs OA1, OA3 and LO1 and 24 V bus
- 4 DeviceNet connector for bus link
- 5  $\overline{\text{24 V}}$  supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter-controller commands (non-reversing and reversing)



LUB + LUC●●●BL + LULC07 + LU9BN11L



LU2B + LUC●●●BL + LULC07 + LU9MRL

When used in conjunction with the power base and control unit, communication module LULC09 allows Ultra starter-controllers to be controlled via DeviceNet bus. Communication module LULC09 is of the slave type.

### Module Specifications

#### I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors
- 1 x 24 V DC output - 0.5 A local auxiliary command.

#### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For DeviceNet bus.

#### Signaling

- Com - Error - 24 V , by LED.

### Tesys Control components

Description	Item	References
DeviceNet communication module	1	LULC09
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

### How to get information on the design of a DeviceNet architecture and the choice of network accessories

Consult the library of downloadable documents on [schneider-electric.com](http://schneider-electric.com) by searching on the name of the communication protocol.

# TeSys Control

## Ultra motor starters - LUF communication gateways

### Product references

PB 121517 eps



LUF9

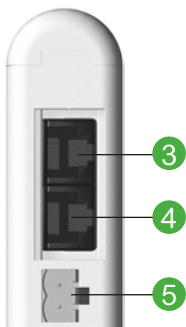
Ultra motor starters



DF526109-17-M eps



561512 eps



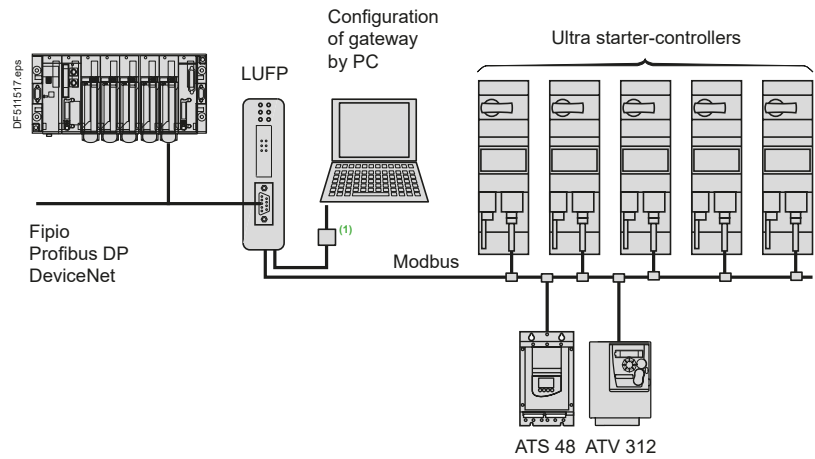
### Introduction

LUF communication gateways allow connection between the Modbus serial link and Fipio, Profibus DP or DeviceNet field buses.

After configuration, these gateways manage information which can be accessed by the Modbus serial link and make this information available for read/write functions (command, monitoring, configuration and adjustment) on the field buses.

An LUF communication gateway consists of a box which can be clipped onto a 35 mm omega rail, allowing connection of up to 8 Slaves connected on the Modbus serial link.

### Example of architecture



### Communication gateway LUF

Description	Reference
Fipio / Modbus gateway	LUF1
Profibus DP / Modbus gateway	LUF7
DeviceNet / Modbus gateway	LUF9

### Description

#### Front panel of the product

- ① LED indicating :
  - communication status of the Modbus serial links,
  - gateway status,
  - communication status of the Fipio, Profibus DP or DeviceNet bus.
- ② Connectors for connection to Fipio, Profibus DP or DeviceNet buses.

#### Underside of product

- ③ RJ45 connector for connection of the Modbus serial link
- ④ RJ45 connector for link to a PC
- ⑤ 24 V power supply

### Software set-up

For the Fipio bus, software set-up of the gateway is performed using either PL7 Micro/Junior/Pro software or ABC Configurator software.

For the Profibus DP and DeviceNet buses, software set-up is performed using ABC Configurator.

This software is included in the Ultra user's manual.

(1) Connection kit for PowerSuite software workshop.

Schemes:  
page A4/70

A4/30

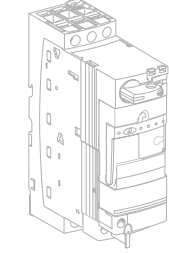
Life Is On

Schneider  
Electric

# TeSys Control

## Ultra motor starters - Current limiter blocks - Accessories

### Product references



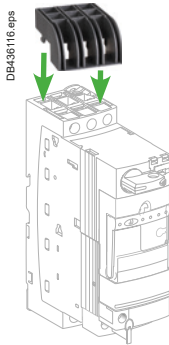
LUALB1



LA9LB920



LU9SP0



LU9SP0



LU9ET1S

### Short-circuit current limiter block

To be connected in series and upstream of a Ultra starter-controller. It increases its ability to withstand the short circuit current from 50 kA to 100 or 130 kA under 400 V.

Principle: under the action of a short-circuit, the opening of two contacts of each phase of the limiter creates a resistive arc. The current then decreases to a value tolerable by a Ultra power base.

#### Limiter blocks and accessories

Description	Breaking capacity Iq (kA)		Ie (A)	Ith (A)	Mounting	Unit reference
	≤ 440 V	690 V				
Limiter-disconnector (1 x LUALF1 cartridge supplied)	130	70	-	32	Direct on power base up to 15 kW/32 A	LUALB1 <sup>(1)</sup>
Limiter limiter cartridge for LUALB1	100	35	32	63	Separate	LA9LB920 <sup>(2)</sup>
	130	70	-	-	Limiter-disconnector	LUALF1

(1) Must be connected to one power base only.

(2) Can be connected to multiple Ultra power bases in parallel with limitation :

- Total Ith max 63 A
- Total nominal current (Ie) 32 A from motor with simultaneous start (LA9LB920 could not withstand higher inrush peak current)

### Phase barrier

Ensures a complementary electrical insulation between phases.

690 V AC network: compulsory.

440 V AC network: compulsory when assembling a UL508 type E compliant motor starter (Self Protected Starter).

Description	Use	Mounting	Reference
Phase separator	LUB or LU2B 12 or 120 LUB or LU2B 32 or 320 LUALB1	Live terminals L1, L2, L3	LU9SP0

### Clip-in labels

Can be clipped on any Ultra power base, on LU6MB0●● inverter block, and Linergy HK busbar system.

#### Marking accessory

Description	Sold by lot of	Reference per unit
Clip-in label 8 x 18 mm	100	LAD90

### Safety-chain identification - Red label

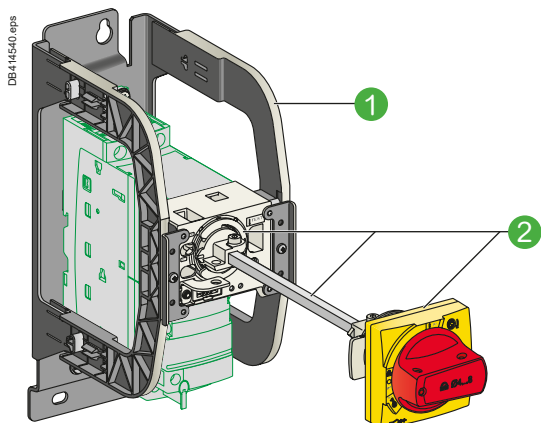
The red sticker is dedicated to Ultra LUCA, LUCB, LUCC, LUCL and LUCL control units.

Description	Reference per unit
Retrofit safety-chain identification sticker	LU9ET1S

# TeSys Control

## Ultra motor starters - Rotary handles

### Product references



LU9APN21 mounting kit

### Extended rotary handle

Allows a circuit breaker or a Ultra starter-controller installed in back of an enclosure to be operated from the front panel.

The rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (OFF) or I (ON) position (depending on the type of rotary handle) by means of up to 3 padlocks with a shank diameter of 4 to 8 mm.

The extension shaft must be adjusted to the depth of the enclosure.

The IP54 rotary handle is fixed with a nut (Ø22) to make it easier to assemble.

### Mounting kit

① Ultra power base bracket; its horseshoe shaped sides hold the rotary mechanism facing the original handle.

② Mechanism, shaft and handle; the shaft enters the handle attached to the door during closing.

### Long shaft

■ to be cut to the required length. Equipped with a connection endpiece.

### Shaft support plate for deep enclosure

■ Provides horizontal guiding of the shaft, when the door is open.

### Spacer base (retrofit accessory)

■ Fixed on a side of the box, for heightening an GVAP●●● handle.

### Handle

■ Delivered as a single unit, to be fitted on a side of the enclosure.

*Note: references below are suitable for Ultra power bases after 2004.*

### "Laser Square" Tool

■ On the principle of an angle extended with a laser beam, the "Laser Square" facilitates tracing the piercing marks on the door or the sides of an enclosure.

### "Safety" stickers

■ Marking: Electrical hazard, etc.

Ultra motor starters



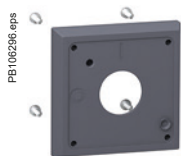
GVAPA1 long shaft

PB106291 eps



GVAPK12 shaft support plate for deep enclosure

PB121242 eps



GVAPP1 spacer base (retrofit accessory)

PB106296 eps



GVAPR54 red handle, IP 54

PB106289 eps



GVAPYPHP external handle protection frame



GVAPL01 "Laser square" plotting tool

PB106297 eps

Description	Tripping indication	Reference
Mounting kit	Black handle, with error status, IP54	● LU9APN21
	Red handle, with error status, IP54	● LU9APN22
	Red handle, without error status, IP65	- LU9APN24
Separate elements	Long shaft = 315 mm	- GVAPA1
	Shaft (≥ 300 mm) support plate for deep enclosure	- GVAPK12
	Spacer base	- GVAPP1
	Black handle, IP54	● GVAPB54
	Red handle, IP54	● GVAPR54
	Red handle, IP65	● GVAPR65
Tool	"Laser square" plotting tool	GVAPL01
"Safety" stickers	German (x10)	GVAPSDE
	Chinese (x10)	GVAPSCN
	Portuguese (x10)	GVAPSPT
	Italian (x10)	GVAPSIT
External handle protection frame for U	Yellow frame	GVAPYPHP
	Black frame	GVAPBPHP

# TeSys Control

## Ultra motor starters - Handle mounting kit for MCC drawers

### Product references



PB11807\_104.eps

#### MCC drawers (Motor Control Center)

The drawers are composed of:

- a fixed part, in the frame of the panel,
- a fully withdrawable part, integrating the protection, control and automation components.

With a height of 3/4/6/8/12/18/24/36 modules, they allow the assembling of motor protection/control feeders:

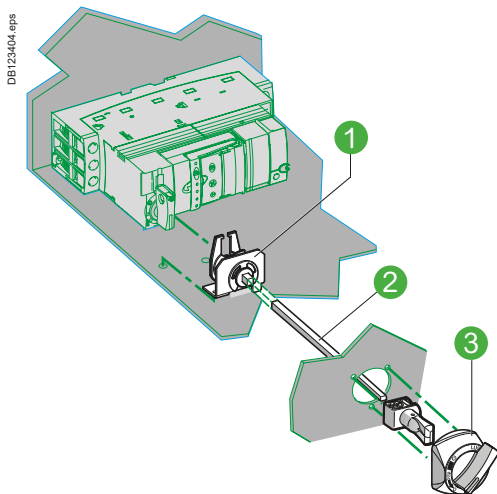
- Direct, one direction of rotation
- Direct, 2 directions of rotation
- Star-delta
- Dahlander (2 speeds)
- 2-speed, separate winding
- Motor drives from 0 to 500 kW
- Soft starters of 0 to 75 kW.

Ultra  
motor  
starters

#### Mounting kit and handle for MCC drawer

Together, this provides manual control of a Ultra starter-controller from the front face of the drawer.

As the clamping part on top of Ultra control pad is open, the kit may be used on Ultra power bases before 2005.



DB123404.eps

#### Mounting kit + small handle

Description	Item	Reference
Handle with mounting kit for MCC drawer	1 + 2 + 3	LU9AP20

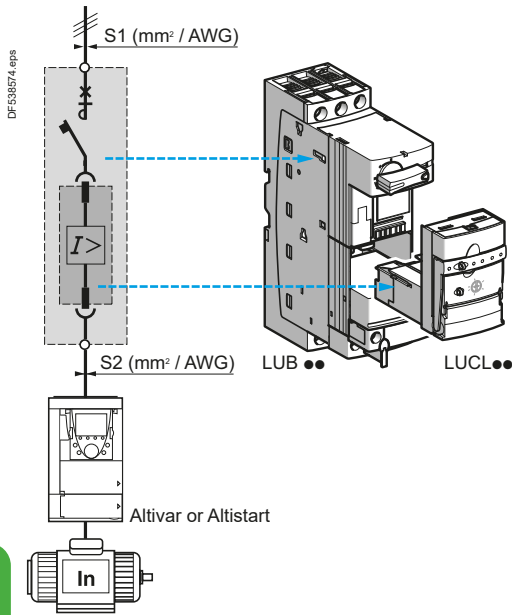


PB121243.eps

# TeSys Control

Ultra motor starters - Use with soft starter / Variable Speed Drive - LUCL control module

## Product references



Ultra motor starters



PB12873 eps



### Introduction

When installed upstream of a variable speed controller or soft start unit, control unit LUCL●●, used in conjunction with an LUB12 or LUB32 power base, provides:

- isolation,
- short-circuit protection of the motor starter.  
(variable speed controller-based or soft start unit-based motor starters).

**Note:** control unit LUCL, when used in conjunction with power base LUB12 or LUB32, conforms to standard IEC 60947-6-2.

### Installation regulations

When the length of the cable between the Ultra starter and the variable speed controller is more than 1.5 m, the c.s.a. of the cable between the variable speed controller and the Ultra starter (S2) must be equal to the c.s.a. of the cable upstream of Ultra (S1).

### Description of LUCL magnetic control unit

- 1 Extraction and locking handle
- 2 Sealing of locking handle
- 3 Dial for magnetic adjustment of motor In
- 4 Locking of settings by sealing the transparent cover

### References

Description	Line current of the variable speed controller or soft start unit	Reference <sup>(1)</sup>
<b>A</b>		
Magnetic control unit	0.15...0.6	LUCLX6●●
	0.35...1.4	LUCL1X●●
	1.25...5	LUCL05●●
	3...12	LUCL12●●
	4.5...18	LUCL18●●
	8...32	LUCL32●●

<sup>(1)</sup> Standard control circuit voltage:

Volts	24	48...72	110...240
---	BL <sup>(2) (3)</sup>	—	—
~	B	—	—
--- or ~	—	ES <sup>(4)</sup>	FU <sup>(5)</sup>

**Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.**

<sup>(2)</sup> Voltage code to be used for a starter-controller with communication module.

<sup>(3)</sup> d.c. voltage with maximum ripple of ±10 %.

<sup>(4)</sup> ---: 48...72 V, ~: 48 V.

<sup>(5)</sup> ---: 110...220 V, ~: 110...240 V.



Control unit and associated power base selection						
Functions provided	Maximum motor power ratings 50/60 Hz			Power base reference	Control unit reference	Line current
	< 400/415 V	500 V	690 V			
	KW	KW	KW			
■ Short-circuit protection	0.09	–	–	LUB12 or LUB32	LUCLX6●●	0.15...0.6
■ Manual reset	0.25	–	–	LUB12 or LUB32	LUCL1X●●	0.35...1.4
	1.5	2.2	3	LUB12 or LUB32	LUCL05●●	1.25...5
	5.5	5.5	9	LUB12 or LUB32	LUCL12●●	3...12
	7.5	9	15	LUB32	LUCL18●●	4.5...18
	15	15	18.5	LUB32	LUCL32●●	8...32

Operating characteristics						
Control units	Standard		Advanced			Multifunction
	LUCA	LUCB	LUC	LUCD	LUCL	LUCM
Thermal overload protection	Integrated function					Non integrated function
Over current protection	14.2 x the setting current					3 to 17 x the setting current
Short-circuit protection	13 x I <sub>r</sub> max (max current setting)					
Protection against phase loss	Integrated function					Non integrated function
Protection against phase imbalance	Integrated function					Non integrated function
Earth fault protection (equipment protection only)	Integrated function					Non integrated function
Tripping class	10	10	20	20	20	5...30
Motor type	3-phase		Single-phase	3-phase	Single-phase and 3-phase	
Thermal overload test function	Integrated function					Non integrated function
Overtorque	Integrated function					Non integrated function
No-load running	Integrated function					Non integrated function
Long starting time	Integrated function					Non integrated function
Reset method	Manual	Integrated function				Parameters can be set
	Automatic or remote	With function module, or parameters can be set via the bus with a communication module (see page 24614/2).			Integrated function	Parameters can be set
					Non integrated function	Parameters can be set via the bus with a communication module (see page 24614/2).

Integrated function
  Non integrated function
  Function provided with accessory

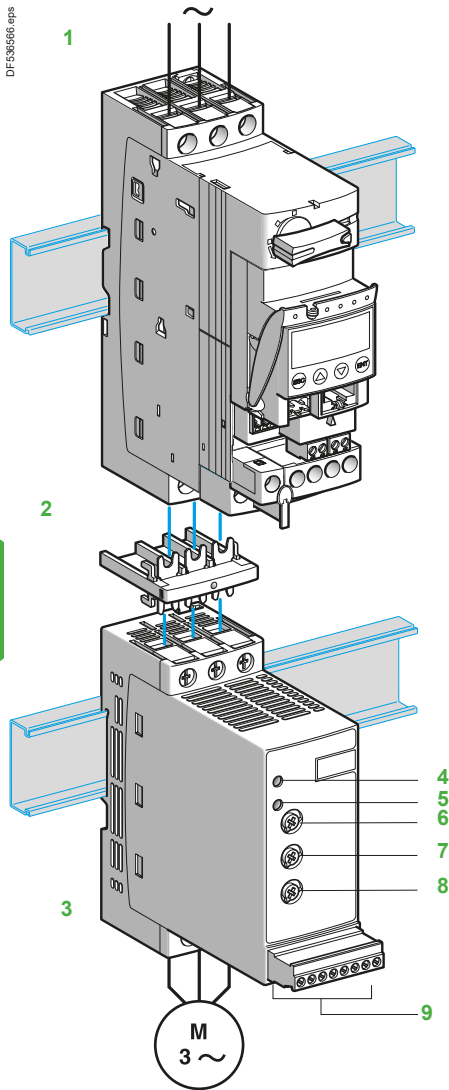
Compatibility			
Compatibility of control unit LUCL●● with	References	Functions	
The controller	No	LUTM	Controller (without thermal overload protection)
Add-on contact blocks with fault signalling and auxiliary contacts	Yes	LUA1C11	Add-on contact blocks with fault signalling (1 N/O + 1 N/C)
		LUA1C20	Add-on contact blocks with fault signalling (2 N/O)
		LUFN20	Auxiliary contacts (2 N/O)
		LUFN11	Auxiliary contacts (1 N/O + 1 N/C)
		LUFN02	Auxiliary contacts (2 N/C)
Communication modules	Yes	ASILUFC5 and ASILUFC51	AS-Interface communication modules
		LUFC00	Parallel wiring module
		LULC07	Profibus DP communication module (1 output/2 inputs)
		LULC08	CANopen communication module (1 output/2 inputs)
		LULC09	DeviceNet communication module (1 output/2 inputs)
		LULC15	Advantys STB communication module (1 output/2 inputs)
		LULC033	Modbus communication module (1 output/2 inputs)
Function modules	No	LUFW10	Alarm function module
		LUFDH11	Thermal overload signalling module with manual reset
		LUFDA01	Thermal overload signalling module with automatic or remote reset (1 N/C)
		LUFDA10	Thermal overload signalling module with automatic or remote reset (1 N/O)
		LUFV2	Motor load indication module

Ultra motor starters

# TeSys Control

## Ultra motor starters - with Altistart U01 soft starter

### Introduction



### Introduction

The Altistart U01 is a soft start/soft stop unit for asynchronous motors. It is designed primarily for combinations with Ultra controller-starters.

When combined with a Ultra 1 controller by means of a connector 2, the Altistart U01 3 is a power option which provides the "Soft start/soft stop" function. The result is a unique, innovative motor starter.

Using the Altistart U01 starter enhances the starting performance of asynchronous motors by allowing them to start gradually, smoothly and in a controlled manner. It prevents mechanical shocks, which lead to wear and tear, and limits the amount of maintenance work and production downtime.

The Altistart U01 limits the starting torque and current peaks on starting, on machines which do not require a high starting torque.

The Altistart U01 is designed for the following simple applications:

- Conveyors
- Conveyor belts
- Pumps
- Fans
- Compressors
- Automatic doors and gates
- Small cranes
- Belt-driven machines, etc.

The Altistart U01 is compact and easy to install. It complies with standards IEC/EN 60947-4-2, carries UL, CSA, C-Tick, CCC certifications and CE marking.

#### ■ ATSU01N2●●LT soft start/soft stop units

- Control two phases of the motor power supply to limit the starting current and for deceleration
- Internal bypass relay
- Motor power ratings ranging from 0.75 kW to 15 kW
- Motor supply voltages ranging from 200 V to 480 V, 50/60 Hz.

An external power supply is required for controlling the starter.

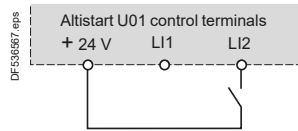
### Description

- Altistart U01 soft start/soft stop units are equipped with:
  - A potentiometer for setting the starting time 6
  - A potentiometer for setting the deceleration time 8
  - A potentiometer for adjusting the start voltage threshold according to the motor load 7
  - 1 green LED 4 to indicate that the unit is switched on
  - 1 yellow LED 5 to indicate that the motor is powered at nominal voltage, if it is connected to the starter
  - A connector 9:
    - 2 logic inputs for Run/Stop commands
    - 1 logic input for the BOOST function
    - 1 logic output to indicate the end of starting
    - 1 relay output to indicate the starter has a power supply fault or the motor has reached a standstill at the end of the deceleration stage

#### ATSU01N2●●●LT soft start unit functions

##### ■ 2-wire control

The run and stop commands are controlled by a single logic input. State 1 of logic input LI2 controls starting and state 0 controls stopping.



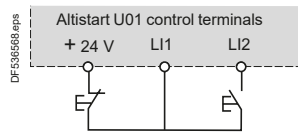
Wiring diagram for 2-wire control

##### ■ 3-wire control

The run and stop commands are controlled by 2 different logic inputs.

Stopping is achieved when logic input LI1 opens (state 0).

The pulse on input LI2 is stored until input LI1 opens.



Wiring diagram for 3-wire control

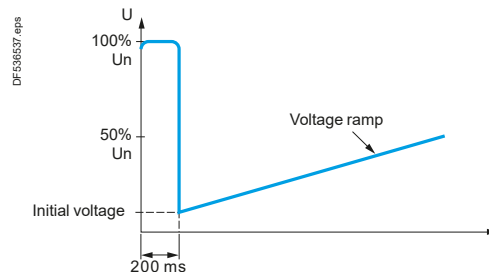
##### ■ Starting time

Controlling the starting time means that the time of the voltage ramp applied to the motor can be adjusted to obtain a gradual starting time, dependent on the motor load.

##### ■ Voltage boost function via logic input

Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.

When the input is at state 1, the function is active (input connected to the + 24 V) and the starter applies a fixed voltage to the motor for a limited time before starting.



Application of a voltage boost equal to 100% of the nominal motor voltage

##### ■ End of starting

○ application function for logic output LO1

ATSU01N2●●●LT soft start/soft stop units are equipped with an open collector logic output LO, which indicates the end of starting when the motor has reached nominal speed.

# TeSys Control

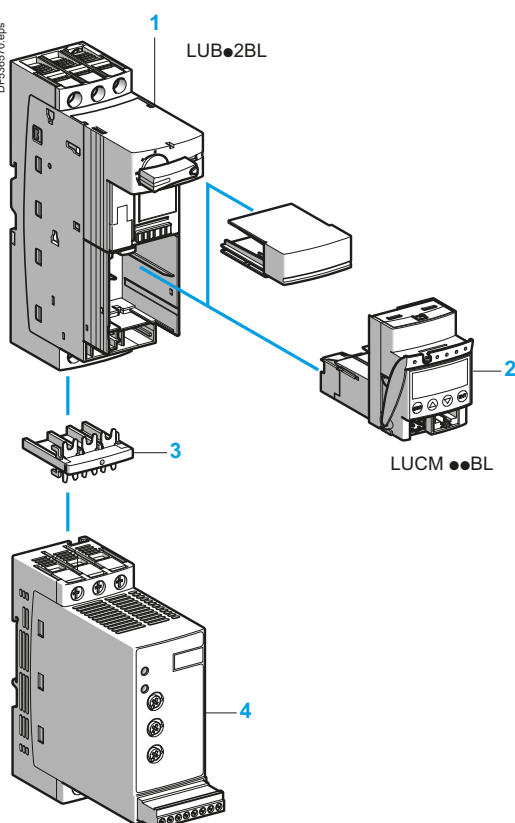
## Altistart U01 soft starter

### Product references



ATSU01N222LT

Ultra motor starters



ATSU 01N2●●LT

### Soft start/soft stop units for 0.75 to 15 kW motors (can be combined with the Ultra starter)

Motor				Starter	
Motor power <sup>(1)</sup>				Nominal current	Reference
230 V		400 V	460 V	A	
kW	HP	kW	HP		
<b>3-phase supply voltage: 200...480 V 50/60 Hz</b>					
0.75	1	1.5	2	6	ATSU01N206LT
1.1	1.5	2.2	3		
1.5	2	–	5	9	ATSU01N209LT
–	–	4	–		
2.2	3	5.5	7.5	12	ATSU01N212LT
3	–	–	–		
4	5	7.5	10	22	ATSU01N222LT
5.5	7.5	11	15		
7.5	10	15	20	32	ATSU01N232LT

### Accessories

Description	Used for starter	Reference
Power connector between ATSU01N2●●LT and U	ATSU01N2●●LT	VW3G4104

### Ultra starter and soft start unit combinations

Numerous possibilities for combinations and options are offered. Please consult the "Ultra Starters-open version" specialist catalogue.

Motor power	Soft starter			U	
	230 V	400 V	460 V	Power base	Control unit <sup>(2)</sup>
Voltage	kW/HP	kW	HP		
0.75/1	1.5	2		ATSU01N206LT	LUB12 LUC●05BL
1.1/1.5	2.2/3	3		ATSU01N206LT	LUB12 LUC●12BL
1.5/2	–	–		ATSU01N209LT	LUB12 LUC●12BL
–	4	5		ATSU01N209LT	LUB12 LUC●12BL
2.2/3	–	–		ATSU01N212LT	LUB12 LUC●12BL
3/–	5.5	7.5		ATSU01N212LT	LUB32 LUC●18BL
4/5	7.5	10		ATSU01N222LT	LUB32 LUC●18BL
5.5/7.5	11	15		ATSU01N222LT	LUB32 LUC●32BL
7.5/10	15	20		ATSU01N232LT	LUB32 LUC●32BL

Example of a starter-motor combination with:

- 1 non-reversing power base for DOL starting (LUB●2BL)
- 2 control unit (LUCM●●BL)
- 3 power connector (VW3G4104)
- 4 Altistart U01 soft start/soft stop unit (ATSU01N2●●LT)

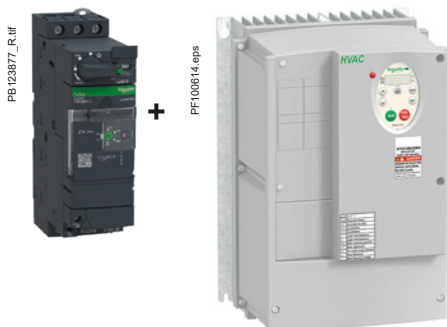
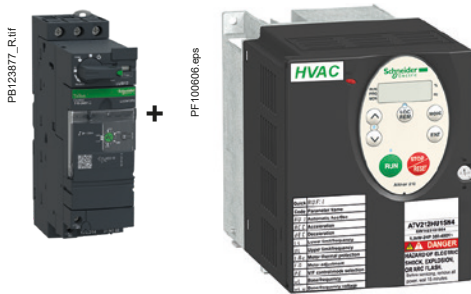
<sup>(1)</sup> Standard motor power ratings, HP power ratings indicated according to standard UL508.

<sup>(2)</sup> Depending on the configuration of the chosen Ultra starter, replace the ● with A for standard, B for expandable, and M for multifunction.

# TeSys Control

## Ultra motor starters - Association with Soft starters / Variable speed controllers

### Product references



### Soft starter coordination

The standard defines tests at different levels of current; the purpose of these tests is to place the equipment in extreme conditions.

The standard defines 2 types of coordination, according to the condition of the components after testing: type 1 and type 2.

Type 1 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must not be able to resume operation without repair or the replacement of parts.

**The product combinations given below provide type 1 coordination**

### Soft start-soft stop unit/ Ultra starter controller combination with magnetic protection

#### Ultra / Altistart 48: type 1 coordination

Power 400 V (kW)	Ultra references (protection + power switching)	Soft starter reference	
		Class 10	Class 20
5.5	LUB32 + LUCL32 or LUCL18	–	ATS48D17
7.5	LUB32 + LUCL32	ATS48D17	ATS48D22
11	LUB32 + LUCL32	ATS48D22	ATS48D32
15	LUB32 + LUCL32	ATS48D32	ATS48D38

### Variable speed controller/ Ultra starter controller combination with magnetic protection

#### Ultra / Altivar 212 UL Type 1/IP 20

Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference	
0.75	LUB12 + LUCL05	ATV212H075N4	ATV212HU15N4
2.2	LUB12 + LUCL12	ATV212HU22N4	
3	LUB12 + LUCL12	ATV212HU30N4	
4	LUB12 + LUCL12	ATV212HU40N4	
5.5	LUB32 + LUCL32 or LUCL18	ATV212HU55N4	
7.5	LUB32 + LUCL32 or LUCL18	ATV212HU75N4	
11	LUB32 + LUCL32	ATV212HD11N4	
15	LUB32 + LUCL32	ATV212HD15N4	

#### Ultra / Altivar 212 IP 54

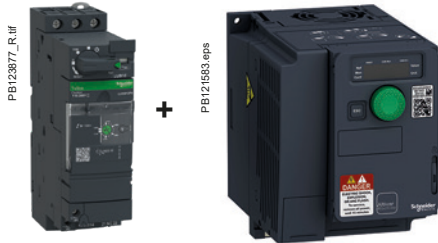
Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference	
0.75	LUB12 + LUCL05	ATV212W075N4	
1.5	LUB12 + LUCL12 or LUCL05	ATV212WU15N4	
2.2	LUB12 + LUCL12	ATV212WU22N4	
3	LUB12 + LUCL12	ATV212WU30N4	
4	LUB12 + LUCL12	ATV212WU40N4	
5.5	LUB32 + LUCL32 or LUCL18	ATV212WU55N4	
7.5	LUB32 + LUCL32 or LUCL18	ATV212WU75N4	
11	LUB32 + LUCL32	ATV212WD11N4	
15	LUB32 + LUCL32	ATV212WD15N4	

Ultra  
motor  
starters

# TeSys Control

Ultra motor starters - Association with Soft starters / Variable speed controllers

## Products references



Ultra motor starters



### Variable speed controller/Ultra starter controller combination with magnetic protection (continued)

#### Ultra / Altivar 320

Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference
0.37	LUB12 + LUCL05	ATV320U04N4C
0.55	LUB12 + LUCL05	ATV320U06N4C
0.75	LUB12 + LUCL05	ATV320U07N4C
1.1	LUB12 + LUCL12	ATV320U11N4C
1.5	LUB12 + LUCL12	ATV320U15N4C
2.2	LUB12 + LUCL12	ATV320U22N4C
3	LUB32 + LUCL18	ATV320U30N4C
4	LUB32 + LUCL18	ATV320U40N4C
5.5	LUB32 + LUCL32	ATV320U55N4C
7.5	LUB32 + LUCL32	ATV320U75N4C

#### Ultra / Altivar 630

Power 400V (kW)	Ultra references (protection + power switching)	Variable speed controller reference
0.75	LUB12 + LUCL05	ATV630U07N4
1.5	LUB12 + LUCL12	ATV630U15N4
2.2	LUB12 + LUCL12	ATV630U22N4
3	LUB32 + LUCL18	ATV630U30N4
4	LUB32 + LUCL18	ATV630U40N4
5.5	LUB32 + LUCL32	ATV630U55N4
7.5	LUB32 + LUCL32	ATV630U75N4



# TeSys Control

## Ultra motor starters

### Product references

Ultra  
motor  
starters

ASILUFC5	LU9R30	LUCB12FU	LUCD32FU
ASILUFC51	LU9RCD03	LUCB18B	LUCD38BL
GV1G10	LU9RCD10	LUCB18BL	LUCD38FU
GVAPA1	LU9RCD50	LUCB18ES	LUCDT1BL
GVAPA2	LU9RDD03	LUCB18FU	LUCDX6BL
GVAPB54S	LU9RDD30	LUCB1XB	LUCDX6FU
GVAPK12	LU9RFL15	LUCB1XBL	LUCL05B
GVAPL01	LU9RPB010	LUCB1XES	LUCL05BL
GVAPP1	LU9RPB100	LUCB1XFU	LUCL05ES
GVAPR65S	LU9RPB400	LUCB32B	LUCL05FU
LA9LB920	LU9SP0	LUCB32BL	LUCL12B
LU2B12B	LUA1C11	LUCB32ES	LUCL12BL
LU2B12BL	LUA1C20	LUCB32FU	LUCL12ES
LU2B12ES	LUA8E20	LUCB38BL	LUCL12FU
LU2B12FU	LUALB1	LUCB38FU	LUCL18B
LU2B32B	LUALF1	LUCBT1BL	LUCL18BL
LU2B32BL	LUB12	LUCBX6B	LUCL18ES
LU2B32ES	LUB120	LUCBX6BL	LUCL18FU
LU2B32FU	LUB32	LUCBX6FU	LUCL1XB
LU2B38BL	LUB320	LUCC05B	LUCL1XBL
LU2B38FU	LUB32NR	LUCC05BL	LUCL1XFU
LU2BA0BL	LUB38	LUCC05ES	LUCL32B
LU2BA0ES	LUB380	LUCC05FU	LUCL32BL
LU2BB0BL	LUCA05B	LUCC12B	LUCL32FU
LU2MB0B	LUCA05BL	LUCC12BL	LUCL38BL
LU2MB0BL	LUCA05ES	LUCC12ES	LUCL38FU
LU2MB0ES	LUCA05FU	LUCC12FU	LUCLX6BL
LU2MB0FU	LUCA12B	LUCC18BL	LUCM05BL
LU6MB0B	LUCA12BL	LUCC18FU	LUCM12BL
LU6MB0BL	LUCA12ES	LUCC1XB	LUCM18BL
LU6MB0ES	LUCA12FU	LUCC1XBL	LUCM1XBL
LU6MB0FU	LUCA18B	LUCC1XES	LUCM32BL
LU9AD7	LUCA18BL	LUCC1XFU	LUCMT1BL
LU9AP00	LUCA18ES	LUCC32B	LUCMX6BL
LU9AP11	LUCA18FU	LUCC32BL	LUCF00
LU9AP20	LUCA1XB	LUCC32FU	LUFDA01
LU9APN21	LUCA1XBL	LUCCX6B	LUFDA10
LU9APN22	LUCA1XES	LUCCX6BL	LUFDH11
LU9APN24	LUCA1XFU	LUCCX6FU	LUFN02
LU9BN11	LUCA32B	LUCD05B	LUFN11
LU9BN11C	LUCA32BL	LUCD05BL	LUFN20
LU9BN11L	LUCA32ES	LUCD05ES	LUFN1
LU9C1	LUCA32FU	LUCD05FU	LUFN7
LU9C2	LUCA38BL	LUCD12B	LUFN9
LU9ET1S	LUCA38FU	LUCD12BL	LUFV2
LU9G02	LUCAX6B	LUCD12ES	LUFW10
LU9G03	LUCAX6BL	LUCD12FU	LULC031
LU9GC3	LUCAX6ES	LUCD18BL	LULC033
LU9GC7	LUCAX6FU	LUCD18FU	LULC07
LU9M1	LUCB05B	LUCD1XB	LULC08
LU9MR1	LUCB05BL	LUCD1XBL	LULC09
LU9MR1C	LUCB05ES	LUCD1XES	LULC15
LU9MRC	LUCB05FU	LUCD1XFU	
LU9MRL	LUCB12B	LUCD32B	
LU9R03	LUCB12BL	LUCD32BL	
LU9R10	LUCB12ES	LUCD32ES	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.



# Technical Data for Designers

## Contents

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# TeSys Control

## Ultra motor starters

### Characteristics

Ultra motor starters

Ref.



Environment			
Product certifications			UL, CSA, CCC, GOST, ASEFA, UKCA. ABS, BV, DNV, GL, LROS. ATEX.
Conforming to standards			IEC/EN 60947-6-2, CSA-22.2 N° 60947-4-1-14 UL 60947-4-1: with phase barrier LU9 SP0
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	V	690
	Conforming to UL508, CSA C22-2 n°14	V	600
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-6-2	kV	6
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to IEC/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	-40...+85
	Operation	°C	Power bases and standard and advanced control units: -25... +70. (At temperatures above 60 °C and up to 70 °C, for starter-controller LUB32, LUB38, leave a minimum gap of 9 mm between products).  Power bases and multifunction control units: -25...+60. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C and up to 60 °C, leave a gap of 20 mm between products.)
Maximum operating altitude		m	2000
Operating positions	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components)
		°C	650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN 60068-2-27 <sup>(1)</sup>		Power poles open: 10 gn
			Power poles closed: 15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 <sup>(1)</sup>		Power poles open: 2 gn
			Power poles closed: 4 gn <sup>(2)</sup>
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3
		kV	On contact: 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	All circuits except for serial link: 4 - Level 4
		kV	Serial link: 2 - Level 3
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-6-2 Uc ~ 24...240 V, Uc --- 48...220 V Uc = 24 V ---	kV	Common mode
			Serial mode
			2
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	V	10
Radiated emission and conducted	Conforming to CISPR 11 and EN 55011		Class A

<sup>(1)</sup> Without modifying the contact states, in the most unfavourable direction.

<sup>(2)</sup> 2 gn with Advantys STB or CANopen communication modules.

References:  
pages A4/10 to A4/14

Curves:  
pages A4/56 to A4/61

Dimensions:  
pages A4/62 and A4/63

Schemes:  
pages A4/64 to A4/76

A4/44

Life Is On

Schneider  
Electric

### Power circuit connection characteristics

#### Connection to Ø4 mm screw clamp terminals

Power base, control unit or reverser block type			LUB12 + LUCA or LUCB or LUCC or LUCD	LUB32/LUB38 + LUCA or LUCB or LUCC or LUCD	LUB12 + LUCM	LUB32 + LUCM	LU2B LU2M LU6M
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	2.5...10	2.5...10	2.5...10	2.5...10	2.5...10
	2 conductors	mm <sup>2</sup>	1.5...6	1.5...6	1.5...6	1.5...6	1.5...6
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1...6	1...6	1...6	1...6	1...6
	2 conductors	mm <sup>2</sup>	1...6	1...6	1...6	1...6	1...6
Solid cable without cable end	1 conductor	mm <sup>2</sup>	1...10	1...10	1...10	1...10	1...10
	2 conductors	mm <sup>2</sup>	1...6	1...6	1...6	1...6	1...6
Screwdriver			Philips n° 2 or flat screwdriver: Ø6 mm				
Tightening torque			N.m	1.9...2.5	1.9...2.5	1.9...2.5	1.9...2.5

### Control circuit connection characteristics

#### Connection to Ø3 mm screw clamp terminals

Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm <sup>2</sup>	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5
	2 conductors	mm <sup>2</sup>	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5
Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm <sup>2</sup>	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
Screwdriver			Philips n° 1 or flat screwdriver: Ø5 mm				
Tightening torque			N.m	0.8...1.2	0.8...1.2	0.8...1.2	0.8...1.2

### Control circuit characteristics

Rated voltage of control circuit	~ 50/60 Hz	V	24...240	24...240	–	–	–	
	≡	V	24...220	24...220	24	24	–	
Voltage limits	≡ 24 V <sup>(1)</sup>	V	20...27	20...27	20...28	20...28	–	
	Operation							
Drop-out	~ 24 V	V	20...26.5	20...26.5	–	–	–	
	~ or ≡ 48...72 V	V	~ 38.5...72, ≡ 38.5...93	–	–	–	–	
	~ 110...240 V	V	~ 88...264	~ 88...264	–	–	–	
	≡ 110...220 V	V	≡ 88...242	≡ 88...242	–	–	–	
	≡ 24 V	V	14.5	14.5	14.5	14.5	–	
	~ 24 V	V	14.5	14.5	–	–	–	
Typical consumption	~ or ≡ 48...72 V	V	29	29	–	–	–	
	~ 110...240 V, ≡ 110...220 V	V	55	55	–	–	–	
	≡ 24 V	mA	130	220	150	200	120	
	I max while closing							
I rms sealed	~ 24 V	mA	140	220	–	–	2360	
	~ or ≡ 48...72 V	mA	280	280	–	–	2300	
	~ 110...240 V, ≡ 110...220 V	mA	280	280	–	–	1000	
	≡ 24 V	mA	60	80	70	75	120	
Heat dissipation	~ 24 V	mA	70	90	–	–	<sup>(2)</sup>	
	~ or ≡ 48...72 V	mA	35	45	–	–	<sup>(2)</sup>	
	~ 110...240 V, ≡ 110...220 V	mA	35	25	–	–	<sup>(2)</sup>	
	≡ 24 V	mA	35	25	–	–	<sup>(2)</sup>	
Operating time	Closing	ms	2	3	1.7	1.8	–	
	Opening	ms	3	3	3	3	–	
Resistance to micro-breaks			ms	3	3	3	–	
Resistance to voltage dips			IEC/EN 61000-4-11				At least 70 % of Uc for 500 ms	–
Mechanical durability			In millions of operating cycles				15	15
Maximum operating rate			In operating cycles per hour				3600	3600

### Main pole characteristics

Number of poles			3	3	3	3	–			
Isolation conforming to IEC/EN 60947-1	Possible		Yes	Yes	Yes	Yes	–			
	Padlocking		1 padlock with Ø6.9 mm shank				–			
Rated thermal current		A	12	32/38	12	32	–			
Rated operational current (Ue ≤ 440V)	To IEC/ EN 60947-6-2	Category AC-41	θ ≤ 70°C: 12 A		θ ≤ 55°C: 12 A		θ ≤ 55°C: 32 A			
	Category AC-43	θ ≤ 70°C: 12 A		θ ≤ 70°C: 32/38 A		θ ≤ 55°C: 12 A	θ ≤ 55°C: 32 A			
Rated operational voltage		V	690 <sup>(3)</sup>		690 <sup>(3)</sup>		690 <sup>(3)</sup>			
Frequency limits		Hz	40...60		40...60		40...60			
Power dissipated in the power circuits	Operational current	A	3	6	9	12	18	25	32	38
	Power dissipated in all three poles	W	0.1	0.3	0.6	1.1	2.4	4.6	7.5	10.6
Rated breaking capacity on short-circuit		V	230	440	500	690	–			
		kA	50	50 (25 for LUB38)	10	4	–			
Total breaking time		ms	2		2		–			
Thermal limit		With Isc max on 440 V	kA <sup>2</sup> s	90	120	90	120			

<sup>(1)</sup> Voltage with maximum ripple of ±10 %. <sup>(2)</sup> No consumption sealed. <sup>(3)</sup> For 690 V, use phase barrier LU9SP0.

# TeSys Control

## Ultra motor starters

### Characteristics

#### Specific characteristics of power bases LU2B and reverser blocks LU2M or LU6M

Duration of inrush phase	~ 50/60 Hz	<b>ms</b>	25
	---	<b>ms</b>	15
Maximum operating time	Without change of direction	<b>ms</b>	75
	With change of direction	<b>ms</b>	150

#### General characteristics of auxiliary contacts

Conventional thermal current (Ith)	For ambient temperature $\theta < 70\text{ }^{\circ}\text{C}$	<b>A</b>	5
Frequency of the operational current		<b>Hz</b>	Up to 400
Minimum switching capacity $\lambda = 10^{-8}$	U min	<b>V</b>	17
	I min	<b>mA</b>	5
Short-circuit protection	Conforming to IEC/EN 60947-5-1	<b>A</b>	gG fuse: 4
Short-time rating	Permissible for	1 s	<b>A</b> 30
		500 ms	<b>A</b> 40
		100 ms	<b>A</b> 50
Insulation resistance		<b>m<math>\Omega</math></b>	10
Non-overlap time	Guaranteed between N/C and N/O contacts	<b>ms</b>	2 (on energisation and on de-energisation)

#### Specific characteristics of auxiliary contacts built-into the power base

Linked contacts	Conforming to IEC/EN 60947-4-1		Each power base has 1 N/O contact and 1 N/C contact which are mechanically linked
Mirror contact	Conforming to IEC/EN 60947-1		The N/C contact fitted in each power base reliably represents the state of the power contacts (safety scheme)
Rated operational voltage (Ue)		<b>V</b>	Up to ~ 690; --- 250
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-5-1	<b>V</b>	690
	Conforming to UL, CSA	<b>V</b>	600

#### Specific characteristics of auxiliary contacts in modules LUFN, of auxiliary contacts LUA1 and of reverser blocks LU2M and LU6M

Rated operational voltage (Ue)		<b>V</b>	Up to ~ 250; --- 250
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-5-1	<b>V</b>	250
	Conforming to UL, CSA	<b>V</b>	250

#### Rated operational power of contacts

Conforming to IEC/EN 60947-5-1

##### a.c. supply, categories AC-14 and AC-15

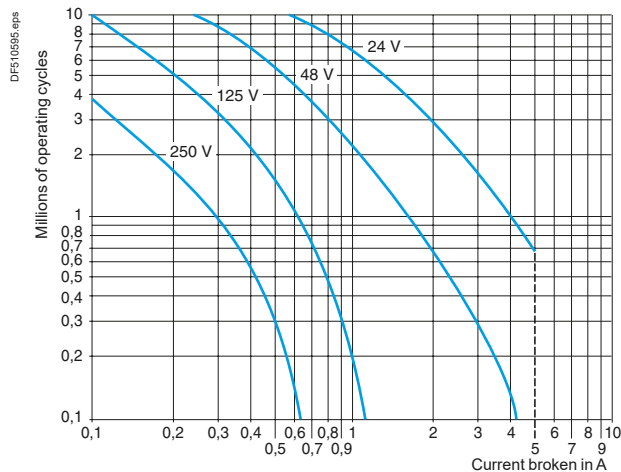
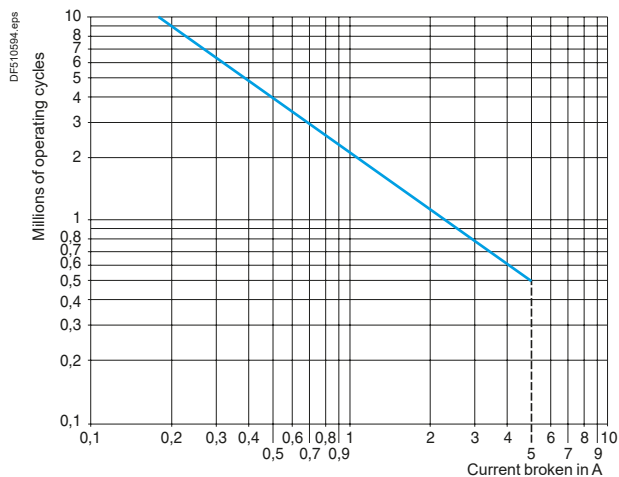
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi = 0.4$ )

	V	24	48	115	230	400	440	690
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100

##### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	125	250
W		120	90	75	68
W		70	50	38	33
W		25	18	14	12



# TeSys Control

## Ultra motor starters - Control units

### Characteristics

#### Characteristics of standard control units LUCA

Protection	Motor type		3-phase
	Conforming to standard		IEC/EN 60947-6-2, UL 60947-4-1, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2		10
	Frequency limits of the operational current	Hz	40...60
	Temperature compensation	°C	-25...+70
	Protection against phase imbalance		Yes
Short-circuit protection	Tripping threshold		13 x I <sub>r</sub> max (max current setting)
	Tripping tolerance		±20 %

#### Characteristics of advanced control units LUCB, LUCC and LUCD

Control unit type		LUCB	LUCC	LUCD
Protection	Motor type	3-phase	Single-phase	3-phase
	Conforming to standard	IEC/EN 60947-6-2, CSA C22-2 n°14	IEC/EN 60947-6-2, CSA C22-2 n°14	IEC/EN 60947-6-2, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2	10	10	20
	Frequency limits of the operational current	Hz	40...60	40...60
	Temperature compensation	°C	-25...+70	-25...+55
	Protection against phase imbalance		Yes	–
Short-circuit protection	Tripping threshold	13 x I <sub>r</sub> max.	13 x I <sub>r</sub> max.	13 x I <sub>r</sub> max.
	Tripping tolerance	±20 %	±20 %	±20 %

#### Characteristics of multifunction control units LUCM

Protection	Motor type		Parameters can be set: single-phase or 3-phase	
	Conforming to standard		IEC/EN 60947-6-2	
Overload protection	Tripping class conforming to IEC/EN 60947-6-2		5, 10, 15, 20, 25, 30 (selectable)	
	Frequency limits of the operational current	Hz	50...60	
	Temperature compensation	°C	-25...+55	
	Protection against phase imbalance		Yes	
Communication interface for terminal on enclosure door	Physical interface		RS 485 multi-drop	
	Connections		RJ45 on front panel	
	Protocol		Modbus RTU	
	Maximum transmission speed	bit/s	19 200 (self-configuration up to this value)	
	Maximum return time	ms	200	
Display	Type		LCD, 2 lines of 12 characters	
	Language version		Multilanguage (English, French, German, Italian, Spanish)	
	Precision		±5 %	
	Resolution		1 % of I <sub>r</sub>	
Auxiliary supply	External type	V	~ 24, with maximum ripple of ±10 %.	
	Heat dissipation	W	0.8	

#### Configuration table for protection devices and alarms on multifunction control units LUCM

	Tripping	Alarm	Adjustment of tripping threshold		Adjustment of time before tripping		Adjustment of alarm threshold	
	Factory setting	Factory setting	Range	Default value	Range	Default value	Range	Default value
Overcurrent	Activated <sup>(1)</sup>	–	3...17 I <sub>r</sub>	14.2	–	–	–	–
Overload	Activated <sup>(1)</sup>	Activated	0.5...32 A <sup>(2)</sup>	I <sub>r</sub> min	Class: 5...30	5	10...100 % of the thermal state	85 %
Earth fault	Activated	Activated	0.2...5 I <sub>r</sub> min	0.3 I <sub>r</sub> min	0.1...1.2 s	0.1 s	0.2...5 I <sub>r</sub> min	0.3 I <sub>r</sub> min
Phase imbalance	Activated	Activated	10...30 %	10 %	0.2...20 s	5 s	10...30 %	10 %
Torque limitation	Deactivated	Deactivated	1...8 I <sub>r</sub>	2 I <sub>r</sub>	1...30 s	5 s	1...8 I <sub>r</sub>	2 I <sub>r</sub>
No-load running	Deactivated	Deactivated	0.3...1 I <sub>r</sub>	0.5 I <sub>r</sub>	1...200 s	10 s	0.3...1 I <sub>r</sub>	0.5 I <sub>r</sub>
Long starting time	Deactivated	Deactivated	1...8 I <sub>r</sub>	I <sub>r</sub>	1...200 s	10 s	1...8 I <sub>r</sub>	I <sub>r</sub>

#### Configuration of additional functions on multifunction control units LUCM

	Factory setting	Setting range
Reset	Manual	Manual, automatic or remote
Time before reset	120 s	1...1000 s
Type of load	3-phase motor	3-phase motor, single-phase motor
	Self-cooled	Self-cooled, force cooled
Language	English	English, French, German, Italian, Spanish
Display	Average current	Average current, thermal state of motor, current in phase 1 / 2 / 3, earth leakage current, phase imbalance, cause of last 5 faults

<sup>(1)</sup> This function cannot be deactivated.

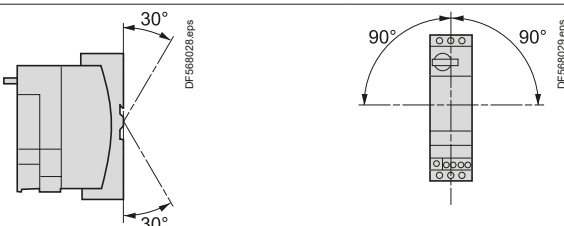
<sup>(2)</sup> The setting range depends on the rating of the control unit used.

# TeSys Control

## Ultra motor starters - Control units

### Characteristics

#### Characteristics of magnetic control unit LUCL

Protection	Motor type		3-phase
	Conforming to standard		When used in conjunction with an LUB12, LUB32 or LUB38 power base, magnetic control unit LUCL conforms to standard IEC 60947-6-2.
Short-circuit protection	Tripping threshold		14.2 x I <sub>n</sub> (max. setting current)
	Tripping tolerance		±20 %
<b>Environment</b>			
Product certifications			CE
Conforming to standards			When used in conjunction an LUB power base, control unit LUCL conforms to standard 60947-6-2.
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	<b>V</b>	690
Rated impulse withstand voltage (U <sub>imp</sub> )	Conforming to IEC/EN 60947-6-2	<b>kV</b>	6
Safety separation of circuits SELV	Conforming to IEC/EN 60947-1 appendix N	<b>V</b>	Between the control or auxiliary circuit and the main circuit: 400 Between the control and auxiliary circuits: 40
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to/EN 60068-2-30	<b>Cycles</b>	12
	Conforming to IEC/EN 60068-2-11	<b>h</b>	48
Ambient air temperature around the device	Storage	<b>°C</b>	- 40... + 85
	Operation	<b>°C</b>	Power bases and standard and advanced control units: - 25... + 70. (At temperatures above 60 °C and up to 70 °C, for I <sub>e</sub> = 32 A, leave a minimum gap of 9 mm between products). Power bases and multifunction control units: - 25... + 60. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C up to 60 °C, leave a gap of 20 mm between products.)
Maximum operating altitude		<b>m</b>	2000
Operating positions	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	<b>°C</b>	960 (parts supporting live components) <b>°C</b> 650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN60068-2-27 <sup>(1)</sup>		Power poles open: 10 gn Power poles closed: 15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 <sup>(1)</sup>		Power poles open: 2 gn Power poles closed: 4 gn <sup>(2)</sup>
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	<b>kV</b>	In open air: 8 - Level 3
		<b>kV</b>	On contact: 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	<b>V/m</b>	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	<b>kV</b>	All circuits except for serial link: 4 - Level 4
		<b>kV</b>	Serial link: 2 - Level 3
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-6-2 U <sub>c</sub> ~ 24...240 V, U <sub>c</sub> ∴ 48...220 V U <sub>c</sub> = 24 V ∴	<b>kV</b>	<b>Common mode</b>
			<b>Serial mode</b>
			2
			1
			Not applicable
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	<b>V</b>	10

(1) Without modifying the contact states, in the most unfavourable direction.  
(2) 2 gn with Advantys STB or CANopen communication modules.



# TeSys Control

## Ultra motor starters - Control units

### Characteristics

Power circuit connection characteristics of LUCL					
Power base and control unit type		LUB12 + LUCL		LUB32 + LUCL	LUB38 + LUCL
<b>Connection to Ø4 mm screw clamp terminals</b>					
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	2.5...10	2.5...10	
	2 conductors	mm <sup>2</sup>	1.5...6	1.5...6	
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1...6	1...6	
	2 conductors	mm <sup>2</sup>	1...6	1...6	
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	1...10	1...10	
	2 conductors	mm <sup>2</sup>	1...6	1...6	
Screwdriver			Philips n° 2 or flat screwdriver: Ø6 mm		
Tightening torque		N.m	1.9...2.5	1.9...2.5	
Control circuit connection characteristics of LUCL					
<b>Connection to Ø3 mm screw clamp terminals</b>					
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.75...1.5	0.75...1.5	
	2 conductors	mm <sup>2</sup>	0.75...1.5	0.75...1.5	
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	0.34...1.5	0.34...1.5	
	2 conductors	mm <sup>2</sup>	0.34...1.5	0.34...1.5	
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.75...1.5	0.75...1.5	
	2 conductors	mm <sup>2</sup>	0.75...1.5	0.75...1.5	
Screwdriver			Philips n° 2 or flat screwdriver: Ø5 mm		
Tightening torque		N.m	0.8...1.2	0.8...1.2	
Control circuit characteristics of LUCL					
Rated control circuit voltage	~ 50/60 Hz	V	24...240	24...240	
	≡	V	24...220	24...220	
Voltage limits	≡ 24 V <sup>(1)</sup>	V	20...27	20...27	
	Operation	V	20...26.5	20...26.5	
Drop-out	~ or ≡ 48...72 V	V	~ 38.5...72, ≡ 38.5...93	~ 38.5...72, ≡ 38.5...93	
	~ 110...240 V	V	~ 88...264	~ 88...264	
	≡ 110...240 V	V	≡ 88...242	≡ 88...242	
	≡ 24 V	V	14.5	14.5	
Typical consumption	~ 24 V	V	14.5	14.5	
	~ or ≡ 48...72 V	V	29	29	
	~ 110...240 V, ≡ 110...220 V	V	55	55	
	I max while closing	mA	280	280	
I rms sealed	≡ 24 V	mA	280	280	
	~ 24 V	mA	60	80	
	~ or ≡ 48...72 V	mA	70	90	
	~ 110...240 V, ≡ 110...220 V	mA	35	45	
Heat dissipation		W	35	25	
Operating time	Closing	ms	2	3	
	Opening	ms	24 V: 70; 48 V: 60; ≥ 72 V: 50	24 V: 70; 48 V: 60; ≥ 72 V: 50	
Resistance to micro-breaks		ms	35	35	
Resistance to voltage dips		ms	3	3	
Resistance to voltage dips		IEC/EN 61000-4-11	At least 70 % of U <sub>c</sub> for 500 ms		
Mechanical durability		In millions of operating cycles	15	15	
Maximum operating rate		In operating cycles per hour	3600	3600	
Main pole characteristics of LUCL					
Number of poles			3	3	
Isolation conforming to IEC/EN 60947-1	Possible		Yes	Yes	
	Padlocking		1 padlock with Ø6.9 mm shank	1 padlock with Ø6.9 mm shank	
Rated thermal current		A	12	32	(38 A for LUB38)
Rated operational current (U <sub>e</sub> ≤ 440 V)	Conforming to IEC/EN 60947-6-2	Category AC-41	θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A	(38 A for LUB38)
		Category AC-43	θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A	38
Rated operational voltage		V	690 <sup>(3)</sup>	690 <sup>(3)</sup>	690
Frequency limits		Of the operating current	Hz	40...60	40...60
Power dissipated in the power circuits	Operational current	A	3 6 9 12 18 25 32 38		
	Power dissipated in all three poles	W	0.1 0.3 0.6 1.1 2.4 4.6 7.5 10.5		
Rated breaking capacity on short-circuit		V	230 440 500 690		
		kA	50 50 10 4		
Total breaking time		ms	2 2 2		
Thermal limit		With I <sub>sc</sub> max on 440 V	kA <sup>2</sup> s	90	120

(1) d.c. voltage with maximum ripple of ± 10 %.

(2) No consumption sealed.

(3) For 690 V, use phase barrier LU9SP0.

References: page A4/34

Schemes: page A4/65

#### Characteristics of limiter-disconnector LUALB1

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	<b>V</b>	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	<b>A</b>	32
Operating threshold I rms	<b>kA</b>	50
Breaking capacity	<b>V</b>	440      690
	<b>kA</b>	130      70
Mounting		Directly on the upstream terminals of the starter-controller
<b>Cabling</b>		
Solid cable	1 conductor	<b>mm<sup>2</sup></b> 1.5...10
	2 conductors	<b>mm<sup>2</sup></b> 1.5...6
Flexible cable without cable end	1 conductor	<b>mm<sup>2</sup></b> 1...10
	2 conductors	<b>mm<sup>2</sup></b> 1...6
Flexible cable with cable end	1 conductor	<b>mm<sup>2</sup></b> 1...6
	2 conductors	<b>mm<sup>2</sup></b> 1...6
Screwdriver		Phillips n°2 or flat screwdriver Ø6 mm
Tightening torque	<b>N.m</b>	1.9...2.5

#### Characteristics of current limiter LA9LB920

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	<b>V</b>	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	<b>A</b>	63
Operating threshold I rms	<b>A</b>	1000
Breaking capacity	<b>V</b>	440      690
	<b>kA</b>	100      35
Mounting		Separate
<b>Cabling</b>		
Solid cable	1 conductor	<b>mm<sup>2</sup></b> 1.5...25
	2 conductors	<b>mm<sup>2</sup></b> 1.5...10
Flexible cable without cable end	1 conductor	<b>mm<sup>2</sup></b> 1.5...25
	2 conductors	<b>mm<sup>2</sup></b> 2.5...10
Flexible cable with cable end	1 conductor	<b>mm<sup>2</sup></b> 1.5...16
	2 conductors	<b>mm<sup>2</sup></b> 1.5...4
Screwdriver		Phillips n°2 or flat screwdriver Ø6 mm
Tightening torque	<b>N.m</b>	2.2

#### Characteristics of thermal overload alarm function modules LUFW10

Activation threshold		Fixed at 88 % of the thermal tripping state
Hysteresis between activation and switching off		5 %
Display		By LED on front panel
Supply		Powered by the control unit
Discrete output characteristics	Type	N/O contact
	AC-15	230 V max; 400 VA 100 000 operating cycles
	DC-13	24 V; 50 W 100 000 operating cycles
Conventional thermal current (Ith)	For ambient temperature $\theta < 70$ °C	<b>A</b> 2
Short-circuit protection	Conforming to IEC/EN 60947-5-1	<b>A</b> gG fuse: 2

#### Characteristics of thermal overload fault signalling and reset modules

Module type		LUFDH11	LUFDA01	LUFDA10
Fault signalling		By LED on front panel		
External power supply	<b>V</b>	~/- 24... 240		
Module consumption	<b>mA</b>	7 at ~ 24 1.1 at ~ 240		
Discrete outputs	Type	1 N/C+ 1 N/O	1 N/C	1 N/O
	AC-15	230 V max; 400 VA 100 000 operating cycles		
	DC-13	24 V; 50 W 100 000 operating cycles		
Conventional thermal current (Ith)	For ambient temperature $\theta < 70$ °C	<b>A</b> 2		
Short-circuit protection	Conforming to IEC/EN 60947-5-1	<b>A</b> gG fuse: 2		
Reset input	Conductor c.s.a.	<b>mm<sup>2</sup></b> 0.2 min		
	Length	<b>m</b> 500 (R = 50 $\Omega$ , L = 52.8 mH, Cp = 93 pF)		





#### Characteristics of motor load indication function module LUFV2

Analogue output			4 - 20 mA
Signal delivered			Value of I average/I <sub>r</sub> ratio within the range of 0 to 2 for LUCB and LUCD Value of I average/I <sub>r</sub> ratio within the range of 0 to 3 for LUC C
Load impedance	Minimum	kΩ	–
	Maximum	Ω	500
	Typical	Ω	100
Signal characteristics with advanced control unit	Precision		±6 %
Signal characteristics with multifunction control unit	Precision		±10 %
	Resolution		1 % of I <sub>r</sub>
Supply			External ~ 24 V

#### Characteristics of AS-Interface communication modules ASILUF C5 and ASILUF C51

Module type		ASILUF C5	ASILUF C51
Product certification		AS-Interface V2.1 n° 52901	AS-Interface V2.1 n° 52303
AS-Interface profile		7.D.F.0	7.A.7.E
Ambient air temperature		°C Operation -25...+70	
Cycle time		5 ms	10
Addressing		31 slaves	62 slaves
AS-Interface supply		V 29.5...31.5	
Current consumption	On the AS-Interface bus	mA	Normal operation: 25
		mA	Fault condition: 30
	On 24 V supply for the outputs	mA	200
Auxiliary supply		V ~ 24 ±30 %	
Number of outputs		2 dedicated to starter-controller coil operation	
Switching capacity of the solid state outputs		0.5 A/24 V (outputs protected against short-circuits)	
Indication/diagnostics		By 2 LEDs on front panel	

#### Characteristics of Modbus communication module LULC033

Physical interface			RS 485 multi-drop
Connections			RJ45 on front panel
Protocol			Modbus RTU
Maximum transmission speed		bit/s	19 200 (self-configuration up to this value)
Maximum return time		ms	30
Addressing			By switches: from 0...31
Ambient air temperature		°C	Operation -25...+55
Discrete inputs	Number		2 (to be assigned according to the configuration)
	Supply	V	~ 24
	Input current	mA	7
Nominal input values	Voltage	V	~ 24 (positive logic)
	Current	mA	7
Response time	Change to state 1	ms	10 (±30 %)
	Change to state 0	ms	10 (±30 %)
Input type			Resistive
Solid state outputs	Number		3, of which 2 dedicated to starter-controller coil operation
	Supply	V	~ 24
	Max. current	mA	500
Protection	gl fuse	A	1
Switching capacity			0.5 A/24 V
Indication/diagnostics			By 3 LEDs on front panel

# TeSys Control

## Ultra motor starters - Communication modules

### Characteristics

Characteristics of CANopen, Profibus DP and DeviceNet communication modules					
Communication module			Profibus DP LULC07	CANopen LULC08	DeviceNet LULC09
Services	Conformity class		NA	S 20 (Schneider Electric)	NA
	Standard		Profibus DP	CIADS-301 V4.02 DR 303-2	IEC 62026-1, overvoltage category III, degree of pollution: 3
	Profile		LVSG V1.0 MS (Motor Starter) and MMS (Motor Management Starter)	–	ODVA (Open DeviceNet Vendor Association) MS (Motor Starter)
	Protocol		Profibus DP	CAN 2.0A (2B passive)	CAN 2.0A (2B passive)
	Address		1...125	0...127 (by switches)	0...63
Structure	Physical interface		9-way SUB-D male	9-way SUB-D female	"Open Style" connector
	Binary rate		9600 Kbits/s...12 Mbits/s	10, 20, 50, 125, 250, 500 and 1000 Kbits/s (by switches)	125...500 kbaud
	Cables		2 shielded twisted pairs		
Supply for the discrete outputs and control	~ 24 V	<b>V</b>	20...28		
	Current consumption	<b>A</b>	1.5 (max)		
	Protection by gl fuse	<b>A</b>	2		
Ambient air temperature		<b>°C</b>	Operation -25...+55		
Logic inputs	Number		2 (to be assigned according to the configuration)		
	Supply		<b>V</b>	~ 24	
	Input current		<b>mA</b>	7	
	Nominal input values	Voltage		<b>V</b>	~ 24 (positive logic)
		Current		<b>mA</b>	7
	Response time	Change to state 1		<b>ms</b>	10 (±30 %)
		Change to state 0		<b>ms</b>	10 (±30 %)
Input type				Resistive	
Discrete outputs	Number		3, of which 2 dedicated to starter-controller coil operation		
	Max. current		<b>mA</b>	500	
	Short-circuit protection			Yes	
	Switching capacity			0.5 A / ~ 24 V	
Indication/diagnostics			By 3 LEDs on front panel		

Characteristics of Advantys STB communication module LULC15					
Physical interface			CAN		
Connections			Fire Wire		
Protocol			CAN 2.0 and CAN 2.B (passive mode)		
Transmission speed		<b>kbit/s</b>	800		
Addressing			Self-addressing		
Supply for the discrete outputs and control	~ 24 V		<b>V</b>	20...28	
	Current consumption		<b>A</b>	1.5 (max)	
	Protection by gl fuse		<b>A</b>	2	
Ambient air temperature		<b>°C</b>	Operation -25...+55		
Discrete inputs	Number		2 ( to be assigned according to configuration)		
	Supply		<b>V</b>	~ 24	
	Input current		<b>mA</b>	7	
	Nominal input values	Voltage		<b>V</b>	~ 24 (positive logic)
		Current		<b>mA</b>	7
	Response time	Change to state 1		<b>ms</b>	10 (± 30 %)
		Change to state 0		<b>ms</b>	10 (± 30 %)
Input type				Resistive	
Discrete outputs	Number		3, of which 2 dedicated to starter-controller coil operation		
	Max. current		<b>mA</b>	500	
	Short-circuit protection			Yes	
	Switching capacity			0.5 A / ~ 24 V	
Indication/diagnostics			By 3 LEDs on front panel		

References: pages A4/25, A4/27, A4/28, A4/29 Schemes: pages A4/68 and A4/69


















































Connection characteristics							
Module type			LUFW10, LUFDH11, LUFDA01 and LUFDA10	LUFV2	ASILUFC5 and ASILUFC51		
					Inputs and 24 V auxiliary supply	Outputs	
Connectors	Pitch		5.08	3.81	5.08	3.81	
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.2...1.5	0.14...1	0.2...1.5	0.14...1	
	2 identical conductors	mm <sup>2</sup>	0.2...1	0.14...0.75	0.2...1	0.14...0.75	
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...1.5	0.25...1	0.25...1.5	0.25...1
		2 identical conductors	mm <sup>2</sup>	0.25...1	0.25...0.34	0.25...1	0.25...0.34
	With insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...1.5	0.25...0.5	0.25...1.5	0.25...0.5
		2 identical conductors (Use a double cable end)	mm <sup>2</sup>	0.5...1	0.5	0.5...1	0.5
Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.2...1.5	0.14...1	0.2...1.5	0.14...1	
	2 identical conductors	mm <sup>2</sup>	0.2...1	0.14...0.5	0.2...1	0.14...0.5	
Conductor size	1 conductor		AWG24... AWG16	AWG26... AWG16	AWG24... AWG16	AWG26... AWG16	
Tightening torque		N.m	0.5...0.6	0.20...0.25	0.5...0.6	0.20...0.25	
Flat screwdriver		mm	3.5	2.5	3.5	2.5	
Module type			LULC033, LULC08 and LULC15	LUFC00	LULC09		
					Inputs and 24 V auxiliary supply	Connection on the bus	
Connectors	Pitch		3.81	3.81	3.81	5 (Open Style) DeviceNet	
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.14...1	0.14...1	0.14...1	0.2...2.5	
	2 identical conductors	mm <sup>2</sup>	0.14...0.75	0.14...0.75	0.14...0.75	0.5...1.5	
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...1	0.25...1	0.25...1	0.25...2.5
		2 identical conductors	mm <sup>2</sup>	0.25...0.34	0.25...0.34	0.25...0.34	0.25...1
	With insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...0.5	0.25...0.5	0.25...0.5	0.25...2.5
		2 identical conductors (Use a double cable end)	mm <sup>2</sup>	0.5	0.5	0.75	0.5...1.5
Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.14...1	0.14...1	0.14...1	0.2...2.5	
	2 identical conductors	mm <sup>2</sup>	0.14...0.5	0.14...0.5	0.14...0.5	0.14...0.5	
Conductor size	1 conductor		AWG26... AWG16	AWG26... AWG16	AWG26... AWG16	AWG24... AWG16	
Tightening torque		N.m	0.20...0.25	0.20...0.25	0.20...0.25	0.5...0.6	
Flat screwdriver		mm	2.5	2.5	2.5	3.5	


# TeSys Control

## Ultra motor starters - Operating status indication

### Characteristics

Knob positions - Poles and Signaling contact states								
Ultra operating status	Position of rotary knob	Indication on front panel	N/O pole contact	N/C pole contact	N/O contact any fault	N/C ontact any fault	⊕ N/O contact product ready	N/C contact Rotary knob on OFF position
References of add-on contact blocks and auxiliary contact modules Terminal referencing	–	–	–	LUFN11 31-32	LUA1C20 97-98	LUA1C11 95-96	LUA1C20 17-18	–
	or	–	–	LUFN02 31-32 41-42	–	–	–	LUA8E20 57/58 67/68
	or	–	–	LUFN20 33-34 43-44	LU9BN11 21-22	–	–	LUA1C11 17-18
	or	–	–	LUFN11 43-44	–	–	–	–
	or	–	–	LU9BN11 13-14	–	–	–	–
Off	OFF 	0						
Ready to operate		0						
Start		1						
Tripped on short-circuit	TRIP 	I>>						
Tripped on thermal overload	Manual reset mode	TRIP 	0					
	Automatic reset on thermal overload fault mode		0					
	Remote reset mode		0					

N/O contact  in closed position.

N/C contact  in open position.

Ultra motor starters

Ref.



# TeSys Control

## Ultra motor starters - Available status

### Characteristics

Data profile under AS-Interface				Standard LUCA	Advanced LUCB, CC, CD	Multifunction LUCM
Control unit present in the product						
Status		D0	Ready (available)			
		D1	Poles closed (running)			
Commands		D0	Start - forward running			
		D1	Start - reverse running			

Main registers accessible with Modbus, CANopen, Advantys STB, Profibus DP and DeviceNet communication modules.				Standard	Advanced	Multifunction
Control unit present in the product						
Marking	Register 0...Register 99	Words...Bits	Commercial reference, serial number, software version			
Log	Register 100...Register 450	Words...Bits	Fault log, Operating log, Log of last 5 trips			
Status	Register 451...Register 464	Words...Bits	Alarm signalling (bits), Fault signalling (bits)			
Values	Register 465...Register 473	Words	Irms phase 1, phase 2, phase 3. Motor load, thermal status Earth leakage current. Phase imbalance and phase failure			
	Register 474...Register 599	Words...Bits	Reserved			
Configuration	Register 600...Register 699	Words...Bits	Protection and alarm thresholds, fallback mode and reset mode			
Commands	Register 700...Register 714	Words...Bits	Commands			

Status and values	Register 452	Bit 0	Short-circuit fault			
		Bit 1	Overcurrent fault			
		Bit 2	Thermal overload fault			
	Register 455	Bit 0	Ready (available)			
		Bit 1	Poles closed			
		Bit 2	Fault			
		Bit 3	Alarms			
		Bit 4	Tripped ("TRIP" position)			
		Bit 5	Fault acknowledgement allowed			
		Bit 6	Reserved			
		Bit 7	Motor running			
		Bit 8	Motor current % (bit 0)			
		Bit 9	Motor current % (bit 1)			
		Bit 10	Motor current % (bit 2)			
		Bit 11	Motor current % (bit 3)			
		Bit 12	Motor current % (bit 4)			
		Bit 13	Motor current % (bit 5)			
	Bit 14	Reserved				
	Bit 15	Motor starting				
Register 461	Bit 3	Thermal overload alarm				
Register 465	Word	Thermal status value				
Register 466	Word	Motor load value (Im/Ir)				

Configuration	Register 602	Bit 0	Manual reset on thermal overload fault			
		Bit 1	Remote reset on thermal overload fault			
		Bit 2	Automatic reset on thermal overload fault			
	Register 682	Value 0	Fallback mode validation			
		Value 1	Outputs OA1 and OA3 unchanged			
		Value 2	Outputs OA1 and OA3 forced to 0			
		Value 3	Outputs OA1 and OA3 unchanged, signalling existence of communication failure			
		Value 4	Outputs OA1 forced to 1 and OA3 unchanged			
Value 5	Outputs OA3 forced to 1 and OA1 unchanged					

Commands	Register 700	Bit 0	LO1 output command			
	Register 704	Bit 0	OA1 output command			
		Bit 1	OA3 output command			
		Bit 2	Reserved			
		Bit 3	Fault acknowledgement			
		Bit 4	Reserved			
		Bit 5	Trip test			
		Bit 6...15	Reserved			

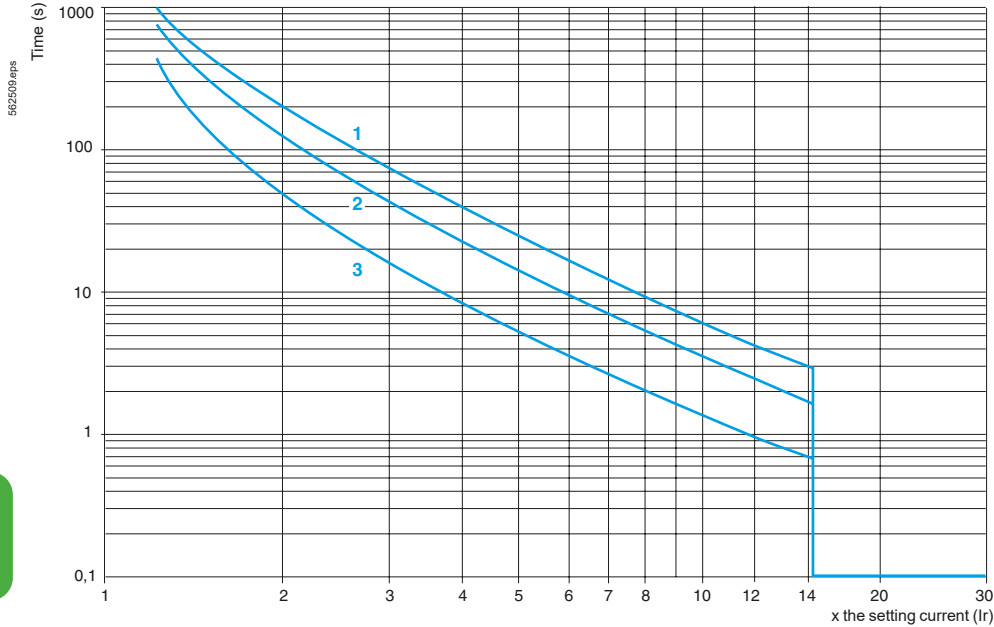
Data accessible

References:  
pages A4/24 to A4/29

Schemes:  
pages A4/66 and A4/67

#### Tripping curves for control units LUCA, LUCB, LUCD

Average operating times at 20 °C according to multiples of the setting current, tolerance :  $\pm 20\%$ .



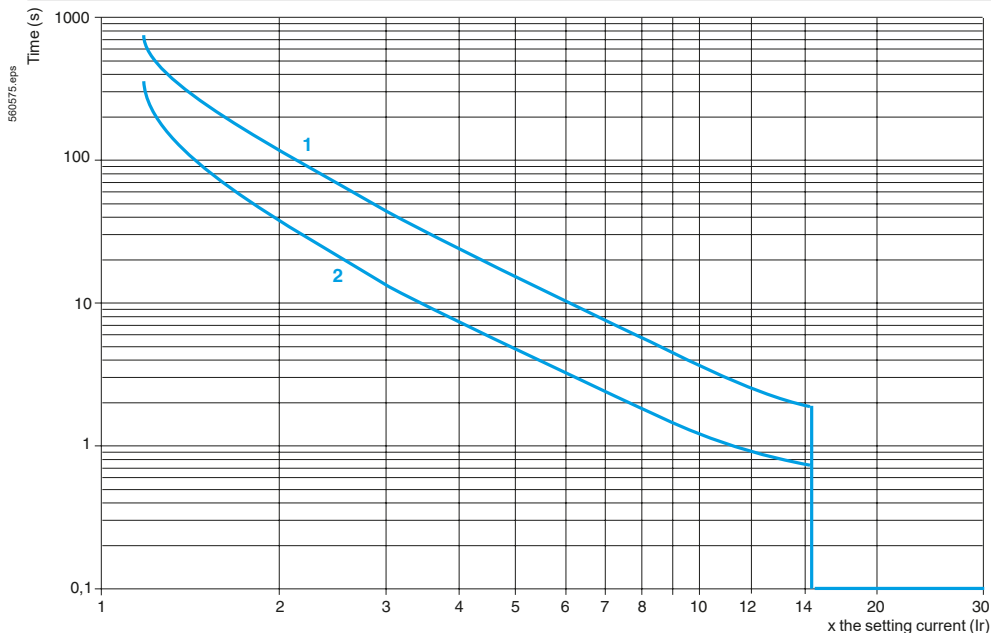
Ultra motor starters

Ref.

- 1 LUCD, 3 poles from cold state, class 20.
- 2 LUCA, LUCB, 3 poles from cold state, class 10.
- 3 LUCA, LUCB, LUCD, 3 poles from hot state.

#### Tripping curves for control units LUCC

Average operating times at 20 °C according to multiples of the setting current, tolerance :  $\pm 20\%$ .

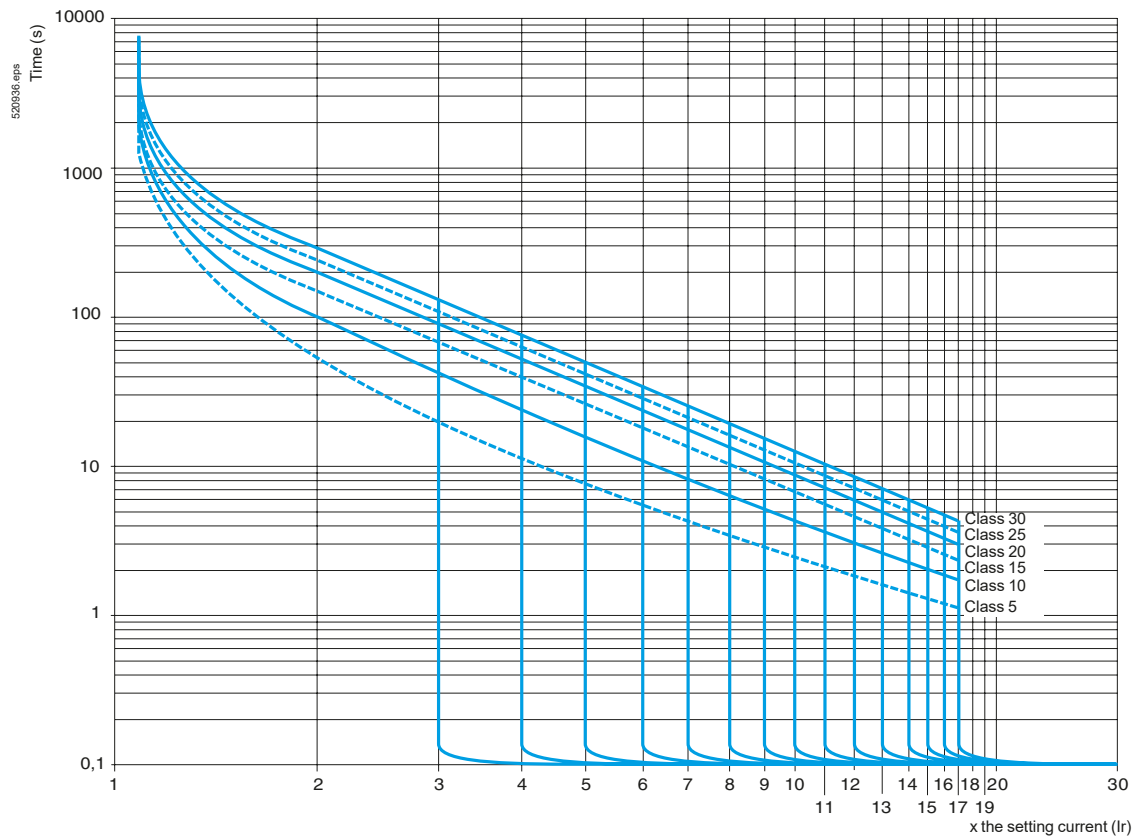


- 1 LUCC, single-phase, cold state.
- 2 LUCC, single-phase, hot state.

#### Tripping curves for control units LUCM

##### Cold state curves

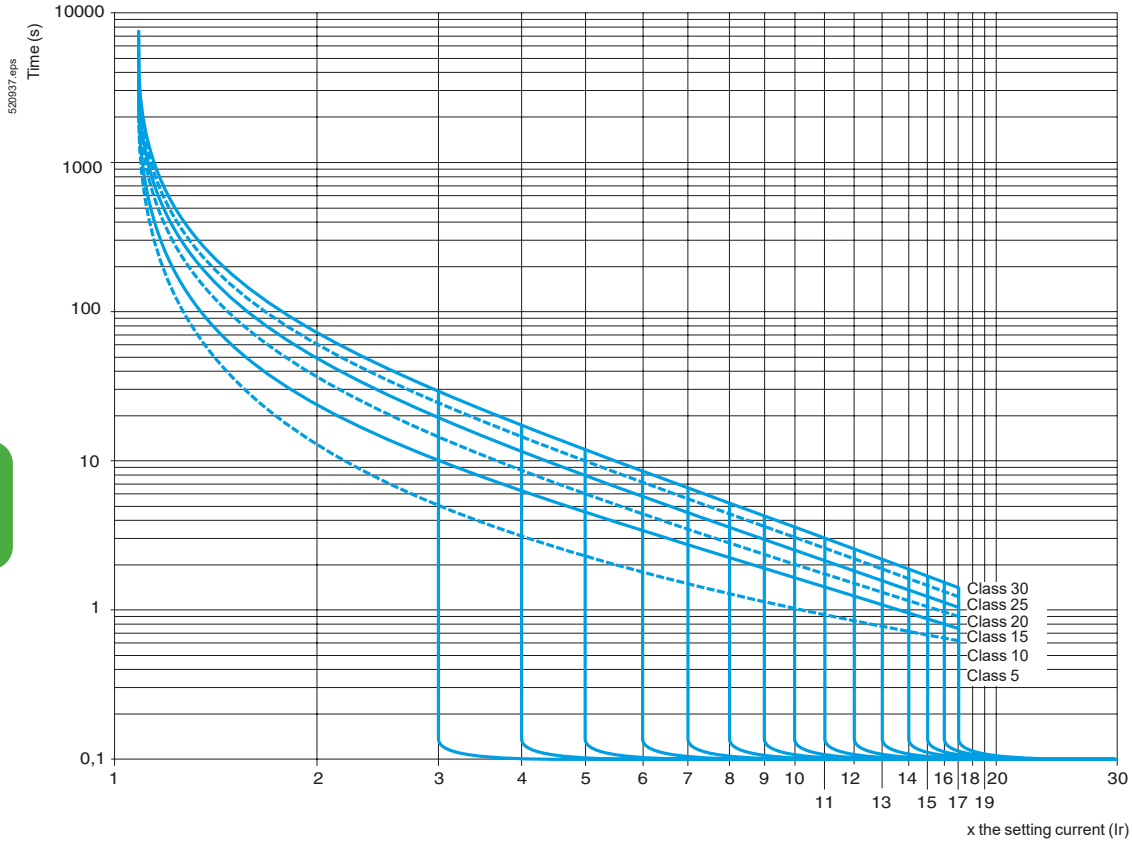
Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.



#### Tripping curves for control units LUCM

##### Hot state curves

Average operating times at 20 °C according to multiples of the setting current, tolerance :  $\pm 20\%$



Ultra motor starters

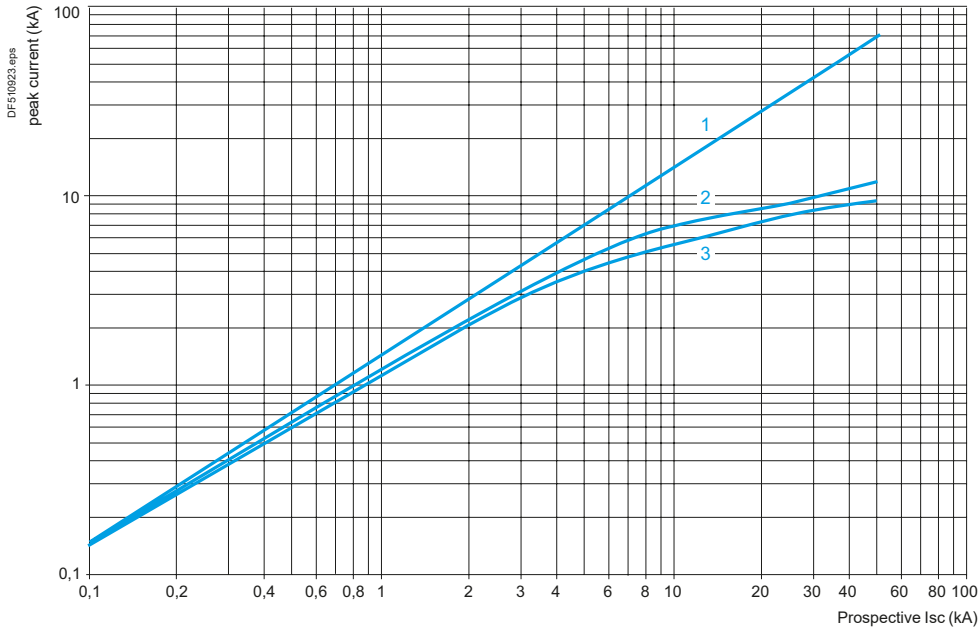
Ref.





#### Current limitation on short-circuit

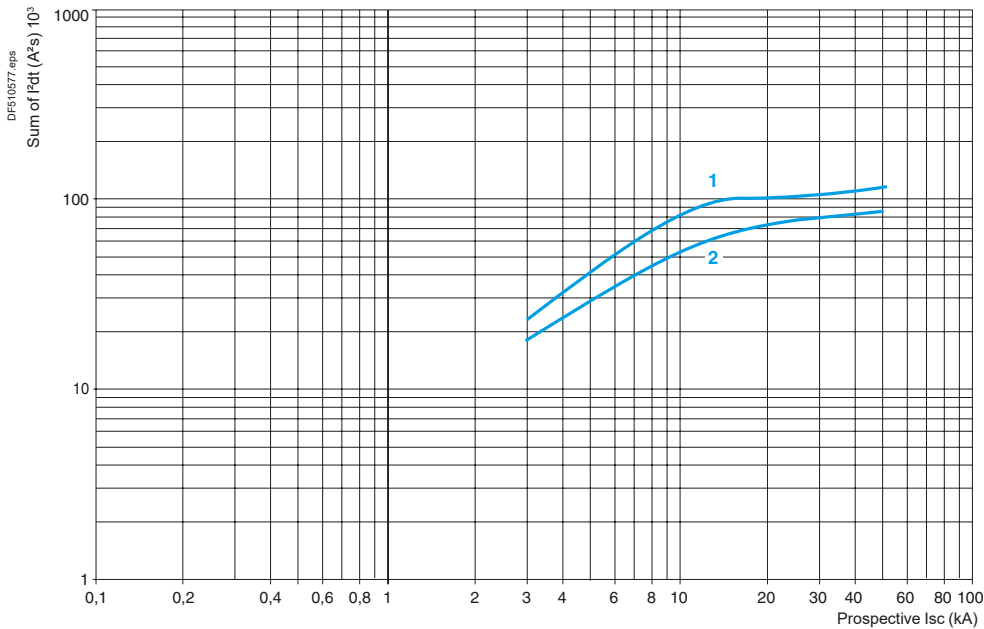
$U_e = 460 \text{ V}$



- 1 Maximum peak current
- 2 32 A, 38 A power base
- 3 12 A power base

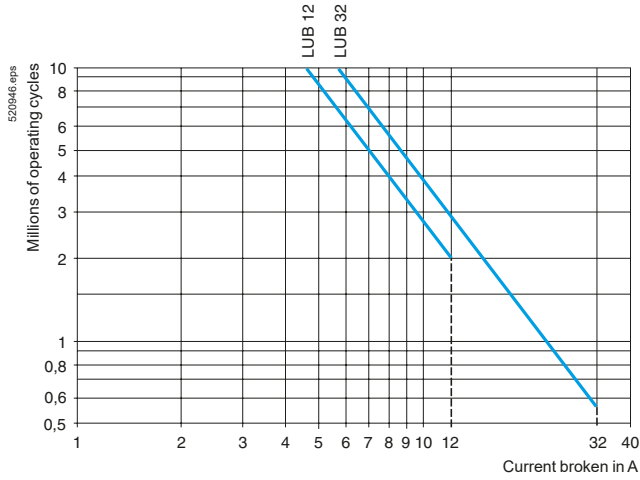
#### Thermal limit on short-circuit

$U_e = 460 \text{ V}$



- 1 32 A, 38 A power base
- 2 12 A power base

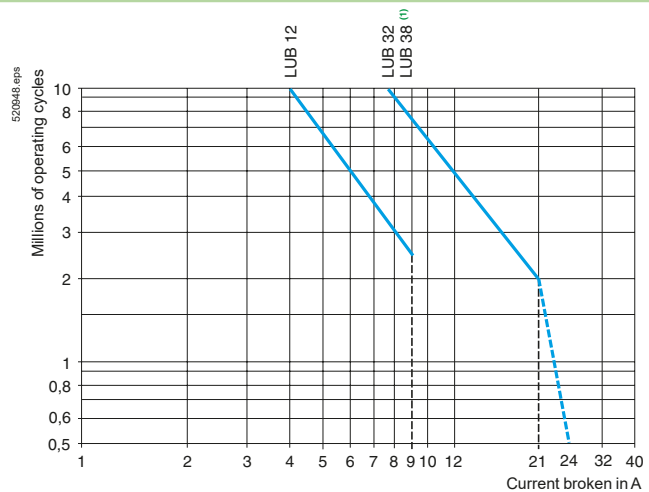
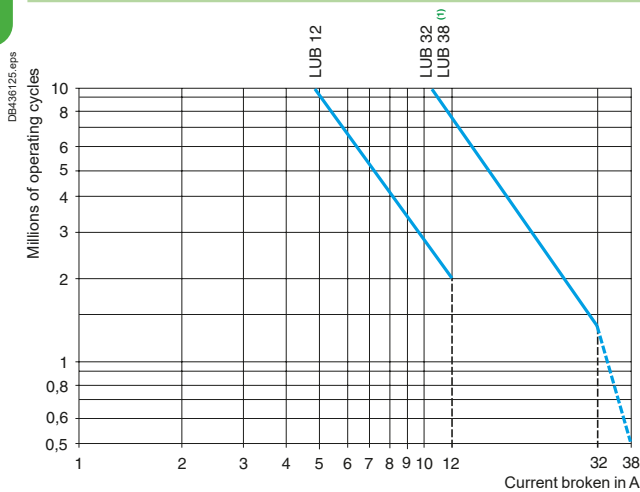
#### Use in category AC-41



#### Use in category AC-43

Ue ≤ 440 V

Ue = 690 V

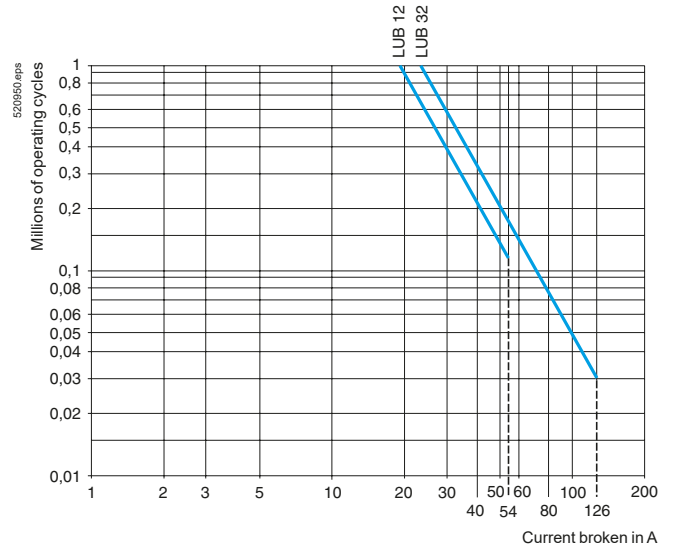
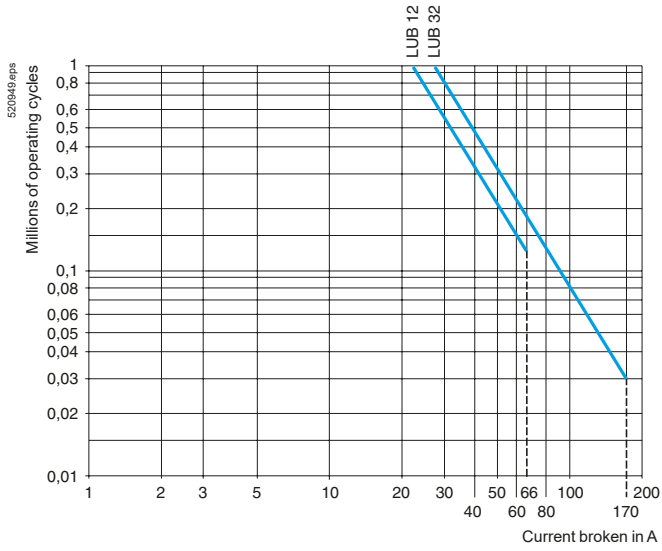


(1) Plain curve: LUB32 + LUB38, dotted curve: LUB38 only.

#### Use in category AC-44

Ue ≤ 440 V

Ue = 690 V



# TeSys Control

## Ultra motor starters

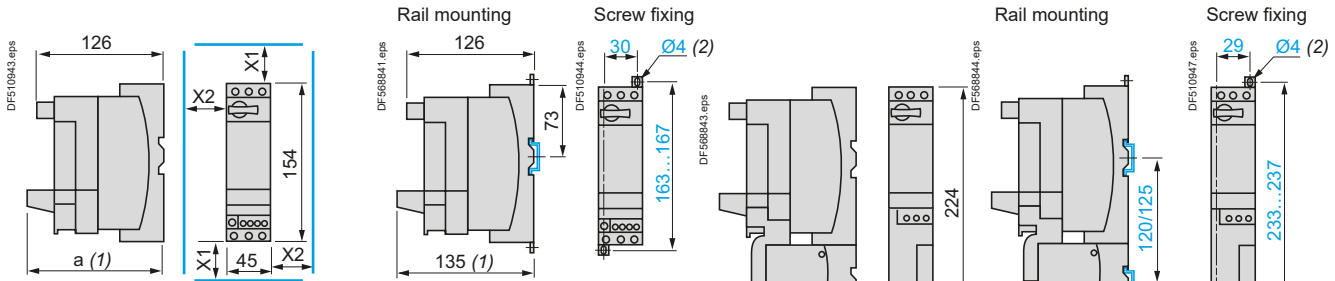
### Dimensions

#### Dimensions

##### Starter-controllers

LUB: non-reversing

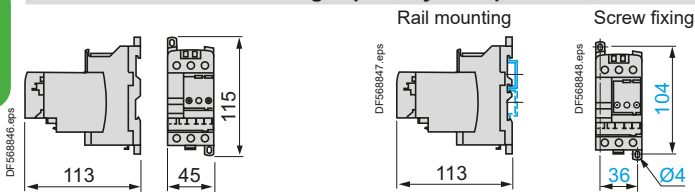
LU2B: reversing



With Modbus module	135
With Advantys STB, CANopen, Profibus DP or DeviceNet modules	147

Minimum electrical clearance:  
 X1 = 50 mm for Ue = 440 V and 70 mm for Ue = 500 and 690 V, X2 = 0

##### Reverser block for mounting separately from power base

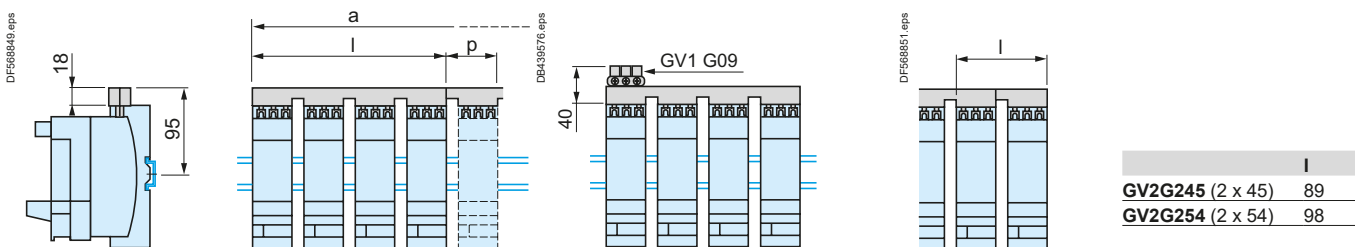


##### Sets of busbars and plug-in power sockets

GV2G445 and GV2G454

GV2G●●● with terminal block GV1G09

GV2G245 and G254



	I	P
GV2G445 (2 x 45)	179	45
GV2G454 (2 x 54)	206	54

	a			
Number of tap-offs	5	6	7	8
GV2G445 (2 x 45)	224	269	314	359
GV2G454 (2 x 54)	260	314	368	422

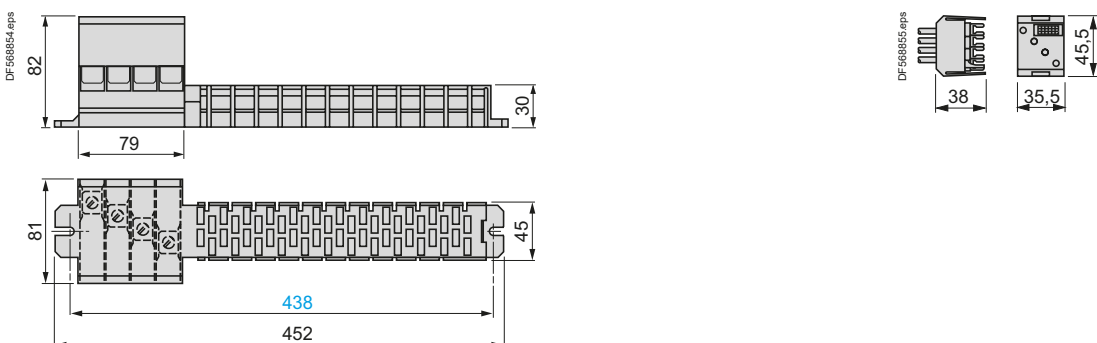
	I
GV2G245 (2 x 45)	89
GV2G254 (2 x 54)	98

	I
GV2G345 (2 x 45)	134
GV2G354 (2 x 54)	152

AK5JB144

AK5PC13, PC33, PC33L



(1) Depth with communication module.  
 (2) Retractable fixing lugs.

References:  
 pages A4/10 and A4/11

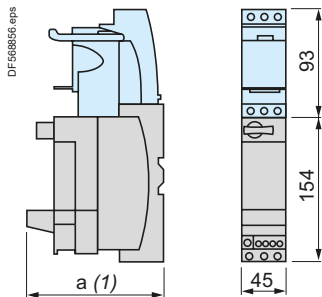
Characteristics:  
 page A4/44

Curves:  
 pages A4/56 to A4/61

Schemes:  
 pages A4/63 to A4/76

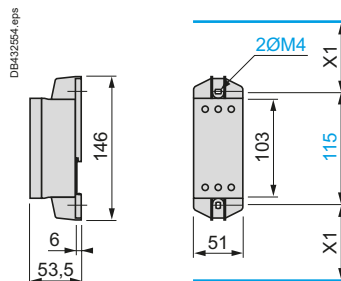
#### Dimensions, mounting

##### Limiter-disconnector LUALB1 Disconnector LUALB10



	a
With Modbus module	135
With Advantys STB, CANopen, Profibus DP or DeviceNet modules	147

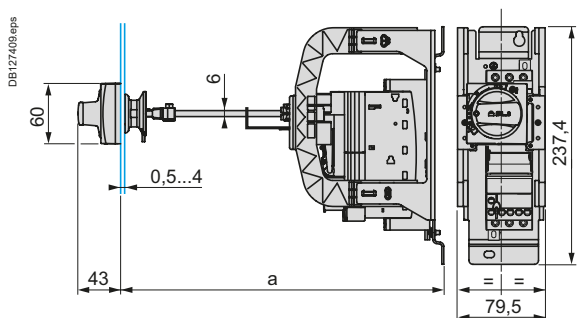
##### Current limiter LA9LB920



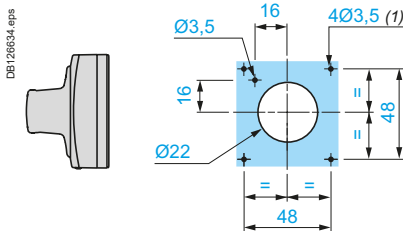
X1: Electrical clearance = 30 mm for  $U_e \leq 690$  V

#### Door interlock mechanisms

##### LU9APN21, LU9APN22, LU9APN24



##### Door cut-out



(1) For IP65 only.

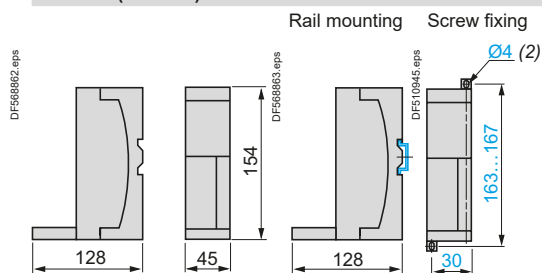
	a	
	Mini	Maxi
LU9APN●●	191	300
LU9APN●● + GVAPK12	300	483

Ultra  
motor  
starters

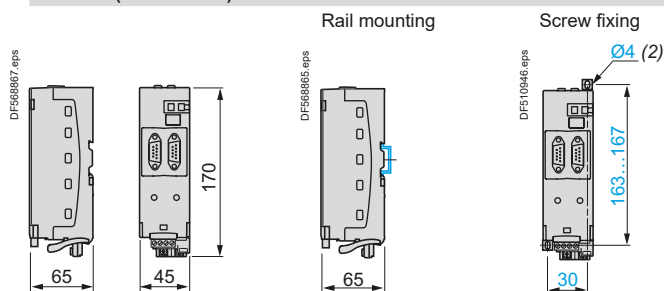
Ref.

#### Splitter boxes

##### LU9GC3 (Modbus) LU9G02 and LU9G03



##### LU9GC7 (Profibus DP)



(1) Depth with communication module.

(2) Retractable fixing lugs.

# TeSys Control

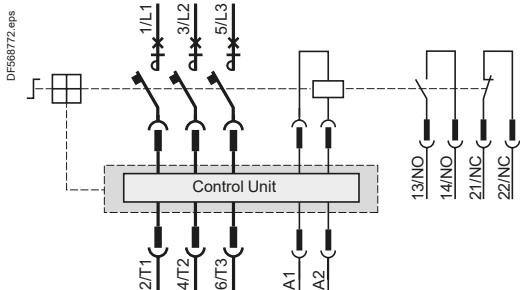
## Ultra motor starters - Terminal identifications

### Schemes

#### 12, 32, 38 A power bases with standard, advanced or multifunction control unit

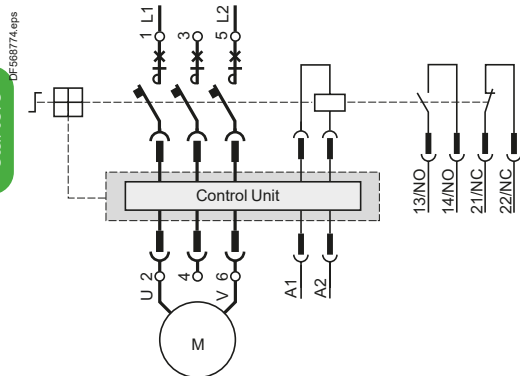
##### LUB

###### Non-reversing



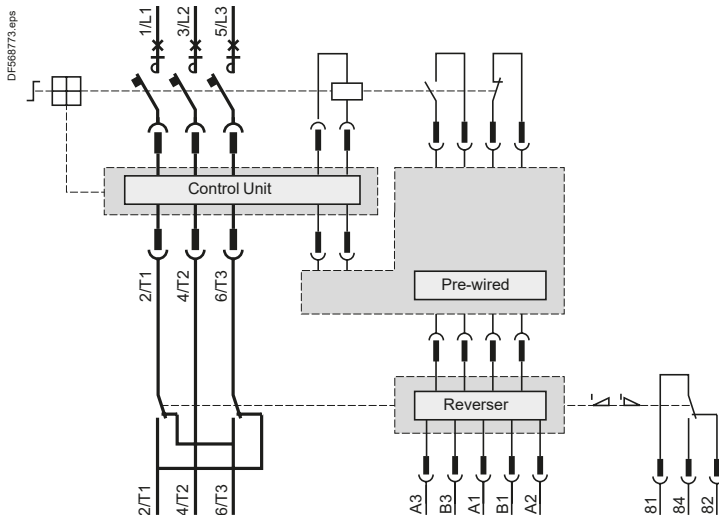
##### With control unit LUCC or LUCM

###### Connection of a single-phase motor

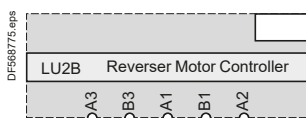


##### LU2B

###### Reversing

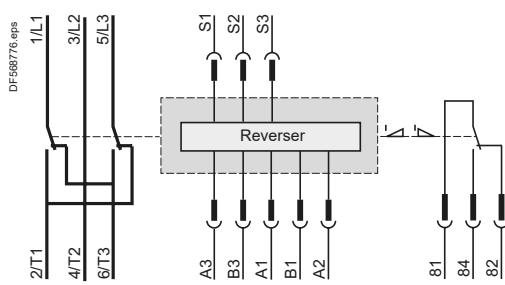


##### Control terminal block

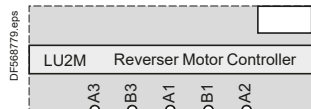


#### Reverser blocks

##### LU2M

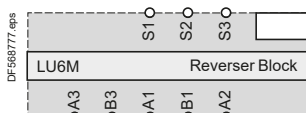


##### Control terminal block

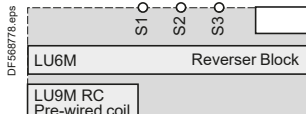


##### LU6M

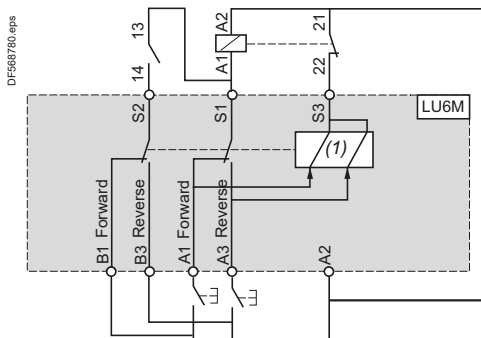
###### Control terminal blocks



###### With pre-wired connector LU9MRC



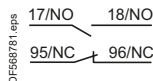
##### Basic scheme



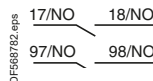
- S1 Start next stage
- S2 Electrical interlocking
- S3 Maintaining contact
- B1 Maintain forward running
- B3 Maintain reverse running
- A1 Pulse forward running
- A2 Common
- A3 Pulse reverse running
- (1) Electronically operated bistable electromagnet.

#### Add-on contact blocks

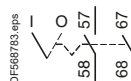
##### LUA1C11



##### LUA1C20

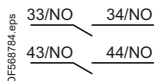


##### LUA8E20

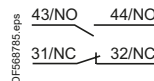


#### Add-on contact modules

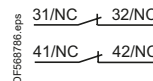
##### LUFN20



##### LUFN11



##### LUFN02



# TeSys Control

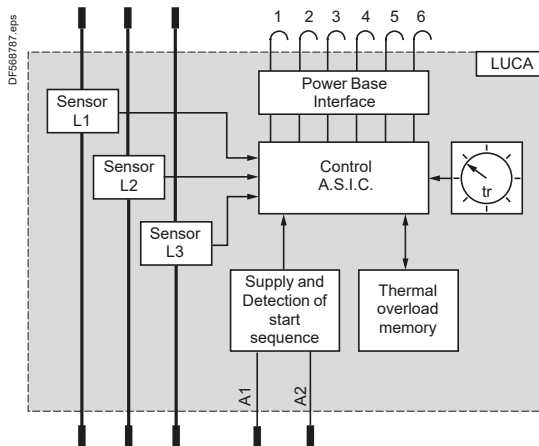
## Ultra motor starters - Terminal identifications

### Schemes

#### Control units

##### Standard control units LUCA

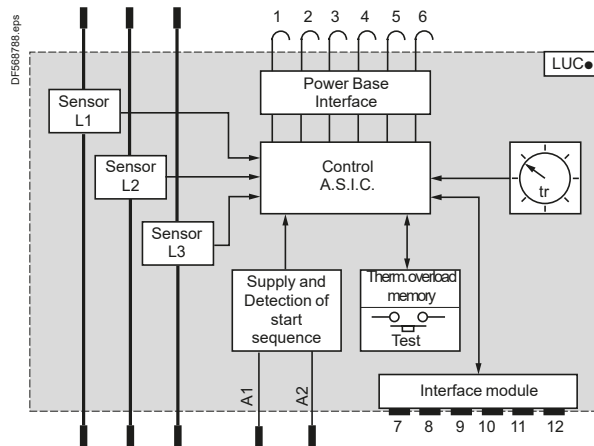
Basic scheme



- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C

##### Advanced control units LUCB, LUCC, LUCD

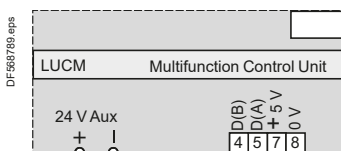
Basic schemehd



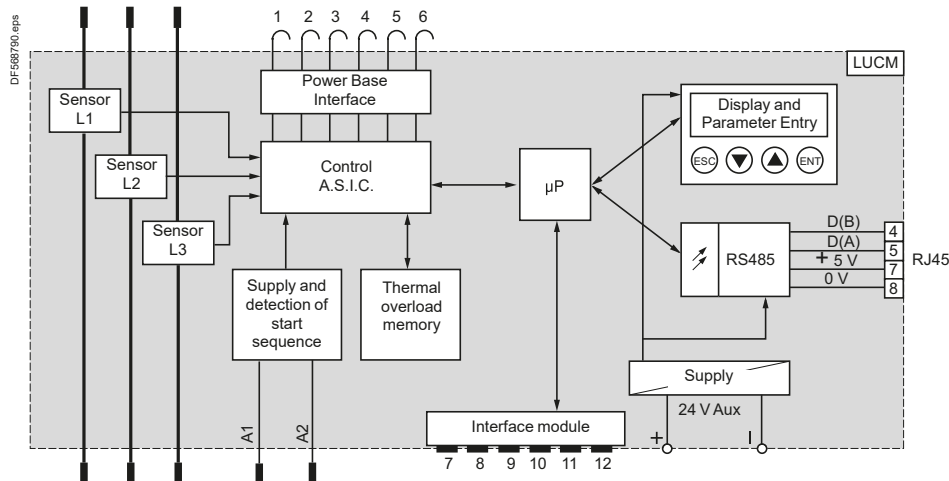
- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C
- 7 Earth
- 8 Thermal status/Set
- 9 Reset mode/Reset
- 10 (Im/Ir)
- 11 Vc2
- 12 Vc1

##### Multifunction control units LUCM

Control terminal block



Basic scheme



- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C
- 7 Earth
- 8 N/C
- 9 Earth
- 10 (Im/Ir)
- 11 Rx/Tx
- 12 Vc1

References:  
pages A4/11 and A4/12

Characteristics:  
pages A4/47 to A4/49

Curves:  
pages A4/56 to A4/58

Ultra motor starters

Ref.



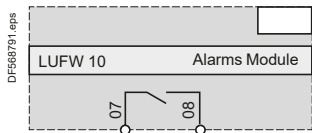
# TeSys Control

## Ultra motor starters - Terminal identifications

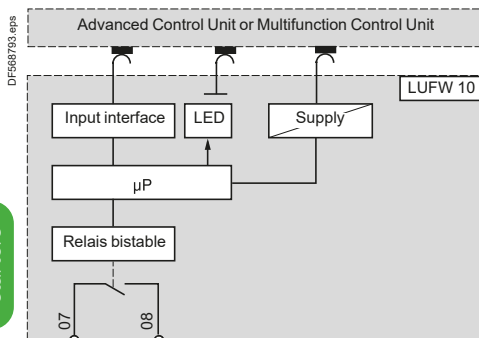
### Schemes

#### Function modules

##### Alarm LUFW10



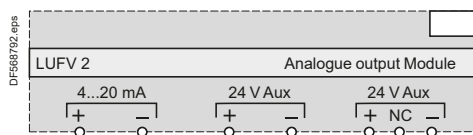
Basic scheme



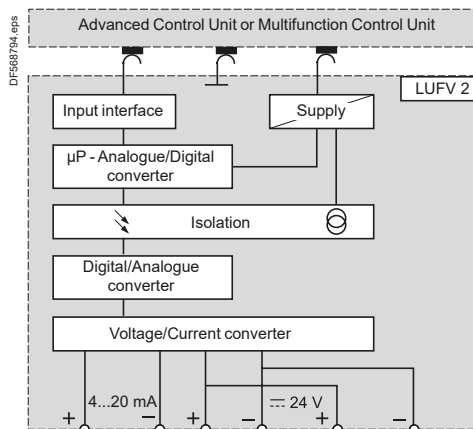
~ 250 V, 2 A  
 ≍ 24 V, 2 A

##### Indication of motor load LUFV2

##### 4-20 mA output



Basic scheme



100 Ω < load < 500 Ω ≍ 30 V max and 40 mA min

Ultra motor starters

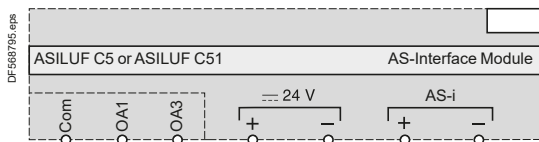
Ref.



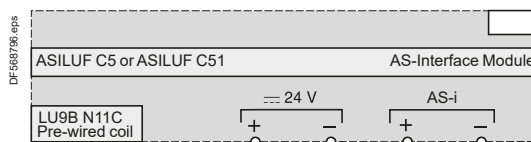
#### Communication modules

##### Communication modules ASILUFC5 and ASILUFC51

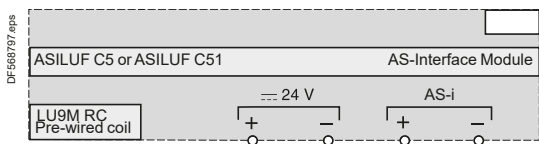
##### Without pre-wired coil connection



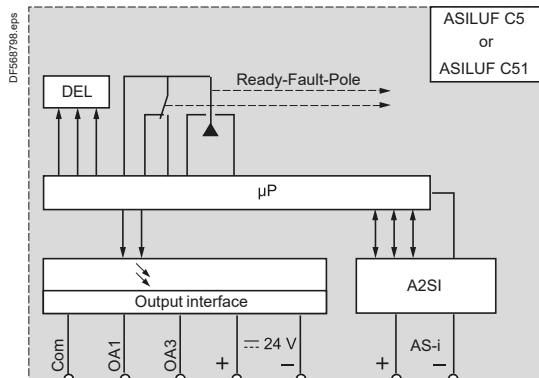
##### With pre-wired coil connection LU9BN11C



##### With pre-wired coil connection LU9MRC



Basic scheme



References:  
 pages A4/13, A4/24

Characteristics:  
 pages A4/50 to A4/55



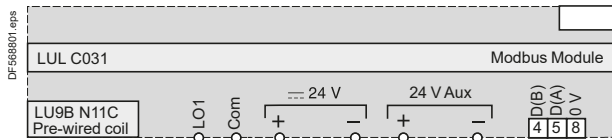
# TeSys Control

## Ultra motor starters - Terminal identifications

### Schemes

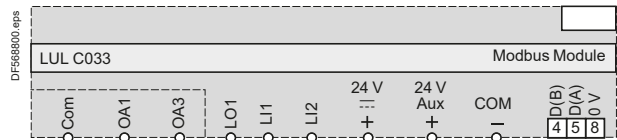
#### Communication modules (continued)

##### With pre-wired coil connection LU9BN11C

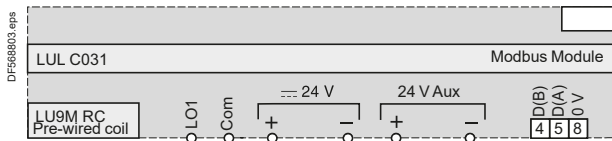


##### Modbus communication module LULC033

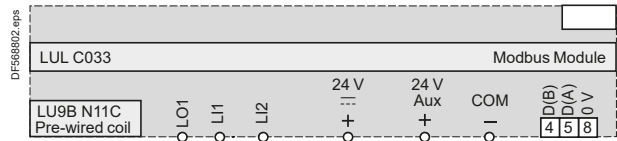
##### Without pre-wired coil connection



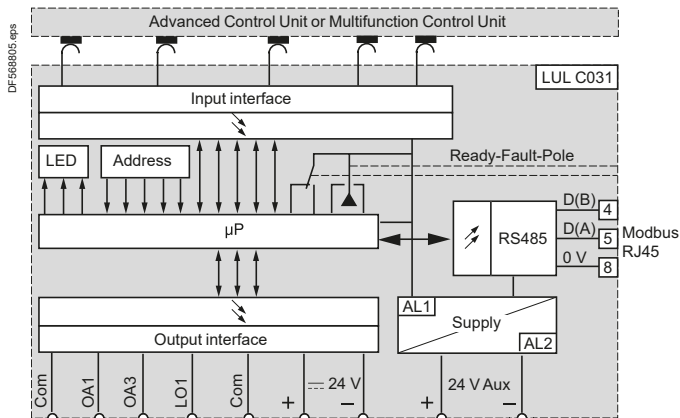
##### With pre-wired coil connection LU9MRC



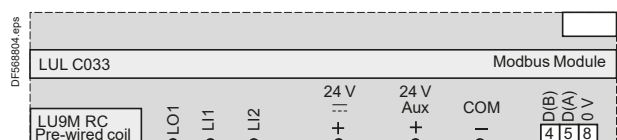
##### With pre-wired coil connection LU9BN11C



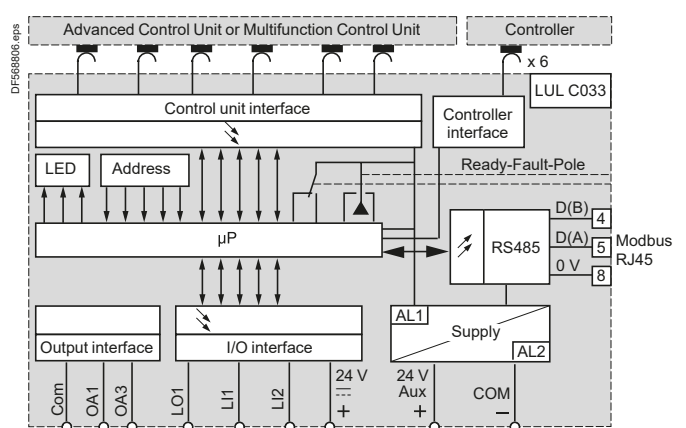
##### Basic scheme



##### With pre-wired coil connection LU9MRC



##### Basic scheme



Ultra motor starters

Ref.



# TeSys Control

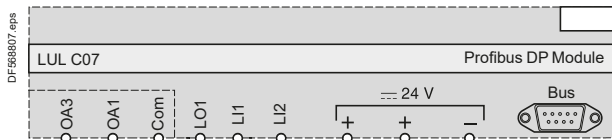
## Ultra motor starters - Terminal identifications

### Schemes

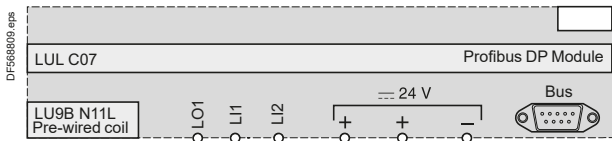
#### Communication modules (continued)

##### Profibus DP communication module LULC07

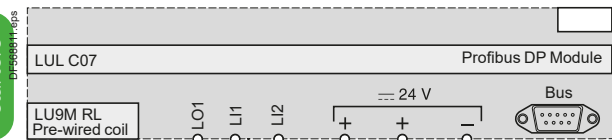
Without pre-wired coil connection



With pre-wired coil connection LU9BN11LC

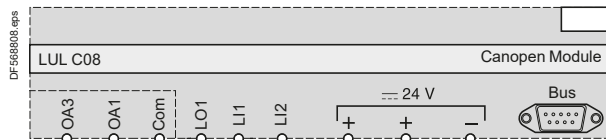


With pre-wired coil connection LU9MRC

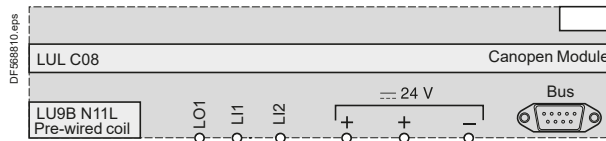


##### CANopen communication module LULC08

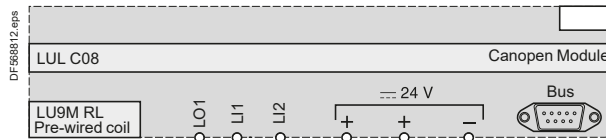
Without pre-wired coil connection



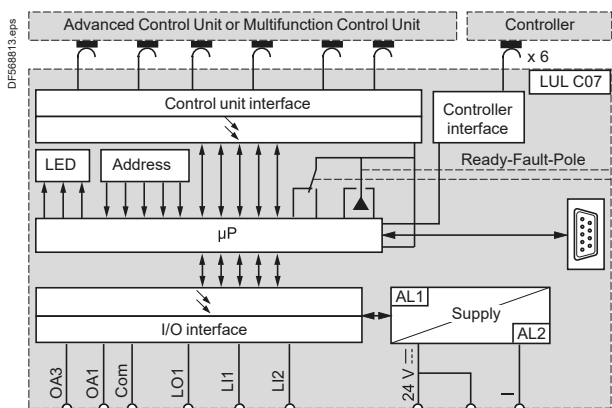
With pre-wired coil connection LU9BN11LC



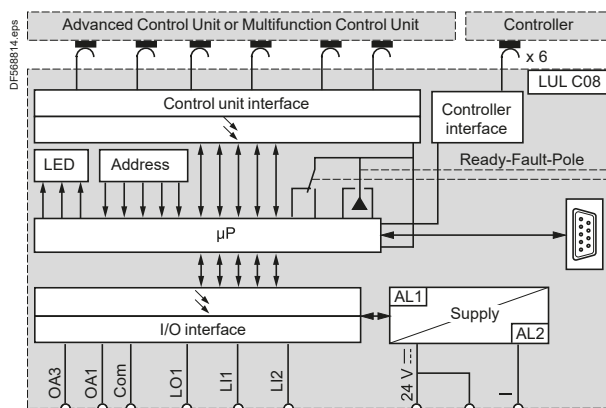
With pre-wired coil connection LU9MRC



#### Basic scheme

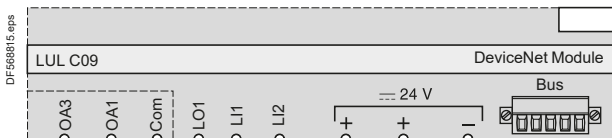


#### Basic scheme

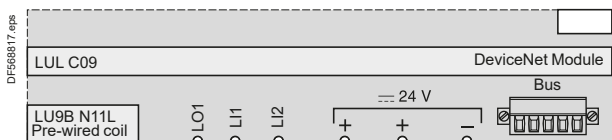


##### DeviceNet communication module LULC09

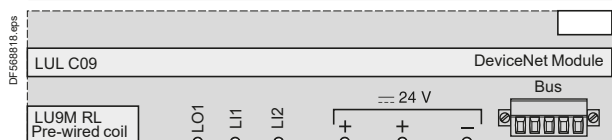
Without pre-wired coil connection



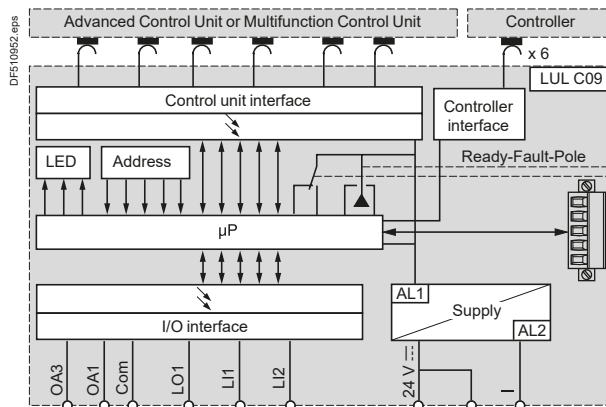
With pre-wired coil connection LU9BN11LC



With pre-wired coil connection LU9M RL



#### Basic scheme



# TeSys Control

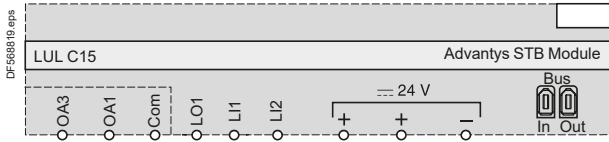
## Ultra motor starters - Terminal identifications

### Schemes

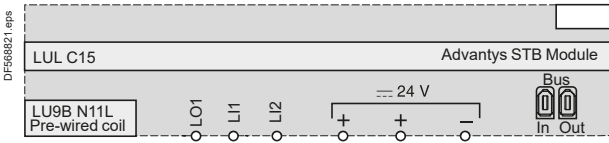
#### Communication modules (continued)

##### Advantys STB communication module LULC15

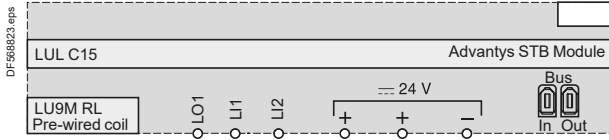
Without pre-wired coil connection



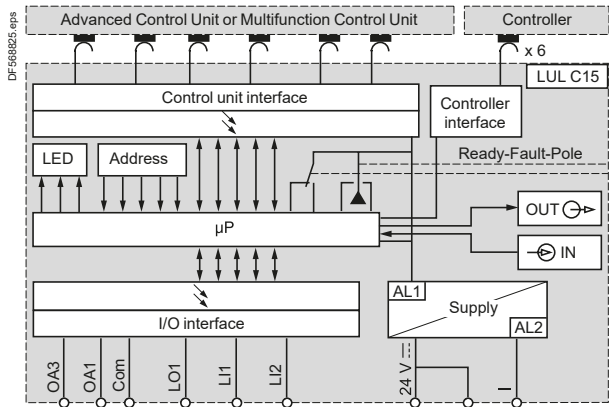
With pre-wired coil connection LU9BN11LC



With pre-wired coil connection LU9MRC



Basic scheme

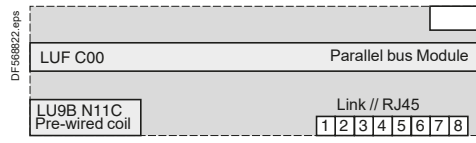


##### Parallel wiring modules

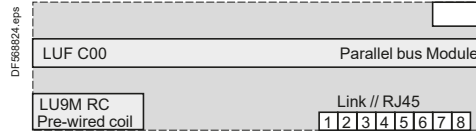
Without pre-wired coil connection



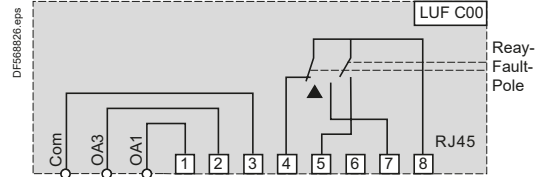
With pre-wired coil connection LU9BN11LC



With pre-wired coil connection LU9MRC

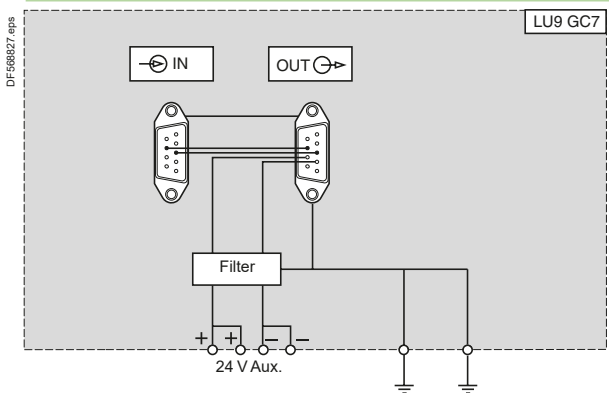


Basic scheme



- 1 Forward running
- 2 Reverse running
- 3 Output common
- 4 Selector in position
- 5 Pole state
- 6 Reserved
- 7 Fault
- 8 Input common

##### Profibus DP power supply module LU9GC7



# TeSys Control

## Ultra motor starters - Terminal identifications

### Schemes

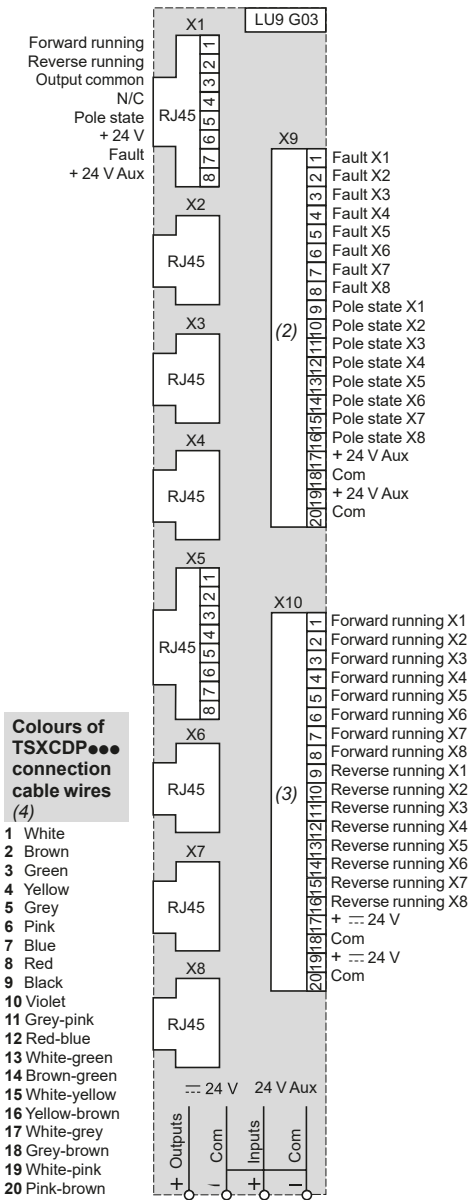
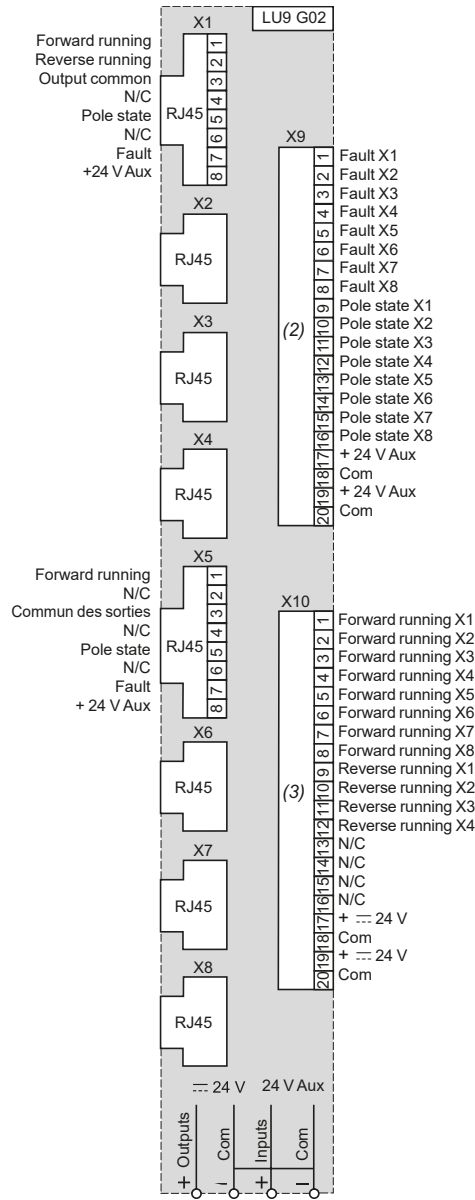
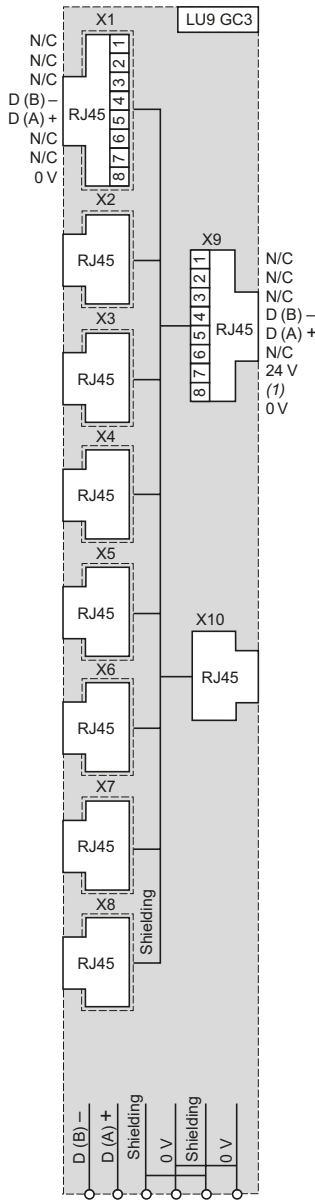
#### Communication modules (continued)

#### Wiring hub and splitter boxes

##### Modbus hub LU9GC3

##### Parallel wiring splitter box LU9G02

##### Parallel wiring splitter box LU9G03



#### Colours of TSXCDP... connection cable wires (4)

- 1 White
- 2 Brown
- 3 Green
- 4 Yellow
- 5 Grey
- 6 Pink
- 7 Blue
- 8 Red
- 9 Black
- 10 Violet
- 11 Grey-pink
- 12 Red-blue
- 13 White-green
- 14 Brown-green
- 15 White-yellow
- 16 Yellow-brown
- 17 White-grey
- 18 Grey-brown
- 19 White-pink
- 20 Pink-brown

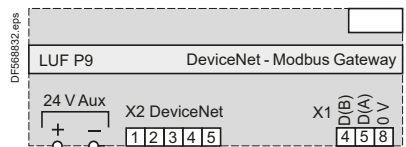
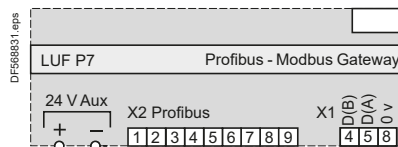
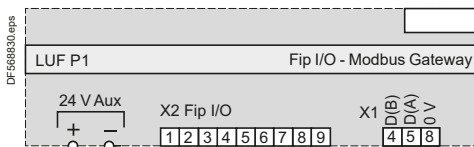
(1) Not connected on connectors X1 to X8. Only present on RJ45 IN and OUT connectors.  
 (2) 20-way HE10 input connector.  
 (3) 20-way HE10 output connector.  
 (4) Wire colours and corresponding HE10 connector pin numbers.

#### Gateways

##### LUF P1

##### LUF P7

##### LUF P9

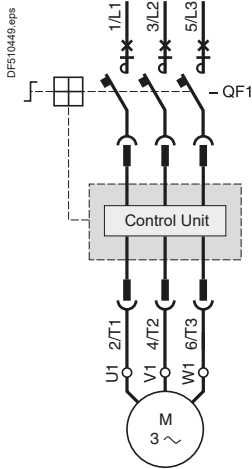


# TeSys Control

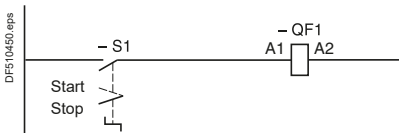
## Ultra motor starters - Non-reversing basic applications

### Schemes

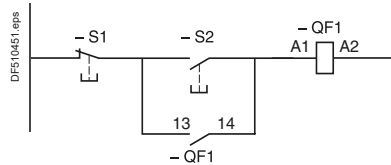
#### Non-reversing starter-controllers LUB



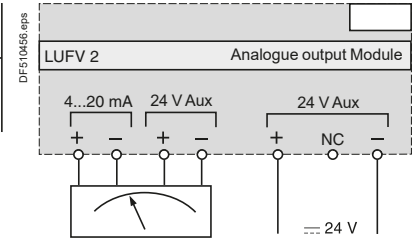
#### 2-wire control via 2-position switch



#### 3-wire control, pulsed start with maintaining contact



#### Connection of a motor load indicator module LUFV2

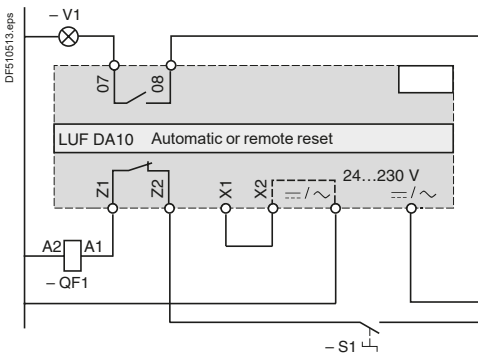


Ultra motor starters

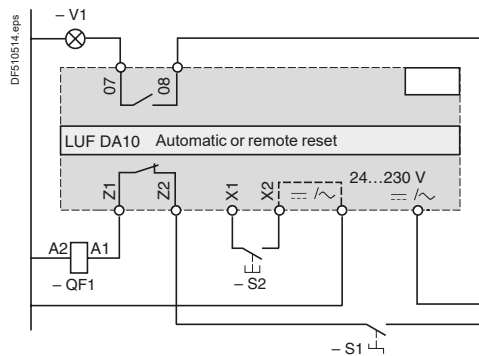
Ref.

#### Connection of thermal overload fault signalling modules LUFDA10

##### Automatic reset

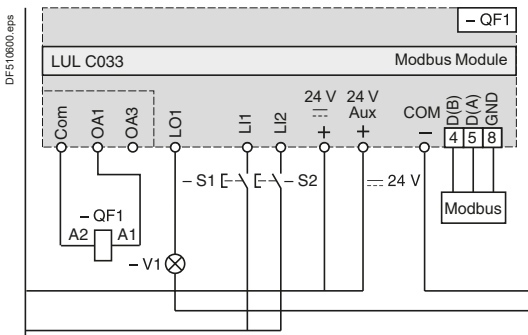


##### Remote reset



#### Control via Modbus communication module LULC033

##### Without pre-wired coil connection



References:  
pages A4/10 to A4/14

# TeSys Control

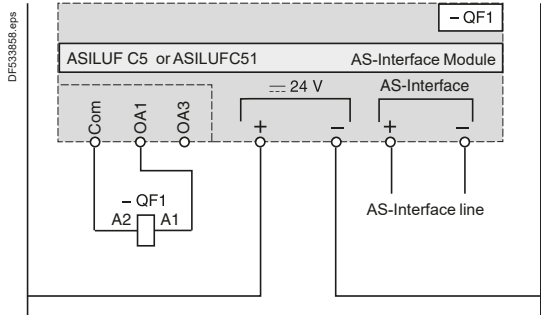
## Ultra motor starters - Non-reversing basic applications

### Schemes

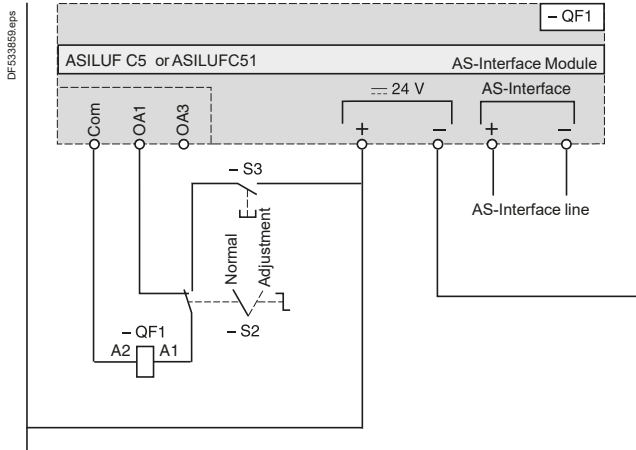
#### Non-reversing starter controllers LUB (continued)

##### Control by communication modules ASILUFC5 and ASILUFC51

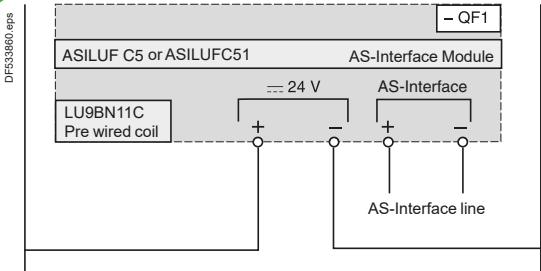
###### Without pre-wired coil connection



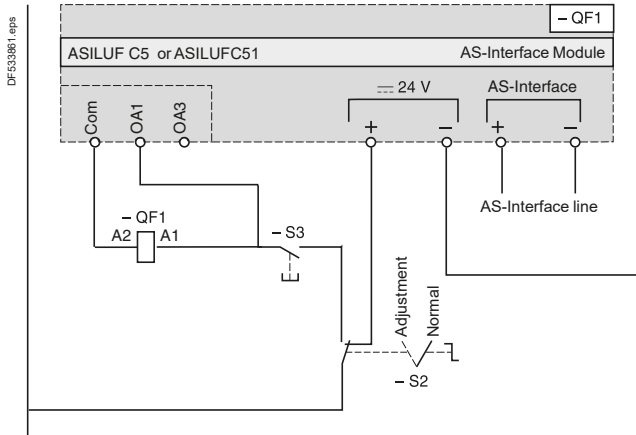
###### Without pre-wired coil connection With local control



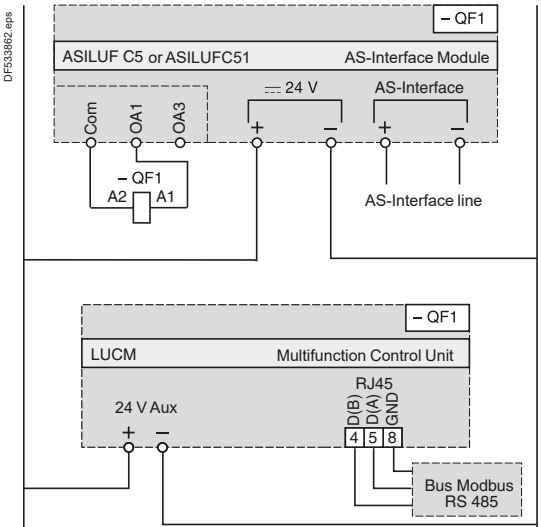
###### With pre-wired coil connection LU9BN11C



###### Without pre-wired coil connection With local control



###### Without pre-wired coil connection With multifunction control unit LUCM



References:  
page A4/14

# TeSys Control

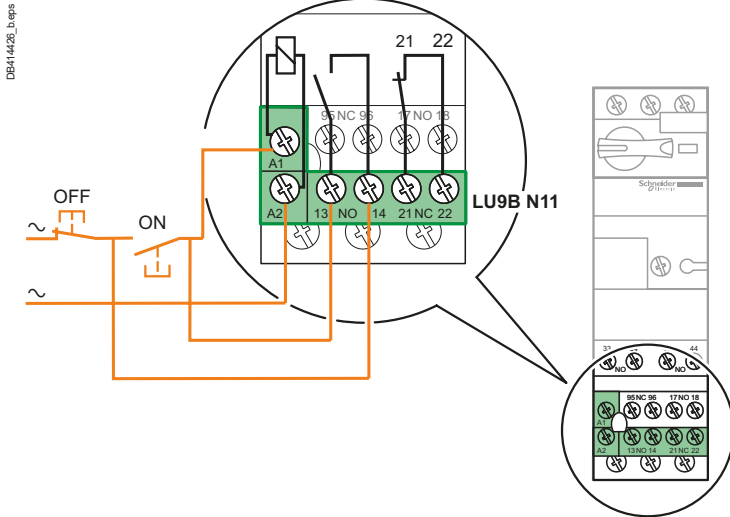
## Ultra motor starters - Non-reversing basic applications

### Schemes

#### Standard or advanced power base

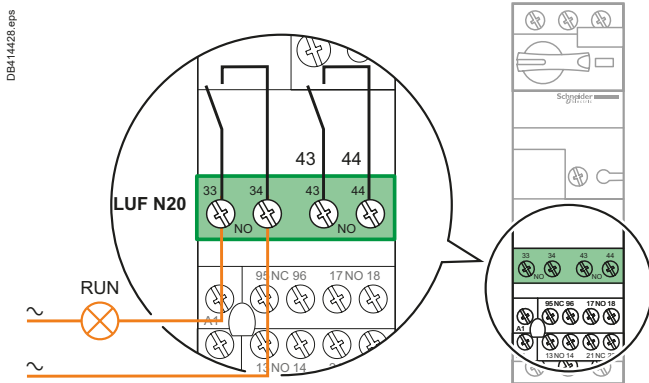
#### ON/OFF control (1 direction of rotation)

#### Push buttons wiring

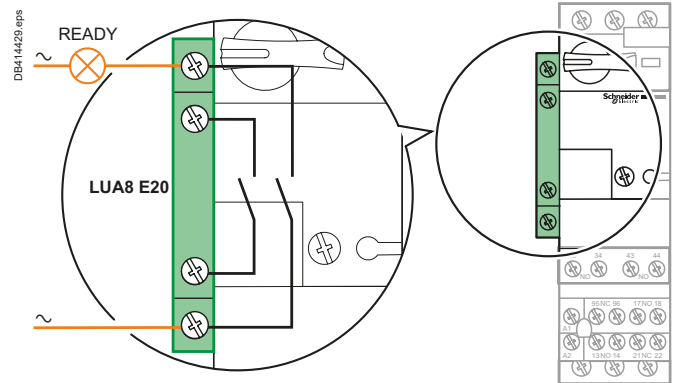


#### ON indication

#### "Motor RUN" indicator wiring

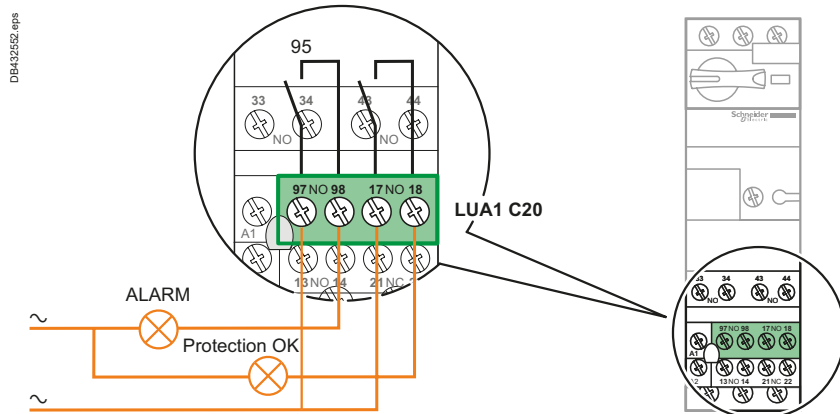


#### "Motor starter READY" indicator wiring



#### ALARM indication

#### Protection device status indicator wiring

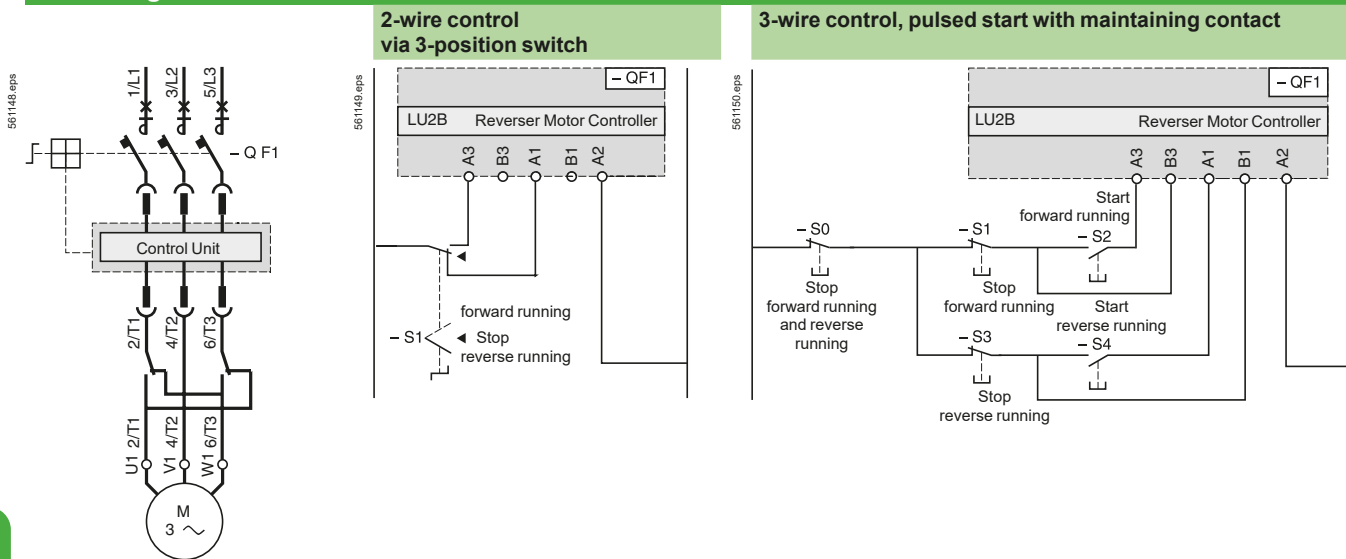


# TeSys Control

## Ultra motor starters - Reversing basic applications

### Schemes

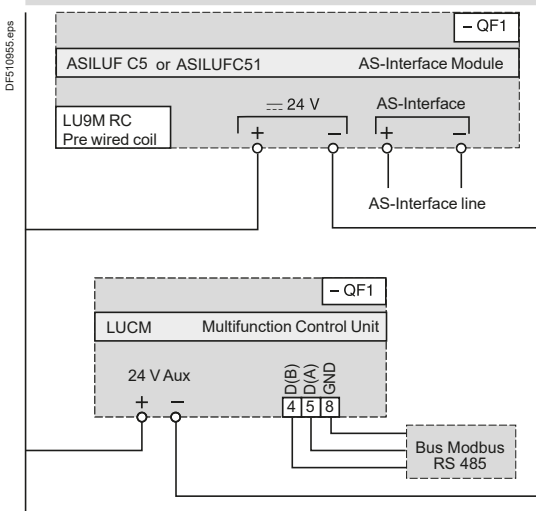
#### Reversing starter-controllers LUB



Ultra motor starters

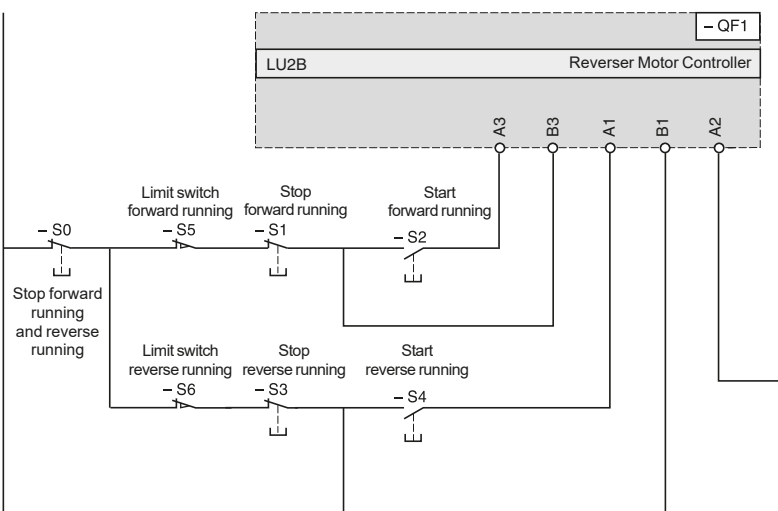
#### Control by communication modules ASILUFC5 and ASILUFC51

With pre-wired coil connection LU9MRC  
With multifunction control unit LUCM



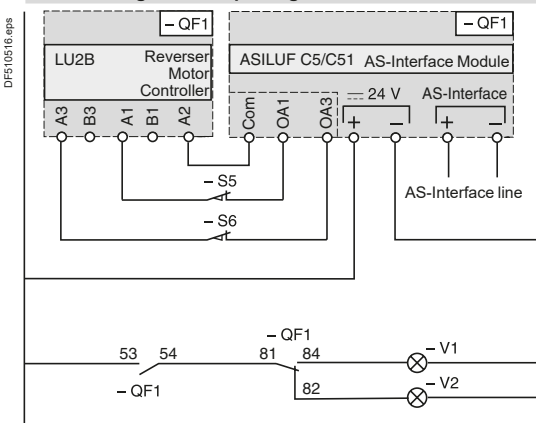
Ref.

#### 3-wire control, pulsed start with maintaining contact and limit switches



#### Control by communication modules ASILUFC5 and ASILUFC51

Without pre-wired coil connection  
With running direction pilot lights and limit switches



References:  
pages A4/10 and A4/24



# TeSys Control

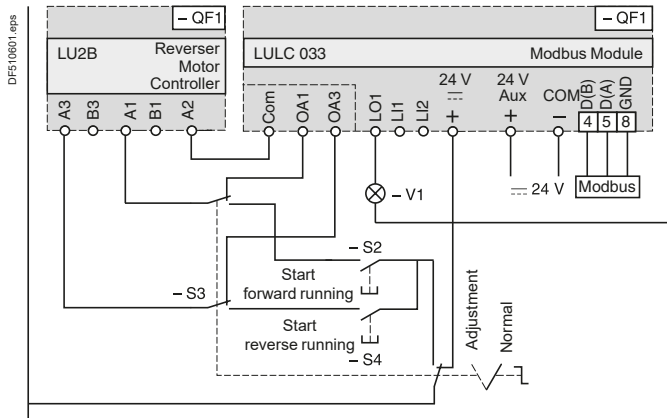
## Ultra motor starters - Reversing basic applications

### Schemes

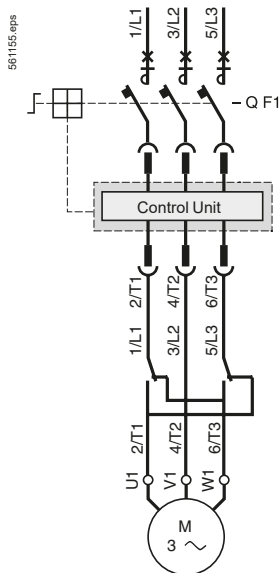
#### Reversing starter controllers LU2B (continued)

##### Control via Modbus communication module LULC033

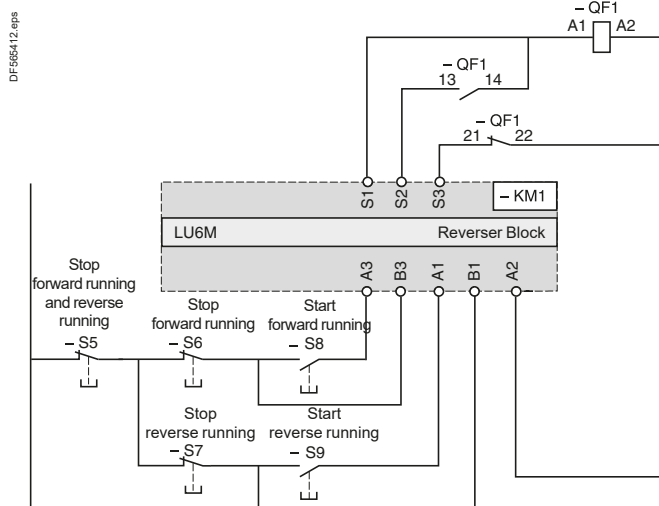
Without pre-wired coil connection. With local control



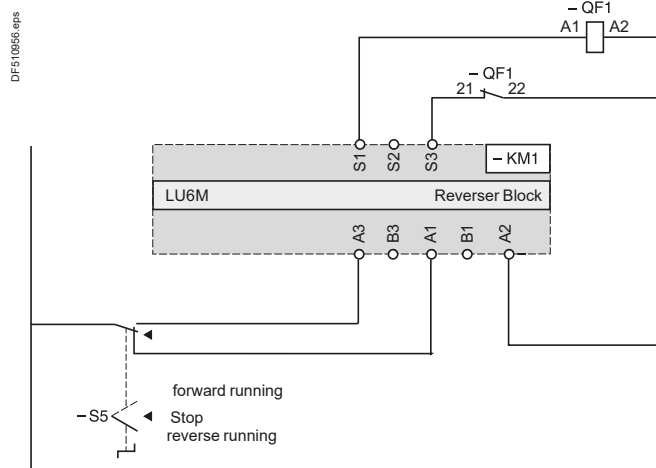
#### Reversing starter-controllers LUB + LU6M



#### 3-wire control, pulsed start with maintaining contact



#### 2-wire control via 3-position switch



References:  
page A4/10

Ultra  
motor  
starters

Ref.

# TeSys Control

## Ultra motor starters - Reversing basic applications

### Schemes

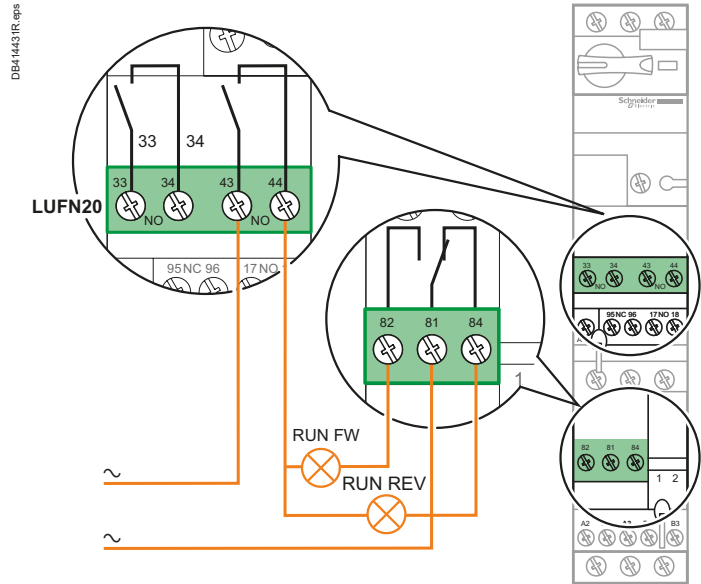
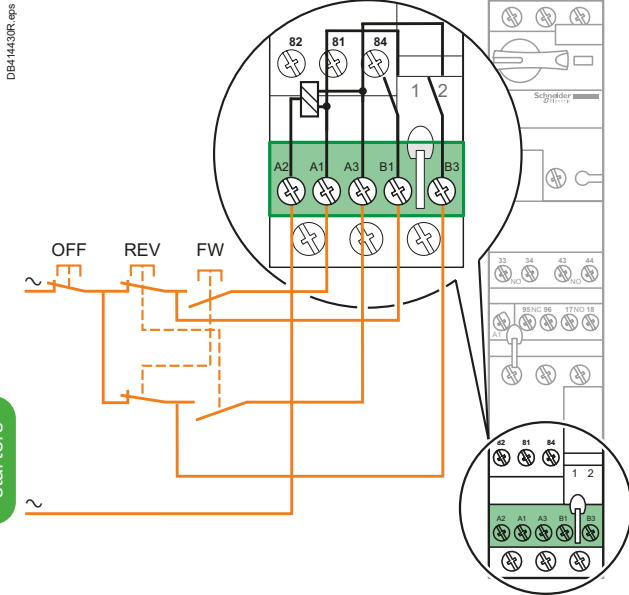
#### Power base with vertical mounting reverser block

FW/REV/OFF control (2 directions of rotation)

Push buttons wiring

FW/REV control

FW, REV indicators wiring



# TeSys Control

## Altistart U01 Soft starter

### Characteristics

Ultra motor starters

Ref.



Environmental characteristics		ATSU01N2●●LT	
<b>Type of starter</b>		Altistart U01 electronic starters have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular standard IEC/EN 60947-4-2.	
Conformity to standards			
Electromagnetic compatibility EMC		CISPR 11 level B, IEC 60947-4-2, level B	
	Conducted and radiated emissions		
	Harmonics	IEC 1000-3-2, IEC 1000-3-4	
	EMC immunity	EN 50082-2, EN 50082-1	
	Electrostatic discharge	IEC 61000-4-2 level 3	
	Immunity to radiated radio-electrical interference	IEC 61000-4-3 level 3	
	Immunity to electrical transients	IEC 61000-4-4 level 4	
	Voltage/current impulse	IEC 61000-4-5 level 3	
	Conducted and radiated emissions	IEC 61000-4-6 level 3	
	Immunity to conducted interference caused by radio-electrical fields	IEC 61000-4-11	
	Damped oscillating waves	IEC 61000-4-12 level 3	
CE marking		The starters carry CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2.	
Product certifications		UL, CSA, C-Tick and CCC	
Degree of protection		IP 20	
Degree of pollution		2 conforming to IEC/EN 60947-4-2	
Vibration resistance		1.5 mm peak to peak from 3 to 13 Hz, 1 gn from 13 to 150 Hz, conforming to IEC/EN 60068-2-6	
Shock resistance		15 gn for 11 ms conforming to IEC/EN 60068-2-27	
Relative humidity		5...95 % without condensation or dripping water conforming to IEC 60068-2-3	
Ambient temperature around the unit	Storage	°C	-25...+70 conforming to IEC/EN 60947-4-2
	Operation	°C	-10...+40 without derating, up to 50°C with current derating of 2 % per °C above 40°C
Maximum operating altitude		m	1000 without derating (above this, derate the current by 2.2 % per additional 100 m)
Operating position			
Maximum permanent angle in relation to the normal vertical mounting position			

Electrical characteristics		ATSU01N2●●LT						
<b>Type of starter</b>		Ac-53b						
Category of use	Conforming to IEC 60947-4-2							
Rated operating voltage	3-phase ~ voltage	V	200 - 10 % to 480 + 10 %					
Frequency		Hz	50 - 5 % to 60 + 5 %					
Output voltage		Maximum 3-phase voltage equal to line supply voltage						
Control supply voltage		24 V ~, 100 mA ±10 %						
Rated operating current		A	6...32					
Adjustable starting time		s	1...10					
Adjustable deceleration time		s	1...10					
Starting torque		%	30... 80 % of DOL motor starting torque					
<b>Type of starter</b>		<b>ATSU</b>	<b>01N206LT</b>	<b>01N209LT</b>	<b>01N212LT</b>	<b>01N222LT</b>	<b>01N232LT</b>	
Control power supply consumption			24 V ~, 65 mA			24 V ~, 100 mA		
Power dissipated	At full load at end of starting	W	1.5	1.5	1.5	2.5	2.5	
	In transient state at 5 times the rated operating current	W	61.5	91.5	121.5	222.5	322.5	
<b>Type of starter</b>		<b>ATSU01N206LT to ATSU01N222LT</b>			<b>ATSU01N232LT</b>			
Use								
Starting time	Starting time	s	1	5	10	1	5	10
Maximum number of cycles per hour	Maximum number of cycles per hour		100	20	10	50	10	5

# TeSys Control

## Altistart U01 Soft starter

### Characteristics

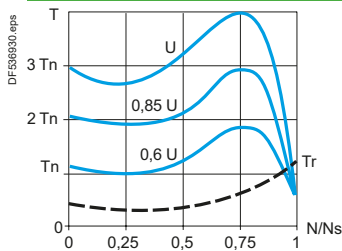
#### Electrical characteristics (continued)

Logic input power supply (electrically isolated between power and control) + 24 V, COM		24 V $\pm$ 10 % Isolated Max. current 100 mA
Logic inputs LI1, LI2, BOOST Stop, run and boost on start-up functions		Logic inputs with impedance 27 k $\Omega$ ; 24 V power supply (U max 40 V) Max. current 8 mA State 0 if U < 5 V and I < 0.2 mA State 1 if U > 13 V and I > 0.5 mA
Logic output LO1 End of starting signal		Open collector logic output: External 24 V power supply (minimum 6 V, maximum 30 V) Max. current 200 mA
Relay output R1A R1C		Normally open (N/O) contact Minimum switching capacity: 10 mA for 6 V $\text{---}$ Maximum switching capacity on inductive load ( $\cos \varphi = 0.5$ and L/R = 20 ms): 2 A for 250 V $\sim$ or 30 V $\text{---}$ (AC-15) Maximum operating voltage 440 V
LED signalling	Green LED Yellow LED	Starter powered up Nominal voltage reached

#### Connections (maximum connection capacity and tightening torque)

Power circuit			Connection to $\varnothing$ 4 mm screw clamps	
Flexible wire without cable end	1 conductor	mm <sup>2</sup>	1.5...10	8 AWG
	2 conductors	mm <sup>2</sup>	1.5...6	10 AWG
Flexible wire with cable end	1 conductor	mm <sup>2</sup>	1...6	10 AWG
	2 conductors	mm <sup>2</sup>	1...6	10 AWG
Rigid wire	1 conductor	mm <sup>2</sup>	1...10	8 AWG
	2 conductors	mm <sup>2</sup>	1...6	10 AWG
Tightening torque		N.m	1.9...2.5	
Control circuit			Screw connector	
Flexible wire without cable end	1 conductor	mm <sup>2</sup>	0.5...2.5	14 AWG
	2 conductors	mm <sup>2</sup>	0.5...1.5	16 AWG
Flexible wire with cable end	1 conductor	mm <sup>2</sup>	0.5...1.5	16 AWG
	2 conductors	mm <sup>2</sup>	0.5...1.5	16 AWG
Rigid wire	1 conductor	mm <sup>2</sup>	0.5...2.5	14 AWG
	2 conductors	mm <sup>2</sup>	0.5...1	17 AWG
Tightening torque		N.m	0.5	

#### Torque characteristics (typical curves)



The diagram opposite shows the torque/speed characteristic of a cage motor in relation to the supply voltage. The torque varies in line with the square of the voltage at a fixed frequency. The gradual increase in the voltage prevents the instantaneous current peak on power-up.

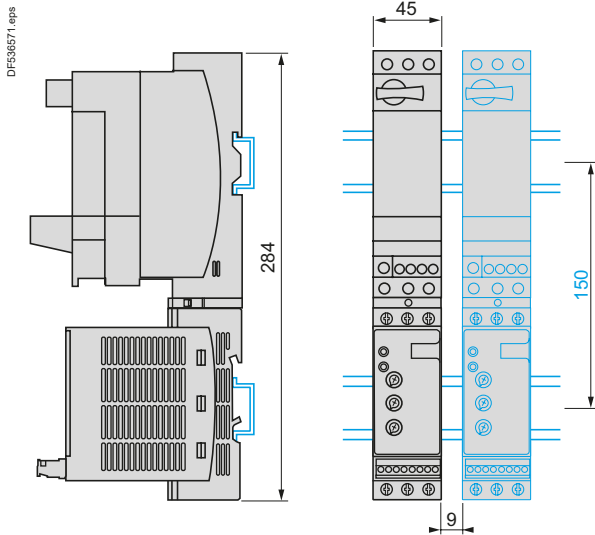


# TeSys Control

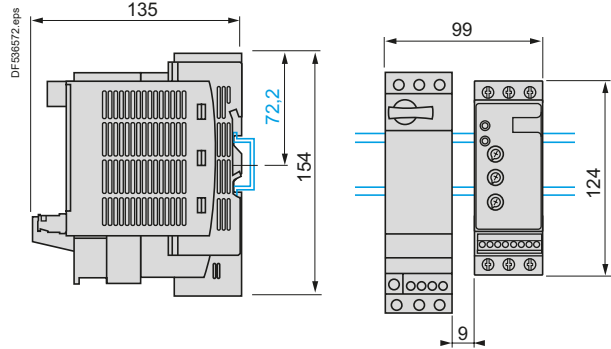
## Altistart U01 Soft starter

### Dimensions

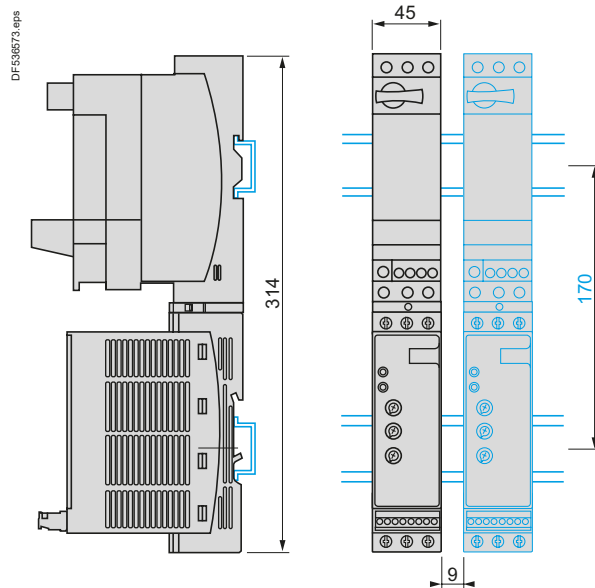
**Ultra combination (non-reversing power base) and ATSU01N206LT to ATSU01N212LT**  
**Mounting on L<sub>r</sub> (35 mm) rail with VW3G4104 connector**



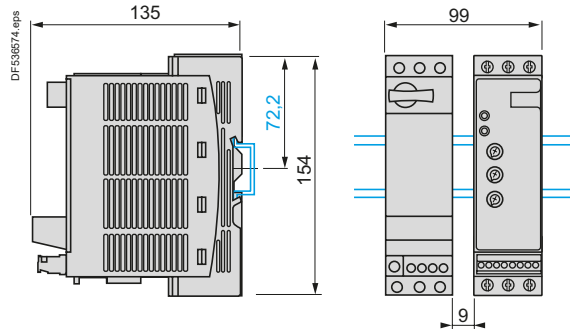
**Ultra combination (non-reversing or reversing power base) and ATSU01N206LT to ATSU01N212LT**  
**Side by side mounting**



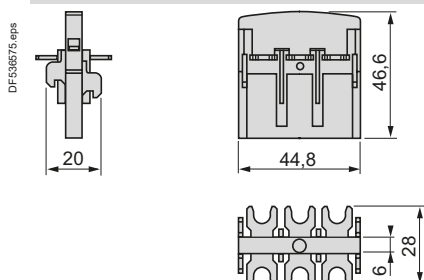
**Ultra combination (non-reversing power base) and ATSU01N222LT to ATSU01N232LT**  
**Mounting on L<sub>r</sub> (35 mm) rail with VW3G4104 connector**



**Ultra combination (non-reversing or reversing power base) and ATSU01N222LT to ATSU01N232LT**  
**Side by side mounting**



#### VW3G4104 connector



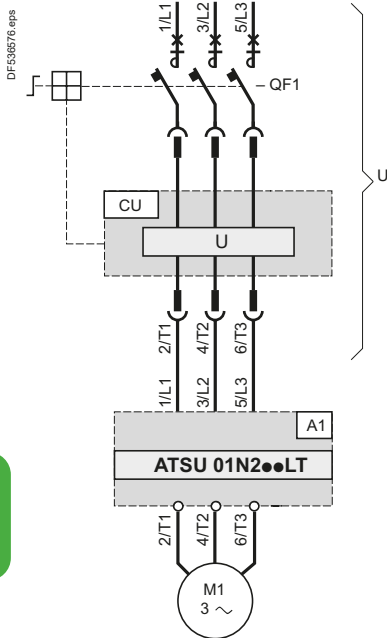
Ultra motor starters

Ref.

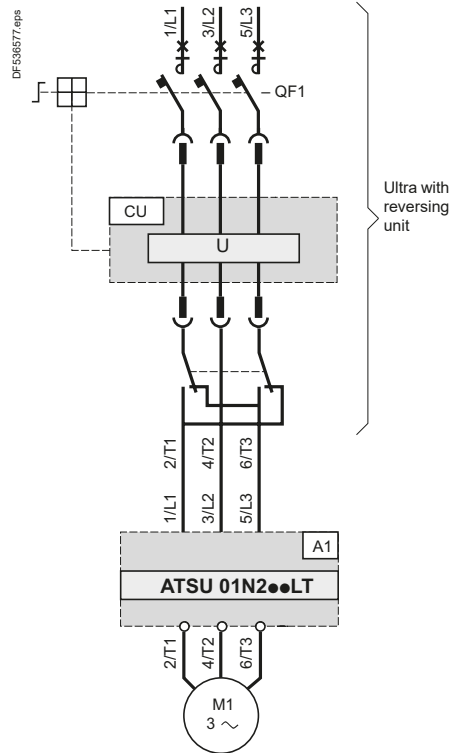


#### ATSU01N2●●LT soft start/soft stop units

##### Power wiring



##### Power wiring with reversing unit



Ultra motor starters

Ref.



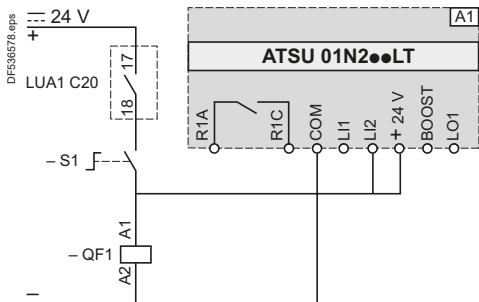
#### Compatible components

Code	Description
A1	Soft start/soft stop unit
QF1	Ultra controller-starter
CU	Ultra control unit

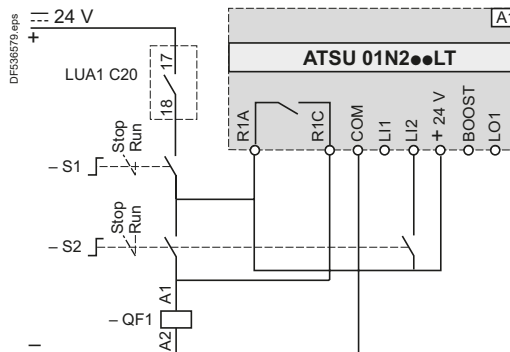
#### ATSU01N2●●LT soft start/soft stop units (continued)

##### Automatic 2-wire control

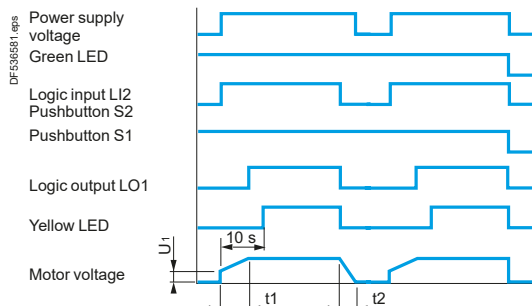
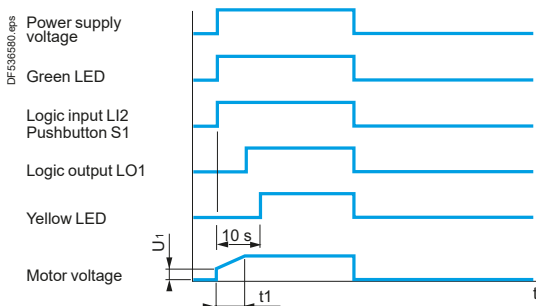
###### Without deceleration



###### With and without deceleration

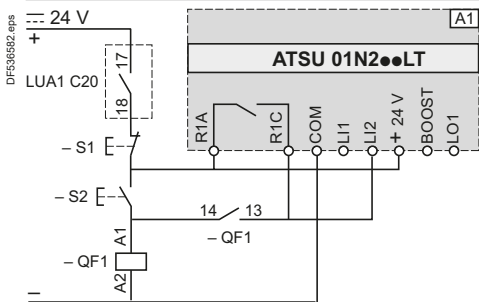


##### Functional diagrams

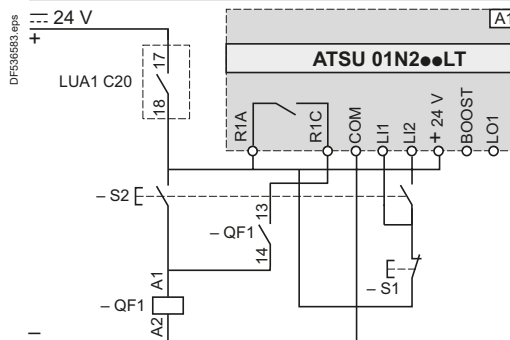


##### Automatic 3-wire control

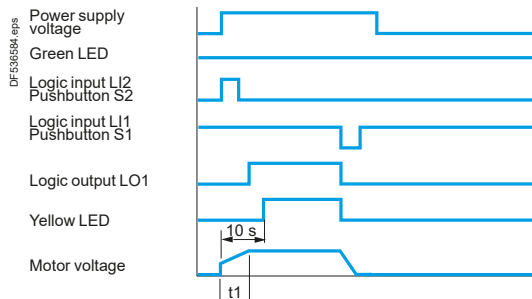
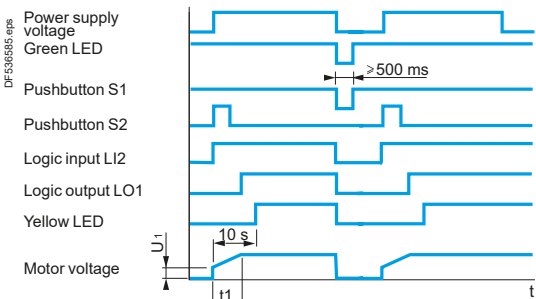
###### Without deceleration



###### With deceleration



##### Functional diagrams

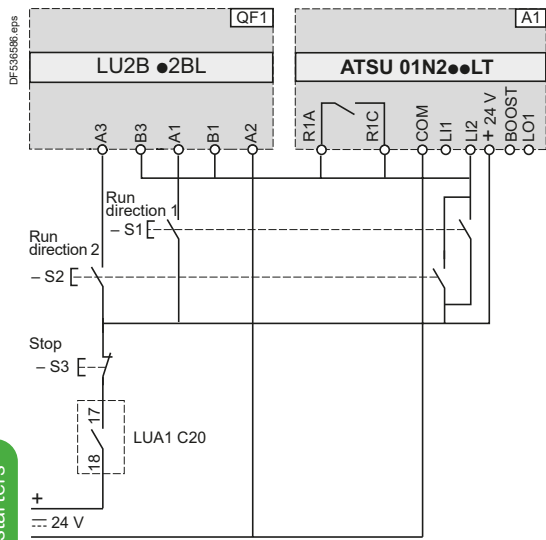


A1: Soft start/soft stop unit  
 S1, S2: XB4B or XB5B pushbuttons  
 QF1: Ultra controller-starter  
 t1: Acceleration time can be controlled by a potentiometer  
 t2: Deceleration time can be controlled by a potentiometer  
 U<sub>s</sub>: Starting time can be controlled by a potentiometer

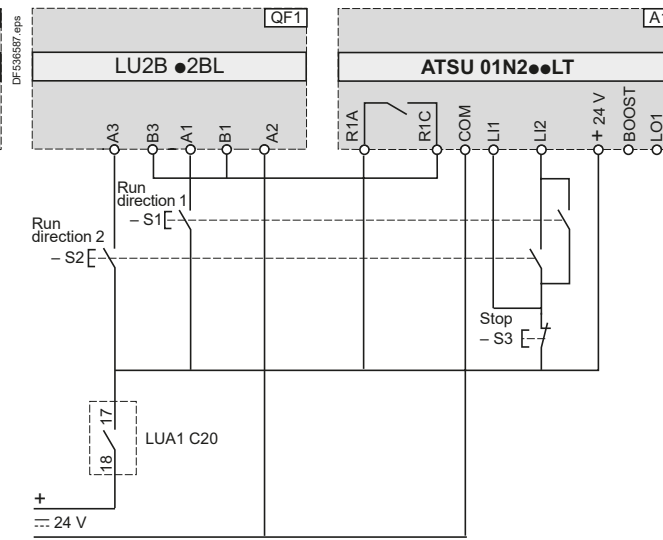
#### ATSU01N2●●LT soft start/soft stop units (continued)

##### Automatic 3-wire control, with reversing unit

###### Without deceleration



###### With deceleration



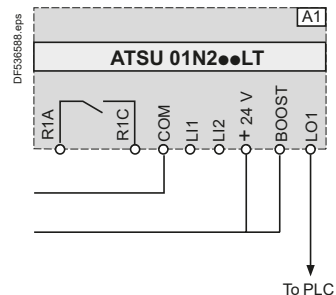
Ultra motor starters

Ref.

QF1: Ultra controller-starter with reversing unit  
 A1: Soft start/soft stop unit  
 S1, S2, S3: XB4B or XB5B pushbuttons  
 S3: minimum depression time 500 ms

QF1: Ultra controller-starter with reversing unit  
 A1: Soft start/soft stop unit  
 S1, S2, S3: XB4B or XB5B pushbuttons

##### Boost on starting and end of starting signal



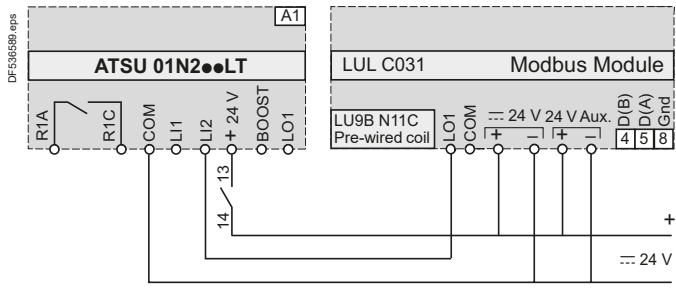
A1: Soft start/soft stop unit



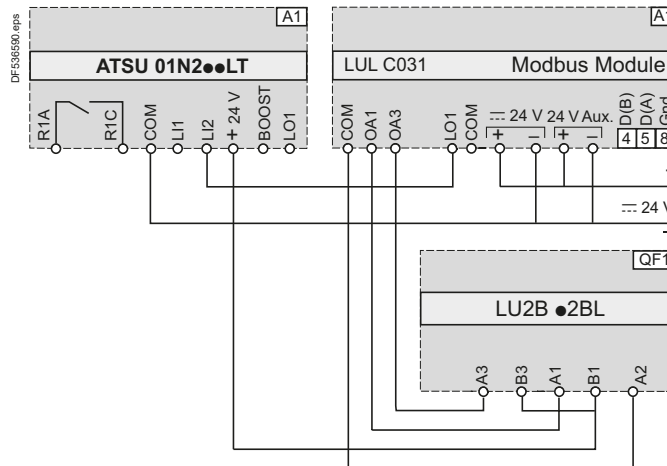
#### ATSU01N2●●LT soft start/soft stop units (continued)

#### Automatic control with Modbus communication module, with and without deceleration

##### Without reversing unit



##### With reversing unit



Function	Register	Bit	Value
<b>Powering down U and ATSU</b>			
-	704	0	0
<b>Automatic control without deceleration</b>			
Run	700	0	1
Stop	704	0	0
<b>Automatic control with deceleration</b>			
Run	700	0	1
Soft stop	700	0	0

Function	Register	Bit	Value
<b>Powering up U and ATSU</b>			
Forward	704	0	1
Reverse	704	1	1
<b>Powering down U and ATSU</b>			
Forward	704	0	0
Reverse	704	1	0
<b>Automatic control without deceleration</b>			
Run	700	0	1
Stop forward	704	0	0
Stop reverse	704	1	0
<b>Automatic control with deceleration (forward or reverse)</b>			
Run	700	0	1
Soft stop	700	0	0

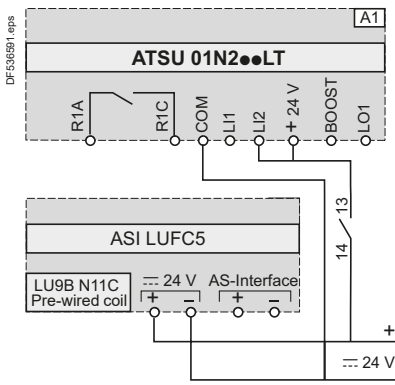
A1: Soft start/soft stop unit

A1: Soft start/soft stop unit

QF1: Ultra controller-starter with reversing unit

#### Automatic control with AS-Interface communication module, without deceleration

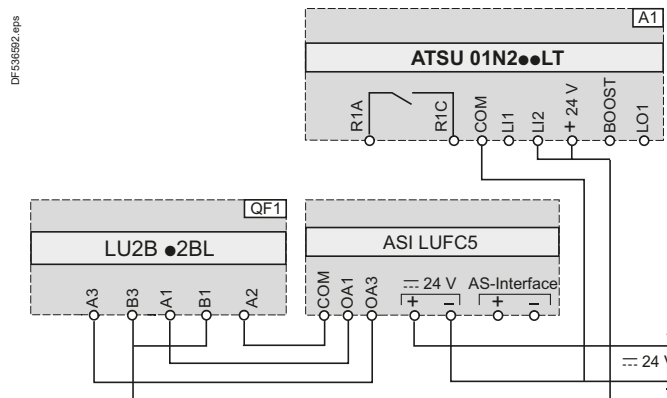
##### Without reversing unit



Function	Bit	Value
<b>Power-up and automatic control without deceleration</b>		
Run	D0	1
Stop	D0	0

A1: Soft start/soft stop unit

##### With reversing unit



Function	Bit	Value
<b>Power-up and automatic control without deceleration</b>		
Run forward	D0	1
Stop	D0	0
Run reverse	D1	1
Stop	D1	0

A1: Soft start/soft stop unit

QF1: Ultra controller-starter with reversing unit



**Coordination between protection and control components****Type of information****Page**

Types of coordination, according to the standard currents in the circuit to be considered

A5/2

Selection of the coordination type

A5/3

**Suggested coordinated Direct-On-Line motor starter combinations**

Fuses + Contactor + Overload relay

A5/4

Circuit breaker (with built in overload protection) + Contactor

A5/11

Circuit breaker + Contactor + Overload relay

A5/18

**Suggested coordinated Star-delta motor starter combinations**

Fuses + Contactors + Overload relay

A5/27

Circuit breaker (with built in overload protection) + Contactors

A5/31

Circuit breaker + Contactors + Overload relay

A5/36

**Suggested coordinated TeSys island motor starter combinations**

Protection Components / Starters - Coordination - IEC

A5/43

Protection Components / Starters - SCCR Ratings - UL

A5/50

**Contactors: Utilisation categories – Standard characteristics – Selection tables per categorie**

Definition: utilisation categories : AC-1, AC-2, AC-3, etc...

A5/51

Definition: contactor standard characteristics

A5/52

Contactor selection tables per utilisation categorie

A5/54

**Contactors for specific application – Design information**

Selection of contactors for lighting circuits

A5/68

Selection of contactors for heating circuits

A5/74

Selection of contactors for switching primaries of 3P LV/LV transformers

A5/76

Selection of contactors for switching 3P capacitor banks (factor correction)

A5/77

Selection of contactors auto-transformer starting

A5/78

Design of long distance remote control for contactors

A5/80

Current of asynchronous squirrel cage motors at nominal load

A5/84

**Standards – Protection against contact – Protective treatments**

International standards and certifications

A5/85

Protection against accidental direct contacts / IP codes

A5/87

#### Type 1 and type 2 coordination according to the standard

The standard defines tests at different levels of current; the purpose of these tests is to place the equipment in extreme conditions.

The standard defines 2 types of coordination, according to the condition of the components after testing:

- type 1,**
- type 2.**

To determine the type of coordination, the standard requires that the behaviour of the equipment be tested under overload and short-circuit conditions for 3 fault current values, covering overload and short-circuit conditions.

#### Type 1 coordination

Type 1 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must not be able to resume operation without repair or the replacement of parts.

#### Type 2 coordination

Type 2 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must subsequently be able to resume operation. The risk of contact welding is permissible; in this case, the manufacturer must indicate measures to be taken regarding maintenance of the equipment.

Type 2 coordination increases reliability of operation.

#### Current values

##### Current “Ico” (overload $I < 10 I_n$ )

The thermal overload relay associated with the contactor provides protection against this type of fault, up to a value Ico (see curve) defined by the manufacturer.

Standard IEC 60947-4-1 specifies the 2 current values to be used for checking coordination between the thermal overload relay and the short-circuit protection device:

- at 0.75 Ico only the thermal overload relay must trip,
- at 1.25 Ico the short-circuit protection device must operate.

##### Current “r” (low level short-circuit $10 < I < 50 I_n$ )

The main cause of this type of fault is the deterioration of insulating materials. Standard IEC 60947-4-1 defines an intermediate short-circuit current “r”. This test current makes it possible to check whether the protection device is providing protection against low-level short-circuits.

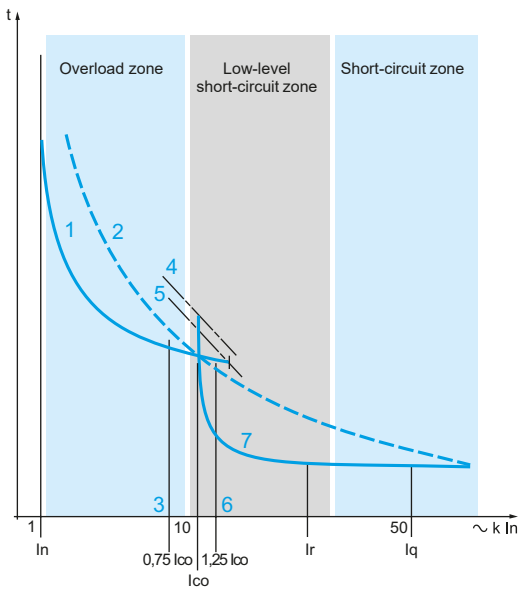
Operational current Ie (AC-3) (A)	Current “r” (kA)
Ie ≤ 16	1
16 < Ie ≤ 63	3
63 < Ie ≤ 125	5
125 < Ie ≤ 315	10
315 < Ie ≤ 630	18
630 < Ie ≤ 1000	30

##### Current “Iq” (short-circuit > current “r”)

This type of fault corresponds to a dead short and is relatively rare. It can be caused by a connection error during maintenance work. Short-circuit protection is provided by fast operating devices.

Standard IEC 60947-4-1 defines a current “Iq”. The coordination tables supplied by Schneider Electric are based on a current “Iq” that is generally ≥ 50 kA.

(1) SCPD: short-circuit protection device.



- 1 Thermal overload relay curve.
- 2 Fuse.
- 3 Tripping of thermal overload relay only.
- 4 Thermal limit of the circuit breaker.
- 5 Thermal overload relay limit.
- 6 Current broken by the SCPD (1).
- 7 Circuit breaker magnetic trip.

#### Selection

##### No coordination

**Considerable risks to both persons and equipment.**

Not authorised by standards:

- NF C 15-100 and IEC 60364-1, article 133-1 (installation regulations),
- EN/IEC 60204-1, article 7 (electrical equipment in machines),
- IEC 60947-4-1, article 8.2.5. (starters)

##### Type 1 coordination

**The most frequently used solution.**

- Equipment costs are lower.
- Reliability of operation is not a requirement.
- Before restarting, it may be necessary to repair the motor starter.

Consequences:

- significant amount of machine downtime,
- skilled maintenance personnel required to repair, check, obtain supplies.

Example: air conditioning in commercial premises.

##### Type 2 coordination

**This solution ensures reliability of operation.**

Consequences:

- reduced machine downtime,
- reduced maintenance after a short-circuit.

Example: escalators.

##### Total coordination

**With this solution, no damage or misadjustment is permissible and reliability of operation is guaranteed.**

Consequences:

- immediate return to service,
- no special precautions required.

Examples: smoke extraction, fire-fighting pumps.

0.06 to 55 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Fuse carrier <sup>(1)</sup> (basic block)	aM fuses		Contactor	Thermal overload relay class 10	
400/415 V		440 V		500 V		Reference	Size	Rating	Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	P	I <sub>e</sub>	P	I <sub>e</sub>			A			A
kW	A	kW	A	kW	A						A
0.06	0.2	0.06	0.19	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0302	0.16...0.23
–	–	0.09	0.28	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0303	0.23...0.36
0.09	0.3	–	–	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0304	0.36...0.54
0.12	0.44	0.12	0.37	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0304	0.36...0.54
0.18	0.6	0.18	0.55	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0305	0.54...0.8
–	–	0.25	0.76	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0305	0.54...0.8
0.25	0.85	–	–	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0306	0.8...1.2
0.37	1.1	0.37	1	0.37	0.88	LS1D32	10 x 38	2	LC1K06	LR2K0306	0.8...1.2
0.55	1.5	0.55	1.36	0.55	1.2	LS1D32	10 x 38	2	LC1K06	LR2K0307	1.2...1.8
–	–	0.75	1.68	0.75	1.5	LS1D32	10 x 38	2	LC1K06	LR2K0307	1.2...1.8
0.75	1.9	–	–	1.1	2.2	LS1D32	10 x 38	4	LC1K06	LR2K0308	1.8...2.6
1.1	2.7	1.1	2.37	1.5	2.9	LS1D32	10 x 38	4	LC1K06	LR2K0308	1.8...2.6
1.5	3.6	1.5	3.06	–	–	LS1D32	10 x 38	4	LC1K06	LR2K0310	2.6...3.7
2.2	4.9	–	–	2.2	3.9	LS1D32	10 x 38	6	LC1K06	LR2K0312	3.7...5.5
–	–	–	–	3	5.2	LS1D32	10 x 38	6	LC1K06	LR2K0312	3.7...5.5
–	–	2.2	4.42	–	–	LS1D32	10 x 38	8	LC1K06	LR2K0312	3.7...5.5
3	6.5	3	5.77	4	6.8	LS1D32	10 x 38	8	LC1K09	LR2K0314	5.5...8
4	8.5	4	7.9	5.5	9.2	LS1D32	10 x 38	12	LC1K09	LR2K0316	8...11.5

(1) For breaking under load, add a rotary switch-disconnector.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 55 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Fuse carrier <sup>(1)</sup> (basic block)	aM fuses		Contactor	Thermal overload relay classe 10	
400/415 V		440 V		500 V		Reference	Size	Rating	Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	P	I <sub>e</sub>	P	I <sub>e</sub>			A			A
kW	A	kW	A	kW	A						A
5.5	11.5	5.5	10.4	7.5	12.4	LS1D32	10 x 38	16	LC1K12	LR2K0321	10...14
7.5	15.5	7.5	13.7	9	13.9	LS1D32	10 x 38	16	LC1D18	LRD21	12...18
-	-	9	16.9	-	-	LS1D32	10 x 38	20	LC1D25	LRD21	12...18
9	18.1	-	-	11	17.6						
11	22	11	20.1	15	23	GK1EK	14 x 51	25	LC1D25	LRD22	16...24
15	29	15	26.5	18.5	28	GK1EK	14 x 51	32	LC1D32	LRD32	23...32
18.5	35	18.5	32.8	22	33	GK1EK	14 x 51	40	LC1D40A	LRD340	30...40
22	41	22	39	30	44	GS●J	22 x 58	50	LC1D50A	LRD350	37...50
-	-	30	51.5	-	-	GS●J	22 x 58	80	LC1D50A	LRD365	48...65
-	-	-	-	37	53	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
30	55	37	64	-	-	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
-	-	-	-	45	64	GS●J	22 x 58	80	LC1D80	LRD3361	55...70
37 <sup>(3)</sup>	66	45	76	-	-	GS●J	22 x 58	100	LC1D80	LRD3363	63...80
45	80	-	-	55	78	GS●J	22 x 58	100	LC1D95	LRD3365	80...104
-	-	55	90	-	-	GS●J	22 x 58	125	LC1D115	LRD4365	80...104
55	97	-	-	75	106	GS●J	22 x 58	125	LC1D115	LRD4367	95...120

(1) For breaking under load, add a rotary switch-disconnector.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) 400 V maximum.

0.06 to 315 kW at 400/415 V: type 2 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector Reference <sup>(1)</sup>	aM fuses		Contactor Reference <sup>(2)</sup>	Thermal overload relay classe 10	
400/415 V		440 V		500 V			Size	Rating A		Reference	Reference
P kW	I <sub>e</sub> A	P kW	I <sub>e</sub> A	P kW	I <sub>e</sub> A						
0.06	0.2	0.06	0.19	–	–	GS1DD	10 x 38	2	LC1D09	LRD02	0.16...0.25
–	–	0.09	0.28	–	–	GS1DD	10 x 38	2	LC1D09	LRD03	0.25...0.4
0.09	0.3	–	–	–	–	–	–	–	–	–	–
0.12	0.44	0.12	0.37	–	–	GS1DD	10 x 38	2	LC1D09	LRD04	0.4...0.63
0.18	0.6	0.18	0.55	–	–	–	–	–	–	–	–
–	–	0.25	0.76	–	–	GS1DD	10 x 38	2	LC1D09	LRD05	0.63...1
0.25	0.85	–	–	0.37	0.88	–	–	–	–	–	–
0.37	1.1	0.37	1	0.55	1.2	–	–	–	–	–	–
0.55	1.5	0.55	1.36	0.75	1.5	GS1DD	10 x 38	2	LC1D09	LRD06	1...1.7
0.75	1.9	0.75	1.68	–	–	–	–	–	–	–	–
–	–	1.1	2.37	1.1	2.2	GS1DD	10 x 38	4	LC1D09	LRD07	1.6...2.5
1.1	2.7	–	–	1.5	2.9	–	–	–	–	–	–
1.5	3.6	1.5	3.06	2.2	3.9	GS1DD	10 x 38	4	LC1D09	LRD08	2.5...4
2.2	4.9	2.2	4.42	3	5.2	GS1DD	10 x 38	6	LC1D09	LRD10	4...6
3	6.5	3	5.77	4	6.8	GS1DD	10 x 38	8	LC1D09	LRD12	5.5...8
4	8.5	4	7.9	5.5	9.2	GS1DD	10 x 38	10	LC1D09	LRD14	7...10
5.5	11.5	5.5	10.4	7.5	12.4	GS1DD	10 x 38	16	LC1D12	LRD16	9...13
7.5	15.5	7.5	13.7	9	13.9	GS1DD	10 x 38	16	LC1D18	LRD21	12...18
–	–	9	16.9	–	–	GS●F	14 x 51	20	LC1D25	LRD21	12...18
9	18.1	11	20.1	11	17.6	–	–	–	–	–	–
11	22	–	–	15	23	GS●F	14 x 51	25	LC1D25	LRD22	16...24
15	29	15	26.5	18.5	28	GS●F	14 x 51	32	LC1D32	LRD32	23...32
18.5	35	18.5	32.8	22	33	GS●F	14 x 51	40	LC1D40A	LRD340	30...40
22	41	22	39	30	44	GS●J	22 x 58	50	LC1D50A	LRD350	37...50
–	–	30	51.5	–	–	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
–	–	–	–	37	53	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
30	55	37	64	–	–	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
–	–	–	–	45	64	GS●J	22 x 58	80	LC1D95	LRD3361	55...70
37	66	45	76	–	–	GS●J	22 x 58	100	LC1D80	LRD3363	63...80
–	–	–	–	55	78	GS●J	22 x 58	100	LC1D115	LR9D5367	60...100
45	80	–	–	–	–	GS●J	22 x 58	100	LC1D95	LRD3365	80...104
55	97	55	90	75	106	GS●L	T0	125	LC1D150	LR9D5369	90...150
75	132	75	125	90	128	GS●L	T0	160	LC1D150	LR9D5369	90...150

(1) GS●: GS1 for direct operator or GS2 for external operator.

(2) For reversing operation, replace the prefix LC1 with LC2.



# TeSys

## Complementary technical information

### Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

55 to 335 kW at 400 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
400 V				Product type	Size		Rating	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA			A			A
55	97	80	GS <sub>o</sub> L	0	125	LC1G115	LR9G115	97
75	132	80	GS <sub>o</sub> L	0	160	LC1G150	LR9G225	132
90	160	80	GS <sub>o</sub> N	1	200	LC1G185	LR9G225	160
110	195	80	GS <sub>o</sub> N	1	250	LC1G225	LR9G225	195
132	230	80	GS <sub>o</sub> QQ	2	315	LC1G265	LR9G500	230
160	280	80	GS <sub>o</sub> QQ	2	400	LC1G330	LR9G500	280
200	350	80	GS2S	3	500	LC1G400	LR9G500	350
220	380	80	GS2S	3	500	LC1G500	LR9G500	380
250	430	80	GS2S	3	500	LC1G500	LR9G500	430
315	540	80	GS2S	3	630	LC1G630 <sup>(2)</sup>	LR9G630	540
335	575	80	GS2V	4	800	LC1G630 <sup>(2)</sup>	LR9G630	575

75 to 400 kW at 440 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
440 V				Product type	Size		Rating	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA			A			A
75	115	80	GS <sub>o</sub> L	0	125	LC1G115	LR9G115	115
90	145	80	GS <sub>o</sub> L	0	160	LC1G150	LR9G225	145
110	177	80	GS <sub>o</sub> N	1	200	LC1G185	LR9G225	177
132	209	80	GS <sub>o</sub> N	1	250	LC1G225	LR9G225	209
160	255	80	GS <sub>o</sub> QQ	2	315	LC1G265	LR9G500	255
200	318	80	GS <sub>o</sub> QQ	2	400	LC1G330	LR9G500	318
220	343	80	GS2S	3	500	LC1G400	LR9G500	343
250	390	80	GS2S	3	500	LC1G500	LR9G500	390
315	505	80	GS2S	3	500	LC1G500	LR9G500	505
355	554	80	GS2S	3	630	LC1G630 <sup>(2)</sup>	LR9G630	554
400	627	80	GS2V	4	800	LC1G630 <sup>(2)</sup>	LR9G630	627

65 to 375 kW at 500 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
500 V				Product type	Size		Rating	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA			A			A
65	92	80	GS <sub>o</sub> L	0	125	LC1G115	LR9G115	92
90	128	80	GS <sub>o</sub> L	0	160	LC1G150	LR9G225	128
110	156	80	GS <sub>o</sub> N	1	200	LC1G185	LR9G225	156
132	184	80	GS <sub>o</sub> N	1	250	LC1G225	LR9G225	184
160	224	80	GS <sub>o</sub> QQ	2	315	LC1G265	LR9G500	224
200	280	80	GS <sub>o</sub> QQ	2	400	LC1G330	LR9G500	280
250	344	80	GS2S	3	500	LC1G400	LR9G500	344
295	405	80	GS2S	3	500	LC1G500	LR9G500	405
375	516	80	GS2S	3	630	LC1G630	LR9G630	516

<sup>(1)</sup> This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.

<sup>(2)</sup> Available mid-2022.

0.75 to 400 kW at 690 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor	Thermal overload relay classe 10	
P	I <sub>e</sub>		Reference <sup>(1)</sup>	Size	Rating	Reference <sup>(2)</sup>	Reference	Setting range
kW	A				A			A
0.75	1.1		GS <sub>o</sub> F	14 x 51	2	LC1D09	LRD06	1...1.6
1.1	1.6		GS <sub>o</sub> F	14 x 51	2	LC1D09	LRD06	1...1.6
1.5	2.1		GS <sub>o</sub> F	14 x 51	4	LC1D09	LRD07	1.6...2.5
2.2	2.8		GS <sub>o</sub> F	14 x 51	4	LC1D09	LRD08	2.5...4
3	3.8		GS <sub>o</sub> F	14 x 51	6	LC1D09	LRD08	2.5...4
4	4.9		GS <sub>o</sub> F	14 x 51	6	LC1D09	LRD10	4...6
5.5	6.7		GS <sub>o</sub> F	14 x 51	8	LC1D09	LRD12	5.5...8
7.5	8.9		GS <sub>o</sub> F	14 x 51	10	LC1D25	LRD16	9...13
11	12.8		GS <sub>o</sub> F	14 x 51	16	LC1D25	LRD16	9...13
15	17		GS <sub>o</sub> F	14 x 51	20	LC1D25	LRD22	16...24
18.5	21		GS <sub>o</sub> F	14 x 51	25	LC1D32	LRD22	16...24
22	24		GS <sub>o</sub> J	22 x 58	32	LC1D40A	LRD332	23...32
30	32		GS <sub>o</sub> J	22 x 58	40	LC1D40A	LRD340	30...40
37	39		GS <sub>o</sub> J	22 x 58	50	LC1D65A	LRD350	37...50
45	47		GS <sub>o</sub> J	22 x 58	63	LC1D80	LRD3357	37...50
55	57		GS <sub>o</sub> J	22 x 58	80	LC1D115	LRD3359	48...65
75	77		GS <sub>o</sub> KK	T00	100	LC1D115	LRD3363	63...80
90	93		GS <sub>o</sub> KK	T00	125	LC1D150	LR9D5369	90...150

55 to 500 kW at 690 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
690 V			Product type	Size	Rating	Product type	Product type	I <sub>r</sub> setting <sup>(3)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)			A			A
kW	A	kA						
55	57	80	GS <sub>o</sub> J	22 x 58	80	LC1G115	LR9G225	57
75	77	80	GS <sub>o</sub> KK	0	100	LC1G115	LR9G225	77
90	93	80	GS <sub>o</sub> KK	0	125	LC1G150	LR9G225	93
110	113	80	GS <sub>o</sub> KK	0	160	LC1G185	LR9G225	113
132	134	80	GS <sub>o</sub> L	0	160	LC1G225	LR9G225	134
160	162	80	GS <sub>o</sub> N	1	200	LC1G225	LR9G225	162
200	203	80	GS <sub>o</sub> N	1	250	LC1G265	LR9G500	203
220	223	80	GS <sub>o</sub> QQ	2	250	LC1G330	LR9G500	223
250	250	80	GS <sub>o</sub> QQ	2	315	LC1G330	LR9G500	250
315	313	80	GS <sub>o</sub> QQ	2	400	LC1G400	LR9G500	313
355	354	80	GS <sub>o</sub> QQ	3	500	LC1G500	LR9G500	354
500	493	80	GS <sub>o</sub> S	3	630	LC1G630	LR9G630	493

(1) GS<sub>o</sub>: GS1 for direct operator or GS2 for external operator.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) This setting is a general guidance, I<sub>r</sub> should be adjusted according to motor characteristics and conditions of use.

0.18 to 55 kW at 400/415 V: type 2 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch- disconnecter	aM fuses		Contactor	Electronic thermal overload relay	
400/415 V			690 V				Reference	Size		Rating	Reference
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>						
kW	A	kA	kW	A	kA			A			A
0.18	0.6	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.25	0.85	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.37	1.1	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.55	1.5	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.75	1.9	100	–	–	–	GS1DD	10 x 38	4	LC1D09	LR9D02	0.4...2.0
1.1	2.7	100	–	–	–	GS1DD	10 x 38	4	LC1D18	LR9D08	1.6...8.0
1.5	3.6	100	–	–	–	GS1DD	10 x 38	4	LC1D18	LR9D08	1.6...8.0
2.2	4.9	100	–	–	–	GS1DD	10 x 38	6	LC1D18	LR9D08	1.6...8.0
3	6.5	100	–	–	–	GS1DD	10 x 38	8	LC1D18	LR9D32	6.4...32
4	8.5	100	–	–	–	GS1DD	10 x 38	10	LC1D18	LR9D32	6.4...32
5.5	11.5	100	–	–	–	GS1DD	10 x 38	16	LC1D25	LR9D32	6.4...32
7.5	15.5	50	–	–	–	GS1DD	10 x 38	16	LC1D25	LR9D32	6.4...32
11	22	50	–	–	–	GS•F	14 x 51	25	LC1D25	LR9D32	6.4...32
15	29	50	–	–	–	GS•J	22 x 58	32	LC1D65A	LR9D110S	22...110
18.5	35	50	–	–	–	GS•J	22 x 58	40	LC1D65A	LR9D110S	22...110
22	41	50	–	–	–	GS•J	22 x 58	50	LC1D65A	LR9D110S	22...110
45 <sup>(1)</sup>	80	100	–	–	–	GS•N	T 1	100	LC1D150	LR9D110S	22...110
55 <sup>(1)</sup>	97	100	–	–	–	GS•N	T 1	125	LC1D150	LR9D110S	22...110
–	–	–	0.37	0.64	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	0.55	0.87	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	0.75	1.1	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	1.1	1.6	100	GS•F	14 x 51	2	LC1D25	LR9D08	1.6...8.0
–	–	–	1.5	2.1	100	GS•F	14 x 51	4	LC1D25	LR9D08	1.6...8.0
–	–	–	2.2	2.8	100	GS•F	14 x 51	4	LC1D25	LR9D08	1.6...8.0
–	–	–	3	4	100	GS•F	14 x 51	6	LC1D25	LR9D08	1.6...8.0
–	–	–	4	5	100	GS•F	14 x 51	6	LC1D25	LR9D08	1.6...8.0
–	–	–	5.5	7	50	GS•F	14 x 51	8	LC1D25	LR9D32	6.4...32
–	–	–	7.5	8.9	50	GS•F	14 x 51	10	LC1D25	LR9D32	6.4...32
–	–	–	11	13	50	GS•F	14 x 51	16	LC1D32	LR9D32	6.4...32
–	–	–	15	16.5	50	GS•F	14 x 51	20	LC1D32	LR9D32	6.4...32
–	–	–	18.5	21	100	GS•F	14 x 51	25	LC1D95	LR9D32	6.4...32
–	–	–	18.5	21	50	GS•F	14 x 51	25	LC1D65A	LR9D32	6.4...32
–	–	–	22	25	50	GS•F	14 x 51	32	LC1D65A	LR9D32	6.4...32
–	–	–	30	33	100	GS•F	14 x 51	40	LC1D95	LR9D110	22...110
–	–	–	37	40	100	GS•F	14 x 51	50	LC1D95	LR9D110	22...110
–	–	–	45	49	100	GS•J	22 x 58	63	LC1D95	LR9D110	22...110

(1) Ratings valid up to 400 V AC only.

#### 0.06 to 375 kW at 415 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse	BS fuses		Contactor	Thermal overload relay	
415 V		440 V		500 V		Reference	Size	Rating	Reference <sup>(1)</sup>	Reference	Setting range
P	I <sub>e</sub>	P	I <sub>e</sub>	P	I <sub>e</sub>			A			A
kW	A	kW	A	kW	kA						
0.06	0.22	0.06	0.19	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD02	0.16...0.25
–	–	0.09	0.28	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD03	0.25...0.4
0.09	0.36	–	–	–	–						
0.12	0.42	0.12	0.37	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD04	0.4...0.63
0.18	0.6	0.18	0.55	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD05	0.63...1
–	–	0.25	0.76	–	–	GS1DDB	A1	NIT 4	LC1D09	LRD05	0.63...1
0.25	0.88	0.37	1	0.37	1						
0.37	1	0.55	1.36	0.55	1.2						
0.55	1.5	0.75	1.68	0.75	1.5	GS1DDB	A1	NIT 6	LC1D09	LRD06	1...1.7
0.75	2	–	–	–	–	GS1DDB	A1	NIT 10	LC1D09	LRD07	1.6...2.5
–	–	–	–	1.5	2.6	GS1DDB	A1	NIT 10	LC1D09	LRD08	2.5...4
1.5	3.5	1.5	3.06	2.2	3.8	GS1DDB	A1	NIT 16	LC1D09	LRD08	2.5...4
2.2	5	2.2	4.42	3	5	GS1DDB	A1	NIT 16	LC1D09	LRD10	4...6
3	6.5	3	5.77	4	6.5	GS1DDB	A1	NIT 20	LC1D09	LRD12	5.5...8
4	8.4	4	7.9	5.5	9	GS1DDB	A1	NIT 20	LC1D09	LRD14	7...10
5.5	11	5.5	10.4	7.5	12	GS1DDB	A1	NIT 20M25	LC1D12	LRD16	9...13
7.5	14	7.5	13.7	9	13.9	GS1DDB	A1	NIT 20M32	LC1D18	LRD21	12...18
9	18.1	9	16.9	–	–	GS2GB	A2	TIA 32M35	LC1D18	LRD21	12...18
11	21	11	20	11	18.4						
–	–	–	–	15	23	GS2GB	A2	TIA 32M50	LC1D25	LRD22	16...24
15	28.5	15	26.5	–	–	GS2GB	A2	TIA 32M63	LC1D32	LRD32	23...32
18.5	35	18.5	32.8	–	–	GS2GB	A3	TIS 63M80	LC1D40A	LRD340	25...40
22	41	22	39	–	–	GS2GB	A3	TIS 63M80	LC1D50A	LRD350	37...50
30	55	30	51.5	–	–	GS2GB	A3	TIS 63M100	LC1D65A	LRD365	48...65
–	–	37	64	–	–	GS2GB	A3	TIS 63M100	LC1D65A	LRD365	48...65
–	–	45	76	45	65	GS2LLB	A4	TCP 100M125	LC1D80	LRD3363	63...80
45	81	–	–	55	80	GS2LLB	A4	TCP 100M125	LC1D95	LRD3365	80...104
55	100	–	–	–	–	GS2LLB	A4	TCP 100M160	LC1D115	LR9D5369	90...150
–	–	55	90	–	–	GS2LLB	A4	TCP 100M160	LC1D115	LR9D5367	60...100
–	–	–	–	80	116	GS2LB	B2	TF 200	LC1D150	LR9D5369	90...150
80	138	80	132	–	–	GS2LB	B2	TF 200M250	LC1D150	LR9D5369	90...150

(1) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 250 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker		Contactor
400/415 V			440 V			500 V			Reference	Setting range	Reference <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>	P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>	P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>	<i>References in italics are available in CEE zone only</i>	of thermal trips	
kW	A	kA	kW	A	kA	kW	A	kA		A	
0.06	0.2	50	0.06	0.19	50	–	–	–	<b>GV2ME02</b> <i>GV2ME02AP</i>	0.16...0.25	<b>LC1K06</b> or <b>LC1D09</b>
0.09	0.3	50	0.09	0.28	50	–	–	–	<b>GV2ME03</b> <i>GV2ME03AP</i>	0.25...0.40	<b>LC1K06</b> or <b>LC1D09</b>
0.12	0.44	50	–	–	–	–	–	–	<b>GV2ME04</b> <i>GV2ME04AP</i>	0.40...0.63	<b>LC1K06</b> or <b>LC1D09</b>
0.18	0.6	50	0.18	0.55	50	–	–	–	<b>GV2ME05</b> <i>GV2ME05AP</i>	0.63...1	<b>LC1K06</b> or <b>LC1D09</b>
0.25	0.85	50	0.25	0.76	50	–	–	–	<b>GV2ME06</b> <i>GV2ME06AP</i>	1...1.6	<b>LC1K06</b> or <b>LC1D09</b>
0.37	1.1	50	0.37	0.99	50	–	–	–	<b>GV2ME06</b> <i>GV2ME06AP</i>	1...1.6	<b>LC1K06</b> or <b>LC1D09</b>
–	–	–	–	–	–	0.37	0.88	50	<b>GV2ME07</b> <i>GV2ME07AP</i>	1.6...2.5	<b>LC1K06</b> or <b>LC1D09</b>
0.55	1.5	50	0.55	1.36	50	0.55	1.2	50	<b>GV2ME08</b> <i>GV2ME08AP</i>	2.5...4	<b>LC1K06</b> or <b>LC1D09</b>
–	–	–	–	–	–	0.75	1.5	50	<b>GV2ME10</b> <i>GV2ME10AP</i>	4...6.3	<b>LC1K06</b> or <b>LC1D09</b>
0.75	1.9	50	0.75	1.68	50	–	–	–	<b>GV2ME14</b> <i>GV2ME14AP</i>	6...10	<b>LC1K09</b> or <b>LC1D09</b>
–	–	–	1.1	2.37	50	1.1	2.2	50	<b>GV2ME16</b> <i>GV2ME16AP</i>	9...14	<b>LC1K12</b> or <b>LC1D12</b>
1.1	2.7	50	–	–	–	1.5	2.9	50	<b>GV2ME20</b> <i>GV2ME20AP</i>	13...18	<b>LC1D18</b>
1.5	3.6	50	1.5	3.06	50	2.2	3.9	50	<b>GV2ME21</b> <i>GV2ME21AP</i>	17...23	<b>LC1D25</b>
2.2	4.9	50	2.2	4.42	50	–	–	–	<b>GV2ME22</b> <i>GV2ME22AP</i>	20...25	<b>LC1D25</b>
–	–	–	3	5.77	50	3	5.2	50	<b>GV2ME32</b> <i>GV2ME32AP</i>	24...32	<b>LC1D32</b>
3	6.5	50	–	–	–	4	6.8	10	<b>GV3P40</b>	30...40	<b>LC1D40A</b>
4	8.5	50	4	7.9	15	5.5	9.2	10	<b>GV3P50</b>	37...50	<b>LC1D50A</b>
5.5	11.5	15	5.5	10.4	8	7.5	12.4	6	<b>GV3P65</b>	48...65	<b>LC1D65A</b>
7.5	15.5	15	7.5	13.7	8	9	13.9	6	<b>GV4P80</b>	40...80	<b>LC1D65A</b>
–	–	–	9	16.9	8	–	–	–	<b>GV4P80</b>	40...80	<b>LC1D80</b>
9	18.1	15	11	20.1	6	11	17.6	4	<b>GV4P115</b>	65...115	<b>LC1D95</b>
11	22	15	–	–	–	15	23	4	<b>GV4P115</b>	65...115	<b>LC1D115</b>
15	29	10	15	26.5	6	18.5	28	4	<b>GV5P150F</b>	70...150	<b>LC1D150</b>
18.5	35	50	18.5	32.8	50	22	33	10	<sup>(3)</sup>	–	<sup>(3)</sup>
22	41	50	22	39	50	30	44	10	<sup>(3)</sup>	–	<sup>(3)</sup>
30	55	50	30	51.5	50	37	53	10	<sup>(3)</sup>	–	<sup>(3)</sup>
37	66	50	–	–	–	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
–	–	–	37	64	70	45	64	30	<sup>(3)</sup>	–	<sup>(3)</sup>
37	66	100	45	76	70	55	78	30	<sup>(3)</sup>	–	<sup>(3)</sup>
45	80	100	–	–	–	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
55	97	100	55	90	70	75	106	30	<sup>(3)</sup>	–	<sup>(3)</sup>
75	132	36	75	125	35	90	128	30	<sup>(3)</sup>	–	<sup>(3)</sup>
–	–	–	90	146	35	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
90	160	36	–	–	–	110	156	30	<sup>(3)</sup>	–	<sup>(3)</sup>
110	195	36	–	–	–	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
160	280	36	318	280	35	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
–	–	–	–	–	–	220	308	30	<sup>(3)</sup>	–	<sup>(3)</sup>
200	350	36	220	318	35	–	–	–	<sup>(3)</sup>	–	<sup>(3)</sup>
250	430	36	250	401	35	335	460	30	<sup>(3)</sup>	–	<sup>(3)</sup>

(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**.

(2) For reversing operation, replace the prefix **LC1** with **LC2**.

(3) Please consult your regional sales office.

0.06 to 250 kW at 400/415 V: type 2 coordination												
Standard power ratings of 3-phase motors 50/60 Hz in categ or y AC-3									Circuit breaker		Contactor	
400/415 V			440 V			500 V			Reference <i>References in italics are available in CEE zone only</i>	Setting range of thermal trips	Reference <sup>(2)</sup>	
P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>	P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>	P	I <sub>e</sub>	I <sub>q</sub> <sup>(1)</sup>				
kW	A	kA	kW	A	kA	kW	A	kA	A			
0.06	0.2	130	0.06	0.19	130	–	–	–	GV2P02 or GV2ME02 or GV2ME02AP	0.16...0.25	LC1D09	
–	–	–	0.09	0.28	130	–	–	–	GV2P03 or GV2ME03 or GV2ME03AP	0.25...0.4	LC1D09	
0.09	0.3	130	0.12	0.37	130	–	–	–	GV2P04 or GV2ME04 or GV2ME04AP	0.4...0.63	LC1D09	
0.12	0.44	130	–	–	–	–	–	–	GV2P05 or GV2ME05 or GV2ME05AP	0.63...1	LC1D09	
0.18	0.6	130	0.18	0.55	130	–	–	–	GV2P06 or GV2ME06 or GV2ME06AP	1...1.6	LC1D09	
0.25	0.85	130	0.25	0.76	130	–	–	–	GV2P06 or GV2ME06 or GV2ME06AP	1...1.6	LC1D09	
0.37	1.1	130	0.37	0.99	130	–	–	–	GV2P07 or GV2ME07 or GV2ME07AP	1.6...2.5	LC1D09	
–	–	–	–	–	–	0.37	0.88	130	GV2P08 or GV2ME08 or GV2ME08P	2.5...4	LC1D09	
0.55	1.5	130	0.55	1.36	130	0.55	1.2	130	GV2P10 or GV2ME10 or GV2ME10AP	4...6.3	LC1D09	
–	–	–	–	–	–	0.75	1.5	130	GV2ME10 or GV2ME10AP	4...6.3	LC1D09	
0.75	1.9	130	0.75	1.68	130	–	–	–	GV2P10	4...6.3	LC1D09	
–	–	–	1.1	2.37	130	1.1	2.2	130	GV2P14 or GV2ME14 or GV2ME14AP	6...10	LC1D09	
1.1	2.7	130	–	–	–	1.5	2.9	130	GV2ME14 or GV2ME14AP	6...10	LC1D09	
1.5	3.6	130	1.5	3.06	130	2.2	3.9	130	GV2P14	6...10	LC1D12	
–	–	–	–	–	–	–	–	–	GV2P16 or GV2ME16 or GV2ME16AP	9...14	LC1D25	
2.2	4.9	130	–	–	–	–	–	–	GV2P20 or GV2ME20 or GV2ME20AP	13...18	LC1D25	
–	–	–	2.2	4.42	50	–	–	–	GV2P21 or GV2ME21 or GV2ME21AP	17...23	LC1D25	
–	–	–	3	5.77	50	3	5.2	50	GV2P22 or GV2ME22 or GV2ME22AP	20...25	LC1D25	
–	–	–	2.2	4.42	130	–	–	–	GV2P22	20...25	LC1D32	
–	–	–	3	5.77	130	3	5.2	130	GV2P32 or GV2ME32 or GV2ME32AP	24...32	LC1D32	
3	6.5	130	–	–	–	–	–	–	GV3P40	30...40	LC1D50A	
4	8.5	130	–	–	–	–	–	–	GV3P40	30...40	LC1D65A	
–	–	–	4	7.9	15	4	6.8	10	GV3P50	37...50	LC1D50A	
–	–	–	–	–	–	5.5	9.2	10	GV3P50	37...50	LC1D65A	
–	–	–	–	–	–	4	7.9	130	GV3P65	48...65	LC1D65A	
5.5	11.5	130	5.5	10.4	50 or 8	7.5	12.4	42 or 6	GV3P65	48...65	LC1D65A	
–	–	–	7.5	13.7	50 or 8	9	13.9	42 or 6	GV3P73	62...73	LC1D80A	
7.5	15.5	50 or 15	9	16.9	20 or 8	–	–	–	GV4P80	40...80	LC1D65A	
9	18.1	50 or 15	11	20.1	20 or 8	11	17.6	10 or 6	GV4P80	40...80	LC1D80	
11	22	50 or 15	–	–	–	–	–	–	GV4P115	65...115	LC1D115	
–	–	–	–	–	–	15	23	10 or 6	GV5P150H	70...150	LC1D150	
15	29	50 or 10	15	26.5	20 or 6	18.5	28	10 or 4				
18.5	35	50	–	–	–	–	–	–				
–	–	–	18.5	32.8	50	22	33	10				
22	41	50	–	–	–	–	–	–				
–	–	–	22	39	50	30	44	10				
30	55	50	30	51.5	50	–	–	–				
–	–	–	–	–	–	37	53	10				
37	66	50	–	–	–	–	–	–				
–	–	–	37	64	70	–	–	–				
37	66	100	45	76	70	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>				
45	80	100	55	90	70	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>				
55	97	100	–	–	–	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>				
75	132	70	75	125	65	–	–	–				
–	–	–	90	146	65	–	–	–				

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3.

(2) Combinations with circuit breaker GV2ME are type 2 coordinated only at 400/415 V and 440 V.

(3) Please consult your regional sales office.

45 to 250 kW at 400 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
400 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)		A	A	
kW	A	kA				
45	80	100	GV4P/GV4PE/GV4PEM115●	86	1118	LC1G115
55	97	100	GV4P/GV4PE/GV4PEM115●	100	1300	LC1G115
55	97	70	GV5P150●	100	1300	LC1G115
75	132	70	GV5P150●	140	1820	LC1G150
90	160	70	GV5P220●	170	2210	LC1G185
110	195	70	GV5P220●	200	2600	LC1G225
110	195	70	GV6P320●	200	2600	LC1G265
132	230	70	GV6P320●	240	3120	LC1G265
160	280	70	GV6P320●	300	3900	LC1G330
200	350	70	GV6P500●	380	4940	LC1G400
220	380	70	GV6P500●	400	5200	LC1G500
250	430	70	GV6P500●	440	5720	LC1G500

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150●/ 220● GV6P320●/ 500●	
Breaking performance code	B	N	S	F	H
400 V	25	50	100	36	70

Coordination and standards

45 to 450 kW at 400 V: type 2 coordination (with ComPact NSX / NS circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
400 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)		A	A	
kW	A	kA				
45	80	130	NSX100● + MicroLogic 2.2 M	86	1105	LC1G115
55	97	130	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	100	1300	LC1G115
75	132	130	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	140	1820	LC1G150
90	160	130	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	170	2210	LC1G185
110	195	130	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	200	2600	LC1G225
110	195	130	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	200	2600	LC1G265
132	230	130	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	240	3120	LC1G265
160	280	130	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	300	3900	LC1G330
200	350	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	380	4940	LC1G400
220	380	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	400	5200	LC1G500
250	430	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	440	5720	LC1G500
300	460	130	NS800● + MicroLogic 5.0	470	6110	LC1G630
335	575	130	NS800● + MicroLogic 5.0	640	8320	LC1G630
355	610	130	NS800● + MicroLogic 5.0	640	8320	LC1G800
400	690	130	NS800● + MicroLogic 5.0	720	9360	LC1G800
450	770	130	NS1000● + MicroLogic 5.0	784	10192	LC1G800

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX160●/ NSX250●/ NSX400●/ NSX630●					NS800●/ NS1000●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	130	150

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.

#### 55 to 300 kW at 440 V: type 2 coordination (with TeSys GV4/GV5/GV6 circuit breakers)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
440 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)				
kW	A	kA		A	A	
55	88	70	GV4P/GV4PE/GV4PEM115●	93	1209	LC1G115
55	88	65	GV5P150●	90	1170	LC1G115
75	120	65	GV5P150●	130	1690	LC1G150
90	145	65	GV5P150●	150	1950	LC1G150
110	177	65	GV5P220●	185	2405	LC1G185
132	209	65	GV5P220●	210	2730	LC1G225
160	255	65	GV6P320●	260	3380	LC1G265
200	318	65	GV6P320●	320	4160	LC1G330
220	343	65	GV6P500●	350	4550	LC1G400
250	390	65	GV6P500●	400	5200	LC1G400
300	466	65	GV6P500●	470	6580	LC1G500

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150●/ 220●		GV6P320●/ 500●	
	B	N	S	F	H	F	H
440 V	20	50	70	35	65	30	65

#### 55 to 450 kW at 440 V: type 2 coordination (with ComPact NSX/NS circuit breakers)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
440 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)				
kW	A	kA		A	A	
55	88	130	NSX100● + MicroLogic 2.2 M	90	1170	LC1G115
75	120	130	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	130	1690	LC1G150
90	145	130	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	150	1950	LC1G150
110	177	130	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	185	2405	LC1G185
132	209	130	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	210	2730	LC1G225
160	255	130	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	260	3380	LC1G265
200	318	130	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	320	4160	LC1G330
220	343	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	350	4550	LC1G400
250	390	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	400	5200	LC1G400
300	466	130	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	470	6110	LC1G500
335	521	130	NS800● + MicroLogic 5.0	560	7280	LC1G630
355	554	130	NS800● + MicroLogic 5.0	560	7280	LC1G630
400	627	130	NS800● + MicroLogic 5.0	640	8320	LC1G800
450	695	130	NS800● + MicroLogic 5.0	720	9360	LC1G800

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	F	N	H	S	L	F	N	H	S	L	L
440 V	35	50	65	90	130	30	42	65	90	130	130

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Applicable also with MicroLogic 6.2 M and 6.3 M trip units.



#### 65 to 295 kW at 500 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
500 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)		A	A	
kW	A	kA				
65	92	30	GV4P/GV4PE/GV4PEM115●	93	1209	LC1G115
65	92	50	GV5P150●	100	1300	LC1G115
90	128	50	GV5P150●	130	1690	LC1G150
110	156	50	GV5P220●	170	2210	LC1G185
132	184	50	GV5P220●	185	2405	LC1G225
160	224	50	GV6P320●	240	3120	LC1G265
200	280	50	GV6P320●	300	3900	LC1G330
250	344	50	GV6P500●	350	4550	LC1G400
295	405	50	GV6P500●	440	5720	LC1G500

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150● / 220●		GV6P320● / 500●	
Breaking performance code	B	N	S	F	H	F	H
500 V	10	25	30	30	50	25	50

#### 65 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX / NS circuit breakers)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
500 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)		A	A	
kW	A	kA				
65	92	70	NSX100● + MicroLogic 2.2 M	95	1235	LC1G115
65	92	70	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	95	1235	LC1G115
90	128	70	NSX160● + MicroLogic 2.2 M <sup>(3)</sup>	130	1690	LC1G150
110	156	70	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	170	2210	LC1G185
132	184	70	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	185	2405	LC1G225
160	224	70	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	240	3120	LC1G265
200	280	70	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	300	3900	LC1G330
250	344	70	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	350	4550	LC1G400
295	405	70	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	440	5720	LC1G500
375	516	70	NS800● + MicroLogic 5.0	560	7280	LC1G630
425	584	70	NS800● + MicroLogic 5.0	640	8320	LC1G800

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●					NSX160● / NSX250●					NSX400● / NSX630●					NS800●
Breaking performance code	F	N	H	S	L	F	N	H	S	L	F	N	H	S	L	L
500 V	25	36	50	65	70	30	36	50	65	70	25	30	50	65	70	100

(2) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

(3) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.

0.06 to 22 kW at 690 V: type 2 coordination							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Limiting block	Circuit breaker		Contactor	
690 V			Product type	Product type	I <sub>r</sub> Setting <sup>(1)</sup>	I <sub>rm</sub> <sup>(1)</sup>	
P	I <sub>e</sub>	I <sub>q</sub>			A	A	
kW	A	kA					
0.06	0.12	100		GV2P01	0.16	1.5	LC1D09
0.09	0.17	100		GV2P02	0.25	2.4	LC1D09
0.12	0.23	100		GV2P02	0.25	2.4	LC1D09
0.18	0.35	100		GV2P03	0.4	5	LC1D09
0.25	0.49	100		GV2P04	0.63	8	LC1D09
0.37	0.64	100		GV2P05	1	13	LC1D09
0.55	0.87	100		GV2P05	1	13	LC1D09
0.75	1.1	100		GV2P06	1.6	22.5	LC1D09
1.1	1.6	65	LA9LB920	GV2P07	1.6	22.5	LC1D25
1.5	2.1	65	LA9LB920	GV2P07	2.5	33.5	LC1D25
2.2	2.8	65	LA9LB920	GV2P08	4	51	LC1D25
3	3.8	65	LA9LB920	GV2P08	4	51	LC1D25
4	4.9	65	LA9LB920	GV2P10	6.3	78	LC1D25
5.5	6.7	65	LA9LB920	GV2P14	10	138	LC1D25
7.5	8.9	65	LA9LB920	GV2P14	10	138	LC1D25
9	12.8	65	LA9LB920	GV2P16	14	170	LC1D25
11	12.8	65	LA9LB920	GV2P16	14	170	LC1D25
15	17	65	LA9LB920	GV2P20	18	223	LC1D25
18.5	21	65	LA9LB920	GV2P21	23	327	LC1D32
22	24	65	LA9LB920	GV2P32	32	416	LC1D40A

<sup>(1)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

30 to 560 kW at 690 V: type 2 coordination (with ComPacT NSX/NS circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
690 V			Product type <sup>(1)</sup>	I <sub>r</sub> Setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type
P	I <sub>e</sub>	I <sub>q</sub> (max)		A	A	
kW	A	kA				
30	32	100	NSX100● + MicroLogic 2.2 M	36	468	LC1G115
37	39	100	NSX100● + MicroLogic 2.2 M	40	520	LC1G115
45	47	100	NSX100● + MicroLogic 2.2 M	50	650	LC1G115
55	57	100	NSX100● + MicroLogic 2.2 M	60	780	LC1G115
75	77	100	NSX100● + MicroLogic 2.2 M	80	1040	LC1G115
90	93	100	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	95	1235	LC1G150
110	113	100	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	115	1495	LC1G185
132	134	100	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	140	1820	LC1G225
160	162	100	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	170	2210	LC1G225
200	203	100	NSX250● + MicroLogic 2.2 M <sup>(3)</sup>	210	2730	LC1G265
220	223	100	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	240	3120	LC1G330
250	250	100	NSX400● + MicroLogic 2.3 M <sup>(3)</sup>	260	3380	LC1G400
315	313	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	320	4160	LC1G400
335	335	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	350	4550	LC1G500
355	354	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	380	4940	LC1G500
375	374	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	380	4940	LC1G630
400	400	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	440	5720	LC1G630
450	455	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	470	6110	LC1G630
475	475	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	500	6500	LC1G630
500	493	100	NSX630● + MicroLogic 2.3 M <sup>(3)</sup>	500	6500	LC1G630
560	551	75	NS800● + MicroLogic 5.0	560	7280	LC1G800

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX250●/ NSX400●/ NSX630●		NS800●
Breaking performance code	HB1	HB2	LB
690 V	75	100	75

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.

#### ½ to 80 hp at 460 V - 3P

GV2P + contactor: compact, high SCCR solution.

GV3P + contactor: medium power, Everlink (long lasting power connection).

GV4PB + contactor: high power, advanced protection settings, Everlink (long lasting power connection), 18 (GV4PB●●●B), 35 (GV4PB●●●N) or 65 (GV4PB●●●S) kA SCCR.

Standard power ratings						Circuit breaker		Contactor		Circuit breaker		Contactor		Circuit breaker		Contactor	
200 V 3P		230 V 3P		460 V 3P		Product reference	Dial range	Product reference	Comb. SCCR 480Y	Product reference	Dial range	Product reference	Comb. SCCR 480Y	Product reference	Dial range	Product reference	SCCR 480Y As applied
HP	FLA	HP	FLA	HP	FLA	(2)	(1)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(3)	(3)	(3)
						A		A		A		A		A		kA	
		½	1.1			GV2P06	1 to 1.6	LC1D09	100					GV4PB02S	0.8 to 2	LC1D09	65
		¾	1.6			GV2P06	1 to 1.6	LC1D09	100					GV4PB02S	0.8 to 2	LC1D09	65
½	2.5	½	2.2	1	2.1	GV2P07	1.6 to 2.5	LC1D09	100					GV4PB03S	1.4 to 3.5	LC1D09	65
				1½	3	GV2P08	2.5 to 4	LC1D09	100					GV4PB03S	1.4 to 3.5	LC1D09	65
¾	3.7	¾	3.2	2	3.4	GV2P08	2.5 to 4	LC1D09	100					GV4PB07S	2.9 to 7	LC1D09	65
1	4.6	1	4.2	3	4.8	GV2P10	4 to 6.3	LC1D09	100					GV4PB07S	2.9 to 7	LC1D09	65
				1½	6	GV2P10	4 to 6.3	LC1D09	100					GV4PB12S	5 to 12.5	LC1D12	65
1½	6.9	2	6.8			GV2P14	6 to 10	LC1D12	100					GV4PB12S	5 to 12.5	LC1D12	65
2	7.8			5	7.6	GV2P14	6 to 10	LC1D12	100					GV4PB12S	5 to 12.5	LC1D12	65
				3	9.6	GV2P14	6 to 10	LC1D12	100	GV3P13	9 to 13	LC1D18	65	GV4PB12S	5 to 12.5	LC1D12	65
3	11			7½	11	GV2P16	9 to 14	LC1D18	50 <sup>(5)</sup>	GV3P13	9 to 13	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65
				10	14	GV2P16	9 to 14	LC1D18	50 <sup>(5)</sup>	GV3P18	12 to 18	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65
5	17.5	5	15.2			GV2P20	13 to 18	LC1D18	50 <sup>(5)</sup>	GV3P18	12 to 18	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65
				7½	22	GV2P21	17 to 23	LC1D25	50 <sup>(5)</sup>	GV3G25	17 to 25	LC1D25	65	GV4PB25S	10 to 25	LC1D25	65
7½	25.3					GV2P22	20 to 25	LC1D25	50 <sup>(5)</sup>	GV3P32	23 to 32	LC1D32	65	GV4PB50S	20 to 50	LC1D50A	65
				10	28					GV3P32	23 to 32	LC1D32	65	GV4PB50S	20 to 50	LC1D50A	65
10	32.2			25	34					GV3P40	30 to 40	LC1D40A	65	GV4PB50S	20 to 50	LC1D50A	65
				15	42					GV3P50	37 to 50	LC1D50A	65	GV4PB50S	20 to 50	LC1D50A	65
15	48									GV3P65	48 to 65	LC1D65A	65	GV4PB50S	20 to 50	LC1D50A	65
				20	54					GV3P65	48 to 65	LC1D65A	65	GV4PB80S	40 to 80	LC1D80	65
20	62.1													GV4PB115S	40 to 80	LC1D80	65
25	78.2	25	68	50	65									GV4PB115S	40 to 80	LC1D80	65
30	92	30	80	60	77									GV4PB115S	65 to 115	LC1D115	65

(1) Motor Full Load Amp Sizes are based on NEC Table 430.250.

(2) Requires use of GV1G09 or GV2GH7 line spacer for Type F rating.

(3) Add coil suffix to complete reference part number. For example, an LC1D09G7 includes a 120 V AC coil.

(4) Requires use of GV3G66 line spacer and GVAM11 short-circuit signaling contact for Type F rating.

(5) SCCR is 42 kA at 480Y when using GV2G busbar links.

0.06 to 250 kW at 400/415 V: type 1 coordination														
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor	Thermal overload relay	
400/415 V			440 V			500 V			Reference	Rating	I <sub>rm</sub> <sup>(1)</sup>	Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
0.06	0.2	50	0.06	0.19	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0302	0.16...0.23
–	–	–	0.09	0.28	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0303	0.23...0.36
0.09	0.3	50	0.12	0.37	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0304	0.36...0.54
0.12	0.44	50	–	–	–	–	–	–	GV2LE04	0.63	8	LC1K06	LR2K0304	0.36...0.54
0.18	0.6	50	0.18	0.55	50	–	–	–	GV2LE04	0.63	8	LC1K06	LR2K0305	0.54...0.8
–	–	–	0.25	0.76	50	–	–	–	GV2LE05	1	13	LC1K06	LR2K0305	0.54...0.8
0.25	0.85	50	–	–	–	–	–	–	GV2LE05	1	13	LC1K06	LR2K0306	0.8...1.2
0.37	1.1	50	0.37	1	50	0.37	0.88	50	–	–	–	–	–	–
0.55	1.5	50	0.55	1.36	50	0.55	1.2	50	GV2LE06	1.6	22.5	LC1K06	LR2K0307	1.2...1.8
–	–	–	–	–	–	0.75	1.5	50	–	–	–	–	–	–
–	–	–	0.75	1.68	50	–	–	–	GV2LE07	2.5	33.5	LC1K06	LR2K0307	1.2...1.8
0.75	1.9	50	–	–	–	–	–	–	GV2LE07	2.5	33.5	LC1K06	LR2K0308	1.8...2.6
1.1	2.7	50	1.1	2.37	50	1.1	2.2	50	–	–	–	–	–	–
1.5	3.6	50	1.5	3.06	50	1.5	2.9	50	GV2LE08	4	51	LC1K06	LR2K0310	2.6...3.7
–	–	–	–	–	–	2.2	3.9	50	GV2LE08	4	51	LC1K06	LR2K0312	3.7...5.5
2.2	4.9	50	2.2	4.4	50	3	5.2	50	GV2LE10	6.3	78	LC1K06	LR2K0312	3.7...5.5
–	–	–	3	5.77	50	–	–	–	GV2LE10	6.3	78	LC1K06	LR2K0314	5.5...8
–	–	–	4	7.9	15	–	–	–	GV2LE14	10	138	LC1K09	LR2K0314	5.5...8
3	6.5	50	–	–	–	4	6.8	10	GV2LE14	10	138	LC1K09	LR2K0314	5.5...8
4	8.5	50	–	–	–	–	–	–	GV2LE14	10	138	LC1K09	LR2K0316	8...11.5
5.5	11.5	15	5.5	10.4	8	7.5	12.4	6	GV2LE16	14	170	LC1K12	LR2K0321	10...14
–	–	–	7.5	13.7	8	9	13.9	6	GV2LE16	14	170	LC1D18	LRD21	12...18
7.5	15.5	15	9	16.9	8	–	–	–	GV2LE20	18	223	LC1D18	LRD21	12...18
9	18.1	15	–	–	–	11	17.6	4	GV2LE22	25	327	LC1D25	LRD22	16...24
11	22	15	11	20.1	6	15	23	4	GV2LE22	25	327	LC1D25	LRD22	16...24
15	29	10	15	26.5	6	18.5	28	4	GV2LE32	32	416	LC1D32	LRD32	23...32
18.5	35	50	18.5	32.5	50	22	33	10	GV3L40	40	560	LC1D40A	LRD340	30...40
22	41	50	22	39	50	30	44	10	GV3L50	50	700	LC1D50A	LRD350	37...50

(1) I<sub>rm</sub>: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 250 kW at 400/415 V: type 1 coordination														
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor		Thermal overload relay
400/415 V			440 V			500 V			Reference	Rating I <sub>rm</sub> <sup>(1)</sup>		Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
30	55	50	30	51.5	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
-	-	-	37	64	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
-	-	-	-	-	-	45	64	50	GV3L65	65	910	LC1D80	LRD3361	55...70
37	66	50	-	-	-	-	-	-	GV3L73	73	1120	LC1D80A	LRD380	62...80
-	-	-	37	64	70	-	-	-	GV4L80	80	880	LC1D65A	LRD365	48...65
-	-	-	-	-	-	45	64	30	GV4L80	80	880	LC1D80	LRD3361	55...70
37	66	100	-	-	-	-	-	-	GV4L80	80	1040	LC1D80	LRD3361	55...70
-	-	-	45	76	70	55	78	30	GV4L80	80	1040	LC1D80	LRD3363	63...80
45	80	100	-	-	-	-	-	-	GV4L115	115	1380	LC1D95	LRD3365	80...104
-	-	-	-	-	-	75	106	30	GV4L115	115	1380	LC1D115	LRD4367	95...120
-	-	-	55	90	70	-	-	-	GV4L115	115	1380	LC1D115	LRD4365	80...104
55	97	100	-	-	-	-	-	-	GV4L115	115	1495	LC1D115	LRD4367	95...120
-	-	-	-	-	-	50	90	<sup>(3)</sup>	NSX100●MA <sup>(3)</sup>	100	1200	LC1D115	LRD4365	80...104
-	-	-	-	-	-	75	106	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1500	LC1D115	LRD4367	95...120
55	97	<sup>(3)</sup>	-	-	-	-	-	-	NSX160●MA <sup>(3)</sup>	150	1350	LC1D115	LRD4367	95...120
75	132	<sup>(3)</sup>	75	125	<sup>(3)</sup>	90	128	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1800	LC1D150	LRD4369	110...140
-	-	-	90	146	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
90	160	<sup>(3)</sup>	-	-	-	110	156	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
110	195	<sup>(3)</sup>	-	-	-	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	110	178	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	132	184	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	132	215	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
132	230	<sup>(3)</sup>	-	-	-	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	160	224	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	160	256	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
160	280	<sup>(3)</sup>	200	321	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	200	280	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	220	310	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
200	350	<sup>(3)</sup>	220	353	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	250	401	<sup>(3)</sup>	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	250	344	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
220	388	<sup>(3)</sup>	-	-	-	-	-	-	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
250	430	<sup>(3)</sup>	280	470	<sup>(3)</sup>	315	432	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-
-	-	-	-	-	-	355	488	<sup>(3)</sup>	<sup>(4)</sup>	-	-	<sup>(4)</sup>	<sup>(4)</sup>	-

(1) I<sub>rm</sub>: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I <sub>q</sub> (kA)	NSX100●MA	NSX160●MA and NSX250●MA	NSX400● and NSX630●
400/415 V	36	70	150
440 V	35	65	130
500 V	25	50	70
660/690 V	8	10	20
Code	F	H	L

(4) Please consult your regional sales office.

#### 0.06 to 250 kW at 400/415 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor	Thermal overload relay	
400/415 V			440 V			500 V			Reference	Rating	I <sub>rm</sub> <sup>(1)</sup>	Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
0.06	0.2	130	0.06	0.19	130	–	–	–	GV2L03 or LE03	0.4	5	LC1D09	LRD02	0.16...0.25
0.09	0.3	130	0.09	0.28	130	–	–	–	GV2L03 or LE03	0.4	5	LC1D09	LRD03	0.25...0.40
–	–	–	0.12	0.37	130	–	–	–						
0.12	0.44	130	–	–	–	–	–	–	GV2L04 or LE04	0.63	8	LC1D09	LRD04	0.4...0.63
0.18	0.6	130	0.18	0.55	130	–	–	–						
0.25	0.85	130	0.25	0.76	130	–	–	–	GV2L05 or LE05	1	13	LC1D09	LRD05	0.63...1
0.37	1.1	130	0.37	0.99	130	–	–	–						
–	–	–	–	–	–	0.37	0.88	130	GV2L05 or LE05	1	13	LC1D09	LRD06	1...1.7
0.55	1.5	130	–	–	–	0.55	1.2	130	GV2L06 or LE06	1.6	22.5	LC1D09	LRD06	1...1.7
–	–	–	0.55	1.36	130	0.75	1.5	130						
0.75	1.9	130	0.75	1.68	130	1.1	2.2	130	GV2L07 or LE07	2.5	33.5	LC1D09	LRD07	1.6...2.5
1.1	2.7	130	1.1	2.37	130	1.5	2.9	130	GV2L08 or LE08	4	51	LC1D09	LRD08	2.5...4
1.5	3.6	130	–	–	–	2.2	3.9	130						
–	–	–	1.5	3.06	130	–	–	–	GV2L08 or LE08	4	51	LC1D09	LRD10	4...6
2.2	4.9	130	–	–	–	–	–	–	GV2L10 or LE10	6.3	78	LC1D09	LRD10	4...6
–	–	–	–	–	–	3	5.2	13						
–	–	–	2.2	4.42	50	–	–	–	GV2LE10	6.3	78	LC1D09	LRD10	4...6
–	–	–	3	5.77	50	3	5.2	50						
–	–	–	2.2	4.42	130	–	–	–	GV2L10	6.3	78	LC1D09	LRD10	4...6
–	–	–	3	5.77	130	3	5.2	130						
3	6.5	130	–	–	–	–	–	–	GV2L14 or LE14	10	10	LC1D09	LRD12	5.5...8
–	–	–	–	–	–	4	6.8	10	GV2LE14	10	138	LC1D12	LRD12	5.5...8
–	–	–	–	–	–	4	6.8	50	GV2L14	10	138	LC1D12	LRD12	5.5...8
4	8.5	130	–	–	–	–	–	–	GV2L14 or LE14	10	138	LC1D09	LRD14	7...10
–	–	–	4	7.9	15	–	–	–	GV2LE14	10	138	LC1D09	LRD14	7...10
–	–	–	4	7.9	130	–	–	–	GV2L14	10	138	LC1D09	LRD14	7...10
–	–	–	–	–	–	5.5	9.2	10	GV2LE14	10	138	LC1D09	LRD14	7...10
–	–	–	–	–	–	5.5	9.2	50	GV2L14	10	138	LC1D09	LRD14	7...10
5.5	11.5	130	5.5	10.4	50	7.5	12.4	42	GV2L16	14	170	LC1D25	LRD16	9...13
–	–	–	7.5	13.7	50	–	–	–	GV2L16	14	170	LC1D25	LRD21	12...18
7.5	15.5	50	9	16.9	20	9	13.9	10	GV2L20	18	223	LC1D25	LRD21	12...18
9	18.1	50	–	–	–	–	–	–	GV2L22	25	327	LC1D25	LRD22	16...24
11	22	50	11	20.1	20	–	–	–						
–	–	–	–	–	–	11	17.6	10	GV2L22	25	327	LC1D32	LRD22	16...24
–	–	–	–	–	–	15	23	10						
15	29	50	15	26.5	50	–	–	–	GV3L32	32	448	LC1D40A	LRD332	23...32
–	–	–	–	–	–	18.5	28	10	GV3L32	32	448	LC1D65A	LRD332	23...32

(1) I<sub>rm</sub>: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.18 to 22 kW at 690 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Limiting block	Circuit breaker			Contactor	Thermal overload relay	
690 V			Product type	Product type	I <sub>r</sub> setting <sup>(1)</sup>	I <sub>rm</sub> <sup>(1)</sup>	Product type	Product type	Setting range
P	I <sub>e</sub>	I <sub>q</sub>			A	A			A
kW	A	kA							
0.18	0.35	100	–	GV2L03	0.4	5	LC1D09	LRD03	0.25...0.4
0.25	0.49	100	–	GV2L04	0.63	8	LC1D09	LRD04	0.4...0.63
0.37	0.64	100	–	GV2L05	1	13	LC1D09	LRD05	0.63...1
0.55	0.87	100	–	GV2L05	1	13	LC1D09	LRD05	0.63...1
0.75	1.1	100	–	GV2L06	1.6	22.5	LC1D09	LRD06	1...1.6
1.1	1.6	100	–	GV2L06	1.6	22.5	LC1D09	LRD06	1...1.6
1.5	2.1	65	LA9LB920 <sup>(2)</sup>	GV2L07	2.5	33.5	LC1D25	LRD07	1.6...2.5
2.2	2.8	65	LA9LB920 <sup>(2)</sup>	GV2L08	4	51	LC1D25	LRD08	2.5...4
3	3.8	65	LA9LB920 <sup>(2)</sup>	GV2L08	4	51	LC1D25	LRD08	2.5...4
4	4.9	65	LA9LB920 <sup>(2)</sup>	GV2L10	6.3	78	LC1D25	LRD10	4...6
5.5	6.7	65	LA9LB920 <sup>(2)</sup>	GV2L14	10	138	LC1D32	LRD12	5.5...8
7.5	8.9	65	LA9LB920 <sup>(2)</sup>	GV2L14	10	138	LC1D32	LRD14	7...10
9	10.6	65	LA9LB920 <sup>(2)</sup>	GV2L16	14	170	LC1D32	LRD16	9...13
11	12.8	65	LA9LB920 <sup>(2)</sup>	GV2L16	14	170	LC1D32	LRD16	9...13
15	17	65	LA9LB920 <sup>(2)</sup>	GV2L20	18	223	LC1D32	LRD21	12...18
18.5	21	65	LA9LB920 <sup>(2)</sup>	GV2L22	25	327	LC1D32	LRD22	16...24
22	24	65	LA9LB920 <sup>(2)</sup>	GV2L22	25	327	LC1D32	LRD32	23...32
22	24	65	LA9LB920 <sup>(2)</sup>	GV2L32	32	416	LC1D40A	LRD332	23...32

(1) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

(2) For more information about the current limiter LA9LB920, see pages A4/31 and A4/63.

0.06 to 250 kW at 400/415 V: type 2 coordination														
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor	Thermal overload relay	
400/415 V			440 V			500 V			Reference	Rating	I <sub>rm</sub> <sup>(1)</sup>	Reference <sup>(2)</sup>	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
18.5	35	50	–	–	–	–	–	–	GV3L40	40	560	LC1D50A	LRD340	30...40
–	–	–	18.5	32.5	50	–	–	–	GV3L40	40	560	LC1D65A	LRD340	30...40
22	41	50	–	–	–	–	–	–	GV3L50	50	700	LC1D50A	LRD350	37...50
–	–	–	22	39	50	30	44	10	GV3L50	50	700	LC1D65A	LRD350	37...50
30	55	50	30	51.5	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
37	66	50	–	–	–	–	–	–	GV3L73	73	1120	LC1D80A	LRD380	62...80
45	60	50	–	–	–	–	–	–	GV3L80	80	1120	LC1D95	LRD3363	63...80
–	–	–	37	64	70	–	–	–	GV4L80	80	880	LC1D65A	LRD365	48...65
37	66	100	45	76	70	(4)	(4)	(4)	GV4L80	80	1040	LC1D80	LRD3363	63...80
45	80	100	55	90	70	(4)	(4)	(4)	GV4L115	115	1380	LC1D115	LR9D5367	60...100
55	97	100	–	–	–	(4)	(4)	(4)	GV4L115	115	1495	LC1D115	LR9D5369	90...150
–	–	–	–	–	–	55	78	(3)	NSX100●MA <sup>(3)</sup>	100	1040	LC1D80	LRD3363	63...80
45	80	(3)	55	90	(3)	–	–	–	NSX100●MA <sup>(3)</sup>	100	1300	LC1D115	LR9D5367	60...100
55	97	(3)	–	–	–	–	–	–	NSX160●MA <sup>(3)</sup>	150	1500	LC1D115	LR9D5369	90...150
–	–	–	–	–	–	75	106	(3)	NSX160●MA <sup>(3)</sup>	150	1950	LC1D115	LR9D5369	90...150
75	132	(3)	75	125	(3)	–	–	–	NSX160●MA <sup>(3)</sup>	150	1950	LC1D150	LR9D5369	90...150
–	–	–	90	146	(3)	–	–	–	NSX160●MA <sup>(3)</sup>	150	1950	LC1D150	LR9D5369	90...150
–	–	–	–	–	–	90	128	(3)	NSX160●MA <sup>(3)</sup>	150	1200	LC1D150	LR9D5369	90...150

(1) I<sub>rm</sub>: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I <sub>q</sub> (kA)	NSX100●MA	NSX160●MA and NSX250●MA	NSX400● and NSX630●
400/415 V	36	70	70
440 V	35	65	65
500 V	25	50	50
660/690 V	8	10	20
Code	F	H	L

(4) Please consult your regional sales office.



#### 45 to 335 kW at 400 V: type 2 coordination (with TeSys GV4 or ComPacT NSX circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
400 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA					A
45	80	100	GV4L/GV4LE115●	1265	LC1G115	LR9G115	80
55	97	100	GV4L/GV4LE115●	1100	LC1G115	LR9G225	80
45	80	130	NSX100● + MA	1265	LC1G115	LR9G115	97
55	97	130	NSX160● + MA	1500	LC1G115	LR9G225	97
75	132	130	NSX160● + MA	1800	LC1G150	LR9G225	132
90	160	130	NSX250● + MA	2640	LC1G185	LR9G225	160
110	195	130	NSX250● + MA	2640	LC1G225	LR9G225	195
110	195	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	195
132	230	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	230
160	280	130	NSX400● + MicroLogic 1.3 M	3840	LC1G330	LR9G500	280
200	350	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	350
220	380	130	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LR9G500	380
250	430	130	NSX630● + MicroLogic 1.3 M	6000	LC1G500	LR9G500	430
300	460	130	NS800● + MicroLogic 5.0 LR OFF	8800	LC1G630	LR9G630	460
335	575	130	NS800● + MicroLogic 5.0 LR OFF	9600	LC1G630	LR9G630	575

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●/ NSX160●/ NSX250●/ NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	L
400 V	25	50	100	36	50	70	100	130	150

#### 55 to 355 kW at 440 V: type 2 coordination (with TeSys GV4 or ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
440 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA					A
55	88	70	GV4L/GV4LE115●	1150	LC1G115	LR9G115	88
55	88	130	NSX100● + MA	1500	LC1G115	LR9G115	88
75	120	130	NSX160● + MA	1800	LC1G150	LR9G225	120
90	145	130	NSX160● + MA	2640	LC1G150	LR9G225	145
110	177	130	NSX250● + MA	2640	LC1G185	LR9G225	177
132	209	130	NSX250● + MA	2860	LC1G225	LR9G225	209
160	255	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	255
200	318	130	NSX400● + MicroLogic 1.3 M	4160	LC1G330	LR9G500	318
220	343	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	343
250	390	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	390
300	466	130	NSX630● + MicroLogic 1.3 M	6500	LC1G500	LR9G500	466
335	521	130	NS800● + MicroLogic 5.0 LR OFF	8800	LC1G630	LR9G630	521
355	554	130	NS800● + MicroLogic 5.0 LR OFF	9600	LC1G630	LR9G630	554

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●/ NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	F	N	H	S	L	L
440 V	20	50	70	35	50	65	100	130	30	42	65	100	130	150

(2) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

Coordination and standards

# TeSys

Complementary technical information

Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 65 to 425 kW at 500 V: type 2 coordination (with TeSys GV4 or ComPact NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
500 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA					A
65	92	30	GV4L/GV4LE115●	1380	LC1G115	LR9G115	92
65	92	70	NSX100● + MA100	1300	LC1G115	LR9G115	92
90	128	70	NSX160● + MA150	1950	LC1G150	LR9G225	128
110	156	70	NSX250● + MA220	2200	LC1G185	LR9G225	156
132	184	70	NSX400● + MicroLogic 1.3 M	2560	LC1G225	LR9G225	184
160	224	70	NSX400● + MicroLogic 1.3 M	3200	LC1G265	LR9G500	224
200	280	70	NSX400● + MicroLogic 1.3 M	3840	LC1G330	LR9G500	280
250	344	70	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	344
295	405	70	NSX630● + MicroLogic 1.3 M	6500	LC1G500	LR9G500	405
375	516	70	NS800● + MicroLogic 5.0 LR OFF	8800	LC1G630	LR9G630	516
425	584	70	NS800● + MicroLogic 5.0 LR OFF	9600	LC1G800	LR9G630	584

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●					NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	F	N	H	S	L	F	N	H	S	L	L
500 V	10	25	30	25	36	50	65	70	30	36	50	65	70	25	30	50	65	70	100

(2) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

Coordination and standards

0.06 to 30 kW at 400/415 V: type 2 coordination												
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Circuit breaker			Contactor		Electronic thermal overload relay	
400/415 V			690 V			Reference	Rating	I <sub>rm</sub>	Reference	Reference	Setting range	
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A	
kW	A	kA	kW	A	kA							
0.06	0.2	100	–	–	–	GV2L03	0.4	5	LC1D09	LR9D01	0.1...0.5	
0.09	0.3	100	–	–	–	GV2L03	0.4	5	LC1D09	LR9D01	0.1...0.5	
0.12	0.44	100	–	–	–	GV2L04	0.63	8	LC1D18	LR9D02	0.4...2.0	
0.18	0.6	100	–	–	–	GV2L04	0.63	8	LC1D18	LR9D02	0.4...2.0	
0.25	0.85	100	–	–	–	GV2L05	1	13	LC1D18	LR9D02	0.4...2.0	
0.37	1.1	100	–	–	–	GV2L05	1	13	LC1D18	LR9D02	0.4...2.0	
0.55	1.5	100	–	–	–	GV2L06	1.6	22.5	LC1D18	LR9D02	0.4...2.0	
0.75	1.9	100	–	–	–	GV2L07	2.5	33.5	LC1D18	LR9D08	1.6...8.0	
1.1	2.7	100	–	–	–	GV2L08	4	51	LC1D18	LR9D08	1.6...8.0	
1.5	3.6	100	–	–	–	GV2L08	4	51	LC1D18	LR9D08	1.6...8.0	
2.2	4.9	100	–	–	–	GV2L10	6.3	78	LC1D18	LR9D08	1.6...8.0	
3	6.5	100	–	–	–	GV2L14	10	138	LC1D25	LR9D32	6.4...32	
4	8.5	100	–	–	–	GV2L14	10	138	LC1D25	LR9D32	6.4...32	
5.5	11.5	100	–	–	–	GV2L16	14	170	LC1D25	LR9D32	6.4...32	
7.5	15.5	50	–	–	–	GV2L20	18	223	LC1D25	LR9D32	6.4...32	
11	22	50	–	–	–	GV2L22	25	327	LC1D25	LR9D32	6.4...32	
15	29	50	–	–	–	GV3L32	40	448	LC1D65A	LR9D110S	22...110	
18.5	35	50	–	–	–	GV3L40	40	560	LC1D65A	LR9D110S	22...110	
22	41	50	–	–	–	GV3L50	50	700	LC1D65A	LR9D110S	22...110	
30	55	50	–	–	–	GV3L65	65	910	LC1D65A	LR9D110S	22...110	
–	–	–	0.37	0.64	50	GV2L05	1	13	LC1D09	LR9D02	0.4...2.0	
–	–	–	0.55	0.87	50	GV2L05	1	13	LC1D09	LR9D02	0.4...2.0	
–	–	–	0.75	1.1	50	GV2L06	1.6	22.5	LC1D09	LR9D02	0.4...2.0	
–	–	–	1.1	1.6	50	GV2L07 + LA9LB920 <sup>(1)</sup>	2.5	33.5	LC1D25	LR9D08	1.6...8.0	
–	–	–	1.5	2.1	50	GV2L07 + LA9LB920 <sup>(1)</sup>	2.5	33.5	LC1D25	LR9D08	1.6...8.0	
–	–	–	2.2	2.8	50	GV2L08 + LA9LB920 <sup>(1)</sup>	4	51	LC1D25	LR9D08	1.6...8.0	
–	–	–	3	4	50	GV2L08 + LA9LB920 <sup>(1)</sup>	4	51	LC1D25	LR9D08	1.6...8.0	
–	–	–	4	5	50	GV2L10 + LA9LB920 <sup>(1)</sup>	6.3	78	LC1D25	LR9D08	1.6...8.0	
–	–	–	5.5	7	50	GV2L14 + LA9LB920 <sup>(1)</sup>	10	138	LC1D25	LR9D32	6.4...32	
–	–	–	7.5	8.9	50	GV2L14 + LA9LB920 <sup>(1)</sup>	10	138	LC1D25	LR9D32	6.4...32	
–	–	–	11	13	3	GV3L18+ LA9LB920 <sup>(1)</sup>	14	252	LC1D32	LR9D32	6.4...32	
–	–	–	15	16.5	3	GV2L22 + LA9LB920 <sup>(1)</sup>	18	327	LC1D32	LR9D32	6.4...32	
–	–	–	18.5	21	3	GV3L25 + LA9LB920 <sup>(1)</sup>	25	350	LC1D65A	LR9D32	6.4...32	
–	–	–	22	25	3	GV2L32 + LA9LB920 <sup>(1)</sup>	32	416	LC1D65A	LR9D32	6.4...32	

<sup>(1)</sup> For more information about the current limiter LA9LB920, see pages A4/31 and A4/63.

30 to 500 kW at 690 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
690 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA		A			A
30	32	100	NSX100● + MA	550	LC1G115	LR9G115	32
37	39	100	NSX100● + MA	550	LC1G115	LR9G115	39
45	47	100	NSX100● + MA	650	LC1G115	LR9G115	47
55	57	100	NSX100● + MA	1100	LC1G150	LR9G115	57
75	77	100	NSX100● + MA	1100	LC1G185	LR9G225	77
90	93	100	NSX250● + MA	1650	LC1G225	LR9G225	93
110	113	100	NSX250● + MA	1650	LC1G225	LR9G225	113
132	134	100	NSX250● + MA	1800	LC1G265	LR9G500	134
160	162	100	NSX250● + MA	2420	LC1G330	LR9G500	162
200	203	100	NSX250● + MA	2640	LC1G400	LR9G500	203
220	223	100	NSX400● + MicroLogic 1.3 M	3520	LC1G400	LR9G500	223
250	250	100	NSX400● + MicroLogic 1.3 M	3520	LC1G500	LR9G500	250
315	313	100	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LR9G500	313
335	335	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	335
355	354	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	354
375	374	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	374
400	400	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	400
450	455	100	NSX630● + MicroLogic 1.3 M	6000	LC1G630	LR9G630	455
475	475	100	NSX630● + MicroLogic 1.3 M	6500	LC1G630	LR9G630	475
500	493	100	NSX630● + MicroLogic 1.3 M	6500	LC1G630	LR9G630	493

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX250●/ NSX400●/ NSX630●	
Breaking performance code	HB1	HB2
690 V	75	100

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

#### 1.5 to 315 kW at 400/415 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: LC3K and LC3D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3								Fuse carrier (basic block)	aM fuses		Star-delta contactors	Thermal overload relay	
400/415 V				440 V					Reference	Size		Rating	Reference
P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub>						
kW	A	A	kA	kW	A	A	kA			A			A
1.5	3.5	2	50	1.5	3.06	2	50	LS1D32	10 x 38	4	LC3K06	LR2K0308	1.8...2.6
2.2	5	3	50	–	–	–	–	LS1D32	10 x 38	6	LC3K06	LR2K0310	2.6...3.7
–	–	–	–	2.2	4.42	3	50	–	–	–	–	–	–
–	–	–	–	3	5.77	3	50	LS1D32	10 x 38	8	LC3K06	LR2K0310	2.6...3.7
3	6.5	4	50	–	–	–	–	LS1D32	10 x 38	8	LC3K06	LR2K0312	3.7...5.5
4	8.4	5	50	4	7.9	5	50	LS1D32	10 x 38	12	LC3K06	LR2K0312	3.7...5.5
5.5	11	6	50	5.5	10.4	6	50	LS1D32	10 x 38	16	LC3K06	LR2K0314	5.5...8
7.5	14.8	9	50	7.5	13.7	8	50	LS1D32	10 x 38	16	LC3K09	LR2K0316	8...11.5
9	18.1	10	100	9	16.9	10	50	LS1D32	10 x 38	20	LC3D12A	LRD16	9...13
11	21	12	100	11	20.1	12	100	GK1EK	14 x 51	25	LC3D12A	LRD16	9...13
15	28.5	16	100	15	26.5	15	100	GK1EK	14 x 51	32	LC3D18A	LRD21	12...18
18.5	35	20	100	18.5	32.8	19	100	GK1EK	14 x 51	40	LC3D18A	LRD22	16...24
–	–	–	–	22	39	23	100	GS●J	22 x 58	50	LC3D18A	LRD22	16...24
22	42	24	100	–	–	–	–	GS●J	22 x 58	50	LC3D32A	LRD32	23...32
–	–	–	–	30	51.5	30	100	GS●J	22 x 58	63	LC3D32A	LRD32	23...32
30	57	33	100	37	64	37	100	GS●J	22 x 58	80	3 x LC1D40A	LRD340	30...40
37	69	40	100	–	–	–	–	GS●J	22 x 58	80	3 x LC1D40A	LRD350	37...50
–	–	–	–	45	76	44	100	GS●J	22 x 58	80	3 x LC1D50A	LRD350	37...50
45	81	47	100	–	–	–	–	GS●J	22 x 58	100	3 x LC1D50A	LRD350	37...50
–	–	–	–	55	90	52	100	GS●K	22 x 58	100	3 x LC1D50A	LRD365	48...65
55	100	58	100	–	–	–	–	GS●K	22 x 58	125	3 x LC1D65A	LRD365	48...65
75	135	78	100	75	125	72	100	GS●L	T0	160	LC3D80	LRD3363	63...80
–	–	–	–	90	146	84	100	GS●L	T0	160	LC3D115	LRD4365	80...104
90	165	95	100	–	–	–	–	GS●N	T1	200	LC3D115	LRD4367	95...120
110	200	115	100	110	178	103	100	GS●N	T1	200	LC3D115	LRD4367	95...120
132	240	139	100	132	215	124	100	GS●QQ	T2	250	LC3D150	LRD4369	110...140
160	285	165	100	160	256	148	100	(2)	–	–	(2)	(2)	–
–	–	–	–	200	321	185	100	(2)	–	–	(2)	(2)	–
220	388	225	100	–	–	–	–	(2)	–	–	(2)	(2)	–
–	–	–	–	250	401	233	100	(2)	–	–	(2)	(2)	–
280	480	278	100	–	–	–	–	(2)	–	–	(2)	(2)	–
–	–	–	–	315	505	293	100	(2)	–	–	(2)	(2)	–
315	555	322	100	355	518	300	100	–	–	–	–	–	–
–	–	–	–	375	575	334	100	(2)	–	–	(2)	(2)	–

(1) I<sub>rD</sub>: current in the motor windings in delta connection.

(2) Please consult your regional sales office.

#### 1.5 to 355 kW at 400/415 V: type 2 coordination

**Maximum operating rate:** LC1D: 30 starts/hour; LC1F: 12 starts/hour.

**Maximum starting time:** LC1D: 30 seconds; LC1F: 20 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse	aM fuses		Star-delta contactors	Thermal overload relay	
400/415 V			440 V			Reference	Size	Rating	Reference	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>						
kW	A	kA	kW	A	kA			A			A
1.5	3.5	50	1.5	3.06	50	GS1DD	10 x 38	4	3 x LC1D09	LRD08	2.5...4
2.2	5	50	2.2	4.42	50	GS1DD	10 x 38	6	3 x LC1D09	LRD10	4...6
3	6.5	50	3	5.77	50	GS1DD	10 x 38	8	3 x LC1D09	LRD12	5.5...8
4	8.4	50	4	7.9	50	GS1DD	10 x 38	10	3 x LC1D09	LRD14	7...10
5.5	11	50	5.5	10.4	50	GS1DD	10 x 38	16	3 x LC1D12	LRD16	9...13
7.5	14.8	50	7.5	13.7	50	GS1DD	10 x 38	16	3 x LC1D18	LRD21	12...18
9	18.1	100	9	16.9	100						
11	21	100	11	20.1	100	GS●F	14 x 51	25	3 x LC1D25	LRD22	16...24
15	28.5	100	15	26.5	100	GS●F	14 x 51	32	3 x LC1D32	LRD32	23...32
18.5	35	100	18.5	32.8	100	GS●F	14 x 51	40	3 x LC1D40A	LRD340	30...40
22	42	100	22	39	100	GS●J	22 x 58	50	3 x LC1D50A	LRD350	37...50
30	57	100	30	51.5	100	GS●J	22 x 58	80	3 x LC1D65A	LRD365	48...65
37	69	100	37	64	100	GS●J	22 x 58	80	3 x LC1D80	LRD3363	63...80
–	–	–	45	76	100	GS●J	22 x 58	80	3 x LC1D80	LRD3365	80...104
45	81	100	–	–	–	GS●J	22 x 58	100	3 x LC1D115	LR9D5367	60...100
–	–	–	55	90	100	GS●L	T0	125	3 x LC1D115	LR9D5369	90...150
55	100	100	–	–	–	GS●L	T0	125	3 x LC1D150	LR9D5369	90...150
–	–	–	75	125	100	GS●L	T0	160	3 x LC1D150	LR9D5369	90...150
355	605	100	–	–	–	GS2V	T4	800	3 x LC1F780	LR9F7381	380...630

Coordination and standards

### Coordination: Star-delta with Fuses (DIN type aM) + Contactors + Overload relay

Contactors: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

90 to 335 kW at 400 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) <sup>(1)</sup>	Contactor Star (KM1) <sup>(1)</sup>	Thermal overload relay	
400 V			Product type	Size	Rating	Product type		Product type	Ir setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> (max)							
kW	A	kA			A				A
90	160	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	92
110	195	80	GS●N	1	250	LC1G150	LC1D80	LR9G225	113
132	230	80	GS●QQ	2	315	LC1G185	LC1G115	LR9G225	133
160	280	80	GS●QQ	2	400	LC1G225	LC1G115	LR9G225	162
200	350	80	GS2●S	3	500	LC1G265	LC1G115	LR9G225	202
220	380	80	GS2●S	3	500	LC1G330	LC1G150	LR9G500	219
250	430	80	GS2●S	3	500	LC1G400	LC1G150	LR9G500	248
315	540	80	GS2●S	3	630	LC1G500	LC1G225	LR9G500	312
335	575	80	GS2●V	4	800	LC1G500	LC1G225	LR9G500	332

110 to 400 kW at 440 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) <sup>(1)</sup>	Contactor Star (KM1) <sup>(1)</sup>	Thermal overload relay	
440 V			Product type	Size	Rating	Product type		Product type	Ir setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> max							
kW	A	kA			A				A
110	177	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	102
132	209	80	GS●N	1	250	LC1G150	LC1D80	LR9G225	121
160	255	80	GS●QQ	2	315	LC1G150	LC1G115	LR9G225	147
200	318	80	GS●QQ	2	400	LC1G185	LC1G115	LR9G225	184
220	343	80	GS2●S	3	500	LC1G225	LC1G115	LR9G225	198
250	390	80	GS2●S	3	500	LC1G265	LC1G150	LR9G500	225
315	505	80	GS2●S	3	500	LC1G265	LC1G150	LR9G500	292
355	554	80	GS2●S	3	630	LC1G330	LC1G225	LR9G500	320
400	627	80	GS2●V	4	800	LC1G400	LC1G225	LR9G500	362

90 to 315 kW at 500 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) <sup>(1)</sup>	Contactor Star (KM1) <sup>(1)</sup>	Thermal overload relay	
500 V			Product type	Size	Rating	Product type		Product type	Ir setting <sup>(2)</sup>
P	I <sub>e</sub>	I <sub>q</sub> max							
kW	A	kA			A				A
90	156	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	90
110	184	80	GS●N	1	250	LC1G150	LC1D80	LR9G115	106
132	224	80	GS●QQ	2	315	LC1G150	LC1G115	LR9G225	129
160	280	80	GS●QQ	2	400	LC1G185	LC1G115	LR9G225	162
200	344	80	GS2●S	3	500	LC1G225	LC1G115	LR9G225	199
220	405	80	GS2●S	3	500	LC1G265	LC1G150	LR9G500	234
250	405	80	GS2●S	3	500	LC1G265	LC1G150	LR9G500	234
315	516	80	GS2●S	3	630	LC1G330	LC1G225	LR9G500	298

(1) Refer to diagram page A5/40.

(2) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.

#### 1.5 to 375 kW at 415 V: type 2 coordination

Maximum operating rate: LC1D: 30 starts/hour.

Maximum starting time: LC1D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse Reference	BS fuses		Star-delta contactors Reference	Thermal overload relay	
415 V			440 V				Size	Rating		Reference	Reference
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>						
kW	A	kA	kW	A	kA			A			A
1.5	3.5	50	1.5	3.06	50	GS1DDB	A1	NIT 16	3 x LC1D09	LRD08	2.5...4
2.2	5	50	2.2	4.42	50	GS1DDB	A1	NIT 16	3 x LC1D09	LRD10	4...6
3	6.5	50	3	5.77	50	GS1DDB	A1	NIT 20	3 x LC1D09	LRD12	5.5...8
4	8.4	50	4	7.9	50	GS1DDB	A1	NIT 20	3 x LC1D09	LRD14	7...10
5.5	11	50	5.5	10.4	50	GS1DDB	A1	NIT 20M25	3 x LC1D12	LRD16	9...13
7.5	14.8	50	7.5	13.7	50	GS1DDB	A1	NIT 20M32	3 x LC1D18	LRD21	12...18
9	18.1	50	9	16.9	50	GS2GB	A2	TIA 32M35	3 x LC1D18	LRD21	12...18
11	21	50	11	20.1	50	GS2GB	A2	TIA 32M50	3 x LC1D25	LRD22	16...24
15	28.5	50	15	26.5	50	GS2GB	A2	TIA 32M63	3 x LC1D32	LRD32	23...32
22	42	50	22	39	50	GS2GB	A3	TIS 63M80	3 x LC1D50A	LRD350	37...50
-	-	-	30	51.5	50	GS2GB	A3	TIS 63M100	3 x LC1D65A	LRD365	48...65
30	57	50	-	-	-	GS2GB	A3	TIS 63M100	3 x LC1D65A	LRD365	48...65
45	81	50	45	76	50	GS2LLB	A4	TCP 100M125	3 x LC1D80	LRD3363	63...80
55	100	80	55	90	80	GS2LLB	A4	TCP 100M160	3 x LC1D115	LR9D5369	90...150
80	138	80	80	132	80	GS2LB	B2	TF 200M250	3 x LC1D150	LR9D5369	90...150



#### 1.5 to 250 kW at 400/415 V and 440 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: 30 seconds.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3								Circuit breaker		Star-delta contactors
400/415 V				440 V				Reference	Setting range of thermal trips	Reference
P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub> <sup>(2)</sup>	P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub> <sup>(2)</sup>	<i>References in italics are available in CEE zone only</i>		
kW	A	A	kA	kW	A	A	kA		A	
1.5	3.6	2	50	1.5	3.06	1.8	50	<b>GV2ME08</b> <i>GV2ME08AP</i>	2.5...4	<b>LC3K06</b>
2.2	4.9	2.9	50	2.2	4.42	2.6	50	<b>GV2ME10</b> <i>GV2ME10AP</i>	4...6.3	<b>LC3K06</b>
–	–	–	–	3	5.77	3.3	50			
3	6.5	3.8	50	–	–	–	–	<b>GV2ME14</b> <i>GV2ME14AP</i>	6...10	<b>LC3K06</b>
4	8.5	4.9	50	4	7.9	4.6	15			
5.5	11.5	6.4	15	5.5	10.4	6	8	<b>GV2ME16</b> <i>GV2ME16AP</i>	9...14	<b>LC3K06</b>
7.5	15.5	8.6	15	7.5	13.7	7.9	8	<b>GV2ME20</b> <i>GV2ME20AP</i>	13...18	<b>LC3K09</b>
–	–	–	–	9	16.9	9.8	8	<b>GV2ME20</b> <i>GV2ME20AP</i>	13...18	<b>LC3D12A</b>
9	18.1	10	15	11	20.1	12	6	<b>GV2ME21</b> <i>GV2ME21AP</i>	17...23	<b>LC3D12A</b>
11	22	12	15	–	–	–	–	<b>GV2ME22</b> <i>GV2ME22AP</i>	20...25	<b>LC3D12A</b>
15	29	17	10	15	26.5	15	6	<b>GV2ME32</b> <i>GV2ME32AP</i>	24...32	<b>LC3D18A</b>
18.5	35	20	50	18.5	32.8	19	50	<b>GV3P40</b>	30...40	<b>LC3D18A</b>
–	–	–	–	22	39	23	50	<b>GV3P50</b>	37...50	<b>LC3D32A</b>
22	41	24	50	30	51.5	30	50	<b>GV3P50</b>	37...50	<b>LC3D32A</b>
30	55	33	50	30	51.5	30	50	<b>GV3P65</b>	48...65	<b>LC3D32A</b>
37	66	40	50	37	64	37	50	<b>GV3P65</b>	48...65	3 x <b>LC1D40A</b> <sup>(3)</sup>
37	66	40	100	37	64	37	70	<b>GV4P80</b>	40...80	3 x <b>LC1D40A</b> <sup>(3)</sup>
–	–	–	–	45	76	44	70	<b>GV4P80</b>	40...80	2 x <b>LC1D50A</b> +1 x <b>LC1D40A</b> <sup>(3)</sup>
45	80	47	100	–	–	–	–	<b>GV4P115</b>	65...115	2 x <b>LC1D50A</b> +1 x <b>LC1D40A</b> <sup>(3)</sup>
55	97	58	100	55	90	52	70	<b>GV4P115</b>	65...115	2 x <b>LC1D65A</b> +1 x <b>LC1D40A</b> <sup>(3)</sup>
75	132	78	35	75	125	72	35	<b>GV5P150F</b>	70...150	<b>LC3D80</b>
–	–	–	–	90	146	84	35	<b>GV5P150F</b>	0...150	<b>LC3D115</b>
90	160	95	35	110	178	103	35	<b>GV5P220F</b>	100...220	<b>LC3D115</b>
110	195	115	35	–	–	–	–			
–	–	–	–	132	215	124	35	<b>GV5P220F</b>	100...220	<b>LC3D150</b>
132	230	135	36	–	–	–	–	<b>GV6P320F</b>	160...320	<b>LC3D150</b>
160	270	158	36	160	256	94	35	<sup>(4)</sup>	–	<sup>(4)</sup>
220	380	220	36	250	401	146	35	<sup>(4)</sup>	–	<sup>(4)</sup>
250	430	250	36	300	480	175	35	<sup>(4)</sup>	–	<sup>(4)</sup>

<sup>(1)</sup> I<sub>rD</sub>: current in the motor windings in delta connection.

<sup>(2)</sup> The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/23.

<sup>(3)</sup> For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.

<sup>(4)</sup> Please consult your regional sales office.

#### 1.5 to 90 kW at 400/415 V and 440 V: type 2 coordination

Maximum operating rate: LC1D: 30 starts/hour.

Maximum starting time: LC1D: 30 seconds.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3								Circuit breaker		Star-delta contactors
400/415 V				440 V				Reference	Setting range of thermal trips	Reference
P	I <sub>e</sub>	I <sub>rD</sub> <sup>(7)</sup>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>rD</sub> <sup>(7)</sup>	I <sub>q</sub> <sup>(1)</sup>		A	
kW	A	A	kA	kW	A	A	kA			
1.5	3.6	–	130	1.5	3.06	–	130	GV2P08	2.5...4	3 x LC1D09 <sup>(2)</sup>
2.2	4.9	–	130	2.2	4.42	–	130	GV2P10	4...6.3	3 x LC1D18 <sup>(3)</sup>
–	–	–	–	3	5.77	–	130	GV2P10	4...6.3	3 x LC1D18 <sup>(3)</sup>
3	6.5	–	130	–	–	–	–	GV2P14	6...10	3 x LC1D18 <sup>(3)</sup>
4	8.5	–	130	4	7.9	–	130	GV2P14	6...10	3 x LC1D18 <sup>(3)</sup>
5.5	11.5	–	130	5.5	10.4	–	50	GV2P16	9...14	3 x LC1D25 <sup>(3)</sup>
–	–	–	–	7.5	13.7	–	50	GV2P16	9...14	3 x LC1D25 <sup>(3)</sup>
7.5	15.5	–	50	9	16.9	–	20	GV2P20	13...18	3 x LC1D25 <sup>(3)</sup>
9	18.1	–	50	11	20.1	–	20	GV2P21	17...23	3 x LC1D25 <sup>(3)</sup>
11	22	–	50	–	–	–	–	GV2P22	20...25	3 x LC1D25 <sup>(3)</sup>
15	29	–	50	15	26.5	–	50	GV3P32	23...32	3 x LC1D40A <sup>(4)</sup>
18.5	35	–	50	–	–	–	–	GV3P40	30...40	2 x LC1D50A +1 x LC1D40A <sup>(3)</sup>
–	–	–	–	18.5	32.8	–	50	GV3P40	30...40	2 x LC1D65A +1 x LC1D40A <sup>(4)</sup>
22	41	–	50	–	–	–	–	GV3P50	37...50	2 x LC1D50A +1 x LC1D40A <sup>(3)</sup>
–	–	–	–	22	39	–	50	GV3P50	37...50	2 x LC1D65A +1 x LC1D40A <sup>(4)</sup>
30	55	–	50	30	51.5	–	50	GV3P65	48...65	2 x LC1D65A +1 x LC1D40A <sup>(4)</sup>
37	66	–	100	45	76	–	70	GV4P80	40...80	3 x LC1D80 <sup>(5)</sup>
–	–	–	–	37	64	–	70	GV4P80	40...80	3 x LC1D65A <sup>(4)</sup>
45	80	–	100	–	–	–	–	GV4P115	65...115	3 x LC1D115 <sup>(6)</sup>
55	97	–	100	55	90	–	70	GV4P115	65...115	3 x LC1D115 <sup>(6)</sup>
75	132	78	70	75	125	74	65	GV5P150H	70...150	3 x LC1D150 <sup>(6)</sup>
–	–	–	–	90	146	86	65	GV5P150H	70...150	3 x LC1D150 <sup>(6)</sup>

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/54.

(2) For mounting 3 contactors LC1D09, star-delta starter kit LAD91217 must be ordered separately, see page B8/43.

(3) For mounting 3 contactors LC1D18 or LC1D25, star-delta starter kit LAD93217 must be ordered separately, see page B8/43.

(4) For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

(5) For mounting 3 contactors LC1D80, star-delta starter kit LA9D8017 must be ordered separately, see page B8/43.

(6) For mounting 3 contactors LC1D115 or LC1D150, see A2/13.

(7) I<sub>rD</sub>: current in the motor windings in delta connection.

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

90 to 250 kW at 400 V: type 2 coordination (with TeSys GV5 / GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
400 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA		A	A		
90	160	70	GV5P220●	170	1360	LC1G115	LC1D65
110	195	70	GV5P220●	200	1600	LC1G150	LC1D80
110	195	70	GV6P320●	200	1600	LC1G150	LC1D80
132	230	70	GV6P320●	240	1920	LC1G150	LC1D95
160	280	70	GV6P320●	300	2400	LC1G185	LC1G115
200	350	70	GV6P500●	380	3040	LC1G225	LC1G115
220	380	70	GV6P500●	400	3200	LC1G265	LC1G150
250	430	70	GV6P500●	440	3520	LC1G265	LC1G150

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220● GV6P320●/GV6P500●		
Breaking performance code	F		H
400 V	36		70

90 to 450 kW at 400 V: type 2 coordination (with ComPact NSX/NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
400 V			Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	
P	I <sub>e</sub>	I <sub>q</sub> (max)					
kW	A	kA		A	A		
90	160	130	NSX250● + MicroLogic 2.2 M	170	1360	LC1G115	LC1D65
110	195	130	NSX250● + MicroLogic 2.2 M	200	1600	LC1G150	LC1D80
110	195	130	NSX400● + MicroLogic 2.3 M	200	1600	LC1G150	LC1D80
132	230	130	NSX400● + MicroLogic 2.3 M	240	1920	LC1G150	LC1D95
160	280	130	NSX400● + MicroLogic 2.3 M	300	2400	LC1G185	LC1G115
200	350	130	NSX630● + MicroLogic 2.3 M	380	3040	LC1G225	LC1G115
220	380	130	NSX630● + MicroLogic 2.3 M	400	3200	LC1G265	LC1G150
250	430	130	NSX630● + MicroLogic 2.3 M	440	3520	LC1G265	LC1G150
300	460	130	NS800● + MicroLogic 5.0	480	3840	LC1G330	LC1G185
335	575	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
355	610	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
400	690	130	NS800● + MicroLogic 5.0	720	5760	LC1G500	LC1G265
450	770	130	NS1000● + MicroLogic 5.0	784	6272	LC1G500	LC1G330

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●/ NSX400●/ NSX630●					NS800●/ NS1000●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	150	150

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Refer to diagram page A5/40.

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

110 to 300 kW at 440 V: type 2 coordination (with TeSys GV5/GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
440 V			Product type <sup>(1)</sup>	Ir setting <sup>(2)</sup>	Irm <sup>(2)</sup>	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
110	177	65	GV5P220●	185	1480	LC1G115	LC1D65
132	209	65	GV5P220●	210	1680	LC1G150	LC1D80
160	255	65	GV6P320●	260	2080	LC1G185	LC1G115
200	318	65	GV6P320●	320	2560	LC1G225	LC1G115
220	343	65	GV6P500●	350	2800	LC1G225	LC1G150
250	390	65	GV6P500●	400	3200	LC1G265	LC1G150
300	466	65	GV6P500●	470	3760	LC1G330	LC1G185

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220●					GV6P320●/GV6P500●				
Breaking performance code	F		H			F		H		
440 V	35		65			30		65		

110 to 450 kW at 440 V: type 2 coordination (with ComPact NSX/NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
440 V			Product type <sup>(1)</sup>	Ir setting <sup>(2)</sup>	Irm <sup>(2)</sup>	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
110	177	130	NSX250● + MicroLogic 2.2 M	185	1480	LC1G115	LC1D65
132	209	130	NSX250● + MicroLogic 2.2 M	210	1680	LC1G150	LC1D80
160	255	130	NSX400● + MicroLogic 2.3 M	260	2080	LC1G185	LC1G115
200	318	130	NSX400● + MicroLogic 2.3 M	320	2560	LC1G225	LC1G115
220	343	130	NSX630● + MicroLogic 2.3 M	350	2800	LC1G225	LC1G150
250	390	130	NSX630● + MicroLogic 2.3 M	400	3200	LC1G265	LC1G150
300	466	130	NSX630● + MicroLogic 2.3 M	470	3760	LC1G330	LC1G185
335	521	130	NS800● + MicroLogic 5.0	560	4480	LC1G330	LC1G185
355	554	130	NS800● + MicroLogic 5.0	560	4480	LC1G400	LC1G225
400	627	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
450	695	130	NS800● + MicroLogic 5.0	720	5760	LC1G500	LC1G265

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	F	N	H	S	L	L
440 V	35	50	65	100	130	30	42	65	100	130	130

<sup>(2)</sup> This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Refer to diagram page A5/40

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

132 to 295 kW at 500 V: type 2 coordination (with TeSys GV5/ GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
500 V			Product type <sup>(1)</sup>	Ir setting <sup>(2)</sup>	Irm <sup>(2)</sup>	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
132	184	50	GV5P220●	185	1480	LC1G115	LC1D65
160	224	50	GV6P320●	240	1920	LC1G150	LC1D80
200	280	50	GV6P320●	300	2400	LC1G185	LC1G115
250	344	50	GV6P500●	350	2800	LC1G225	LC1G115
295	405	50	GV6P500●	440	3520	LC1G265	LC1G150

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220●			GV6P320●/ 500●		
Breaking performance code	F	H		F	H	
500 V	30	50		25	50	

132 to 425 kW at 500 V: type 2 coordination (with ComPact NSX/ NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>
500 V			Product type <sup>(1)</sup>	Ir setting <sup>(2)</sup>	Irm <sup>(2)</sup>	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
132	184	70	NSX250● + MicroLogic 2.2 M <sup>(4)</sup>	185	1480	LC1G115	LC1D65
160	224	70	NSX400● + MicroLogic 2.3 M <sup>(4)</sup>	240	1920	LC1G150	LC1D80
200	280	70	NSX400● + MicroLogic 2.3 M <sup>(4)</sup>	300	2400	LC1G185	LC1G115
250	344	70	NSX630● + MicroLogic 2.3 M <sup>(4)</sup>	350	2800	LC1G225	LC1G115
295	405	70	NSX630● + MicroLogic 2.3 M <sup>(4)</sup>	440	3520	LC1G265	LC1G150
375	516	70	NS800● + MicroLogic 5.0	560	4480	LC1G330	LC1G185
425	584	70	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	F	N	H	S	L	L
500 V	30	36	50	65	70	25	30	50	65	70	100

<sup>(2)</sup> This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Refer to diagram page A5/40.

<sup>(4)</sup> Applicable also with MicroLogic 6.2 M and 6.3 M trip units.

#### 1.5 to 315 kW at 400/415 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: LC3K and LC3D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3								Circuit breaker			Star-delta contactors	Thermal overload relay	
400/415 V				440 V				Reference	Rating	I <sub>rm</sub> <sup>(2)</sup>	Reference	Reference	Setting range
P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>rD</sub> <sup>(1)</sup>	I <sub>q</sub>		A	A			A
kW	A	A	kA	kW	A	A	kA						
–	–	–	–	1.5	3.06	1.8	50	LC3D32A	4	51	LC3K06	LR2K0308	1.8...2.6
1.5	3.6	2	50	2.2	4.42	3	50						
2.2	4.9	3	50	3	5.77	3	50	GV2LE10	6.3	78	LC3K06	LR2K0310	2.6...3.7
3	6.5	4	50	–	–	–	–	GV2LE14	10	138	LC3K06	LR2K0312	3.7...5.5
–	–	–	–	4	7.9	5	50	GV2LE10	6.3	78	LC3K06	LR2K0312	3.7...5.5
4	8.5	5	50	–	–	–	–	GV2LE14	10	138	LC3K06	LR2K0312	3.7...5.5
–	–	–	–	5.5	10.4	6	15	GV2LE14	10	138	LC3K06	LR2K0314	5.5...8
5.5	11.5	6	15	–	–	–	–	GV2LE16	14	170	LC3K06	LR2K0314	5.5...8
–	–	–	–	7.5	13.7	8	8	GV2LE16	14	170	LC3K09	LR2K0316	8...11.5
7.5	15.5	9	15	–	–	–	–	GV2LE20	18	223	LC3K09	LR2K0316	8...11.5
–	–	–	–	9	16.9	1	8	GV2LE16	14	170	LC3D12A	LRD16	9...13
9	18.1	10	15	–	–	–	–	GV2LE22	25	327	LC3K12	LR2K0316	8...11.5
–	–	–	–	11	20.1	12	8	GV2LE20	18	223	LC3K12	LR2K0321	10...14
11	22	12	15	–	–	–	–	GV2LE22	25	327	LC3K12	LR2K0321	10...14
–	–	–	–	15	26.5	15	6	GV2LE22	25	327	LC3D18A	LRD21	12...18
15	29	16	10	–	–	–	–	GV2LE32	32	384	LC3D18A	LRD21	12...18
18.5	35	20	50	18.5	32.8	19	50	GV3L40	40	560	LC3D18A	LRD22	16...24
22	41	24	50	22	39	23	50	GV3L50	50	700	LC3D32A	LRD32	23...32
–	–	–	–	30	51.5	30	50	GV3L65	65	910	LC3D32A	LRD32	23...32
30	55	33	50	–	–	–	–	GV3L65	65	910	LC3D32A	LRD35	30...38
–	–	–	–	37	64	37	50	GV3L65	65	910	3 x LC1D40A <sup>(4)</sup>	LRD340	30...40
37	66	40	100	–	–	–	–	GV4L80	80	640	3 x LC1D40A <sup>(4)</sup>	LRD350	37...50
–	–	–	–	37	64	37	70	GV4L80	80	640	3 x LC1D40A <sup>(4)</sup>	LRD340	30...40
–	–	–	–	45	76	44	70	GV4L80	80	800	2 x LC1D50A +1 x LC1D40A <sup>(4)</sup>	LRD350	37...50
45	80	47	100	–	–	–	–	GV4L115	115	805	2 x LC1D50A +1 x LC1D40A <sup>(4)</sup>	LRD350	37...50
–	–	–	–	55	90	52	70	GV4L115	115	805	2 x LC1D50A +1 x LC1D40A <sup>(4)</sup>	LRD365	48...65
–	–	–	–	75	125	72	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1200	LC3D80	LRD3363	63...80
75	132	78	<sup>(3)</sup>	–	–	–	–	NSX160●MA <sup>(3)</sup>	150	1200	LC3D80	LRD3363	63...80
–	–	–	–	90	146	85	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1200	LC3D115	LRD4365	80...104
90	160	96	<sup>(3)</sup>	110	178	103	<sup>(3)</sup>	NSX250●MA <sup>(3)</sup>	220	1760	LC3D115	LRD4365	80...104
–	–	–	–	132	215	125	<sup>(3)</sup>	NSX250●MA <sup>(3)</sup>	220	1760	LC3D150	LRD4369	110...140
110	195	116	<sup>(3)</sup>	–	–	–	–	NSX250●MA <sup>(3)</sup>	220	1760	LC3D115	LRD4367	95...120
–	–	–	–	160	256	148	<sup>(3)</sup>	NSX400● + Micrologic 1.3M <sup>(3)</sup>	320	2240	LC3D150	LR9D5369	90...150
–	–	–	–	200	321	186	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
132	230	139	<sup>(3)</sup>	–	–	–	–	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
160	280	165	<sup>(3)</sup>	–	–	–	–	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
200	350	204	<sup>(3)</sup>	220	353	204	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
220	388	225	<sup>(3)</sup>	250	401	233	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
280	480	278	<sup>(3)</sup>	–	–	–	–	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
–	–	–	–	315	505	295	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
315	540	322	<sup>(3)</sup>	355	518	300	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–
–	–	–	–	375	575	334	<sup>(3)</sup>	<sup>(5)</sup>	–	–	<sup>(5)</sup>	<sup>(5)</sup>	–

(1) I<sub>rD</sub>: current in the motor windings in delta connection.

(2) I<sub>rm</sub>: setting current of the magnetic trip.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I <sub>q</sub> (kA)	NSX100●MA		NSX160●MA, NSX250●MA		NSX400●, NSX630●		NS800●	
400/415 V	36	70	36	70	70	150	70	150
440 V	35	65	35	65	65	130	65	130
Code	F	H	F	H	H	L	H	L

(4) For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

(5) Please consult your Regional Sales Office.

#### 1.5 to 250 kW at 400/415 V: type 2 coordination

Maximum operating rate: LC3D: 30 starts/hour.

Maximum starting time: LC3D: 30 seconds.

Standard power ratings of 3-phase motors  
50/60 Hz in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Circuit breaker			Star-delta contactors	Thermal overload relay	
400/415 V			440 V			Reference	Rating	I <sub>rm</sub> <sup>(1)</sup>	Reference	Reference	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>		A	A			A
kW	A	kA	kW	A	kA						
1.5	3.6	130	1.5	3.06	130	GV2L08	4	51	3 x LC1D09	LRD08	2.5...4
2.2	4.9	130	2.2	4.42	130	GV2L10	6.3	78	3 x LC1D09	LRD10	4...6
3	6.5	130	3	5.77	130						
–	–	–	4	7.9	20	GV2L14	10	138	3 x LC1D18	LRD14	7...10
4	8.5	130	–	–	–	GV2L14	10	138	3 x LC1D18	LRD16	9...13
5.5	11.5	50	5.5	10.4	20	GV2L16	14	170	3 x LC1D25	LRD16	9...13
7.5	15.5	50	7.5	13.7	20	GV2L20	18	223	3 x LC1D25	LRD21	12...18
–	–	–	9	16.9	20	GV2L22	25	327	3 x LC1D25	LRD21	12...18
9	18.1	50	–	–	–	GV2L22	25	327	3 x LC1D25	LRD22	16...24
11	22	50	11	20.1	20						
15	29	50	15	26.5	50	GV3L32	32	448	3 x LC1D40A <sup>(2)</sup>	LRD332	23...32
18.5	35	50	–	–	–	GV3L40	40	560	2 x LC1D50A +1 x LC1D40A <sup>(2)</sup>	LRD340	30...40
–	–	–	18.5	32.8	50	GV3L40	40	560	2 x LC1D65A +1 x LC1D40A <sup>(2)</sup>	LRD340	30...40
22	41	50	–	–	–	GV3L50	50	700	2 x LC1D50A +1 x LC1D40A <sup>(2)</sup>	LRD350	37...50
–	–	–	22	39	50	GV3L50	50	700	2 x LC1D65A +1 x LC1D40A <sup>(2)</sup>	LRD350	37...50
30	55	50	30	51.5	50	GV3L65	65	910	2 x LC1D65A +1 x LC1D40A <sup>(2)</sup>	LRD365	48...65
–	–	–	37	64	50	GV3L65	65	910	3 x LC1D80	LRD3359	48...65
37	66	100	–	–	–	GV4L80	80	640	3 x LC1D80	LRD3363	63...80
–	–	–	45	76	70	GV4L80	80	800	3 x LC1D80	LRD3363	63...80
45	80	100	–	–	–	GV4L115	115	805	3 x LC1D115	LR9D5367	60...100
–	–	–	55	90	70	GV4L115	115	920	3 x LC1D115	LR9D5367	60...100
55	97	100	–	–	–	GV4L115	115	920	3 x LC1D115	LR9D5369	90...150
55	97	<sup>(3)</sup>	–	–	–	NSX160●MA <sup>(3)</sup>	150	1200	3 x LC1D115	LR9D5369	90...150
–	–	–	75	125	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1200	3 x LC1D150	LR9D5369	90...150
75	132	<sup>(3)</sup>	90	146	<sup>(3)</sup>	NSX160●MA <sup>(3)</sup>	150	1200	3 x LC1D150	LR9D5369	90...150

<sup>(1)</sup> I<sub>rm</sub>: setting current of the magnetic trip.

<sup>(2)</sup> For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

<sup>(3)</sup> Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I <sub>q</sub> (kA)	NSX100●MA		NSX160●MA, NSX250●MA		NSX400●, NSX630●	
400/415 V	36	70	36	70	70	150
440 V	35	65	35	65	65	130
Code	F	H	F	H	H	L

### Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

#### 90 to 450 kW at 400 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>	Thermal overload relay		
400 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>	
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA	A					
90	160	130	NSX250● + MA	1980	LC1G115	LC1D65	LR9G115	92
110	195	130	NSX250● + MA	1980	LC1G150	LC1D80	LR9G225	113
110	195	130	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	113
132	230	130	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	133
160	280	130	NSX400● + MicroLogic 1.3 M	2560	LC1G185	LC1G115	LR9G225	162
200	350	130	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	202
220	380	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	219
250	430	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	248
300	460	130	NS800● + MicroLogic 5.0 LR OFF	4000	LC1G330	LC1G185	LR9G500	266
335	575	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G400	LC1G225	LR9G500	332
355	610	130	NS800● + MicroLogic 5.0 LR OFF	5600	LC1G400	LC1G225	LR9G500	352
400	627	130	NS800● + MicroLogic 5.0 LR OFF	5600	LC1G400	LC1G225	LR9G500	362
450	695	130	NS800● + MicroLogic 5.0 LR OFF	6400	LC1G500	LC1G265	LR9G500	401

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●/ NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	130	150

#### 110 to 355 kW at 440 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>	Thermal overload relay		
440 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>	
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA	A					
110	177	130	NSX250● + MA	1980	LC1G115	LC1D65	LR9G115	102
132	209	130	NSX250● + MA	1980	LC1G150	LC1D80	LR9G225	121
160	255	130	NSX400● + MicroLogic 1.3 M	2240	LC1G185	LC1D95	LR9G225	147
200	318	130	NSX400● + MicroLogic 1.3 M	2560	LC1G225	LC1G115	LR9G225	184
220	343	130	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	198
250	390	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	225
300	466	130	NSX630● + MicroLogic 1.3 M	4000	LC1G330	LC1G185	LR9G500	269
335	521	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G330	LC1G185	LR9G500	301
355	554	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G400	LC1G225	LR9G500	320

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●				NS800L
Breaking performance code	F	N	H	S	L	F	N	S	L	L
440 V	35	50	65	100	130	30	42	100	130	130

<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Refer to diagram page A5/40.

Coordination and standards



# TeSys

## Complementary technical information

### Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

**RE17RMMWS** timer to be used for Star-Delta starter application.

#### 132 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) <sup>(3)</sup>	Contactor Star (KM1) <sup>(3)</sup>	Thermal overload relay		
500 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type	I <sub>r</sub> setting <sup>(2)</sup>	
P	I <sub>e</sub>	I <sub>q</sub> (max)						
kW	A	kA		A			A	
132	184	70	NSX400● + MicroLogic 1.3 M	1600	LC1G115	LC1D65	LR9G225	106
160	224	70	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	129
200	280	70	NSX400● + MicroLogic 1.3 M	2560	LC1G185	LC1G115	LR9G225	162
250	344	70	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	199
295	405	70	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	234
375	516	70	NS800● + MicroLogic 5.0	4800	LC1G330	LC1G185	LR9G500	298
425	584	70	NS800● + MicroLogic 5.0	4800	LC1G400	LC1G185	LR9G500	337

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX400●/ NSX630●					NS800●
	F	N	H	S	L	L
500 V	25	30	50	65	70	100

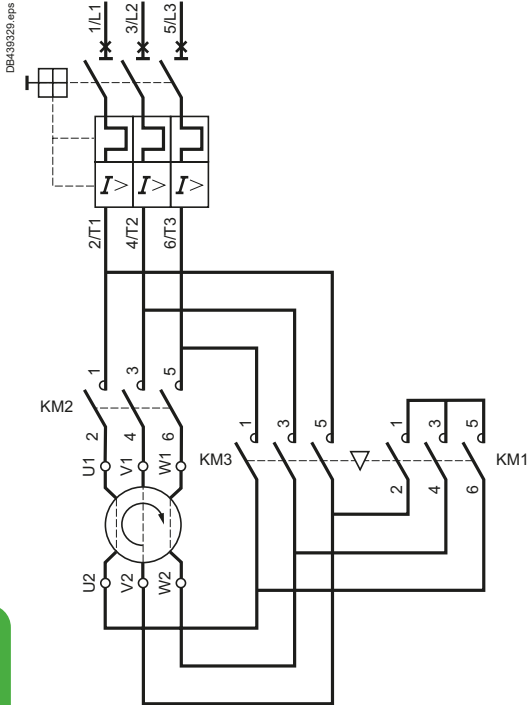
<sup>(2)</sup> This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

<sup>(3)</sup> Refer to diagram page A5/40.

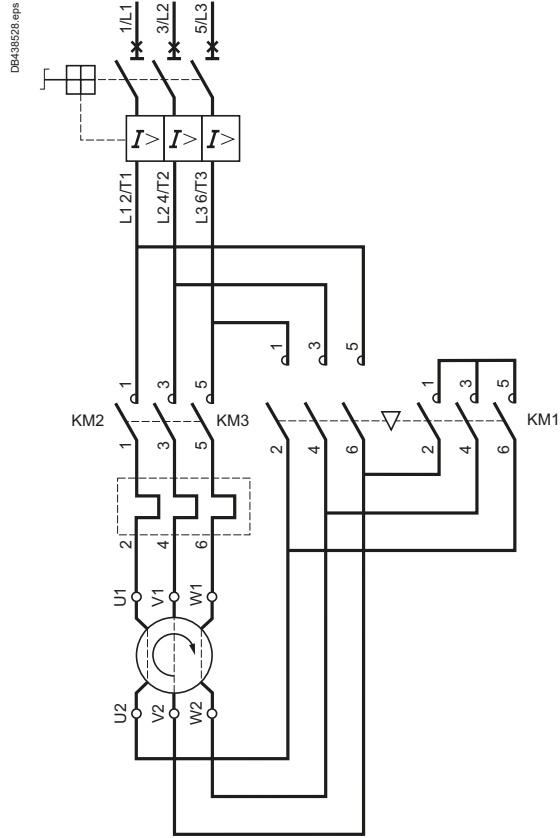
Coordination and standards

#### Star-Delta motor 'Power' circuit diagram

Thermal magnetic circuit breaker + contactors

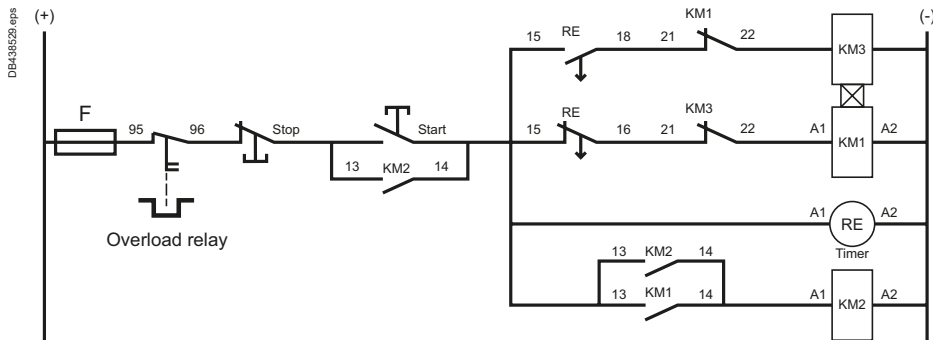


Magnetic circuit breaker + contactors + overload relay



Coordination and standards

#### Star-Delta Motor 'Control' circuit diagram



Recommended timing relay (RE): Zelio Timer ref. **RE17RMMWS** (12...240 V AC/DC 50/60 Hz – 8 AAC/DC contacts)

# TeSys

Complementary technical information

Resistive load protection and control

Coordination: Thermal magnetic circuit breakers + Contactors

275 to 1000 A up to 690 V: type 2 coordination (with ComPacT NSX or NS circuit breakers)				
Current ratings of 3-phase loads 50/60 Hz in category AC-1		Circuit breaker		Contactor
Up to 690 V, temperature ≤ 40 °C		Product type <sup>(1)</sup>	In	Product type
Ie	Iq (max)		A	
A	kA		A	
275	100	NSX400● + MicroLogic 2.3	400	LC1G150
305	100	NSX400● + MicroLogic 2.3	400	LC1G185
330	100	NSX400● + MicroLogic 2.3	400	LC1G225
385	100	NSX400● + MicroLogic 2.3	400	LC1G265
440	100	NSX630● + MicroLogic 2.3	630	LC1G330
550	100	NSX630● + MicroLogic 2.3	630	LC1G400
700	75	NS800● + MicroLogic 5.0	800	LC1G500
1000	100 <sup>(2)</sup>	NS1000● + MicroLogic 5.0	1000	LC1G630

<sup>(1)</sup> Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX400●/ NSX630●								NS800●/NS1000●	
	F	N	H	S	L	R	HB1	HB2	L	LB
400 V	36	50	70	100	150	200	-	-	150	200
440 V	30	42	65	90	130	200	-	-	130	200
500 V	25	30	50	65	70	80	85	100	100	100
690 V	10	10	20	25	35	45	75	100	-	75

<sup>(2)</sup> Up to 500 V AC.

Coordination and standards

# TeSys

Complementary technical information

Resistive load protection and control

Coordination: Fuses (NFC, DIN type gG) + Contactors

275 to 1050 A up to 690 V: type 2 coordination (with NFC, DIN, type gG fuses)					
Current ratings of 3-phase loads 50/60 Hz in category AC-1		Switch-disconnector	gG fuse		Contactor
Up to 690 V, temperature ≤ 40 °C		Product type	Size	Rating	Product type
I <sub>e</sub>	I <sub>q</sub> (max)				
A	kA			A	
250	80	GS●QQ	2	315	LC1G115
275	80	GS●QQ	2	315	LC1G150
305	80	GS●QQ	2	315	LC1G185
330	80	GS●QQ	2	400	LC1G225
385	80	GS●QQ	2	400	LC1G265
440	80	GS●S	3	500	LC1G330
550	80	GS●S	3	630	LC1G400
700	80	GS●V	4	800	LC1G500
1000	80	GS●V	4	1000	LC1G630
1050	80	GS●V	4	1250	LC1G800

# TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 or 2 coordination with fuses - 690 V

690 V - Type 1 or 2 coordination with fuses			
Applications with 3-phase motors 50-60 Hz in category AC-3	aM fuses	Standard Starters SIL Starters Power Interface Modules	
690 V	Rating	References	Setting range
I <sub>q</sub>			
kA	A		A
80	≤10	TPRST009 TPRSS009 TPRPM009	0.18-9
	≤25	TPRST025 TPRSS025 -	0.5-25
	≤40	TPRST038 TPRSS038 TPRPM038	0.76-38
	≤80	TPRST065 TPRSS065 -	3.25-65
	≤80	TPRST080 TPRSS080 TPRPM080	4-80

Coordination  
and  
standards

# TeSys island motor starters

## Standard, SIL starters - Power interface modules

### IEC - Type 1 coordination with circuit breakers - 230 V

0.06 to 22 kW at 230 V: Type 1 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
230 V			References	References	Setting range
P	I <sub>e</sub>	I <sub>q</sub>			
kW	A	kA			A
0.06	0.35	100	GV2L03	TPRST009 TPRSS009 TPRPM009	0.18-9
0.09	0.52	100	GV2L04	TPRST009 TPRSS009 TPRPM009	0.18-9
0.12	0.7	100	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.18	1	100	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.25	1.5	100	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.37	1.9	100	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	2.6	100	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	3.3	100	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
1.1	4.7	100	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	6.3	100	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
2.2	8.5	100	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
3	11.3	100	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
4	15	100	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
5.5	20	50	GV2L22	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
7.5	27	50	GV2L32	TPRST038 TPRSS038 TPRPM038	0.76-38
9	32	100	GV3L40	TPRST038 TPRSS038 TPRPM038	0.76-38
11	38	100	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
15	51	100	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
18.5	61	100	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
22	72	100	GV3L73	TPRPM080	4-80

# TeSys island motor starters

Standard, SIL starters

IEC - Type 2 coordination with circuit breakers - 230 V

0.06 to 22 kW at 230 V: Type 2 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	
230 V			References	References	Setting range
P	I <sub>e</sub>	I <sub>q</sub>			
kW	A	kA			A
0.06	0.35	100	GV2L03	TPRST009 TPRSS009	0.18-9
0.09	0.52	100	GV2L04	TPRST009 TPRSS009	0.18-9
0.12	0.7	100	GV2L05	TPRST009 TPRSS009	0.18-9
0.18	1	100	GV2L06	TPRST009 TPRSS009	0.18-9
0.25	1.5	100	GV2L06	TPRST009 TPRSS009	0.18-9
0.37	1.9	100	GV2L07	TPRST009 TPRSS009	0.18-9
0.55	2.6	100	GV2L08	TPRST009 TPRSS009	0.18-9
0.75	3.3	100	GV2L08	TPRST025 TPRSS025	0.5-25
1.1	4.7	100	GV2L10	TPRST025 TPRSS025	0.5-25
1.5	6.3	100	GV2L14	TPRST025 TPRSS025	0.5-25
2.2	8.5	100	GV2L14	TPRST025 TPRSS025	0.5-25
3	11.3	100	GV2L16	TPRST025 TPRSS025	0.5-25
4	15	100	GV2L20	TPRST025 TPRSS025	0.5-25
5.5	20	50	GV2L22	TPRST025 TPRSS025	0.5-25
7.5	27	50	GV2L32	TPRST038 TPRSS038	0.76-38
9	32	100	GV3L40	TPRST038 TPRSS038	0.76-38
11	38	100	GV3L40	TPRST065 TPRSS065	3.25-65
15	51	100	GV3L65	TPRST065 TPRSS065	3.25-65
18.5	61	100	GV3L65	TPRST065 TPRSS065	3.25-65

Coordination  
and  
standards

# TeSys island motor starters

## Standard, SIL starters - Power interface modules

### IEC - Type 1 coordination with circuit breakers - 400/415 - 440 - 500 V

0.06 to 37 kW at 400/415 - 440 - 500 V: Type 1 coordination											
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3									Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
400/415 V			440 V			500 V			References	References	Setting range
P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>	P	I <sub>e</sub>	I <sub>q</sub>			
kW	A	kA	kW	A	kA	kW	A	kA		A	
0.06	0.2	100	0.06	0.18	100	-	-	-	GV2L03	TPRST009 TPRSS009 TPRPM009	0.18-9
0.09	0.3	100	0.09	0.27	100	-	-	-			
0.12	0.44	100	0.12	0.4	100	-	-	-	GV2L04	TPRST009 TPRSS009 TPRPM009	0.18-9
0.18	0.6	100	0.18	0.55	100	-	-	-			
0.25	0.85	100	0.25	0.77	100	-	-	-	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.37	1.1	100	-	-	-	0.37	0.88	100			
-	-	-	0.37	1	100	-	-	-	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	1.5	100	0.55	1.4	100	0.55	1.2	100			
-	-	-	-	-	-	0.75	1.5	100	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	1.9	100	0.75	1.7	100	-	-	-			
1.1	2.7	100	-	-	-	1.1	2.2	100			
-	-	-	1.1	2.4	100	-	-	-	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	3.6	100	1.5	3.3	100	1.5	2.9	100			
2.2	4.9	100	2.2	4.5	100	2.2	3.9	100	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
-	-	-	3	5.9	100	3	5.2	100			
3	6.5	100	-	-	-	-	-	-	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
4	8.5	100	4	7.7	20	4	6.8	10			
-	-	-	-	-	-	5.5	9.2	10			
5.5	11.5	50	5.5	10.5	20	-	-	-	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
-	-	-	-	-	-	7.5	12.4	10			
7.5	15.5	50	7.5	14.1	20	-	-	-	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
-	-	-	9	16.5	20	9	13.9	10			
9	18.1	50	-	-	-	-	-	-	GV2L22	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
11	22	50	11	20	20	11	17.6	10			
-	-	-	-	-	-	15	23	10			
15	29	50	15	26.4	20	-	-	-	GV2L32	TPRST038 TPRSS038 TPRPM038	0.76-38
-	-	-	-	-	-	18.5	28	10			
18.5	35	50	18.5	31.8	50	-	-	-	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	-	-	-	22	33	12			
22	41	50	22	37.3	50	-	-	-	GV3L50	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	-	-	-	30	44	12			
30	55	50	30	50	50	-	-	-	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	37	60	50	37	53	12			
37	66	50	-	-	-	-	-	-	GV3L73	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80

Coordination and standards



# TeSys island motor starters

## Standard, SIL starters

### IEC - Type 2 coordination with circuit breakers - 400/415 - 440 - 500 V

0.06 to 37 kW at 400/415 - 440 - 500 V: Type 2 coordination										Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	Setting range
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3									References			
400/415 V			440 V			500 V				P	le	Iq
P	Ie	Iq	P	Ie	Iq	P	Ie	Iq	A			
kW	A	kA	kW	A	kA	kW	A	kA				
0.06	0.2	100	0.06	0.18	100	-	-	-	GV2L03	TPRST009 TPRSS009	0.18-9	
0.09	0.3	100	0.09	0.27	100	-	-	-				
0.12	0.44	100	0.12	0.4	100	-	-	-	GV2L04	TPRST009 TPRSS009	0.18-9	
0.18	0.6	100	0.18	0.55	100	-	-	-				
0.25	0.85	100	0.25	0.77	100	-	-	-	GV2L05	TPRST009 TPRSS009	0.18-9	
0.37	1.1	100	-	-	-	0.37	0.88	100				
-	-	-	0.37	1	100	-	-	-	GV2L06	TPRST009 TPRSS009	0.18-9	
0.55	1.5	100	0.55	1.4	100	0.55	1.2	100				
-	-	-	-	-	-	0.75	1.5	100	GV2L07	TPRST009 TPRSS009	0.18-9	
0.75	1.9	100	0.75	1.7	100	-	-	-				
						1.1	2.2	100				
1.1	2.7	100	-	-	-	-	-	-	GV2L07	TPRST025 TPRSS025	0.5-25	
-	-	-	1.1	2.4	100	-	-	-	GV2L08	TPRST009 TPRSS009	0.18-9	
-	-	-	-	-	-	1.5	2.9	100				
1.5	3.6	100	1.5	3.3	100	-	-	-	GV2L08	TPRST025 TPRSS025	0.5-25	
2.2	4.9	100	2.2	4.5	100	2.2	3.9	100	GV2L10	TPRST025 TPRSS025	0.5-25	
-	-	-	3	5.9	100	3	5.2	100				
3	6.5	100	-	-	-	-	-	-	GV2L14	TPRST025 TPRSS025	0.5-25	
4	8.5	100	4	7.7	20	4	6.8	10				
-	-	-	-	-	-	5.5	9.2	10				
5.5	11.5	50	5.5	10.5	20	-	-	-	GV2L16	TPRST025 TPRSS025	0.5-25	
-	-	-	-	-	-	7.5	12.4	10				
7.5	15.5	50	7.5	14.1	20	-	-	-	GV2L20	TPRST025 TPRSS025	0.5-25	
-	-	-	9	16.5	20	9	13.9	10				
9	18.1	50	-	-	-	-	-	-	GV2L22	TPRST025 TPRSS025	0.5-25	
11	22	50	11	20	20	11	17.6	10				
-	-	-	-	-	-	15	23	10				
15	29	50	15	26.4	20	-	-	-	GV2L32	TPRST038 TPRSS038	0.76-38	
-	-	-	-	-	-	18.5	28	10				
18.5	35	50	18.5	31.8	50	-	-	-	GV3L40	TPRST065 TPRSS065	3.25-65	
-	-	-	-	-	-	22	33	12				
22	41	50	22	37.3	50	-	-	-	GV3L50	TPRST065 TPRSS065	3.25-65	
-	-	-	-	-	-	30	44	12				
30	55	50	30	50	50	-	-	-	GV3L65	TPRST065 TPRSS065	3.25-65	
-	-	-	37	60	50	37	53	12				
37	66	50	-	-	-	-	-	-	GV3L73	TPRST065 TPRSS065	3.25-65	

Coordination  
and  
standards

# TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 coordination with circuit breakers - 690 V

0.06 to 37 kW at 690 V: Type 1 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
690 V			References	References	Setting range
P	I <sub>e</sub>	I <sub>q</sub>			
kW	A	kA			A
0.37	0.64	100	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	0.87	4	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	1.1	4	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
1.1	1.6	4	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	2.1	4	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
2.2	2.8	4	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
3	3.8	4	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
4	4.9	4	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
5.5	6.7	4	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
7.5	8.9	4	GV2L14	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
9	10.5	4	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
11	12.8	4	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
15	17	4	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
18.5	21	4	GV2L22	TPRST038 TPRSS038 TPRPM038	0.76-38
22	24	4	GV2L22	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
30	32	6	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
37	39	6	GV3L50	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80

Coordination and standards

# TeSys island motor starters

Standard, SIL starters

IEC - Type 2 coordination with circuit breakers - 690 V

0.06 to 37 kW at 690 V: Type 2 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	
690 V			References	References	Setting range
P	I <sub>e</sub>	I <sub>q</sub>			
kW	A	kA			A
0.37	0.64	100	GV2L05	TPRST009 TPRSS009	0.18-9
0.55	0.87	4	GV2L05	TPRST009 TPRSS009	0.18-9
0.75	1.1	4	GV2L06	TPRST009 TPRSS009	0.18-9
1.1	1.6	4	GV2L07	TPRST009 TPRSS009	0.18-9
1.1	1.6	50	GV2L07 + LA9LB920	TPRST025 TPRSS025	0.5-25
1.5	2.1	4	GV2L07	TPRST009 TPRSS009	0.18-9
1.5	2.1	50	GV2L07 + LA9LB920	TPRST025 TPRSS025	0.5-25
2.2	2.8	4	GV2L08	TPRST025 TPRSS025	0.5-25
2.2	2.8	50	GV2L08 + LA9LB920	TPRST025 TPRSS025	0.5-25
3	3.8	4	GV2L08	TPRST025 TPRSS025	0.5-25
3	3.8	50	GV2L08 + LA9LB920	TPRST025 TPRSS025	0.5-25
4	4.9	4	GV2L10	TPRST025 TPRSS025	0.5-25
4	4.9	50	GV2L10 + LA9LB920	TPRST025 TPRSS025	0.5-25
5.5	6.7	4	GV2L14	TPRST025 TPRSS025	0.5-25
5.5	6.7	50	GV2L14 + LA9LB920	TPRST025 TPRSS025	0.5-25
7.5	8.9	4	GV2L14	TPRST025 TPRSS025	0.5-25
7.5	8.9	50	GV2L14 + LA9LB920	TPRST025 TPRSS025	0.5-25
9	10.5	4	GV2L16	TPRST025 TPRSS025	0.5-25
11	12.8	4	GV2L16	TPRST025 TPRSS025	0.5-25
11	12.8	3	GV3L18 + LA9LB920	TPRST038 TPRSS038	0.76-38
15	17	4	GV2L20	TPRST025 TPRSS025	0.5-25
15	17	3	GV2L22 + LA9LB920	TPRST038 TPRSS038	0.76-38
18.5	21	4	GV2L22	TPRST038 TPRSS038	0.76-38
18.5	21	3	GV3L25 + LA9LB920	TPRST065 TPRSS065	3.25-65
22	24	4	GV2L22	TPRST065 TPRSS065	3.25-65
22	24	3	GV2L32 + LA9LB920	TPRST065 TPRSS065	3.25-65
30	32	6	GV3L40	TPRST065 TPRSS065	3.25-65
37	39	6	GV3L50	TPRST065 TPRSS065	3.25-65

Coordination  
and  
standards

# TeSys island motor starters

## Standard, SIL starters - Power interface modules

### UL - SCCR Ratings

#### Short Circuit Current Ratings (SCCR)

UL File E39281 and File E48539 Suitable for use on a circuit delivering not more than:								Standard Starters SIL Starters Power Interface Modules	
High SCCR						Standard SCCR		References	Setting range
Max Voltage 600 V Class J Fuse <sup>(1)</sup>		Max Voltage 480 V Circuit Breaker		Max Voltage 600 V Circuit Breaker		Max Voltage 600 V Circuit Breaker or Fuse			
SCCR	Maximum Amperage	SCCR	Maximum Amperage	SCCR	Maximum Amperage	SCCR	Maximum Amperage		A
kA	A	kA	A	kA	A	kA	A		
100	25	85	35	50	35	5	35	TPRST009 TPRSS009 TPRPM009	0.18-9
100	60	85	60	50	60	5	100	TPRST025 TPRSS025	0.5-25
100	100	85	60	50	60	5	125	TPRST038 TPRSS038 TPRPM038	0.76-38
100	125	85	110	50	110	5	250	TPRST065 TPRSS065	3.25-65
100	125	85	110	50	110	5	250	TPRST080 TPRSS080 TPRPM080	4-80

(1) When protected by any Class J or CC time-delay fuse (Class CC applicable up to 30 A only).

Coordination and standards

#### Group Motor Rating

Suitable for group installation on a circuit delivering not more than:				Standard Starters SIL Starters	
Max voltage 600 V - Class J Fuse <sup>(1)</sup>		Max voltage 480 V - Circuit Breaker		References	Setting range
SCCR	Maximum Amperage	SCCR	Maximum Amperage		
kA	A	kA	A		A
5	90	5	90	TPRST009 TPRSS009	0.18-9
5	175	5	175	TPRST025 TPRSS025	0.5-25
5	175	5	175	TPRST038 TPRSS038	0.76-38
5	600	5	600	TPRST065 TPRSS065	3.25-65
5	600	5	600	TPRST080 TPRSS080	4-80

(1) When protected by any Class J or CC time-delay fuse.

#### Contactor utilisation categories conforming to IEC 60947-1

The standard utilisation categories define the current values which the contactor must be able to make or break.

These values depend on:

- the type of load being switched: squirrel cage or slip ring motor, resistors,
- the conditions under which making or breaking takes place: motor stalled, starting or running, reversing, plugging.

#### a.c. applications

<b>Category AC-1</b>	<p>This category applies to all types of a.c. load with a power factor equal to or greater than 0.95 (<math>\cos \varphi \geq 0.95</math>).</p> <p>Application examples: heating, distribution.</p>
<b>Category AC-2</b>	<p>This category applies to starting, plugging and inching of slip ring motors.</p> <ul style="list-style-type: none"> <li>■ On closing, the contactor makes the starting current, which is about 2.5 times the rated current of the motor.</li> <li>■ On opening, it must break the starting current, at a voltage less than or equal to the mains supply voltage.</li> </ul>
<b>Category AC-3</b>	<p>This category applies to squirrel cage motors with breaking during normal running of the motor.</p> <ul style="list-style-type: none"> <li>■ On closing, the contactor makes the starting current, which is about 5 to 7 times the rated current of the motor.</li> <li>■ On opening, it breaks the rated current drawn by the motor.</li> </ul> <p>Application examples: all standard squirrel cage motors: lifts, escalators, conveyor belts, bucket elevators, compressors, pumps, mixers, air conditioning units, etc...</p>
<b>Category AC-4</b>	<p>This category covers applications with plugging and inching of squirrel cage and slip ring motors. The contactor closes at a current peak which may be as high as 5 or 7 times the rated motor current. On opening it breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe.</p> <p>Application examples: printing machines, wire drawing machines, cranes and hoists, metallurgy industry.</p>

#### d.c. applications

<b>Category DC-1</b>	<p>This category applies to all types of d.c. load with a time constant (L/R) of less than or equal to 1 ms.</p>
<b>Category DC-3</b>	<p>This category applies to starting, counter-current braking and inching of shunt motors. Time constant <math>\leq 2</math> ms.</p> <ul style="list-style-type: none"> <li>■ On closing, the contactor makes the starting current, which is about 2.5 times the rated motor current.</li> <li>■ On opening, the contactor must be able to break 2.5 times the starting current at a voltage which is less than or equal to the mains voltage. The slower the motor speed, and therefore the lower its back e.m.f., the higher this voltage. Breaking is difficult.</li> </ul>
<b>Category DC-5</b>	<p>This category applies to starting, counter-current braking and inching of series wound motors. Time constant <math>\leq 7.5</math> ms.</p> <p>On closing, the contactor makes a starting current peak which may be as high as 2.5 times the rated motor current. On opening, the contactor breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe.</p>

#### Utilisation categories for auxiliary contacts & control relays conforming to IEC 60947-1

#### a.c. applications

<b>Category AC-14<sup>(1)</sup></b>	<p>This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is less than 72 VA.</p> <p>Application example: switching the operating coil of contactors and relays.</p>
<b>Category AC-15<sup>(1)</sup></b>	<p>This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is more than 72 VA.</p> <p>Application example: switching the operating coil of contactors.</p>

#### d.c. applications

<b>Category DC-13<sup>(2)</sup></b>	<p>This category applies to the switching of electromagnetic loads for which the time taken to reach 95 % of the steady state current (<math>T = 0.95</math>) is equal to 6 times the power P drawn by the load (with <math>P \leq 50</math> W).</p> <p>Application example: switching the operating coil of contactors without economy resistor.</p>
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<sup>(1)</sup> Replaces category AC-11.

<sup>(2)</sup> Replaces category DC-11.

# TeSys Control

## Contactors - Definitions and comments

### General - Coordination and standards

#### Definitions

<b>Altitude</b>	<p>The rarefied atmosphere at high altitude reduces the dielectric strength of the air and hence the rated operational voltage of the contactor. It also reduces the cooling effect of the air and hence the rated operational current of the contactor (unless the temperature drops at the same time).</p> <p>No derating is necessary up to 3000 m.</p> <p>Derating factors to be applied above this altitude for main pole operational voltage and current (a.c. supply) are as follows.</p> <table border="1"> <thead> <tr> <th>Altitude</th> <th>3500 m</th> <th>4000 m</th> <th>4500 m</th> <th>5000 m</th> </tr> </thead> <tbody> <tr> <td>Rated operational voltage</td> <td>0.90</td> <td>0.80</td> <td>0.70</td> <td>0.60</td> </tr> <tr> <td>Rated operational current</td> <td>0.92</td> <td>0.90</td> <td>0.88</td> <td>0.86</td> </tr> </tbody> </table>	Altitude	3500 m	4000 m	4500 m	5000 m	Rated operational voltage	0.90	0.80	0.70	0.60	Rated operational current	0.92	0.90	0.88	0.86
Altitude	3500 m	4000 m	4500 m	5000 m												
Rated operational voltage	0.90	0.80	0.70	0.60												
Rated operational current	0.92	0.90	0.88	0.86												
<b>Ambient air temperature</b>	<p>The temperature of the air surrounding the device, measured near to the device.</p> <p>The operating characteristics are given:</p> <ul style="list-style-type: none"> <li>- with no restriction for temperatures between -5 and +55 °C,</li> <li>- with restrictions, if necessary, for temperatures between -50 and +70 °C.</li> </ul>															
<b>Rated operational current (Ie)</b>	This is defined taking into account the rated operational voltage, operating rate and duty, utilisation category and ambient temperature around the device.															
<b>Rated conventional thermal current (Ith) <sup>(1)</sup></b>	The current which a closed contactor can sustain for a minimum of 8 hours without its temperature rise exceeding the limits given in the standards.															
<b>Permissible short time rating</b>	The current which a closed contactor can sustain for a short time after a period of no load, without dangerous overheating.															
<b>Rated operational voltage (Ue)</b>	This is the voltage value which, in conjunction with the rated operational current, determines the use of the contactor or starter, and on which the corresponding tests and the utilisation category are based. For 3-phase circuits it is expressed as the voltage between phases. Apart from exceptional cases such as rotor short-circuiting, the rated operational voltage Ue is less than or equal to the rated insulation voltage Ui.															
<b>Rated control circuit voltage (Uc)</b>	The rated value of the control circuit voltage, on which the operating characteristics are based. For a.c. applications, the values are given for a near sinusoidal wave form (less than 5 % total harmonic distortion).															
<b>Rated insulation voltage (Ui)</b>	This is the voltage value used to define the insulation characteristics of a device and referred to in dielectric tests determining leakage paths and creepage distances. As the specifications are not identical for all standards, the rated value given for each of them is not necessarily the same.															
<b>Rated impulse withstand voltage (Uimp)</b>	The peak value of a voltage surge which the device is able to withstand without breaking down.															
<b>Rated operational power (expressed in kW)</b>	The rated power of the standard motor which can be switched by the contactor, at the stated operational voltage.															

<sup>(1)</sup> Conventional thermal current, in free air, conforming to IEC standards.

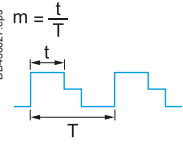
**Note:** these definitions are extracted from standard IEC 60947-1.

# TeSys Control

## Contactors - Definitions and comments

### General - Coordination and standards

#### Definitions

<b>Rated breaking capacity</b> <sup>(1)</sup>	This is the current value which the contactor can break in accordance with the breaking conditions specified in the IEC standard.
<b>Rated making capacity</b> <sup>(1)</sup>	This is the current value which the contactor can make in accordance with the making conditions specified in the IEC standard.
<b>On-load factor (m)</b>	<div style="display: flex; align-items: center;"> <div style="flex: 1;">  </div> <div style="flex: 2;"> <p>This is the ratio between the time the current flows (t) and the duration of the cycle (T). Cycle duration: duration of current flow + time at zero current.</p> </div> </div>
<b>Pole impedance</b>	<p>The impedance of one pole is the sum of the impedance of all the circuit components between the input terminal and the output terminal.</p> <p>The impedance comprises a resistive component (R) and an inductive component (<math>X = L\omega</math>).</p> <p>The total impedance therefore depends on the frequency and is normally given for 50 Hz.</p> <p>This average value is given for the pole at its rated operational current.</p>
<b>Electrical durability</b>	This is the average number of on-load operating cycles which the main pole contacts can perform without maintenance. The electrical durability depends on the utilisation category, the rated operational current and the rated operational voltage.
<b>Mechanical durability</b>	This is the average number of no-load operating cycles (i.e. with zero current flow through the main poles) which the contactor can perform without mechanical failure.

<sup>(1)</sup> For a.c. applications, the breaking and making capacities are expressed by the rms value of the symmetrical component of the short-circuit current. Taking into account the maximum asymmetry which may exist in the circuit, the contacts therefore have to withstand a peak asymmetrical current which may be twice the rms symmetrical component.

**Note:** these definitions are extracted from standard IEC 60947-1.

# TeSys Control

## Contactors for utilisation category AC-3

### Selection - Coordination and standards

#### Operational current and power conforming to IEC ( $\theta \leq 60^\circ\text{C}$ )

Contactor size			LC1/ LP1 K06	LC1/ LP1 K09	LC1 K12	LC1 K16	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
Maximum operational current in AC-3	$\leq 440\text{ V}$	<b>A</b>	6	9	12	16	9	12	18	25	32	38	40
Rated operational power P (standard motor power ratings)	220/240 V <sup>(1)</sup>	<b>kW</b>	1.5	2.2	3	3	2.2	3	4	5.5	7.5	9	11
	380/400 V <sup>(2)</sup>	<b>kW</b>	2.2	4	5.5	7.5	4	5.5	7.5	11	15	18.5	18.5
	415 V	<b>kW</b>	2.2	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	440 V	<b>kW</b>	3	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	500 V	<b>kW</b>	3	4	4	5.5	5.5	7.5	10	15	18.5	18.5	22
	660/690 V <sup>(3)</sup>	<b>kW</b>	3	4	4	4	5.5	7.5	10	15	18.5	18.5	30
	1000 V	<b>kW</b>	–	–	–	–	–	–	–	–	–	–	–

#### Maximum operating rate in operating cycles/hour <sup>(4)</sup>

On-load factor	Operational power	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A				
$\leq 85\%$	P	–	–	–	–	1200	1200	1200	1200	1000	1000	1000
	0.5 P	–	–	–	–	3000	3000	2500	2500	2500	2500	2500
$\leq 25\%$	P	–	–	–	–	1800	1800	1800	1800	1200	1200	1200

#### Operational current and power conforming to UL, CSA ( $\theta \leq 60^\circ\text{C}$ )

Contactor size			LC1/ LP1 K06	LC1/ LP1 K09	LC1/ LP1 K12	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
Maximum operational current in AC-3	$\leq 440\text{ V}$	<b>A</b>	6	9	12	9	12	18	25	32	–	40
Rated operational power P (standard motor power ratings 60 Hz)	200/208 V	<b>HP</b>	1.5	2	3	2	3	5	7.5	10	–	10
	230/240 V	<b>HP</b>	1.5	3	3	2	3	5	7.5	10	–	10
	460/480 V	<b>HP</b>	3	5	7.5	5	7.5	10	15	20	–	30
	575/600 V	<b>HP</b>	3	5	10	7.5	10	15	20	25	–	30

(1) 230 V for LC1G115 to LC1G800 contactors.

(2) 400 V for LC1G115 to LC1G800 contactors.

(3) 690 V for LC1G115 to LC1G800 contactors.

(4) Depending on the operational power and the on-load factor ( $\theta \leq 60^\circ\text{C}$ ).



# TeSys Control

## Contactors for utilisation category AC-3

### Selection - Coordination and standards

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
50	65	66	80	95	115	150	115	150	185	225	265	330	400	500	630	800	780	1000
15	18.5	22	22	25	30	40	30	37	55	55	75	90	110	150	180	200	220	315
22	30	37	37	45	55	75	55	75	90	110	132	160	200	250	335	450	400	560
25	37	37	45	45	59	80	55	75	90	110	132	160	200	250	335	355	425	630
30	37	37	45	45	59	80	65	80	100	129	150	185	220	295	355	375	425	670
30	37	37	55	55	75	90	65	90	110	132	160	200	250	295	375	400	450	-
33	37	37	45	45	80	100	75	90	110	160	200	220	315	355	500	560	475	-
-	-	-	45	45	65	75	-	75	75	132	160	185	220	335	450	450	450	-

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
1000	1000	1000	750	750	750	750	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	500	(5)
2500	2500	2500	2000	2000	2000	1200	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	1200	(5)
1200	1200	1200	1200	1200	1200	1200	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	600	(5)

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
50	65	65	80	95	115	150	115	150	185	225	265	330	400	500	630	800	780	1000
15	20	20	30	30	30	40	30	40	50	60	75	100	125	150	250	300	-	350
15	20	20	30	30	40	50	40	50	60	75	100	125	150	200	300	350	450	400
40	40	40	60	60	75	100	75	100	125	150	200	250	300	400	600	700	900	900
40	50	50	60	60	100	125	100	125	150	150	200	300	400	450	700	800	900	-

(5) Other values: please contact your regional sales office.

Coordination  
and  
standards

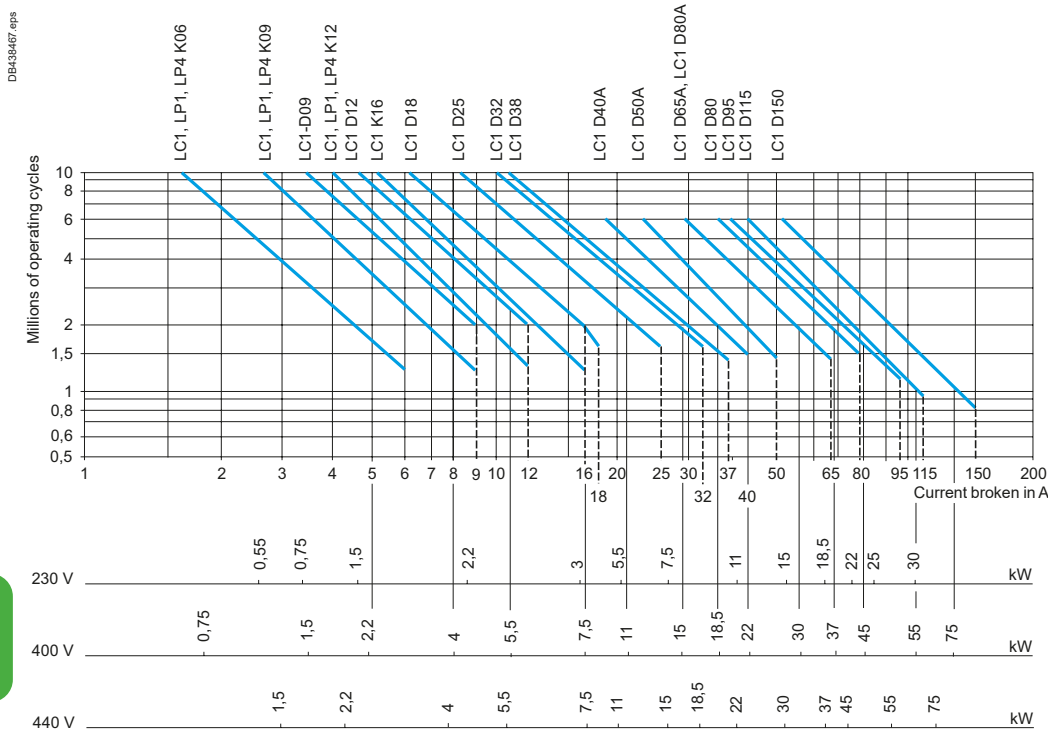
# TeSys Control

## Contactors for utilisation category AC-3

### Selection - Coordination and standards

#### Selection according to required electrical durability, in category AC-3 ( $U_e \leq 440\text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.  
The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.



Operational power in kW-50 Hz.

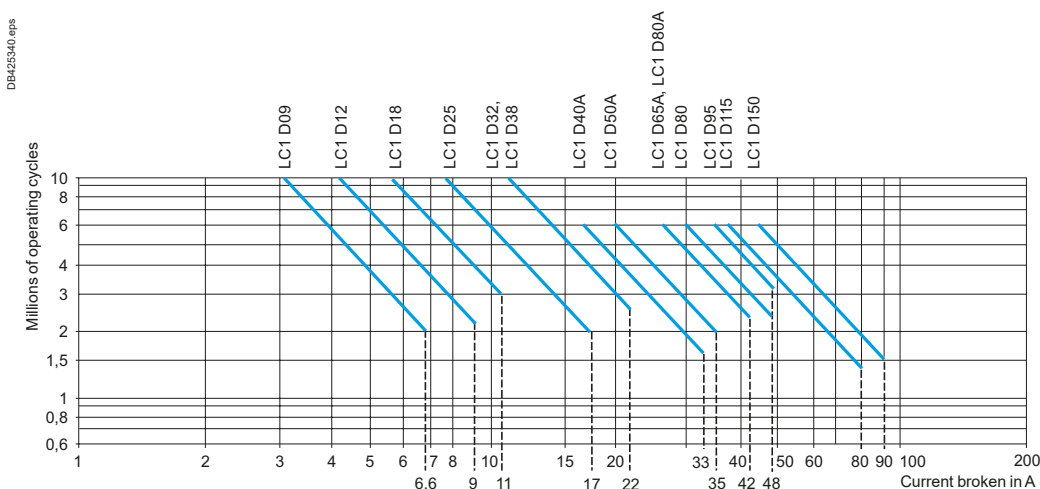
#### Example:

Asynchronous motor with  $P = 5.5\text{ kW}$  -  $U_e = 400\text{ V}$  -  $I_e = 11\text{ A}$  -  $I_c = I_e = 11\text{ A}$   
or asynchronous motor with  $P = 5.5\text{ kW}$  -  $U_e = 415\text{ V}$  -  $I_e = 11\text{ A}$  -  $I_c = I_e = 11\text{ A}$   
3 million operating cycles required.

The above selection curves show the contactor rating needed: LC1D18.

#### Selection according to required electrical durability, in category AC-3 ( $U_e = 660/690\text{ V}$ )<sup>(1)</sup>

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.  
The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.



<sup>(1)</sup> For  $U_e = 1000\text{ V}$ , use the 660/690 V curves, but do not exceed the operational current at the operational power indicated for 1000 V.

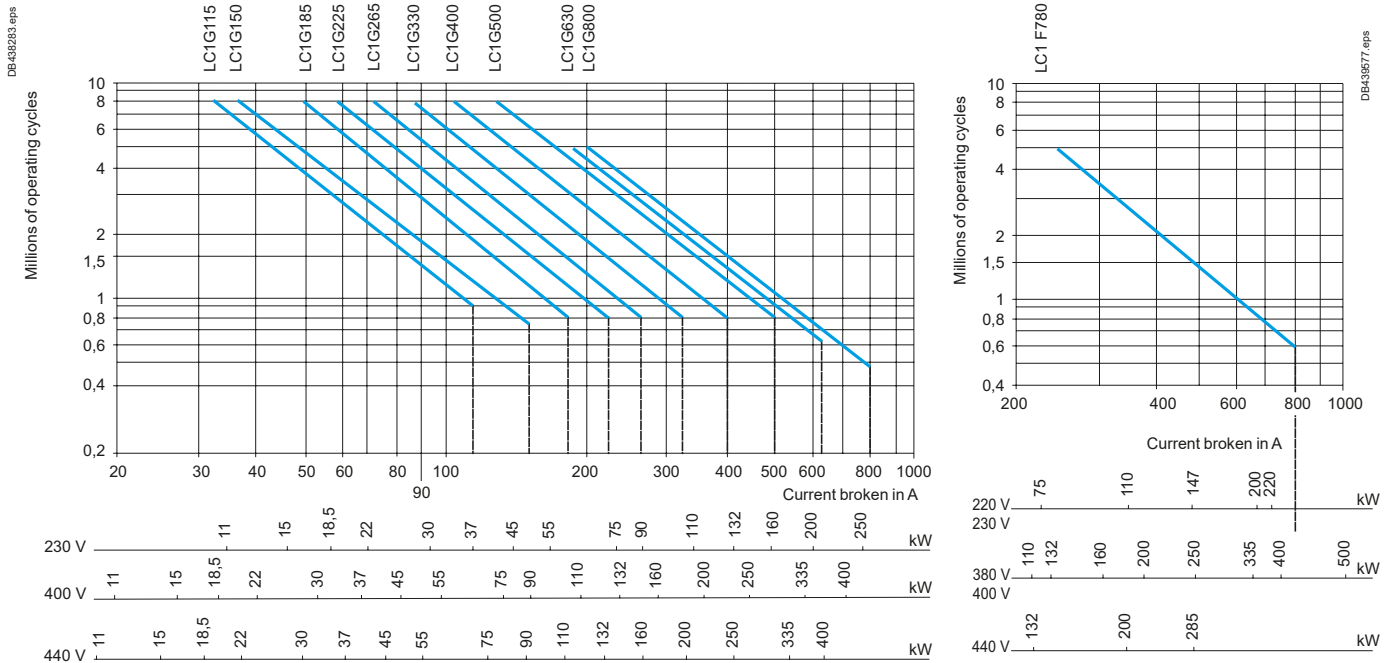
# TeSys Control

## Contactors for utilisation category AC-3

### Selection - Coordination and standards

#### Selection according to required electrical durability, in category AC-3 ( $U_e \leq 440$ V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running. The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.



Operational power in kW-50 Hz.

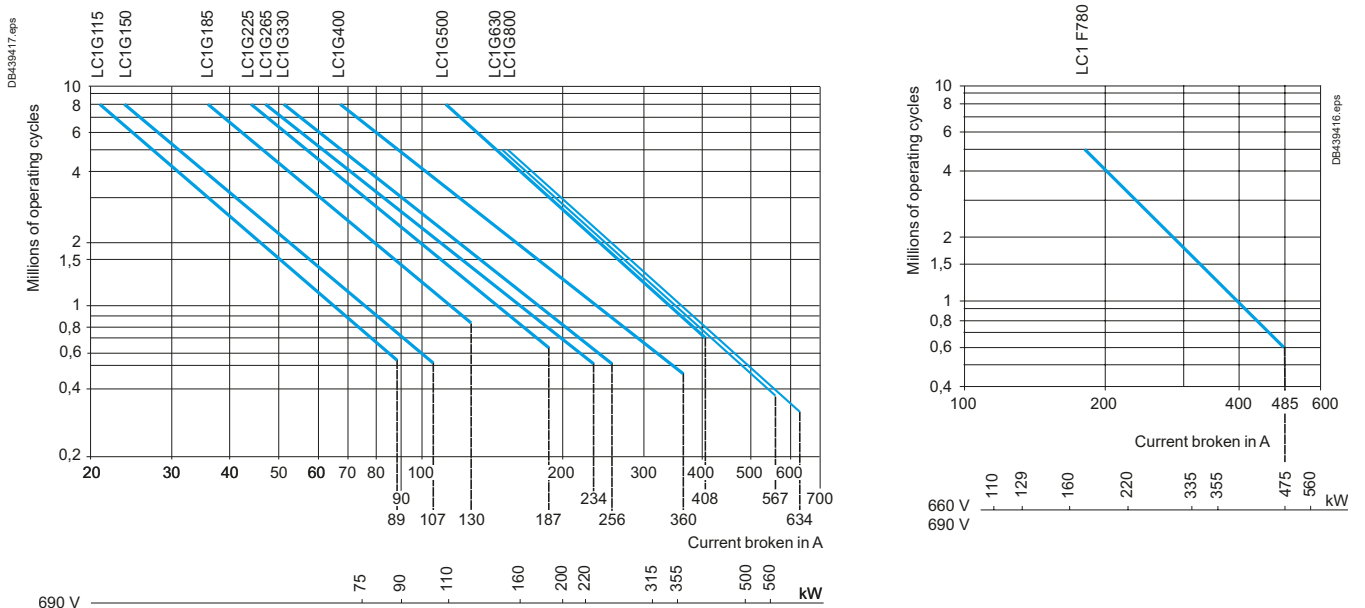
#### Example:

Asynchronous motor with  $P = 132$  kW -  $U_e = 400$  V -  $I_e = 230$  A -  $I_c = I_e = 230$  A  
1.8 million operating cycles required.

The above selection curves show the contactor rating needed: LC1G400.

#### Selection according to required electrical durability, in category AC-3 ( $U_e = 660/690$ V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.  
The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.



#### Example:

Asynchronous motor with  $P = 200$  kW -  $U_e = 690$  V -  $I_e = 203$  A -  $I_c = I_e = 203$  A  
1 million operating cycles required.

The above selection curves show the contactor rating needed: LC1G400.

Coordination and standards

# TeSys Control

## Contactors for utilisation category AC-1

### Selection - Coordination and standards

#### Maximum operational current (open-mounted device)

Contactor size	LC1/LP1 K09	LC1/LP1 K12	LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A DT60A	LC1 D50A	LC1 D65A DT80A	LC1/LP1 D80 D80		
Maximum operating rate in operating cycles/hour	600	600	600	600	600	600	600	600	600	600	600	600	600		
Connection conforming to IEC 60947-1	Cable c.s.a. mm <sup>2</sup>	4	4	4	4	4	6	6	10	10	35	35	50		
	Bar c.s.a. mm	-	-	-	-	-	-	-	-	-	-	-	-		
Operational current in AC-1 in A, according to the ambient temperature conforming to IEC 60947-1	≤ 40 °C	A	20	20	25	20	25	32	40	50	50	60	80	80	125
	≤ 60 °C	A <sup>(4)</sup>	20	20	25	20	25	32	40	50	50	60	80	80	125
	≤ 70 °C	A <sup>(4)</sup>	(1)	(1)	17	(1)	17	22	28	35	35	42	56	56	80
Maximum operational power ≤ 60 °C	220/230 V	kW	8	8	9	8	9	11	14	18	18	21	29	29	45
	240 V	kW	8	8	9	8	9	12	15	19	19	23	31	31	49
	380/400 V	kW	14	14	15	14	15	20	25	31	31	37	50	50	78
	415 V	kW	14	14	17	14	17	21	27	34	34	41	54	54	85
	440 V	kW	15	15	18	15	18	23	29	36	36	43	58	58	90
	500 V	kW	17	17	20	17	20	23	33	41	41	49	65	65	102
	660/690 V	kW	22	22	27	22	27	34	43	54	54	65	80	80	135
	1000 V	kW	-	-	-	-	-	-	-	-	-	-	-	-	120

- (1) Please consult your Regional Sales Office.
- (2) With set of right-angled connectors LA9F2100.
- (3) With set of right-angled connectors LA9F2600.

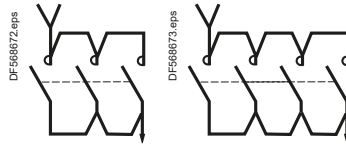
- (4) LC1F780 to LC1F2600, LC1G115 to LC1G800: the maximum control voltage must not exceed rated U<sub>c</sub> for a temperature  $\theta$ , 60 °C ≤  $\theta$  ≤ 70 °C.

Coordination and standards

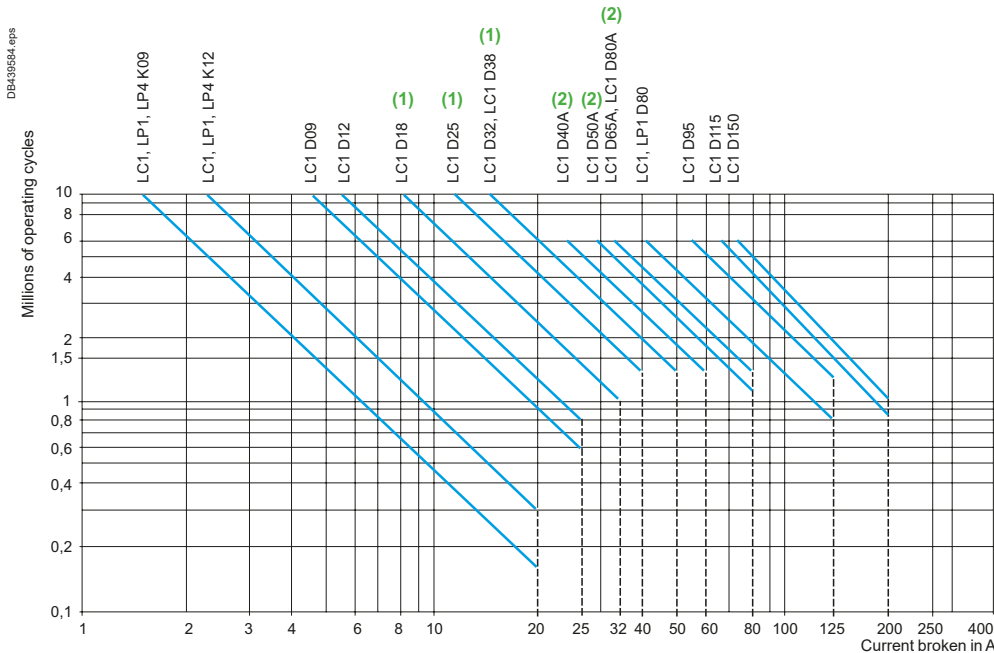
#### Increase in operational current by parallel connection of poles

Apply the following coefficients to the currents or power values given above; these coefficients take into account an often unbalanced current distribution between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8



#### Selection according to required electrical durability, in category AC-1 (U<sub>e</sub> ≤ 690 V)



- (1) For Deca Green, consult online datasheets for values.
- (2) For Deca Green or DC coil, consult online datasheets for values.

Control of resistive circuits ( $\cos \phi \geq 0.95$ ).

The current broken (I<sub>c</sub>) in category AC-1 is equal to the current (I<sub>e</sub>) normally drawn by the load.

#### Example:

- U<sub>e</sub> = 220 V - I<sub>e</sub> = 50 A  $\theta \leq 40$  °C - I<sub>c</sub> = I<sub>e</sub> = 50 A
- 2 million operating cycles required
- the above selection curves show the contactor rating needed: LC1D50A.

# TeSys Control

## Contactors for utilisation category AC-1

### Selection - Coordination and standards

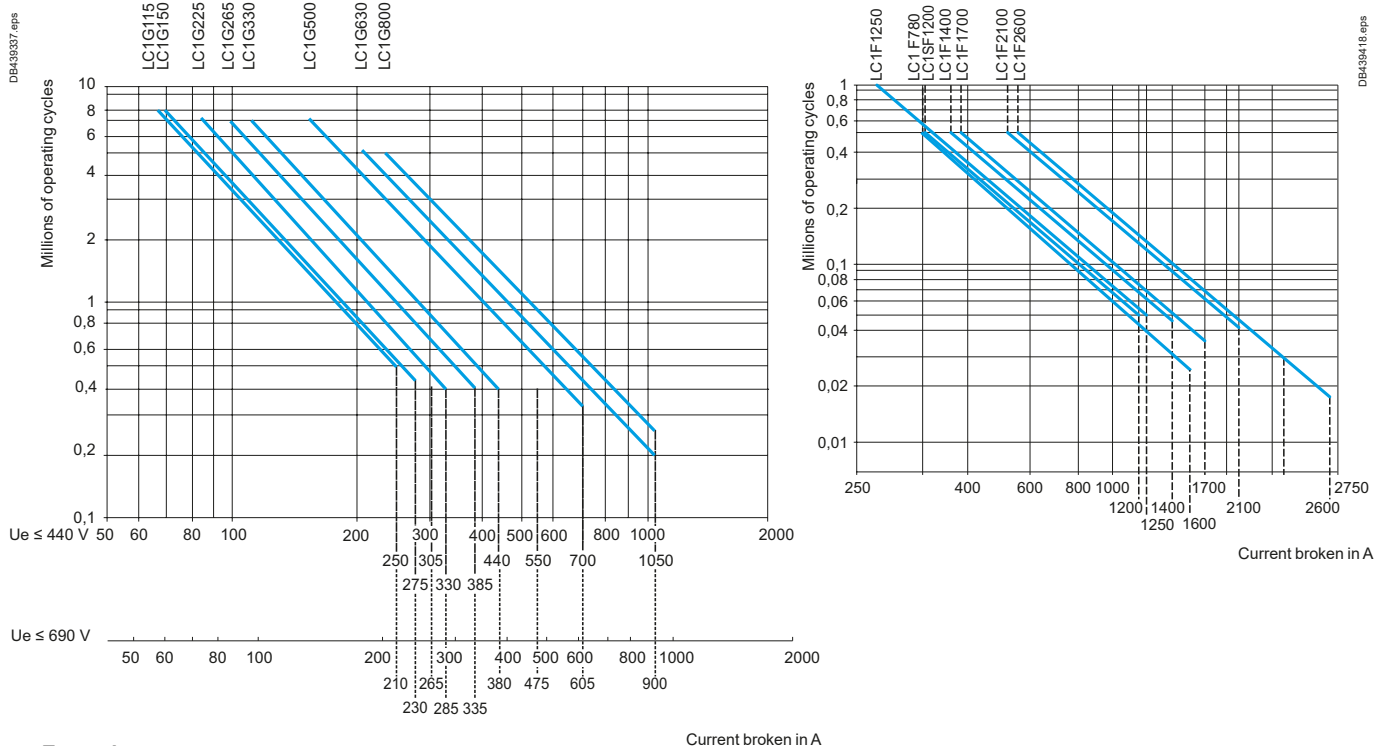
LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000	LC1S F1200	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100	LC1 F2600
600	600	600	300	300	300	300	300	300	300	300	300	300	600	600	300	300	200	200	200	200
50	120	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2 100x5	3 100x5	2 50x8	2 100x5	2 100x5	3 100x5	4 100x5	3 100x10
125	200	200	250	275	305	330	385	440	550	700	1050	1050	1600	1250	1200	1260	1400	1700	2100 <sup>(2)</sup>	2600
125	200	200	225	250	275	300	350	400	500	600	800	800	1350	<sup>(1)</sup>	1110	1060	1190	1450	1750 <sup>(2)</sup>	2600 <sup>(3)</sup>
80	160	160	210	235	255	280	330	380	470	540	640	640	1100	<sup>(1)</sup>	1020	900	1080	1300	1500 <sup>(2)</sup>	2150 <sup>(3)</sup>
45	80	80	90	100	110	120	140	160	200	240	320	320	550	<sup>(1)</sup>	400	420	474	570	700	840
49	83	83	90	100	110	120	150	170	210	250	330	330	570	<sup>(1)</sup>	410	440	490	600	780	920
78	135	135	160	170	190	210	240	280	350	420	550	550	950	<sup>(1)</sup>	700	730	820	1000	1200	1450
85	140	140	160	180	200	220	250	290	360	430	580	580	1000	<sup>(1)</sup>	720	760	850	1050	1300	1580
90	150	150	170	190	210	230	270	300	380	460	610	610	1050	<sup>(1)</sup>	750	810	910	1100	1350	1680
102	170	170	190	220	240	260	300	350	430	520	690	690	1200	-	850	920	1000	1250	1550	1910
135	235	235	270	300	330	360	420	480	600	720	960	960	1650	-	1200	1260	1400	1700	2100	2520
120	345	345	390	430	480	520	610	690	870	1040	1390	1390	2400	-	-	-	2100	2500	3100 <sup>(2)</sup>	3820

- (1) Please consult your Regional Sales Office.
- (2) With set of right-angled connectors LA9F2100.
- (3) With set of right-angled connectors LA9F2600.

- (4) LC1F780 to LC1F2600, LC1G115 to LC1G800: the maximum control voltage must not exceed rated  $U_c$  for a temperature  $\theta$ ,  $60^\circ\text{C} \leq \theta \leq 70^\circ\text{C}$ .

Coordination and standards

### Selection according to required electrical durability, in category AC-1 ( $U_e \leq 690\text{ V}$ , $\theta \leq 40^\circ\text{C}$ )



- Example:**
- $U_e = 440\text{ V}$  -  $I_e = 500\text{ A}$  -  $\theta \leq 40^\circ\text{C}$  -  $I_c = I_e = 500\text{ A}$
  - 0.8 million operating cycles required
  - the above selection curves show the contactor rating needed: LC1G630.

# TeSys Control

## Contactors for utilisation categories AC-2 or AC-4

### Selection - Coordination and standards

#### Maximum breaking current

Category AC-2: slip ring motors - breaking the starting current.

Category AC-4: squirrel cage motors - breaking the starting current.

Contactor size			LC1/ LP1 K06	LC1/ LP1 K09	LC1/ LP1 K12	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
In category AC-4 (le max)	Ue ≤ 440 V le max broken = 6 x I motor	A	36	54	54	54	72	108	150	192	192	240
	440 V < Ue ≤ 690 V le max broken = 6 x I motor	A	26	40	40	40	50	70	90	105	105	150

#### Depending on the maximum operating rate <sup>(1)</sup> and the on-load factor, $\theta \leq 60^\circ\text{C}$ <sup>(2)</sup>

From 150 and 15 % to 300 and 10 %	A	20	30	30	30	40	45	75	80	80	110
From 150 and 20 % to 600 and 10 %	A	18	27	27	27	36	40	67	70	70	96
From 150 and 30 % to 1200 and 10 %	A	16	24	24	24	30	35	56	60	60	80
From 150 and 55 % to 2400 and 10 %	A	13	19	19	19	24	30	45	50	50	62
From 150 and 85 % to 3600 and 10 %	A	10	16	16	16	21	25	40	45	45	53

Contactor size			LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800
In category AC-4 (le max)	Ue ≤ 440 V le max broken = 6 x I motor	A	690	900	1110	1350	1590	1980	2400	3000	3780	4050
	440 V < Ue ≤ 690 V le max broken = 6 x I motor	A	530	640	780	1120	1400	1530	2160	2450	3400	3800

#### Depending on the maximum operating rate <sup>(1)</sup> and the on-load factor, $\theta \leq 60^\circ\text{C}$ <sup>(2)</sup>

Duty Cycle [Cycle/h]	Load Factor [%]		LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800
150	15	A	319	400	478	562	641	758	869	1001	1124	1204
300	10	A	250	314	375	441	502	593	679	779	870	923
150	20	A	304	383	457	538	613	726	834	962	1083	1165
600	10	A	183	230	275	324	369	437	502	579	653	703
150	30	A	280	352	421	495	565	668	766	883	993	1065
1200 <sup>(3)</sup>	10	A	131	164	196	230	262	309	353	404	449	473
150	55	A	239	300	358	421	480	568	652	750	842	902
2400 <sup>(3)</sup>	10	A	120	151	181	212	242	287	329	379	426	457
150	85	A	208	261	312	368	420	498	572	661	748	809
3600 <sup>(3)</sup>	10	A	120	151	181	212	242	287	329	379	426	457

<sup>(1)</sup> Do not exceed the maximum number of operating cycles.

<sup>(2)</sup> For temperatures higher than 60 °C, use a maximum operating rate value equal to 80 % of the actual value when selecting from the tables.

<sup>(3)</sup> Control Module can operate with higher duty cycle during limited time followed by proposed cooling time.

Operating cycles/hour	Cool time
1200	10 min
2400	30 min
3600	60 min

#### Counter current braking (plugging)

The current varies from the maximum plug-braking current to the rated motor current.

The making current must be compatible with the rated making and breaking capacities of the contactor.

As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

#### Permissible AC-4 power rating for 200 000 operating cycles

Operational voltage		LC●/ LP● K06	LC●/ LP● K09	LC●/ LP● K12	LC● D09	LC● D12	LC● D18	LC● D25	LC● D32	LC● D38	LC● D40A
220/230 V <sup>(4)</sup>	kW	0.75	1.1	1.1	1.5	1.5	2.2	3	4	4	4
380/400 V <sup>(5)</sup>	kW	1.5	2.2	2.2	2.2	3.7	4	5.5	7.5	7.5	9
415 V	kW	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	9
440 V	kW	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	11
500 V	kW	2.2	3	3	3	4	5.5	7.5	9	9	11
660/690 V <sup>(6)</sup>	kW	3	4	4	4	5.5	7.5	10	11	11	15

<sup>(4)</sup> 230 V for LC1G115 to LC1G800 contactors.

<sup>(5)</sup> 400 V for LC1G115 to LC1G800 contactors.

<sup>(6)</sup> 690 V for LC1G115 to LC1G800 contactors.

# TeSys Control

Contactors for utilisation categories AC-2 or AC-4

Selection - Coordination and standards

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F780
300	390	390	480	570	630	830	4260
170	210	210	250	250	540	640	2910
140	160	160	200	200	280	310	1600
120	148	148	170	170	250	280	1400
100	132	132	145	145	215	240	1100
80	110	110	120	120	150	170	820
70	90	90	100	100	125	145	710

Coordination  
and  
standards

LC● D50A	LC● D65A	LC1 D80A	LC● D80	LC● D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
5.5	7.5	7.5	7.5	9	9	11	11	11	15	18.5	22	22	30	37	37	37	63
11	11	11	15	15	18.5	22	22	22	30	30	37	45	55	55	55	75	110
11	11	11	15	15	18.5	22	22	22	30	30	37	45	55	55	55	75	110
11	15	15	15	15	18.5	22	22	22	30	37	45	55	55	55	75	75	132
15	15	15	22	22	30	37	11	11	18.5	22	22	30	45	45	55	55	150
15	18.5	18.5	25	25	30	45	18.5	22	22	30	37	45	55	55	75	90	185

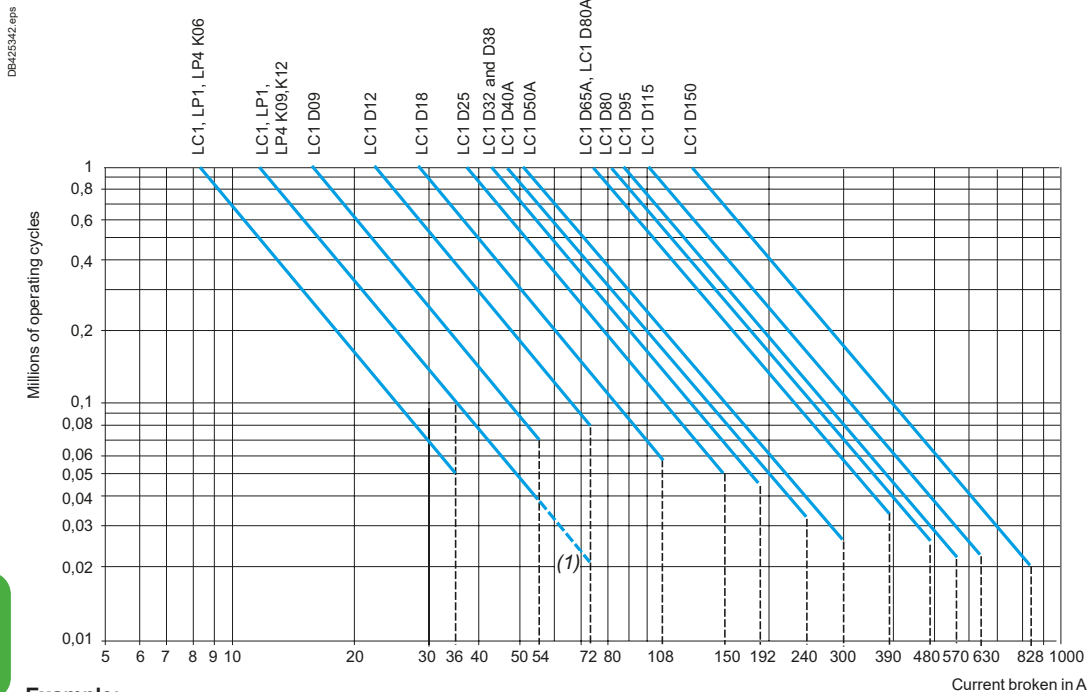
# TeSys Control

## Contactors for utilisation categories AC-2 or AC-4

### Selection - Coordination and standards

#### Selection according to required electrical durability, in categories AC-2 or AC-4 ( $U_e \leq 440 \text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.  
 The current broken ( $I_c$ ) in AC-2 is equal to  $2.5 \times I_e$ .  
 The current broken ( $I_c$ ) in AC-4 is equal to  $6 \times I_e$  ( $I_e$  = rated operational current of the motor).



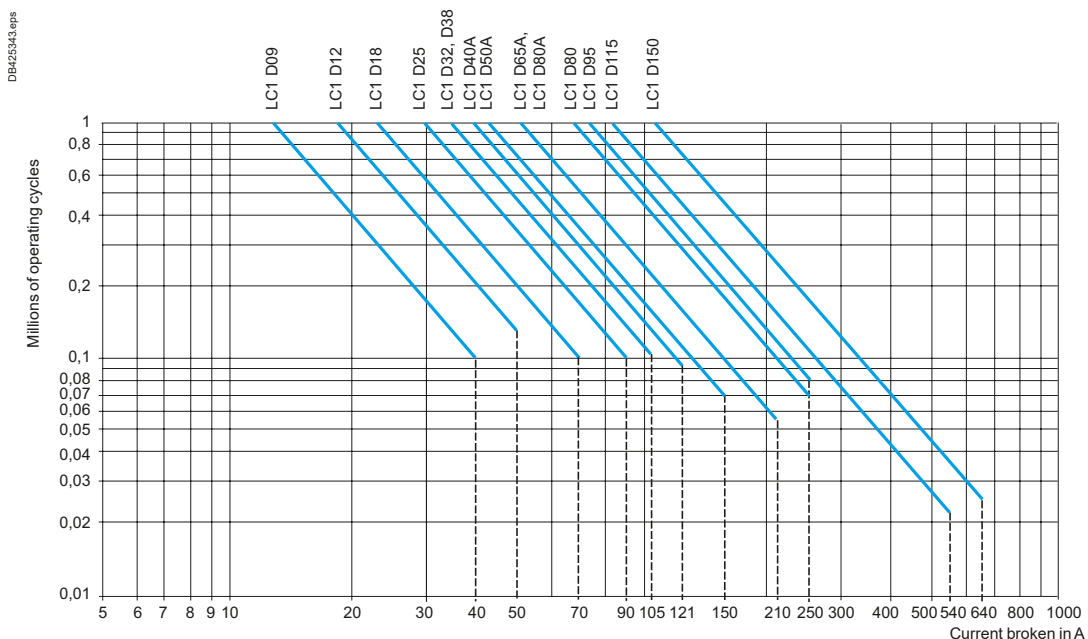
#### Example:

- asynchronous motor with  $P = 5.5 \text{ kW}$  -  $U_e = 400 \text{ V}$  -  $I_e = 11 \text{ A}$ .  $I_c = 6 \times I_e = 66 \text{ A}$
- or asynchronous motor with  $P = 5.5 \text{ kW}$  -  $U_e = 415 \text{ V}$  -  $I_e = 11 \text{ A}$ .  $I_c = 6 \times I_e = 66 \text{ A}$
- 200 000 operating cycles required
- the above selection curves show the contactor rating needed: LC1D25.

(1) The dotted lines are only applicable to LC1, LP1K12 contactors.

#### Selection according to required electrical durability, use in category AC-4 ( $440 \text{ V} < U_e \leq 690 \text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.  
 The current broken ( $I_c$ ) in AC-2 is equal to  $2.5 \times I_e$ .  
 The current broken ( $I_c$ ) in AC-4 is equal to  $6 \times I_e$  ( $I_e$  = rated operational current of the motor).





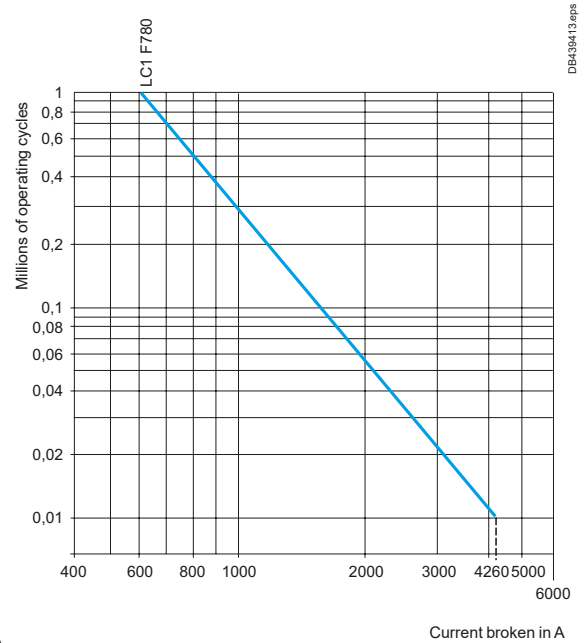
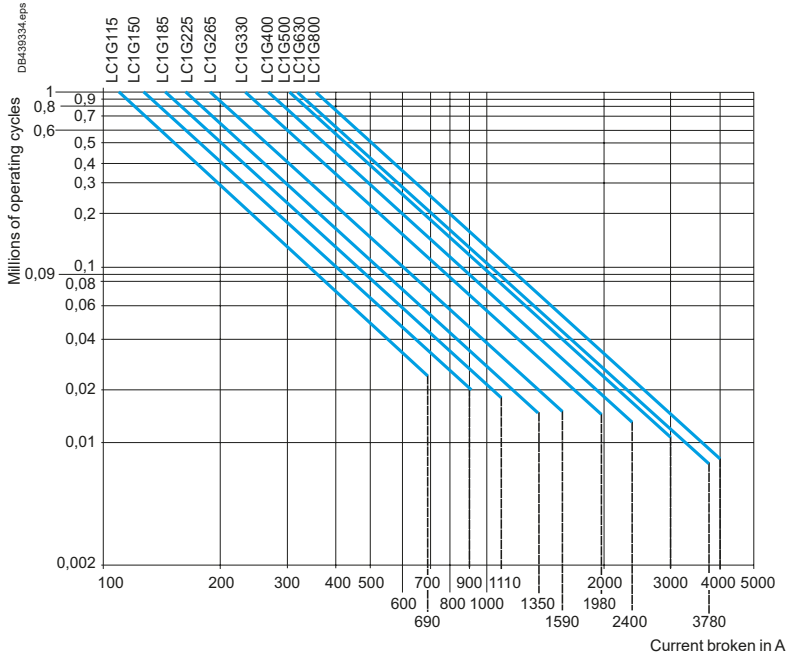
# TeSys Control

## Contactors for utilisation categories AC-2 or AC-4

### Selection - Coordination and standards

#### Selection according to required electrical durability, in categories AC-2 or AC-4 ( $U_e \leq 440\text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.  
The current broken ( $I_c$ ) in AC-4 is equal to  $6 \times I_e$ .  
( $I_e$  = rated operational current of the motor).

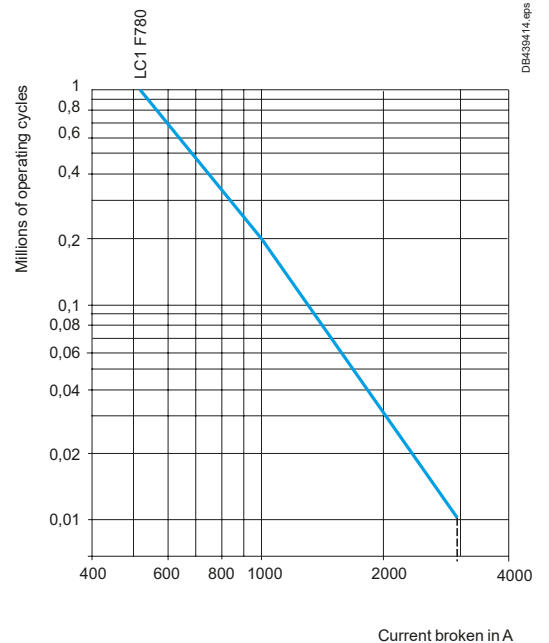
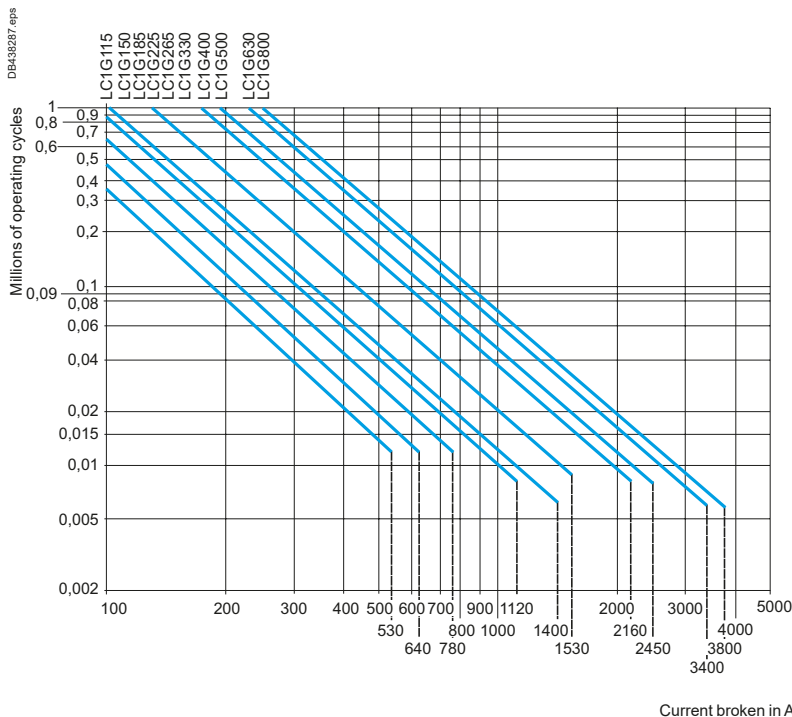


#### Example:

- asynchronous motor with  $P = 132\text{ kW}$  -  $U_e = 400\text{ V}$  -  $I_e = 230\text{ A}$ .  $I_c = 6 \times I_e = 1380\text{ A}$ . 30 000 operating cycles required.
- the above selection curves show the contactor rating needed: LC1G330.

#### Selection according to required electrical durability, use in category AC-4 ( $440\text{ V} < U_e \leq 690\text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.  
The current broken ( $I_c$ ) in AC-4 is equal to  $6 \times I_e$  ( $I_e$  = rated operational current of the motor).

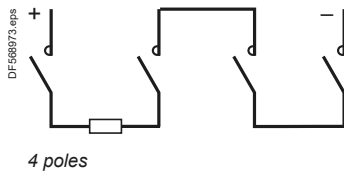
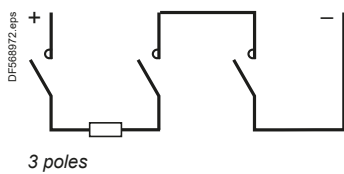
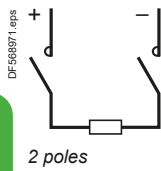
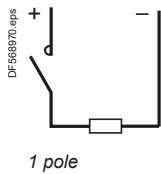


Coordination and standards

# TeSys Control

## Contactors for utilisation categories DC-1 to DC-5

### Selection - Coordination and standards



Coordination and standards

#### Rated operational current (Ie) in Amperes, in utilisation category DC-1, resistive loads: time constant $\frac{L}{R} \leq 1$ ms, ambient temperature $\leq 60$ °C

Rated operational voltage Ue V	No. of poles connected in series	Contactor rating								
		LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A	LC1 DT60A
24	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
48/75	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
125	1	4	4	4	4	7	7	7	7	7
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
250	1	1	1	1	1	1	1	1	1	1
	2	4	4	4	4	7	7	7	7	7
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
300	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	4	4	4	4	7	7	7	7	–
	4	–	20	20	25	32	–	–	–	50
460	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–

#### Rated operational current (Ie) in Amperes, in utilisation category DC-2 to DC-5, inductive loads: time constant $\frac{L}{R} \leq 15$ ms, ambient temperature $\leq 60$ °C

Rated operational voltage Ue V	No. of poles connected in series	Contactor rating								
		LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A	LC1 DT60A
24	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
48/75	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
125	1	2	2	2	2	3	3	3	4	4
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
250	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	2	2	2	2	2	3	3	3	4	4
	3	8	8	8	8	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
300	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	2	2	2	2	3	3	3	3	3
	4	–	8	8	8	32	–	–	–	50
460	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–

# TeSys Control

## Contactors for utilisation categories DC-1 to DC-5

### Selection - Coordination and standards

#### Contactors for utilisation categories DC-1 to DC-5

Contactors for utilisation categories DC-1 to DC-5																	
Contactor rating																	
LC1 D50A	LC1 D65A D80A	LC1 DT80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
7	7	7	12	12	12	12	205	225	250	270	315	360	450	540	855	855	1180
65	65	65	100	100	200	200	205	225	250	270	315	360	450	540	855	855	1180
65	65	65	100	100	200	200	225	250	275	300	355	405	505	605	960	960	1300
-	-	65	100	-	200	-	225	250	275	300	355	405	505	605	960	960	1300
1	1.5	1.5	2	2	10	10	-	-	-	-	-	-	-	-	-	-	-
7	7	7	12	12	200	200	180	205	225	245	285	325	405	485	770	770	1000
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	945	945	1300
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	7	7	12	12	200	200	185	205	225	250	290	330	415	495	785	785	1000
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	200	-	185	205	225	245	285	325	410	490	775	775	1000

Coordination and standards

#### Contactors for utilisation categories DC-1 to DC-5

Contactors for utilisation categories DC-1 to DC-5																	
Contactor rating																	
LC1 D50A	LC1 D65A D80A	LC1 DT80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
4	4	4	5	5	10	10	-	-	-	-	-	-	-	-	-	-	-
65	65	65	100	100	200	200	190	210	230	250	290	335	420	500	795	795	1000
65	65	65	100	100	200	200	205	230	255	275	325	370	460	555	875	875	1000
-	-	65	100	-	200	-	205	230	255	275	325	370	460	555	875	875	1000
1	1.5	1.5	1	1	3	3	-	-	-	-	-	-	-	-	-	-	-
4	4	4	5	5	200	200	175	190	210	230	270	305	385	460	730	730	900
65	65	65	100	100	200	200	185	210	230	250	290	335	415	500	790	790	1000
-	-	65	100	-	200	-	225	250	275	300	355	405	505	605	960	960	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	3	3	5	5	200	200	175	195	210	230	270	310	385	465	730	730	900
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	200	-	175	190	210	230	270	310	385	460	730	730	800

### Selection according to required electrical durability, use in categories DC-1 to DC-5

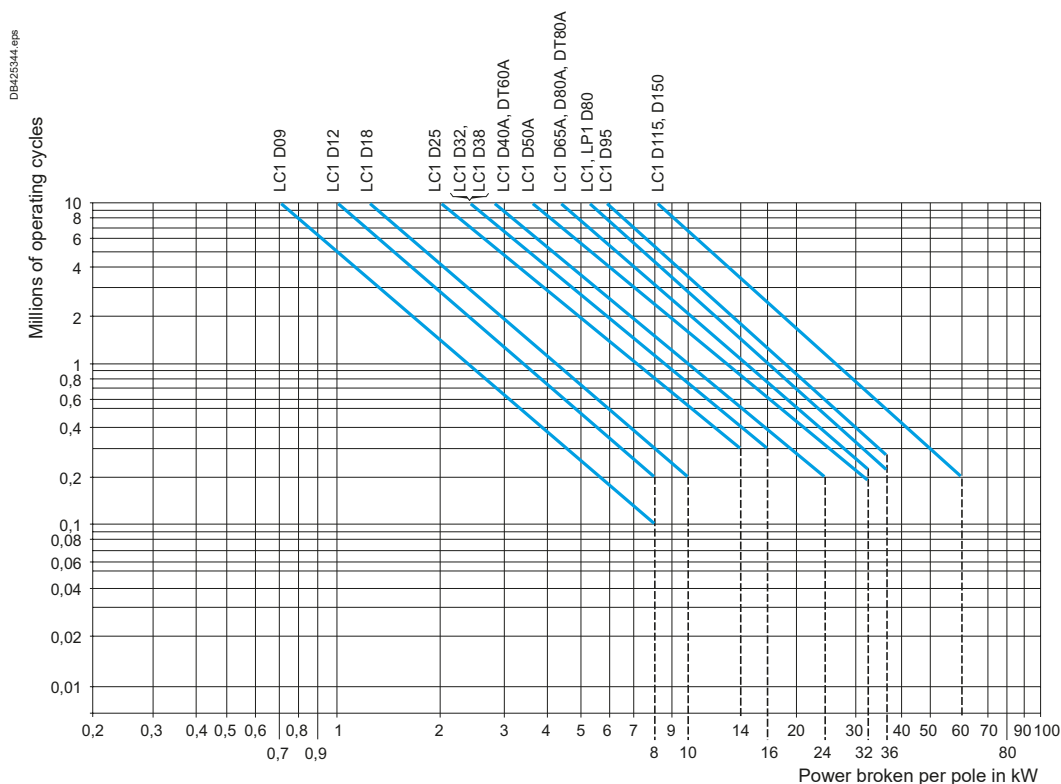
The criteria for contactor selection are:

- the rated operational current  $I_e$
- the rated operational voltage  $U_e$
- the utilisation category and the time constant L/R
- the required electrical durability.

### Maximum operating rate (operating cycles)

The following limits must not be exceeded: 120 operating cycles/hour at rated operational current  $I_e$ .

### Electrical durability

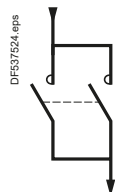


### Example

Series wound motor -  $P = 1.5 \text{ kW}$  -  $U_e = 200 \text{ V}$  -  $I_e = 7.5 \text{ A}$ .

Utilisation: reversing, inching.

- Utilisation category = DC-5.
- Select contactor LC1D09 with 3 poles in series.
- The power broken is:  $P_c \text{ total} = 2.5 \times 200 \times 7.5 = 3.75 \text{ kW}$ .
- The power broken per pole is:  $1.25 \text{ kW}$ .
- The electrical durability read from the curve is  $\geq 3$  millions of operating cycles.



### Use of poles in parallel

Electrical durability can be increased by using poles connected in parallel.

With  $N$  poles connected in parallel, the electrical durability becomes: electrical durability read from the curves  $\times N \times 0.7$ .

### Note:

When the poles are connected in parallel, the maximum operational currents indicated on pages A5/64 and A5/65 must not be exceeded.

### Note:

Ensure that the connections are made in such a way as to equalise the currents in each pole.

## Selection according to required electrical durability, use in categories DC-1 to DC-5

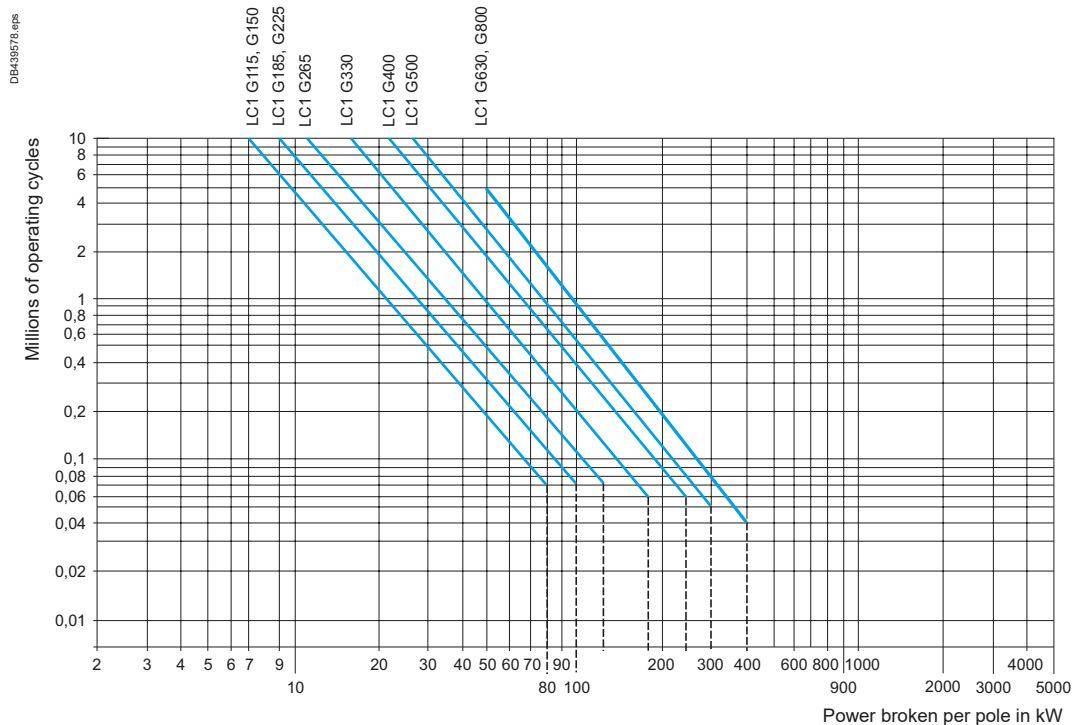
### Determining the electrical durability

The electrical durability can be read directly from the curves below, having previously calculated the power broken as follows:

$$P \text{ broken} = U \text{ broken} \times I \text{ broken}$$

The tables below give the values of  $U_c$  and  $I_c$  for the various utilisation categories.

Power broken			
Utilisation categories	U broken	I broken	P broken
DC-1 Non inductive or slightly inductive loads	$U_e$	$I_e$	$U_e \times I_e$
DC-2 Shunt wound motors, breaking whilst motor running	$0.1 U_e$	$I_e$	$0.1 U_e \times I_e$
DC-3 Shunt wound motors, reversing, inching	$U_e$	$2.5 I_e$	$U_e \times 2.5 I_e$
DC-4 Series wound motors, breaking whilst motor running	$0.3 U_e$	$I_e$	$0.3 U_e \times I_e$
DC-5 Series wound motors, reversing, inching	$U_e$	$2.5 I_e$	$U_e \times 2.5 I_e$

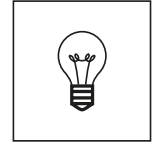


### Example

Series wound motor:  $P = 40 \text{ kW}$  -  $U_e = 200 \text{ V}$  -  $I_e = 200 \text{ A}$ .

Utilisation: reversing, inching.

- Utilisation category = DC-5.
- Select contactor LC1G150 with 2 poles in series.
- The power broken is:  $P_c \text{ total} = 2.5 \times 200 \times 200 = 100 \text{ kW}$ .
- The power broken per pole is 50 kW.
- The electrical durability read from the curve is 500000 operating cycles.



## General

The operating conditions of lighting circuits have the following characteristics:

- continuous duty: the switching device can remain closed for several days or even months
- a dispersion factor of 1: all luminaires in the same group are switched on or off simultaneously
- a relatively high temperature around the device due to the enclosure, the presence of fuses, or an unventilated control panel location.

This is why the operational current for lighting is lower than the value given for AC-1 duty.

## Protection

The continuous duty current drawn by a lighting circuit is constant. In fact:

- it is unlikely that the number of luminaires of an existing circuit will be modified
- this type of circuit cannot create an overload of long duration.

It is therefore only necessary to provide short-circuit protection.

This can be provided by:

- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type uses.

## Distribution system

### Single-phase circuit, 220/240 V

The tables on pages A5/69 to A5/73 are based on a single-phase 220/240 V circuit and can therefore be applied directly in this case.

### 3-phase circuit, 380/415 V (with neutral)

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between one phase and neutral. The contactor can then be selected from the 220/240 V single-phase tables for a number of lamps equal to  $\frac{N}{3}$  lamps.

### 3-phase circuit, 220/240 V

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between 2 phases (L1-L2), (L2-L3), (L3-L1). The contactor can then be selected from the 220/240 V single-phase table for a number of lamps equal to  $\frac{N}{\sqrt{3}}$  lamps.

## Contactor selection tables

For the different types of lamps, the tables on pages A5/69 to A5/73 give the maximum number of lamps of unit power P (in Watts), which can be switched simultaneously for each size of contactor.

They are based on:

- a 220/240 V single-phase circuit
- an ambient temperature of 55 °C <sup>(2)</sup>, taking into account the operating conditions (see General paragraph)
- an electrical life of more than 10 years (200 days' operation per year).

They take into account:

- the total current drawn (including ballast)
- transient phenomena which occur at switch-on
- the starting currents and their duration
- the circulation of any harmonics which may be present.

### Lamps with compensating capacitor C (µF) connected in parallel

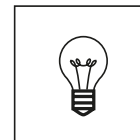
Parallel connected compensating capacitors C cause a current peak at the moment of switch-on. To ensure that the value of this current peak remains compatible with the making characteristics of the contactors, the unit value of the capacitance must not exceed the following:

Switching contactor rating <sup>(1)</sup>	LC1 K09	LP1 K09	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A	LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80
Maximum unit value C (µF) of parallel connected compensating capacitor	7	3	18	18	25	60	96	96	120	120	240	240	240
Switching contactor rating <sup>(1)</sup>	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	
Maximum unit value C (µF) of parallel connected compensating capacitor	240	240	300	360	800	1200	1700	2500	4000	6000	9000	10800	

This value is independent of the number of lamps switched by the contactor.

<sup>(1)</sup> Validation tests have not been carried out with Deca Green contactors.

<sup>(2)</sup> For an ambient temperature of 40 °C, multiply the number by 1.2.



#### Usual values

The tables show the following values:

- IB: value of current drawn by each lamp at its rated voltage,
  - C: unit capacitance for each lamp,
- corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Incandescent and halogen lamps										
P (W)	60	75	100	150	200	300	500	750	1000	
IB (A)	0.27	0.34	0.45	0.68	0.91	1.40	2.30	3.40	4.60	LC1 <sup>(1)</sup>
Max. no. of lamps according to P (W)	35	28	21	14	10	6	4	2	2	K09
	59	47	35	23	17	11	7	4	3	D09, D12
	77	61	46	30	23	15	9	6	4	D18
	92	73	55	36	27	18	11	7	5	D25
	129	103	77	51	38	25	15	10	7	D32, D38
	163	129	97	64	48	31	19	13	9	D40A
	207	164	124	82	62	40	24	16	12	D50A, D65A, D80A
	296	235	177	117	88	57	34	23	17	D80, D95
	430	340	256	170	126	82	50	34	24	D115
	466	370	280	184	138	90	54	36	26	D150
	710	564	426	282	210	136	82	56	40	G185
	770	610	462	304	228	148	90	60	44	G225
	888	704	532	352	262	170	104	70	52	G265
	1006	800	604	400	298	194	118	80	58	G330
	1274	1010	764	504	378	244	148	100	74	G400
	1718	1364	1030	682	508	330	200	136	100	G500
	2328	1850	1396	924	690	448	272	184	136	G630
	2776	2204	1666	1102	824	534	326	220	162	G800

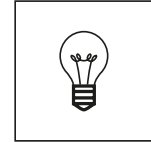
Mixed lighting lamps						
P (W)	100	160	250	500	1000	
IB (A)	0.45	0.72	1.10	2.30	4.50	LC1 <sup>(1)</sup>
Max. no. of lamps according to P (W)	21	13	8	4	2	K09
	35	22	14	7	3	D09, D12
	46	29	18	9	4	D18
	55	36	23	11	5	D25
	77	48	30	15	7	D32, D38
	97	61	38	19	9	D40A
	124	77	49	24	12	D50A, D65A, D80A
	177	111	70	34	17	D80, D95
	256	160	104	50	26	D115
	280	174	114	54	28	D150
	426	266	174	82	42	G185
	462	288	188	90	46	G225
	532	332	218	104	52	G265
	604	378	246	118	60	G330
	764	478	312	150	76	G400
	1030	644	422	202	102	G500
	1398	874	572	272	140	G630
	1666	1040	680	326	166	G800

<sup>(1)</sup> Validation tests have not been carried out with Deca Green contactors.

# TeSys Control

## Contactors for lighting circuits <sup>(1)</sup>

### Selection - Coordination and standards



#### Usual values

The tables show the following values:

■ IB: value of current drawn by each lamp at its rated voltage

■ C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Fluorescent lamps with starter. Single fitting												
	Non corrected				With parallel correction						LC1 <sup>(1)</sup>	
	P (W)	20	40	65	80	110	20	40	65	80		110
	IB (A)	0.39	0.45	0.70	0.80	1.2	0.17	0.26	0.42	0.52		0.72
C (µF)	–	–	–	–	–	5	5	7	7	16		
Max. no. of lamps according to P (W)	24	21	13	12	8	56	36	22	18	–	K09	
	41	35	22	20	13	94	61	38	30	22	D09, D12	
	53	46	30	26	17	123	80	50	40	29	D18	
	66	57	37	32	21	152	100	61	50	36	D25	
	89	77	50	43	29	205	134	83	67	48	D32, D38	
	112	97	62	55	36	258	169	104	84	61	D40A	
	143	124	80	70	46	329	215	133	107	77	D50A, D65A, D80A	
	205	177	114	100	66	470	367	190	153	111	D80, D95	
	410	354	228	200	132	940	614	380	306	222	D115, D150	
	492	426	274	240	160	1128	738	456	368	266	G185	
	532	462	296	260	172	1224	800	490	400	288	G225	
	614	532	342	300	200	1412	922	570	462	332	G265	
	696	604	388	340	226	1600	1046	648	522	378	G330	
	882	764	490	430	286	2024	1322	818	662	478	G400	
	1190	1030	662	580	386	2728	1724	1104	892	644	G500	
	1612	1398	698	786	524	3700	2418	1498	1210	874	G630, G800	

Fluorescent lamps with starter. Twin fitting												
	Non corrected					With series correction					LC1 <sup>(1)</sup>	
	P (W)	2x20	2x40	2x65	2x80	2x110	2x20	2x40	2x65	2x80		2x110
	IB (A)	2x0.22	2x0.41	2x0.67	2x0.82	2x1.1	2x0.13	2x0.24	2x0.39	2x0.48		2x0.65
Max. no. of lamps according to P (W)	2x21	2x11	2x7	2x5	2x4	2x36	2x20	2x12	2x10	2x7	K09	
	2x36	2x18	2x10	2x8	2x6	2x60	2x32	2x20	2x16	2x12	D09, D12	
	2x46	2x24	2x14	2x12	2x8	2x80	2x42	2x26	2x20	2x16	D18	
	2x58	2x30	2x18	2x14	2x10	2x100	2x54	2x32	2x26	2x20	D25	
	2x78	2x42	2x26	2x20	2x14	2x134	2x72	2x44	2x36	2x26	D32, D38	
	2x100	2x52	2x32	2x26	2x18	2x168	2x90	2x56	2x44	2x32	D40A	
	2x126	2x68	2x40	2x34	2x24	2x214	2x116	2x70	2x58	2x42	D50A, D65A, D80A	
	2x180	2x96	2x58	2x48	2x36	2x306	2x166	2x102	2x82	2x60	D80, D95	
	2x360	2x194	2x118	2x96	2x72	2x614	2x332	2x204	2x166	2x122	D115, D150	
	2x436	2x234	2x142	2x116	2x86	2x738	2x400	2x246	2x200	2x148	G185	
	2x472	2x254	2x154	2x126	2x94	2x800	2x432	2x266	2x216	2x160	G225	
	2x544	2x292	2x178	2x146	2x108	2x922	2x500	2x308	2x250	2x184	G265	
	2x618	2x332	2x202	2x166	2x124	2x1046	2x566	2x348	2x282	2x208	G330	
	2x782	2x420	2x256	2x210	2x156	2x1322	2x716	2x440	2x358	2x264	G400	
	2x1054	2x566	2x346	2x282	2x210	2x1784	2x966	2x594	2x482	2x356	G500	
	2x1430	2x766	2x468	2x384	2x286	2x2418	2x1310	2x806	2x654	2x484	G630, G800	

<sup>(1)</sup> Validation tests have not been carried out with Deca Green contactors.





**Usual values**

The tables show the following values:

- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Fluorescent lamps without starter. Single fitting												
	Non corrected					With parallel correction					LC1 <sup>(1)</sup>	
	P (W)	20	40	65	80	110	20	40	65	80		110
	IB (A)	0.43	0.55	0.80	0.95	1.4	0.19	0.29	0.46	0.57		0.79
C (µF)	–	–	–	–	–	5	5	7	7	16		
Max. no. of lamps according to P (W)	22	17	12	10	6	50	33	20	16	–	K09	
	37	29	20	16	11	84	55	34	28	20	D09, D12	
	48	38	26	22	15	110	72	45	36	26	D18	
	60	47	32	27	18	136	89	56	45	32	D25	
	97	63	43	36	25	184	101	76	61	44	D32, D38	
	102	80	55	46	31	231	151	95	77	55	D40A	
	130	101	70	58	40	294	193	121	98	70	D50A, D65A, D80A	
	186	145	100	84	57	421	275	173	140	101	D80, D95	
	372	290	200	168	114	842	550	346	280	202	D115, D150	
	446	348	240	202	136	1010	662	416	336	242	G185	
	484	378	260	218	148	1094	716	452	364	262	G225	
	558	436	300	252	170	1262	828	522	420	304	G265	
	632	494	340	286	194	1432	938	590	476	344	G330	
	800	624	430	362	246	1810	1186	748	604	434	G400	
	1078	844	580	488	330	2442	1600	1008	814	586	G500	
	1462	1144	786	662	448	3310	2168	1366	1104	796	G630, G800	

Fluorescent lamps without starter. Twin fitting												
	Non corrected					With series correction					LC1 <sup>(1)</sup>	
	P (W)	2x20	2x40	2x65	2x80	2x110	2x20	2x40	2x65	2x80		2x110
	IB (A)	2x0.25	2x0.47	2x0.76	2x0.93	2x1.3	2x0.14	2x0.26	2x0.43	2x0.53		2x0.72
C (µF)	–	–	–	–	–	5	5	7	7	16		
Max. no. of lamps according to P (W)	2x19	2x10	2x6	2x5	2x3	2x34	2x18	2x11	2x9	2x6	K09	
	2x32	2x16	2x10	2x8	2x6	2x56	2x30	2x18	2x14	2x10	D09, D12	
	2x42	2x22	2x12	2x10	2x8	2x74	2x40	2x24	2x18	2x14	D18	
	2x52	2x26	2x16	2x12	2x10	2x92	2x50	2x30	2x24	2x18	D25	
	2x70	2x36	2x22	2x18	2x12	2x124	2x66	2x40	2x32	2x24	D32, D38	
	2x88	2x46	2x28	2x22	2x16	2x156	2x84	2x50	2x40	2x30	D40A	
	2x112	2x58	2x36	2x30	2x20	2x200	2x106	2x64	2x52	2x38	D50A, D65A, D80A	
	2x160	2x84	2x52	2x42	2x30	2x234	2x152	2x92	2x74	2x54	D80, D95	
	2x320	2x170	2x104	2x86	2x60	2x570	2x306	2x186	2x150	2x110	D115, D150	
	2x384	2x204	2x126	2x102	2x74	2x686	2x368	2x222	2x180	2x132	G185	
	2x416	2x220	2x136	2x112	2x80	2x742	2x400	2x242	2x196	2x144	G225	
	2x480	2x254	2x158	2x128	2x92	2x856	2x462	2x278	2x226	2x166	G265	
	2x544	2x288	2x178	2x146	2x104	2x970	2x522	2x316	2x256	2x188	G330	
	2x688	2x366	2x226	2x184	2x132	2x1228	2x662	2x400	2x324	2x238	G400	
	2x928	2x494	2x304	2x248	2x178	2x1656	2x892	2x540	2x438	2x322	G500	
	2x1258	2x668	2x414	2x338	2x242	2x2246	2x1210	2x730	2x592	2x436	G630, G800	

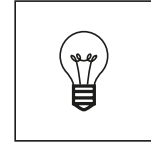
<sup>(1)</sup> Validation tests have not been carried out with Deca Green contactors.

Coordination and standards

# TeSys Control

## Contactors for lighting circuits <sup>(1)</sup>

### Selection - Coordination and standards



#### Usual values

The tables show the following values:

■ IB: value of current drawn by each lamp at its rated voltage

■ C: unit capacitance for each lamp

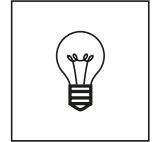
corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Low pressure sodium vapour lamps																
	Non corrected							With parallel correction								
	P (W)	35	55	90	135	150	180	200	35	55	90	135	150	180	200	
	IB (A)	1.2	1.6	2.4	3.1	3.2	3.3	3.4	0.3	0.4	0.6	0.9	1	1.2	1.3	
	C (µF)	–	–	–	–	–	–	–	17	17	25	36	36	36	36	LC1 <sup>(1)</sup>
Max. no. of lamps according to P (W)	6	5	3	2	2	2	2	–	–	–	–	–	–	–	–	K09
	10	7	5	3	3	3	3	40	30	–	–	–	–	–	–	D09, D12
	12	9	6	4	4	4	4	50	37	25	–	–	–	–	–	D18
	15	11	7	6	5	5	5	63	47	31	21	19	15	14	–	D25
	21	16	10	8	8	7	7	86	65	43	28	26	21	20	–	D32, D38
	27	20	13	10	10	10	9	110	82	55	36	33	27	25	–	D40A
	35	26	17	13	13	12	12	140	105	70	46	42	35	32	–	D50A, D65A, D80A
	50	37	25	19	18	18	17	200	150	100	66	60	50	46	–	D80, D95
	100	75	50	38	36	36	34	400	300	200	132	120	100	92	–	D115, D150
	140	104	70	54	52	50	48	560	420	280	186	168	140	128	–	G185
	152	114	76	58	56	54	54	606	454	302	202	182	152	140	–	G225
	174	130	88	68	66	64	62	700	524	350	232	210	174	162	–	G265
	198	148	98	76	74	72	70	792	594	396	264	238	198	182	–	G330
	250	188	124	96	94	90	88	1002	752	502	334	300	250	252	–	G400
	338	254	168	130	126	122	118	1352	1014	676	450	406	338	312	–	G500
	496	372	248	192	186	180	174	1982	1488	992	660	594	496	458	–	G630, G800

High pressure sodium vapour lamps												
	Non corrected					With parallel correction						
	P (W)	150	250	400	700	1000	150	250	400	700	1000	
	IB (A)	1.9	3.2	5	8.8	12.4	0.84	1.4	2.2	3.9	5.5	
	C (µF)	–	–	–	–	–	20	32	48	96	120	LC1 <sup>(1)</sup>
Max. no. of lamps according to P (W)	4	2	1	–	–	–	–	–	–	–	–	K09
	6	3	2	1	–	–	–	–	–	–	–	D09, D12
	7	4	3	1	1	–	–	–	–	–	–	D18
	10	5	3	2	1	–	–	–	–	–	–	D25
	13	8	5	2	2	–	–	–	–	–	–	D32, D38
	17	10	6	3	2	–	–	–	–	–	–	D40A
	22	13	8	4	3	–	–	–	–	–	–	D50A, D65A, D80A
	31	18	12	6	4	–	–	–	–	–	–	D80, D95
	62	36	24	12	8	–	–	–	–	–	–	D115, D150
	88	52	34	18	14	–	–	–	–	–	–	G185
	96	56	36	20	16	–	–	–	–	–	–	G225
	110	66	42	24	18	–	–	–	–	–	–	G265
	124	74	48	26	20	–	–	–	–	–	–	G330
	158	94	60	34	24	–	–	–	–	–	–	G400
	214	126	80	46	32	–	–	–	–	–	–	G500
	312	186	118	68	48	–	–	–	–	–	–	G630, G800

(1) Validation tests have not been carried out with Deca Green contactors.



### Usual values

The tables show the following values:

- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp corresponding to the values normally quoted by lamp manufacturers.

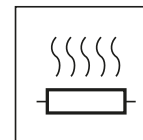
These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

High pressure mercury vapour lamps																
Max. no. of lamps according to P (W)	Non corrected							With parallel correction								
	P (W)	50	80	125	250	400	700	1000	50	80	125	250	400	700	1000	
	IB (A)	0.54	0.81	1.20	2.30	4.10	6.80	9.90	0.3	0.45	0.67	1.3	2.3	3.8	5.5	
C (µF)	–	–	–	–	–	–	–	–	10	10	10	18	25	40	60	
																LC1 <sup>(1)</sup>
																K09
																D09, D12
																D18
																D25
																D32, D38
																D40A
																D50A, D65A, D80A
																D80, D95
																D115, D150
																G185
																G225
																G265
																G330
																G400
																G500
																G630, G800

Metal iodine vapour lamps																
Max. no. of lamps according to P (W)	Non corrected				With parallel correction											
	P (W)	250	400	1000	2000	250	400	1000	2000							
	IB (A)	2.5	3.6	9.5	20	1.4	2	5.3	11.2							
C (µF)	–	–	–	–	32	32	64	140								
																LC1 <sup>(1)</sup>
																K09
																D09, D12
																D18
																D25
																D32, D38
																D40A
																D50A, D65A, D80A
																D80, D95
																D115, D150
																G185
																G225
																G265
																G330
																G400
																G500
																G630, G800

<sup>(1)</sup> Validation tests have not been carried out with Deca Green contactors.



## Selection

### General

A heating circuit is a power switching circuit supplying one or more resistive heating elements switched by a contactor. The same general rules apply as for motor circuits, except that heating circuits are not normally subjected to overload currents. It is therefore only necessary to provide short-circuit protection.

### Characteristics of heating elements

The examples below are based on resistive heating elements used for industrial furnaces or for the heating of buildings (infra-red or resistive radiant type, convactor heaters, closed loop heating circuits, etc.). The variation in resistance values between hot and cold states causes a current peak at switch-on which never exceeds 2 to 3 times the rated operational current ( $I_n$ ). This initial peak does not recur during normal operation where subsequent switching is thermostatically controlled. The rated power and current of a heater are given for the normal operating temperature.

### Protection

The steady state current drawn by a heating circuit is constant when the voltage is stable. In fact:

- it is unlikely that the number of loads in an existing circuit will be modified
- this type of circuit cannot create overloads. It is therefore only necessary to provide short-circuit protection.

This can be provided by:

- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type fuses.

### Switching, control, protection

A heating element or group of heating elements of a given power may be either single-phase or 3-phase and may be supplied from a 220/127 V or a 400/230 V distribution system. Excluding a single-phase 127 V system (which is no longer commonly used), the following 3 types of circuit arrangement are possible:

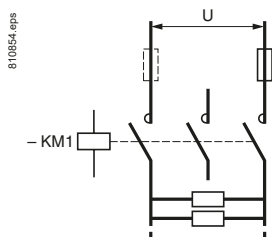
- single-phase, 2-pole switching
- single-phase, 4-pole switching
- 3-phase switching

## Component selection according to the power switched

The combinations suggested below are based on an ambient temperature of 55 °C (60 °C for Giga contactors LC1G) and for powers at the nominal voltage, but they also ensure switching in the event of prolonged overloads up to 1.05  $U_e$ .

Single-phase, 2-pole switching				
Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
3.5	6.5	11	–	LC1K09, LP1K09
4.5	8	14	–	LC1D12
6	10.5	18.5	–	LC1D18
7	13	22.5	–	LC1D25
10	18	30.5	–	LC1D32, LC1D38
13	22.5	39.5	–	LC1D40A
16.5	28.5	43.5	–	LC1D65A, LC1D80A
24	42	73	82.5	LC1D80, LP1D80
44	76	118	157	LC1D115, LC1D150
270	460	715	945	LC1F780

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
40	75	125	185	LC1G115
45	80	140	205	LC1G150
50	90	155	225	LC1G185
55	100	170	250	LC1G225
65	115	200	290	LC1G265
75	130	230	330	LC1G330
95	165	285	415	LC1G400
115	200	345	500	LC1G500
150	265	460	665	LC1G630
150	265	460	665	LC1G800

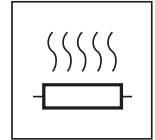


Circuit controlled by 2 poles of the contactor.

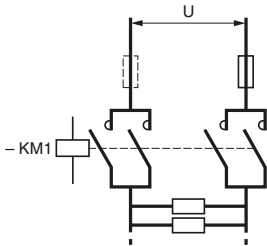
# TeSys Control

## Contactors for heating circuits

### Selection - Coordination and standards

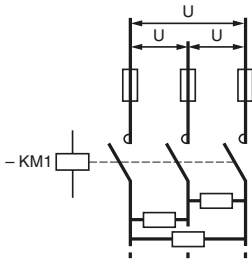


810856.eps



Circuit controlled by a 4-pole contactor with the poles parallel connected in pairs using appropriate connecting links. This solution enables the control of power values approximately equivalent to those controlled by the same contactor on 3-phase.

810857.eps



Circuit controlled by 3 poles of the contactor.

### Component selection according to the power switched

#### Single-phase, 4-pole switching

Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
4.5	8	13.5	–	LC1K09004, LP1K09004
7	13	22.5	–	LC1DT25
12	21	36.5	–	LC1DT40
26	45.5	79.5	–	LC1DT80A
38	66	117.5	132	LC1D80004, LP1D80004
425	735	1140	1520	LC1F7804

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
65	120	205	300	LC1G1154
75	130	230	330	LC1G1504
80	145	250	365	LC1G1854
90	160	275	400	LC1G2254
105	185	320	465	LC1G2654
120	210	365	530	LC1G3304
150	265	460	665	LC1G4004
180	320	550	800	LC1G5004
245	425	735	1065	LC1G6304
245	425	735	1065	LC1G8004

#### 3-phase switching

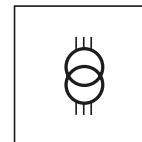
Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
4.5	8	13.5	–	LC1K09, LP1K09
7	13	22.5	–	LC1D12
10	18	30.5	–	LC1D18
13	22.5	39.5	–	LC1D25
18	31	52.5	–	LC1D32, LC1D38
22.5	38	68	–	LC1D40A
28.5	49	86	–	LC1D65A, LC1D80A
40.5	70.5	126	135.5	LC1D80, LP1D80
83	140	235	345	LC1D115, LC1D150
570	1000	1650	2400	LC1F780

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
70	125	220	320	LC1G115
80	140	245	360	LC1G150
90	155	270	395	LC1G185
95	170	295	430	LC1G225
115	200	345	505	LC1G265
130	230	395	575	LC1G330
165	285	495	720	LC1G400
195	345	595	865	LC1G500
265	460	795	1150	LC1G630
265	460	795	1150	LC1G800

#### Application example

For a 220 V, 50 Hz, single-phase circuit supplying a total heating load of 12.5 kW. Select a 3-pole contactor **LC1D65A**.

Coordination  
and  
standards



### Operating conditions

Maximum ambient temperature: 55 °C.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:

- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, layout and size of the windings, ...)
- the performance of the magnetic laminations used
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The inrush current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

### Contactor selection

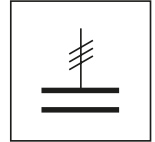
The peak magnetising current of the transformer must be lower than the values given in the tables below.

Maximum operating rate: 120 operating cycles/hour.

Contactor rating <sup>(1)</sup>		LC1/ LP1 K06	LC1/ LP1 K09	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A	LC1 D50A	LC1 D65A D80	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F780	
Maximum permissible current peak at switch-on	A	160	225	350	350	420	630	770	770	1100	1250	1400	1550	1650	1800	2000	12 000	
Maximum operational power <sup>(2)</sup>	220 V	kVA	2	2.5	4	4	5	7	8.5	8.5	14	16	18	19.5	19.5	25	25	175
	240 V																	
	380 V	kVA	3.5	5	7	7	8	12.5	15	15	24	27	31	34	34	50	50	280
	400 V																	
	415 V	kVA	4	5.5	8	8	9	14	17	17	28	32	36	39	39	55	55	310
	440 V																	
500 V	kVA	5	7	9	9	11	16.5	20	20	32	36	40	45	45	65	65	350	
660 V	kVA	6	8.5	12	12	14	21.5	26.5	26.5	42	48	53	59	59	80	80	400	
690 V																		
1000 V	kVA	-	-	-	-	-	-	-	-	-	-	-	85	95	100	100	650	

<sup>(1)</sup> Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.

<sup>(2)</sup> Maximum operational power corresponding to a current peak at switch-on of 30 I<sub>n</sub>.



### Standard contactors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz). As a general rule, the peak current on energisation is lower when:

- the mains inductances are high
- the line transformer ratings are low
- the transformer short-circuit voltage is high
- the ratio between the sum of the ratings of the capacitors already switched into the circuit and that of the capacitor to be switched in is small (for multiple step capacitor banks).

In accordance with standards IEC 60070, NF C 54-100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in the tables below take this overload into account. Short-circuit protection is normally provided by gl type HPC fuses rated at 1.7 to 2 In.

### Contactor applications

#### Operating conditions

Capacitors are directly switched. **The values of peak current at switch-on must not exceed the values indicated opposite.**

An inductor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. Inductance values are determined according to the selected operating temperature.

#### Power factor correction by a single-step capacitor bank

The use of a choke inductor is unnecessary: the inductance of the mains supply is adequate to limit the peak to a value compatible with the contactor characteristics.

#### Power factor correction by a multiple-step capacitor bank

Select a special contactor as defined on page B8/34.

**If a standard contactor is used, it is essential to insert a choke inductor in each of the three phases of each step.**

### Maximum operational power of contactors

#### Standard contactors

Maximum operating rate: 120 operating cycles/hour.

Electrical durability at maximum load: 100 000 operating cycles.

With choke inductors connected, where necessary.

Operational power at 50/60 Hz						Max. peak current	Contactor rating <sup>(1)</sup>
$\theta \leq 40\text{ °C}$ <sup>(2)</sup>			$\theta \leq 55\text{ °C}$ <sup>(2)</sup>				
220/240 V	400/440 V	600/690 V	220/240 V	400/440 V	600/690 V	A	
kvAR	kvAR	kvAR	kvAR	kvAR	kvAR		
6	11	15	6	11	15	560	LC1D09, D12
9	15	20	9	15	20	850	LC1D18
11	20	25	11	20	25	1600	LC1D25
14	25	30	14	25	30	1900	LC1D32, D38
17	30	37	17	30	37	2160	LC1D40
22	40	50	22	40	50	2160	LC1D50
22	40	50	22	40	50	3040	LC1D65
35	60	75	35	60	75	3040	LC1D80, D95
50	90	125	38	75	80	3100	LC1D115
60	110	135	40	85	90	3300	LC1D150

<sup>(1)</sup> Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.

<sup>(2)</sup> Upper limit of temperature category conforming to IEC 60070.

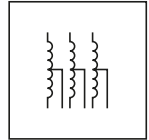
Operational power at 50/60 Hz						Max. peak current	Contactor rating
$\theta \leq 40\text{ °C}$ <sup>(3)</sup>			$\theta \leq 60\text{ °C}$ <sup>(3)</sup>				
220/240 V	400/440 V	600/690 V	220/240 V	400/440 V	600/690 V	A	
kvAR	kvAR	kvAR	kvAR	kvAR	kvAR		
50	90	150	45	80	135	1900	LC1G115
55	100	165	50	90	150	2480	LC1G150
60	110	185	55	100	165	3050	LC1G185
65	120	200	60	110	180	3710	LC1G225
75	140	235	70	125	210	4370	LC1G265
85	160	265	80	145	240	5450	LC1G330
110	200	335	100	185	305	6600	LC1G400
140	255	425	120	220	365	8250	LC1G500
210	385	640	160	295	485	10400	LC1G630
210	385	640	160	295	485	13200	LC1G800

<sup>(3)</sup> Upper limit of temperature category conforming to IEC 60831-1.

# TeSys Control

## Contactors for auto-transformer starting <sup>(1)</sup>

Recommended wiring scheme, operation, curves  
 Coordination and standards



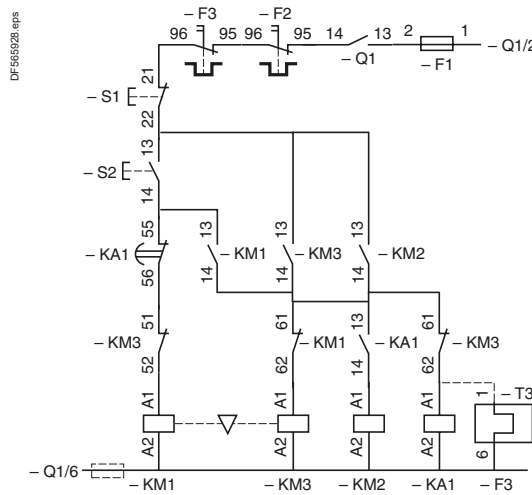
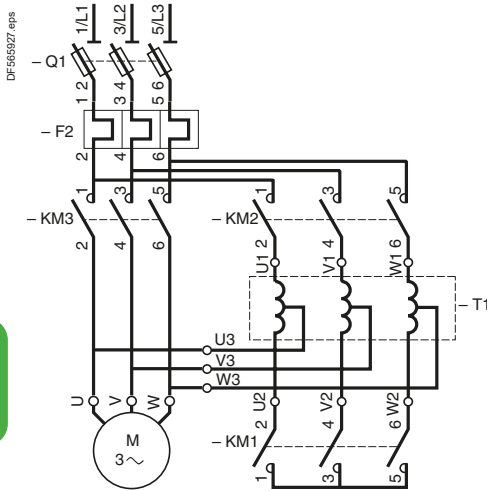
### Applications

Auto-transformer starting is suitable for starting all types of squirrel cage motors: with 3, 6 or even 9 terminals according to North American technology. Starting is performed at reduced voltage and produces maximum torque at minimum line current.

It allows the starting torque ( $C = f(U)^2$ ) to be adapted to the resistive torque of the driven machine by means of the 2 or 3 intermediate voltage take-off connections on the auto-transformer (0.65 and 0.8  $U_n$  or 0.5, 0.65 and 0.8  $U_n$ ). In general, only one take-off connection is used.

This type of starting is used for high power and/or high inertia machines. The motor is never disconnected from its power supply during starting (closed transition) and transient phenomena are eliminated.

### Recommended wiring scheme



Coordination and standards

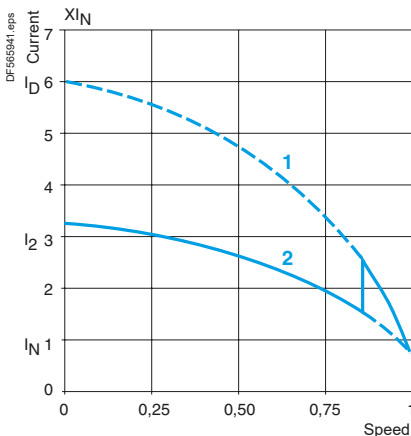
### Operation

Starting is performed in 3 stages:

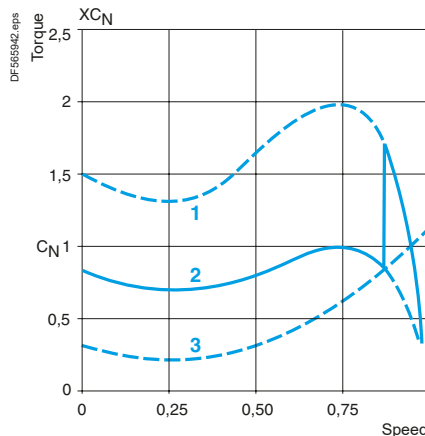
- star connection of the auto-transformer is made by KM1, then contactor KM2 closes and the motor starts under reduced voltage
- the neutral point is opened by KM1; part of the auto-transformer winding is switched into each phase for a short moment, constituting a stator starting inductance
- KM3 switches the motor to full mains voltage and causes the auto-transformer to be shunted out of circuit by KM2.

The auto-transformer used generally has an air gap (adjusted or not) in order to obtain, during the second phase of starting, a series inductance whose value is compatible with correct starting.

### Operating curves



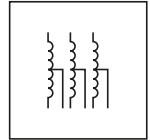
- 1 Direct switching current
- 2 Current with auto-transformer



- 1 Direct motor torque
- 2 Torque with auto-transformer
- 3 Resistive torque of the machine

<sup>(1)</sup> Deca Green contactors have not been validated for auto-transformer starting.





## Auto-transformer starters from 59 to 900 kW up to 440 V (type 1 coordination)

The components recommended in the table below have been determined according to the following characteristics:

- auto-transformer: on 0.65 Un connection with non adjusted air gap
- 3 starts per hour, of which 2 consecutive
- motor starting current:  $I_d/I_n = 6$
- $I_q = 70$  kA
- transient current on closing of KM3  $\leq 7 \sqrt{2} I_n$
- maximum starting time: 30 seconds
- ambient temperature  $\theta \leq 40$  °C.

Switch-disconnector-fuses: operators and accessories, please consult your Regional Sales Office.

Contactors: 3-pole.

LC1D: see pages B8/22 and B8/27.

Auxiliary contact blocks:

- for contactors LC1D: one LADN11 (1 N/O + 1 N/C) on KM1.

Thermal overload relays:

- LR: see pages B11/4 to B11/9
- LR9D: see pages B11/5 to B11/9.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3					Switch-disconnector-fuse Reference	aM fuses		Contactors <sup>(1)</sup>			Overload relays	
220/230 V	380/400 V	415 V	440 V	In max		Size	Rating	KM3 LC1	KM2 LC1	KM1 LC1	Reference <sup>(2)</sup>	Setting range
kW	kW	kW	kW	A		A					A	
30	55	59	59	105	GS●K	22 x 58	125	D115	D115	D3210	LR9D5369	90...150
											LRD4367	95...120
40	75	80	80	138	GS●L	T0	160	D150	D115	D5011	LR9D5369	90...150
											LRD4369	110...140

<sup>(1)</sup> Deca Green contactors have not been validated for auto-transformer starting.

<sup>(2)</sup> For power ratings greater than or equal to 400 kW at 415 V, use one LRD-05 on the current transformer.

<sup>(3)</sup> Check with the motor manufacturer whether the fuses should be fitted in parallel.

### Voltage drop caused by the inrush current

When the operating coil of a contactor is energised, the inrush current produces a voltage drop in the control circuit cable caused by the resistance of the conductors, which can adversely affect closing of the contactor.

An excessive voltage drop in the control supply cables (both a.c. and d.c.) can lead to non closure of the contactor poles or even destruction of the coil due to overheating.

This phenomenon is aggravated by:

- a long line
- a low control circuit voltage
- a cable with a small c.s.a.
- a high inrush power drawn by the coil.

The maximum length of cable, depending on the control voltage, the inrush power and the conductor c.s.a., is indicated in the graphs below.

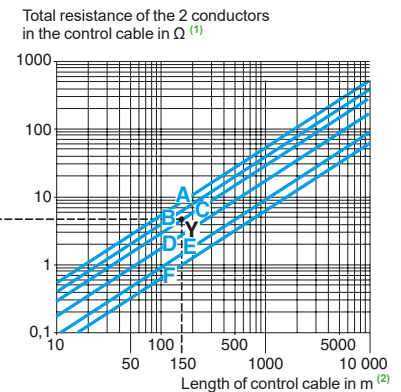
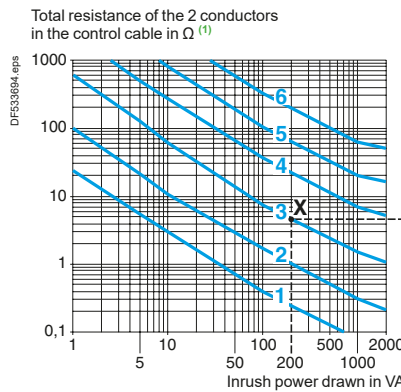
### Remedial action

To reduce the voltage drop at switch-on:

- increase the conductor c.s.a.
- use a higher control circuit voltage
- use an intermediate control relay.

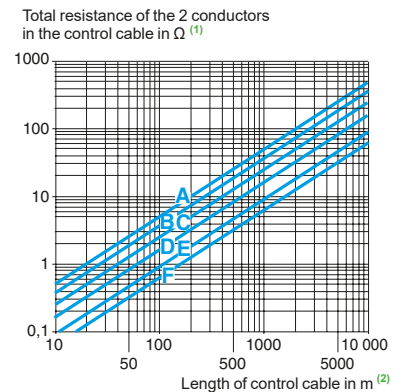
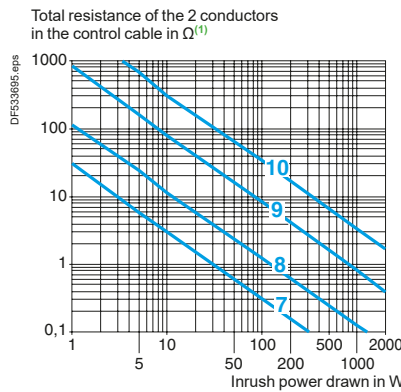
### Selection of conductor c.s.a.

These graphs are for a maximum line voltage drop of 5%. They give a direct indication of the copper conductor c.s.a. to be used for the control cable, depending on its length, the inrush power drawn by the contactor coil and the control circuit voltage (see example page A5/81).



1 ~ 24 V    3 ~ 115 V    5 ~ 400 V

**C.s.a. of copper cables**  
 A 0.75 mm<sup>2</sup>    C 1.5 mm<sup>2</sup>    E 4 mm<sup>2</sup>



2 ~ 48 V    4 ~ 230 V    6 ~ 690 V

B 1 mm<sup>2</sup>    D 2.5 mm<sup>2</sup>    F 6 mm<sup>2</sup>

7 ~ 24 V    9 ~ 125 V  
 8 ~ 48 V    10 ~ 250 V

**C.s.a. of copper cables**  
 A 0.75 mm<sup>2</sup>    C 1.5 mm<sup>2</sup>    E 4 mm<sup>2</sup>  
 B 1 mm<sup>2</sup>    D 2.5 mm<sup>2</sup>    F 6 mm<sup>2</sup>

(1) For 3-wire control, the current only flows in 2 of the conductors.  
 (2) This is the length of the cable comprising 2 or 3 conductors. (Distance between the contactor and the control device).

### Voltage drop caused by the inrush current

What cable c.s.a. is required for the control circuit of an LC1 D40A, 115 V contactor, operated from a distance of 150 metres?

- Contactor LC1D40A, voltage 115 V, 50 Hz: inrush power: 200 VA.

On the left-hand graph on the page opposite, point X is at the intersection of the vertical line corresponding to 200 VA and the ~ 115 V voltage curve.

On the right-hand graph on the page opposite, point Y is at the intersection of the vertical line corresponding to 150 m and the horizontal line passing through point X.

Use the conductor c.s.a. indicated by the curve which passes through point Y, i.e.: 1.5 mm<sup>2</sup>.

If point Y lies between two c.s.a. curves, choose the larger of the c.s.a. values.

### Calculating the maximum cable length

The maximum permissible length for acceptable line voltage drop is calculated by the formula:

$$L = \frac{U^2}{SA} \cdot s \cdot K$$

where:

- L : distance between the contactor and the control device in m (length of the cable)
- U : supply voltage in V
- SA : apparent inrush power drawn by the coil in VA
- s : conductor c.s.a. in mm<sup>2</sup>
- K : factor given in the table below.

a.c. supply	SA in VA	20	40	100	150	200
	K	1.38	1.5	1.8	2	2.15
d.c. supply	Irrespective of the apparent inrush power SA, expressed in W K = 1.38					

**Residual current in the coil due to cable capacitance**

When the control contact of a contactor is opened, the control cable capacitance is effectively in series with the coil of the electromagnet. This capacitance can cause a residual current to be maintained in the coil, with the risk that the contactor will remain closed.

**This only applies to contactors operating on an a.c. supply.**

This phenomenon is aggravated by:

- a long line length between the coil control contact and the contactor, or between the coil control contact and the power supply,
- a high control circuit voltage,
- a low coil consumption, sealed,
- a low value of contactor drop-out voltage.

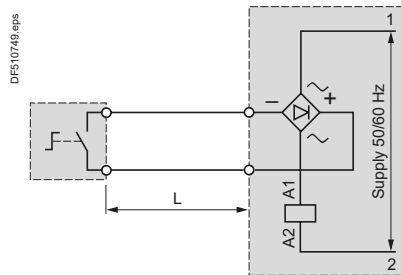
The maximum control cable length, according to the contactor coil supply voltage, is indicated in the graph on the page opposite.

**Remedial action**

Various solutions can be adopted to avoid the risk of the contactor remaining closed due to cable capacitance:

- use a d.c. control voltage, or
- add a rectifier, connected as shown in the scheme below, but retaining an a.c. operating coil: in this way, rectified a.c. current flows in the control cable.

When calculating the maximum cable length, take the resistance of the conductors into account.



- Connect a resistor in parallel with the contactor coil <sup>(1)</sup>.

Value of the resistance:

$$R \Omega = \frac{1}{10^{-3} C (\mu F)} \quad (C \text{ capacitance of the control cable})$$

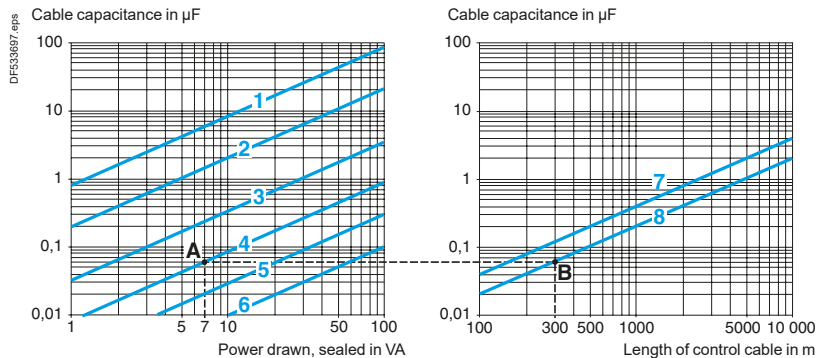
Power to be dissipated:

$$PW = \frac{U^2}{R}$$

*(1) To avoid increasing the voltage drop due to inrush current, this resistor must be brought into operation after the contactor has closed by using an N/O contact.*

### Residual current in the coil due to cable capacitance

These graphs are for a capacitance, between 2 conductors, of 0.2 µF/km. They make it possible to determine whether there is a risk of the contactor remaining closed due to the power drawn by the coil when sealed, as well as the control circuit voltage, according to the length of the control cable.



1	~ 24 V	3	~ 115 V	5	~ 400 V	7	3-wire control
2	~ 48 V	4	~ 230 V	6	~ 690 V	8	2-wire control

In the zones below the straight lines for 3-wire and 2-wire control respectively, there is a risk of the contactor remaining closed.

#### Examples

What is the maximum length for the control cable of an LC1D12 contactor, operating on 230 V, with 2-wire control?

- Contactor LC1D12, voltage 230 V, 50 Hz: power sealed 7 VA.

On the left-hand graph, point A is at the intersection of the vertical line for 7 VA with the ~ 230 V voltage curve.

On the right-hand graph, point B is at the intersection of the horizontal line with the 2-wire control curve.

The maximum cable length is therefore 300 m.

In the same example, with a 600 m cable, the point lies in the risk zone. A resistor must therefore be connected in parallel with the contactor coil.

$$R = \frac{1}{10^{-3} \cdot C} = \frac{1}{10^{-3} \cdot 0.12} = 8.3 \Omega$$

Value of this resistance:

$$P = \frac{U^2}{R} = \frac{(220)^2}{8300} = 6 \text{ W}$$

Power to be dissipated:

Alternative solution: use a d.c. control supply.

#### Calculating the cable length

The maximum permitted length of control cable to avoid the effects of capacitance is calculated using the formula:

$$L = 455 \cdot \frac{S}{U^2 \cdot C_0}$$

L : distance between the contactor and the control device in km (length of the cable),

S : apparent power, sealed, in VA,

U : control voltage in V,

C<sub>0</sub> : line capacitance of the cable in µF/km.

# Technical information

## Current of asynchronous squirrel cage motors at nominal load

### General - Coordination and standards

Coordination and standards

3-phase 4-pole motors				
Current values for power in kW				
Rated operational power <sup>(1)</sup>	Indicative rated operational current values at:			
	230 V	400 V	500 V	690 V
kW	A			
0.06	0.35	0.2	0.16	0.12
0.09	0.52	0.3	0.24	0.17
0.12	0.7	0.44	0.32	0.23
0.18	1	0.6	0.48	0.35
0.25	1.5	0.85	0.68	0.49
0.37	1.9	1.1	0.88	0.64
0.55	2.6	1.5	1.2	0.87
0.75	3.3	1.9	1.5	1.1
1.1	4.7	2.7	2.2	1.6
1.5	6.3	3.6	2.9	2.1
2.2	8.5	4.9	3.9	2.8
3	11.3	6.5	5.2	3.8
4	15	8.5	6.8	4.9
5.5	20	11.5	9.2	6.7
7.5	27	15.5	12.4	8.9
11	38	22	17.6	12.8
15	51	29	23	17
18.5	61	35	28	21
22	72	41	33	24
30	96	55	44	32
37	115	66	53	39
45	140	80	64	47
55	169	97	78	57
75	230	132	106	77
90	278	160	128	93
110	340	195	156	113
132	400	230	184	134
160	487	280	224	162
200	609	350	280	203
250	748	430	344	250
315	940	540	432	313
355	1061	610	488	354
400	1200	690	552	400
500	1478	850	680	493
560	1652	950	760	551
630	1844	1060	848	615
710	2070	1190	952	690
800	2340	1346	1076	780
900	2640	1518	1214	880
1000	2910	1673	1339	970

Current values for power in hp							
Rated operational power <sup>(2)</sup>	Indicative rated operational current values at:						
	110 - 120 V	200 V	208 V	220 - 240 V	380 - 415 V	440 - 480 V	550 - 600 V
hp	A						
1/2	4.4	2.5	2.4	2.2	1.3	1.1	0.9
3/4	6.4	3.7	3.5	3.2	1.8	1.6	1.3
1	8.4	4.8	4.6	4.2	2.3	2.1	1.7
1 1/2	12	6.9	6.6	6	3.3	3	2.4
2	13.6	7.8	7.5	6.8	4.3	3.4	2.7
3	19.2	11	10.6	9.6	6.1	4.8	3.9
5	30.4	17.5	16.7	15.2	9.7	7.6	6.1
7 1/2	44	25.3	24.2	22	14	11	9
10	56	32.2	30.8	28	18	14	11
15	84	48.3	46.2	42	27	21	17
20	108	62.1	59.4	54	34	27	22
25	136	78.2	74.8	68	44	34	27
30	160	92	88	80	51	40	32
40	208	120	114	104	66	52	41
50	260	150	143	130	83	65	52
60	-	177	169	154	103	77	62
75	-	221	211	192	128	96	77
100	-	285	273	248	165	124	99
125	-	359	343	312	208	156	125
150	-	414	396	360	240	180	144
200	-	552	528	480	320	240	192
250	-	-	-	604	403	302	242
300	-	-	-	722	482	361	289
350	-	-	-	828	560	414	336
400	-	-	-	954	636	477	382
450	-	-	-	1030	-	515	412
500	-	-	-	1180	786	590	472

(1) Values conforming to standard IEC 60072-1 (at 50 Hz).

(2) Values conforming to standard UL 508 (at 60 Hz).

**Note:** These values are given as a guide. They may vary depending on the type of motor, its polarity and the manufacturer.

## Standardisation

### Conformity to standards

Schneider Electric products satisfy, in the majority of cases, national (for example: BS in Great Britain, NF in France, DIN in Germany), European (for example: CENELEC) or international (IEC) standards. These product standards precisely define the performance of the designated products (such as IEC 60947 series for low voltage equipment).

When used correctly, as designated by the manufacturer and in accordance with regulations and correct practices, these products will allow users to build equipment, machine systems or installations that conform to their appropriate standards (for example: IEC 60204-1, relating to electrical equipment used on industrial machines).

Schneider Electric is able to provide proof of conformity of its production to the standards it has chosen to comply with, through its quality assurance system.

On request, and depending on the situation, Schneider Electric can provide the following:

- a declaration of conformity,
- a certificate of conformity (CB certificate, Asefa/Lovag),
- a homologation certificate or approval, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant navy.

Standard	Certification authority		Country
	Name	Regulation authority	
ANSI	American National Standards Institute	ANSI	USA
BS	British Standards Institution	BSI	Great Britain
CEI	Comitato Elettrotecnico Italiano	CEI	Italy
DIN/VDE	Verband Deutscher Electrotechniker	VDE	Germany
EN	Comité Européen de Normalisation Electrotechnique	CENELEC	Europe
TR	Eurasian Customs Union	EAC	Russia, Belarus, Kazakhstan
<b>Regulation</b>			
IEC	International Electrotechnical Commission	IEC	Worldwide
JIS	Japanese Industrial Standards Committee	JISC	Japan
NBN	Institut Belge de Normalisation	IBN	Belgium
NEN	Nederlands Normalisatie Instituut	NNI	Netherlands
NF	Union Technique de l'Electricité	UTE	France
SAA	Standards Association of Australia	SAA	Australia
UNE	Asociacion Española de Normalizacion y Certificacion	AENOR	Spain

### European EN standards

These are technical specifications established in conjunction with, and with approval of, the relative bodies within the various CENELEC member countries (European Union, European Free Trade Association and many central and eastern European countries having «member» or «affiliated» status). Prepared in accordance with the principle of consensus, the European standards are the result of a weighted majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn. European standards incorporated within the French collection of standards carry the prefix NF EN. At the 'Union Technique de l'Electricité' (*Technical Union of Electricity*) (UTE), the French version of a corresponding European standard carries a dual number: European reference (NF EN ...) and classification index (C ...).

Therefore, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110.

This standard is identical to the British standard BS EN 60947-4-1 or the German standard DIN EN 60947-4-1.

Whenever reasonably practical, European standards reflect the international standards (IEC). With regard to automation system components and distribution equipment, in addition to complying with the requirements of French NF standards, Schneider Electric brand components conform to the standards of all other major industrial countries.

## Regulations

### European Directives

Opening up of European markets assumes harmonisation of the regulations pertaining to each of the member countries of the European Union.

The purpose of the European Directive is to eliminate obstacles hindering the free circulation of goods within the European Union, and it must be applied in all member countries. Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulations. The Directives, in particular those of a technical nature which concern us, only establish the objectives to be achieved, referred to as "essential requirements".

The manufacturer must take all the necessary measures to ensure that his products conform to the requirements of each Directive applicable to his production.

As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for his product by affixing the CE marking.

The CE marking is affixed to Schneider Electric brand products concerned, in order to confirm compliance with French and European regulations.

#### Significance of the CE marking

- The CE marking affixed to a product signifies that the manufacturer declares that the product conforms to the relevant European Directive(s) which concern it; this condition must be met to allow free distribution and circulation within the countries of the European Union of any product subject to one or more of the E.U. Directives.
- The CE marking is intended solely for national market control authorities.
- The CE marking must not be confused with a conformity mark.

### European Directives

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance.

For Schneider Electric brand products, one or several Directives are likely to be applicable, depending on the product, and in particular:

- the Low Voltage Directive 2014/35/EU: the CE marking relating to this Directive has been compulsory since April 2016.
- the Electromagnetic Compatibility Directive 2014/30/EU: the CE marking on products covered by this Directive has been compulsory since April 2016.

### CB certificate, Asefa/Lovag certificate

- CB certification is issued according to IEC standards in respect to a multilateral agreement between almost industrial countries called CB scheme. It allows international certification of electrical and electronic products so that a single certification facilitates a worldwide market access.
- The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques - Association of French Testing Stations for Low Voltage Industrial Electrical Equipment) is to carry out tests of conformity to standards and to issue certificates of conformity and test reports. ASEFA laboratories are authorised by the French authorisation committee (COFRAC). ASEFA is now a member of the European agreement group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognised by all the authorities which are members of the group and carry the same validity as those issued by any of the member authorities.

### Quality labels

When components can be used in domestic and similar applications, it is sometimes recommended that a "Quality label" be obtained, which is a form of certification of conformity.

Code	Quality label	Country
CEBEC	Comité Electrotechnique Belge	Belgium
KEMA-KEUR	Keuring van Electrotechnische Materialen	Netherlands
NF	Union Technique de l'Electricité	France
ÖVE	Österreichischer Verband für Electrotechnik	Austria
SEMKO	Svenska Elektriska Materiel Kontrollnatanalen	Sweden

### Product certifications

In some countries, the certification of certain electrical components is a legal requirement. In this case, a certificate of conformity to the standard is issued by the official test authority.

Each certified device must bear the relevant certification symbols when these are mandatory:

Code	Certification authority	Country
CSA	Canadian Standards Association	Canada
UL	Underwriters Laboratories	USA
CCC	China Compulsory Certification	China

Note on certifications issued by the Underwriters Laboratories (UL). There are two levels of approval:

- "Recognized" (UL)** The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer and where its use within such limits is acceptable by the Underwriters Laboratories.  
The component is not approved as a "Product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited.  
A "Recognized" component does not necessarily carry the certification symbol.
- "Listed" (UL)** The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "Product for general use" and as a component in assembled equipment. A "Listed" component must carry the certification.

### Marine classification societies

Prior recognition by certain marine classification societies is generally required for electrical equipment which is intended for use on board merchant vessels.

Europe community has emitted regulation No. 391/2009 for common rules for Type approval of Marine equipment.

MR TA Mutual Recognition Type Approval is a certificate that is mutually recognized by all 12 classification societies from the **EU RO MR group** (European Recognized Organizations). Renewal of marine certifications, or new products certification is now covered by EU-MR (Mutual Recognition) process and therefore removes the need for multiple marine certifications. Current EU RO members include all major societies like DNV-GL, BV, ABS, LR as well as non-European societies like CCS, KR, NK, RMRs, etc.

Rules	Classification authority	Country
ABS	American Bureau of Shipping	Unites States of America
KRoS	Korean register of Shipping	South Korea
BV	Bureau Veritas	France
DNV-GL	Det Norske Veritas - Germanischer Lloyd	Norway - Germany
LRoS	Lloyd's Register of Shipping	Great Britain
NKK	Nippon Kaiji Kyokai	Japan
RINA	Registro Italiano Navale	Italy
RMRoS	Russian Maritime Register of Shipping	Russia
CCS	China Classification Society	Republic of China

**Note:** for further details on a specific product, please refer to the "Characteristics" pages in this catalogue or consult your Regional Sales Office.



# Technical information

## Degrees of protection provided by enclosures IP code

### Introduction - Coordination and standards

#### Degrees of protection against the penetration of solid bodies, water and personnel access to live parts

The European standard EN 60529 dated October 1991, IEC publication 529 (2<sup>nd</sup> edition - November 1989), defines a coding system (IP code) for indicating the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water. This standard does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gasses, fungi or vermin.

Certain equipment is designed to be mounted on an enclosure which will contribute towards achieving the required degree of protection (example : control devices mounted on an enclosure).















Different parts of an equipment can have different degrees of protection (example : enclosure with an opening in the base).

Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

### IP ●●● code

The IP code comprises **2 characteristic numerals** (e.g. **IP 55**) and may include **an additional letter** when the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral (e.g. IP 20C). Any characteristic numeral which is unspecified is replaced by an X (e.g. IP XXB).

1 <sup>st</sup> characteristic numeral		2 <sup>nd</sup> characteristic numeral		Additional letter	
corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.		corresponds to protection of the equipment against penetration of water with harmful effects.		corresponds to protection of personnel against direct contact with live parts.	
Protection of the equipment	Protection of personnel				
<b>0</b> Non-protected	Non-protected	<b>0</b> Non-protected		<b>A</b>	With the back of the hand.
<b>1</b> Ø 50 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm.	<b>1</b> 	Protected against direct contact with the back of the hand (accidental contacts).	<b>B</b>	With the finger.
<b>2</b> Ø 12,5 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm.	<b>2</b> 	Protected against direct finger contact.	<b>C</b>	With a Ø2.5 mm tool.
<b>3</b> Ø 2,5 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm.	<b>3</b> 	Protected against direct contact with a Ø2.5 mm tool.	<b>D</b>	With a Ø1 mm wire.
<b>4</b> Ø 1 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 1 mm.	<b>4</b> 	Protected against direct contact with a Ø1 mm wire.		
<b>5</b> 	Dust protected (no harmful deposits).	<b>5</b> 	Protected against direct contact with a Ø1 mm wire.		
<b>6</b> 	Dust tight.	<b>6</b> 	Protected against direct contact with a Ø1 mm wire.		
		<b>7</b> 			
		<b>8</b> 			

Coordination and standards

# Technical information

## Degrees of protection provided by enclosures IK code

### Introduction - Coordination and standards

#### Degrees of protection against mechanical impact

The European standard EN 50102 dated March 1995 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact. Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors. Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

#### IK ●● code

The IK code comprises **2 characteristic numerals** (e.g. **IK 05**).

#### 2 characteristic numerals

corresponding to a value of impact energy.

		h (cm)	Energy (J)
<b>00</b>	Non-protected		
<b>01</b>		7.5	0.15
<b>02</b>		10	0.2
<b>03</b>		17.5	0.35
<b>04</b>		25	0.5
<b>05</b>		35	0.7
<b>06</b>		20	1
<b>07</b>		40	2
<b>08</b>		30	5
<b>09</b>		20	10
<b>10</b>		40	20

# Part B

## COMPONENTS FOR CONVENTIONAL SOLUTIONS

**Linergy BZ, HK**  
Busbar systems

Up to 630 A



B1/1

Power  
busbar  
systems

**GV, LAD, U**  
Wiring systems for motor  
starters



B2/1

Wiring  
systems

**TeSys Control**  
Switch-disconnectors

Up to 175 A



B3/1

Switch-  
disconnectors

**TeSys Power**  
Fuse carriers

Up to 125 A



B4/1

Fuse  
carriers

**TeSys Power**  
Switch-disconnector fuses

Up to 1250 A



B5/1

Switch-  
disconnector  
fuses

**TeSys Power**  
Deca, Giga and Modular  
Motor circuit breakers

Up to 250 kW



B6/1

Motor  
circuit  
breakers

**TeSys Control**  
SK, K, Deca Control relays

Up to 10 A



B7/1

Control  
relays

**TeSys Control**  
SK, K, SKGC, Deca, Modular  
and other Contactors

Up to 150 A (AC-3)



B8/1

Contactors

**TeSys Control**  
Giga High power contactors

Up to 800 A (AC-3)



B9/1

High power  
contactors

**TeSys Control**  
F High power contactors

Up to 2600 A (AC-1)



B10/1

High power  
contactors

**TeSys Protect**  
LRK, Deca, Giga  
Overload relays

Up to 630 A



B11/1

Overload  
relays



**Busbar systems for electrical distribution and motors starters**

Type of product	Range	Pages
Introduction Linery BZ		B1/2
Multistandard power busbar Linery BZ	From 160 to 630 A	B1/4
Introduction Linery HK		B1/10
Multistandard hot-plug distribution system Linery HK	Up to 160 A	B1/12

Technical Data for Designers

B1/17



All Schneider Electric **distribution and connection systems** are brought together into a single brand name:  
**Linery**

Distribution blocks  
Device feeders  
Power busbars  
Hot plug busbar system  
Terminal blocks and bars.

Catalogue reference: **LVED213001EN**

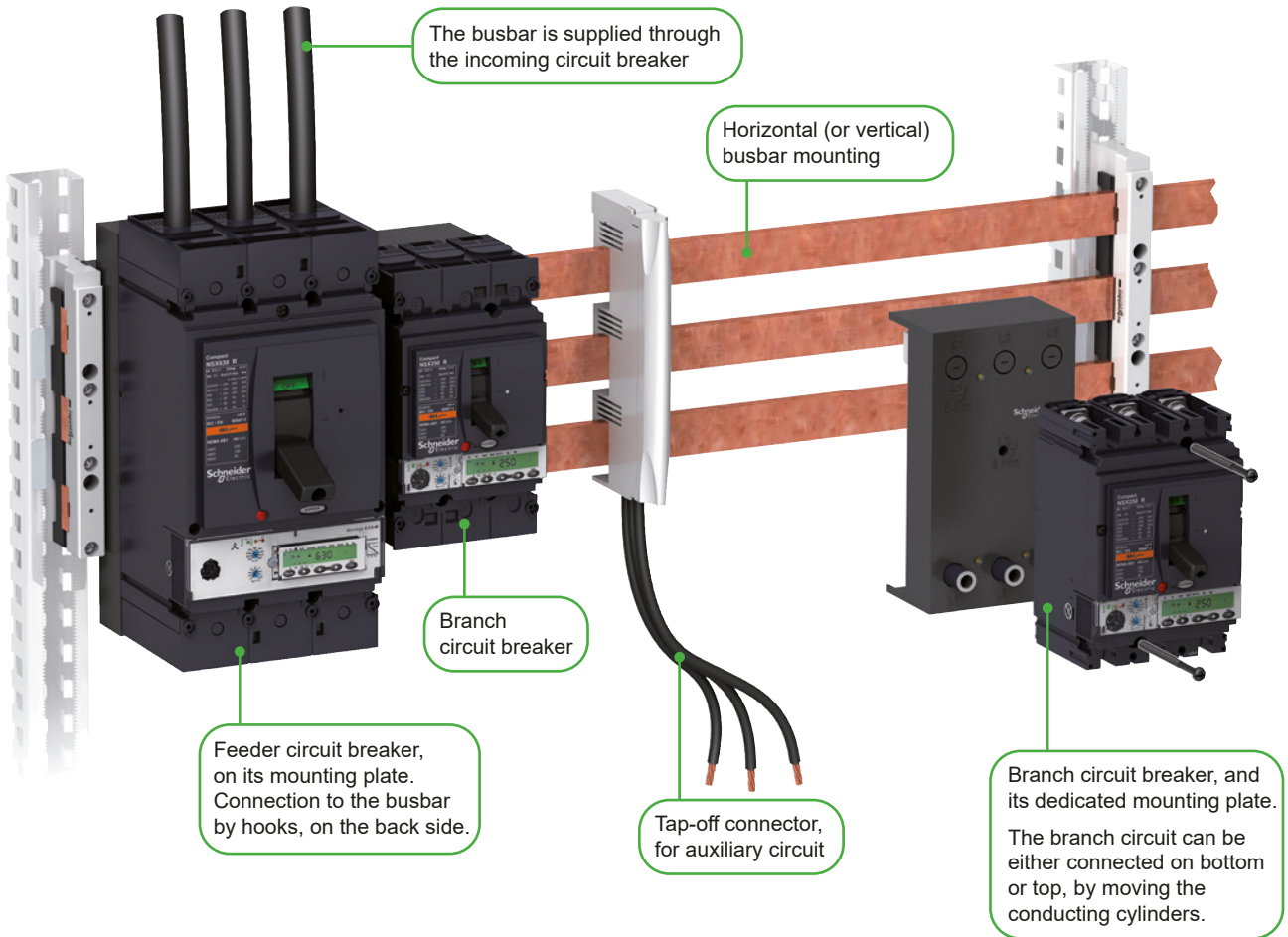
# Linergy BZ, HK Busbar systems

## Linergy BZ - Electrical distribution up to 630 A

### Introduction

In enclosures, when space saving and fast connection are a strong requirement

Power busbar systems



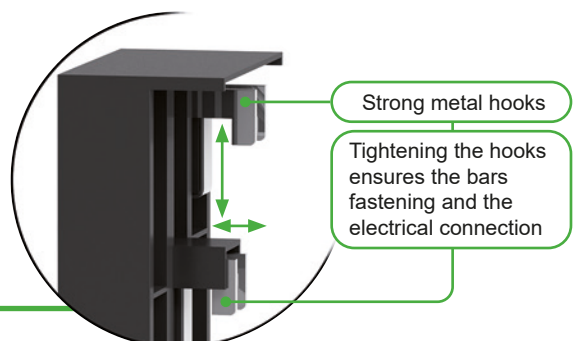
Ideal for industrial process application

### Advantages

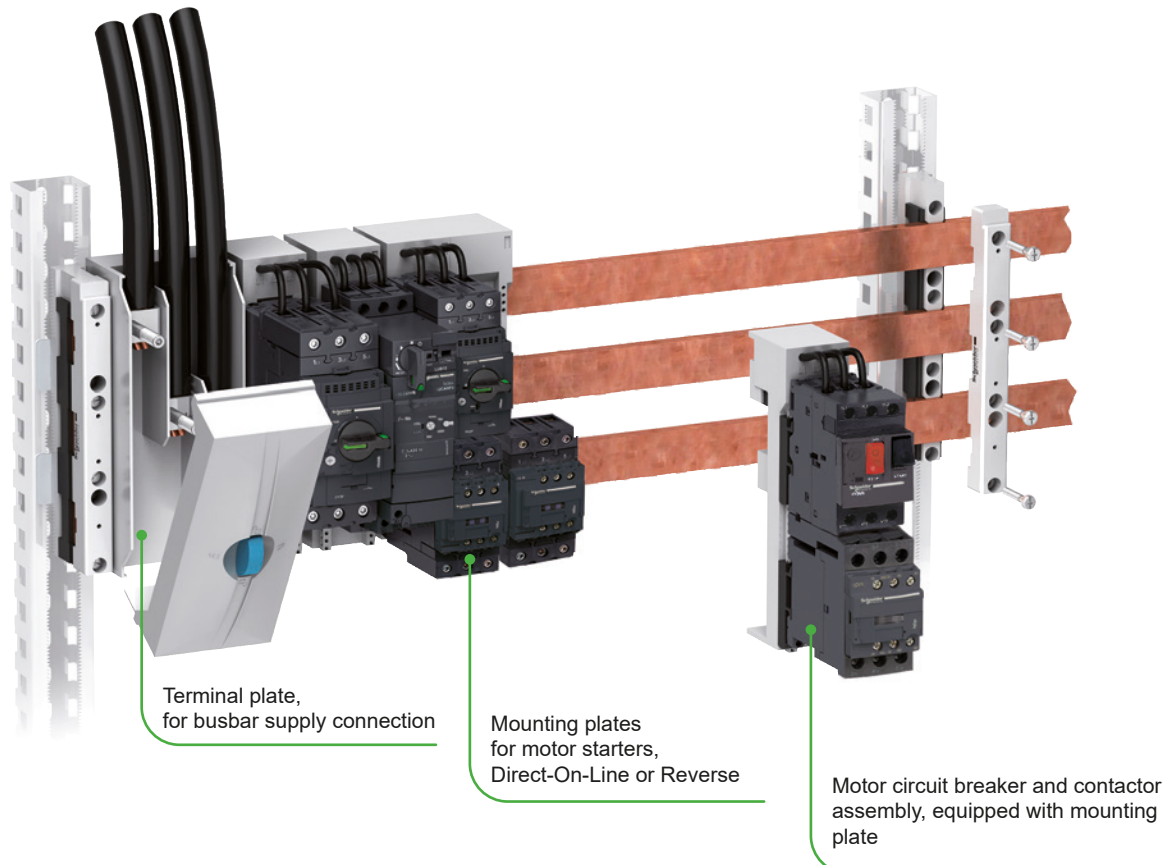
- Considerable space saving: components are directly mounted on the busbar
- Quick connection, disconnection: a metal hook combines mechanical fastening and electrical connection
- Multi standard: conform to IEC and UL standards

### Detailed view: back face of a mounting plate

- Mounting plates, for Compact NSX, Powerpact and GV5 circuit breakers
- Compatible with bars:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm



In control switchboards, when space saving, quick mounting and replacement are required

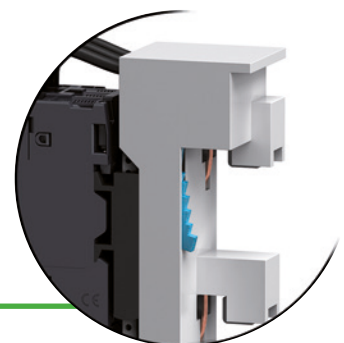


## Advantages

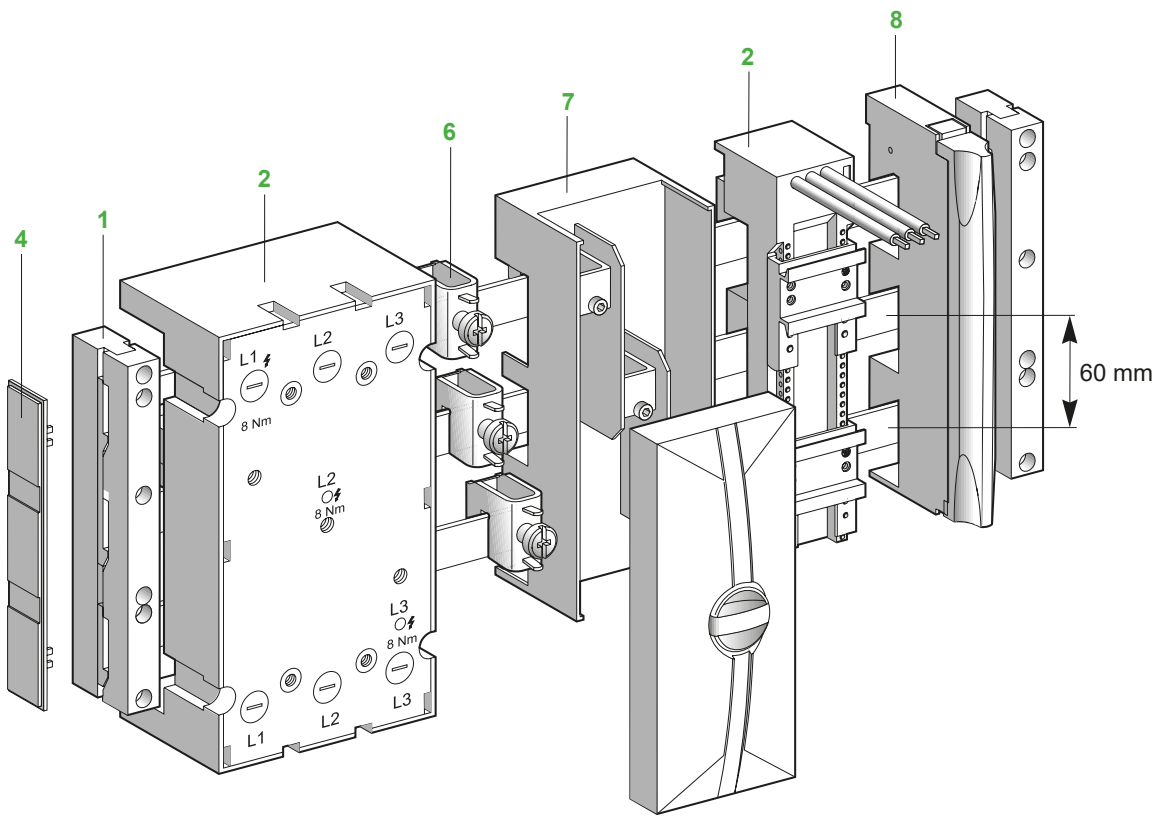
- Considerable space saving: components are directly mounted on the busbar
- Large choice of mounting plates (for a Deca Frame 2 (GV2) , a Deca Frame 3 (GV3) motor circuit breakers and assemblies, a Deca Frame 5 (GV5) Ultra)
- Quick connection, disconnection (power off): clip-on mounting plates
- Vibration resistant busbar connections: no periodical re-tightening required
- Multi standard: conform to IEC and UL standards

### Detailed view: back face of a motor starter mounting plate

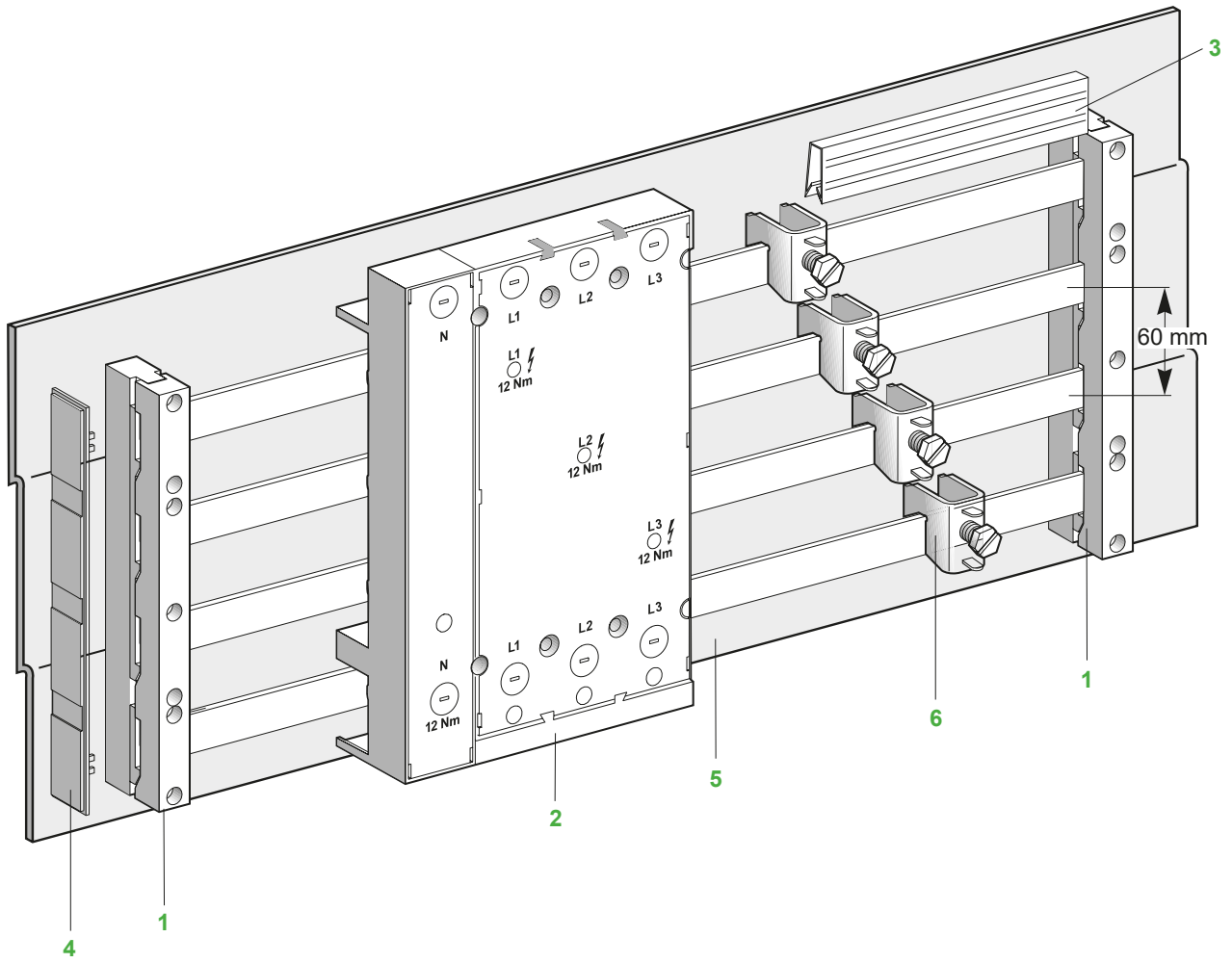
- A reliable electrical contact is ensured by copper blades
- The blue part locks the mounting plate on the busbar, compatibility is provided with the standard profiles:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm



DB400244.eps



DB400245.eps

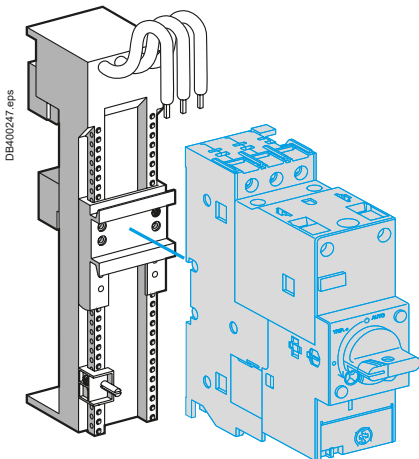
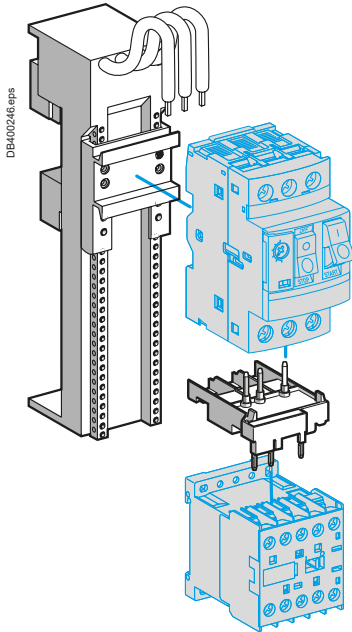




# Linergy BZ, HK Busbar systems

## Linergy BZ - Mounting plates for motor starters

### Introduction



Installation examples.

### Description

The mounting plate system for busbars simplifies the installation of motor feeder components used in your electrical installations. Power distribution is performed by a busbar.

The mounting plates are fitted directly on this busbar, by snap-on mounting, thus implementing mechanical and electrical connection.

This system offers numerous benefits:

- space saving in cabinets
- fast, safe and reliable electrical and mechanical connection
- easy connection
- protection for users against electric shocks by direct contacts (IP20) by using busbars end covers
- equipment flexibility and modularity
- increased equipment availability: easier maintenance
- power supply without drilling (connectors) from 1.5 to 120 mm<sup>2</sup>.

### Busbars system

The busbar interaxis is 60 mm. Depending on the cross section of the bars, the busbar can withstand a maximum current of 630 A.

**Note:** The bars forming the busbar are not part of the LA9Z offer. They are not supplied by us. Their selection depends on the maximum current needed for your installation (see next page).

### Support for 3P and 4P busbar (1)

These are available in 2 versions: three-pole and four-pole.

For applications having to comply with the UL standard, use the LA9ZX01508 support (3P only).

### The mounting plates (2)

These allow mounting of the power feeder components consisting of:

- a Deca Frame 2 (GV2) motor circuit breaker, mounted alone or in conjunction with a TeSys K or Deca contactor
- a Deca Frame 3 (GV3) motor circuit breaker, mounted alone or in conjunction with a Deca contactor
- a Ultra motor starter
- a Deca Frame 5 (GV5) motor circuit breaker
- an Integral motor starter
- a NSX100-250 or NSX400-630 A circuit breaker
- H/J/L PowerPact circuit breaker frame.

### Accessories

Accessories complete the offer:

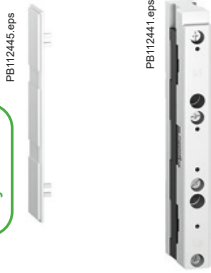
- covers (3) for 5 and 10 mm bars
- end covers (4)
- a base plate (5)
- 1P connectors (6)
- 3P connectors on mounting plate (7)
- a spring terminal 3P connection module (8).

# Linergy BZ, HK Busbar systems

## Linergy BZ - Busbar supports and accessories

### Product references

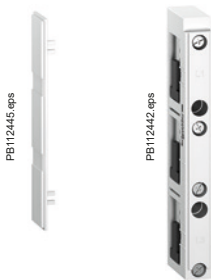
Power busbar systems



LA9ZX01573 LA9ZX01495



LA9ZX01131 LA9ZX01485



LA9ZX01573 LA9ZX01508



LA9ZX01244

#### IEC busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01495
	End covers for 3-pole busbar support	10	LA9ZX01573
4-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01485
	End covers for 4-pole busbar support (5 left, 5 right)	10	LA9ZX01131

#### UL busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 20, 30 x 5/10 mm busbars	10	LA9ZX01508
	Base plate 240 x 700	2	LA9ZX01515
	End covers for busbar support	10	LA9ZX01573

#### Other accessories

		Min. order qty	Unit reference
Covers, length 1 m	For 12-30 x 5 mm busbars	10	LA9ZX01244
	For 12-30 x 10 mm busbars	10	LA9ZX01245



# Linergy BZ, HK Busbar systems

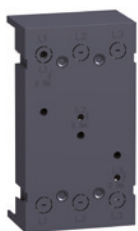
## Linergy BZ - Mounting plates

### Product references



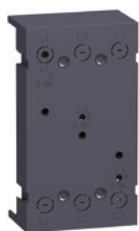
PB112427\_R\_1.eps

LA9ZA32627



PB103841\_R\_1.eps

LV429372



PB103841\_R\_1.eps

LA9ZA32600



PB112432\_R\_1.eps

LV432624

#### For Integral motor starter

Operating current AC-3 440 V	Protection by contactor-circuit breaker	Mounting plate l x h x d	Min. order qty	Unit reference
63 A	LD1, LD4LD●	108 x 260 x 63	1	LA9ZA32627

#### For Deca Frame 5 (GV5), Frame 6 (GV6) motor circuit breakers

Ratings	Mounting plate l x h x d	Min. order qty	Unit reference
150-220 A GV5	Mounting plate for 3P circuit breakers 104 x 190 x 63	1	LV429372
	Mounting plate for 4P circuit breakers 139 x 251 x 63	1	LV429373
320-500 A GV6	Mounting plate for 3P circuit breakers 139 x 270 x 63	1	LV432623
	Mounting plate for 4P circuit breakers 184 x 284 x 63	1	LV432624

#### For PowerPact 3P circuit breakers

Ratings	Mounting plate l x h x d	Min. order qty	Unit reference
60-100-150 A	Mounting plate for H frame circuit breakers 104 x 190 x 63	1	LA9ZA32600
250 A	Mounting plate for J frame circuit breakers 104 x 190 x 63	1	LV429372
250-400-600 A	Mounting plate for L frame circuit breakers 139 x 270 x 63	1	LV432623

#### Characteristics of busbar mounting plates

Type of mounting plate	LA9ZA32621 LA9ZA32622	LA9ZA32427 LA9ZA32428 LA9ZA32434 LA9ZA32623 LA9ZA32442 LA9ZA32443	LA9ZA32624 LA9ZA32625 LA9ZA32626 LA9ZA32627	LV429372 LV429373	LV432623 LV432624	LA9ZA32600	
Degree of protection as per IEC 60529	IP	20					
Rated insulation voltage	V	690					
Permissible current	A	25	32	63	80-100-250	400-630	60-100-150
Peak rated current	kA	50	50 <sup>(1)</sup>	50	50	50	50
SCCR (UL) with Compact NSX circuit breaker protection	mm <sup>2</sup>	The reinforced breaking capacity due to cascading in circuit breaker combination is maintained					
Conductor cross section (color: black)	mm <sup>2</sup>	4	6	10	NA		
	AWG	12	10	8	NA		
Type of conductor insulating material	PVC	105°			NA		

(1) 35 kA with LUB12 for LA9ZA32427 and LA9ZA32428.

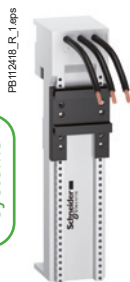


# Linergy BZ, HK Busbar systems

## Linergy BZ - Mounting plates

### Product references

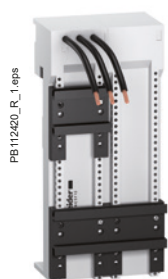
Power busbar systems



LA9ZA32443, LA9ZA32621



LA9ZA32434, LA9ZA32442



LA9ZA32622



LA9ZA32623



LA9ZA32427



LA9ZA32428



LA9ZA32624



LA9ZA32625



LA9ZA32626

#### For Deca Frame 2 (GV2) motor circuit breakers

Operating current AC-3 440 V	Protection by motor circuit breaker	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
<b>Mounting plate, 1-way</b>					
25 A	GV2ME GV2P GV2LE	LC1D LC1K LP4K06-K12	45 x 200 x 63	4	LA9ZA32621
32 A	GV2LE		63 x 200 x 63	4	LA9ZA32443
<b>Mounting plate, 2-way <sup>(3)</sup></b>					
25 A	GV2ME GV2P GV2LE	LC1D LC1K LP4K06-K12	90 x 200 x 63	2	LA9ZA32622
32 A	GV2ME GV2P GV2LE	LC1D	45 x 200 x 63	4	LA9ZA32434
			54 x 200 x 63	4	LA9ZA32442
			90 x 200 x 63	2	LA9ZA32623

#### Ultra motor starters

Operating current AC-3 440 V	Protection by power base	Mounting plate l x h x d	Min. order qty	Unit reference
<b>Mounting plate, 1-way</b>				
32 A	LUB12, LUB32	45 x 200 x 63	4	LA9ZA32427
<b>Mounting plate, 2-way</b>				
32 A	LUB12, LUB32	45 x 260 x 63	4	LA9ZA32428

#### For Deca Frame 3 (GV3) motor circuit breakers

Operating current AC-3 440 V	Protection by power base	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
<b>Mounting plate, 1-way <sup>(1)</sup></b>					
63 A	GV3P	–	54 x 200 x 63	4	LA9ZA32624
	GV3P	LC1D40A...65 A	54 x 260 x 63	4	LA9ZA32625
<b>Mounting plate, 2-way <sup>(1) (2)</sup></b>					
63 A	GV3P	LC2D40A...65 A	117 x 260 x 63	4	LA9ZA32626

(1) Contactor-circuit breaker combination without additional part.

(2) Use the LAD9R3 kit for the execution of changeover contactors.

(3) Use the LAD9R1 or LAD9R1V kit for the execution of changeover contactors.

**Note:** the mounting plate rails can be shifted vertically in 1.25 mm increments.

# Linergy BZ, HK Busbar systems

## Linergy BZ - Accessories

### Product references



LA9ZX01285



LA9ZX01287



LA9ZX01413



LA9ZX01243



LA9ZX01563

Terminals				
	I max		Set of	Unit reference
One-pole for flat bars, 5 mm	270 A	Capacity 4-35 mm <sup>2</sup>	50	LA9ZX01285
	400 A	Capacity 16-70 mm <sup>2</sup>	25	LA9ZX01287
3P cover, width 84 mm			10	LA9ZX01413

Terminals on mounting plate				
	I max		Min. order qty	Unit reference
3P, on mounting plate + cover, for 12 x 5 to 30 x 10 busbars, width 81 mm	440 A	Capacity 35-120 mm <sup>2</sup>	1	LA9ZX01243
3P, on mounting plate + cover, for 20 x 5 to 30 x 10 busbars, width 135 mm	560 A	Capacity 120-300 mm <sup>2</sup>	1	LA9ZX01754

Connection module				
	I max		Min. order qty	Unit reference
3P, spring terminal connection + cover, for 12 x 5 to 30 x 10 busbars, width 20 mm	80 A	Capacity 1.5-16 mm <sup>2</sup>	8	LA9ZX01563

Connection by connectors											
		LA9ZX01285		LA9ZX01287		LA9ZX01243		LA9ZX01563		LA9ZX01754	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Flexible wire	mm <sup>2</sup>	4	35	16	70	35	120	1.5	16	120	300
Multi-strand wire	mm <sup>2</sup>	4	35	16	70	35	120	1.5	16	120	300
Rigid wire	mm <sup>2</sup>	4	35	-	-	-	-	1.5	16	-	-
Tightening torque	N.m	... x 5		... x 5		... x 5-10		... x 5-10		... x 5-10	
Cover		LA9ZX01413		LA9ZX01413		Supplied without cover		Supplied without cover		Supplied without cover	

Power busbar systems



# Linergy BZ, HK Busbar systems

## Linergy HK - Electrical distribution up to 160 A

### Introduction

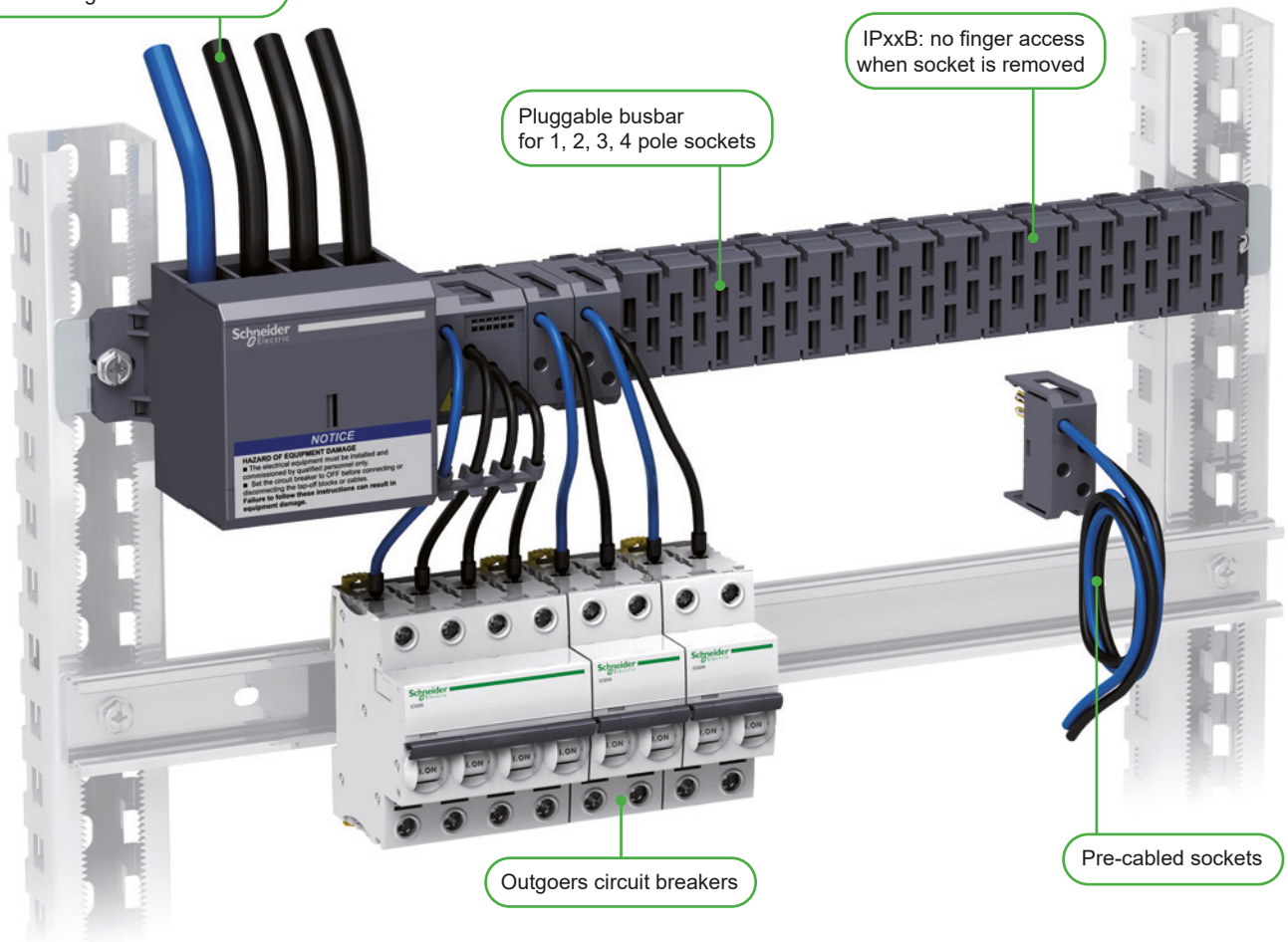
Hot-plug distribution: when continuity of service is required

Power busbar systems

The busbar is supplied through the incoming circuit breaker

IPxxB: no finger access when socket is removed

Pluggable busbar for 1, 2, 3, 4 pole sockets



Outgoers circuit breakers

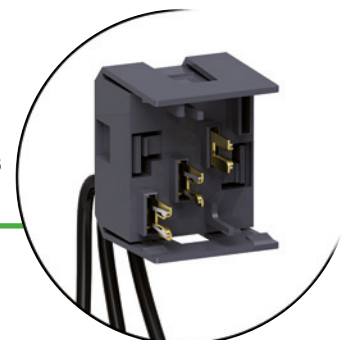
Pre-cabled sockets

### Advantages

- Considerable time saving: stand alone busbar, fixed to the chassis with 2 screws
- Preserved continuity of service during modification: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets
- Multi standard: conform to IEC and UL standards

### Detailed view: pre cabled socket

- The assembling process and the technological choices ensure a long-lasting reliability
- Each wire is welded on a spring clip providing robustness to the socket and vibration resistant contacts



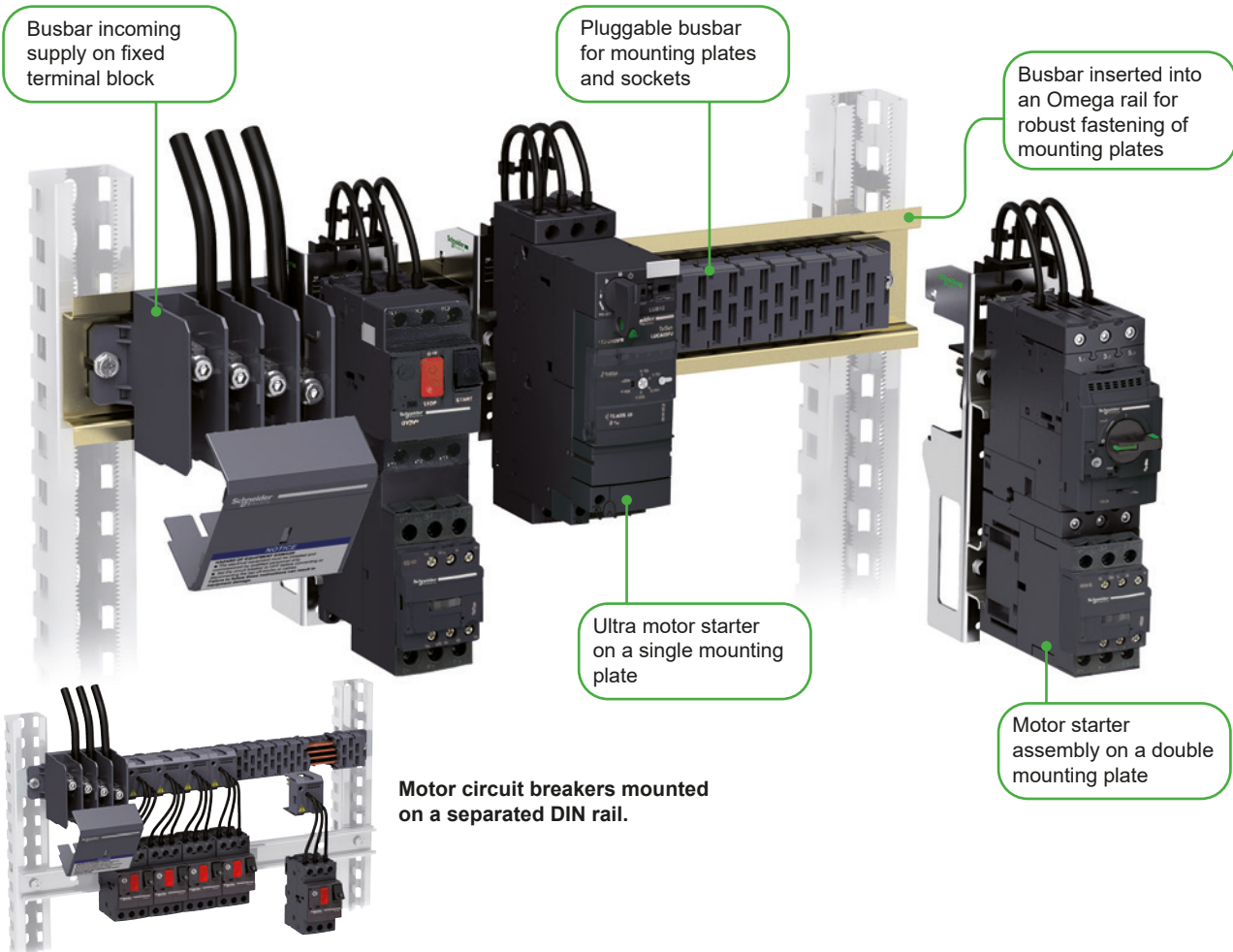
# Linergy BZ, HK Busbar systems

## Linergy HK - Electrical distribution to motor starters

### Introduction



When compactness and continuity of service are required

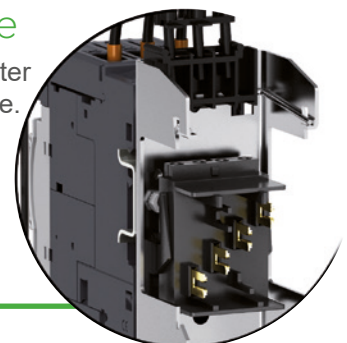


### Advantages

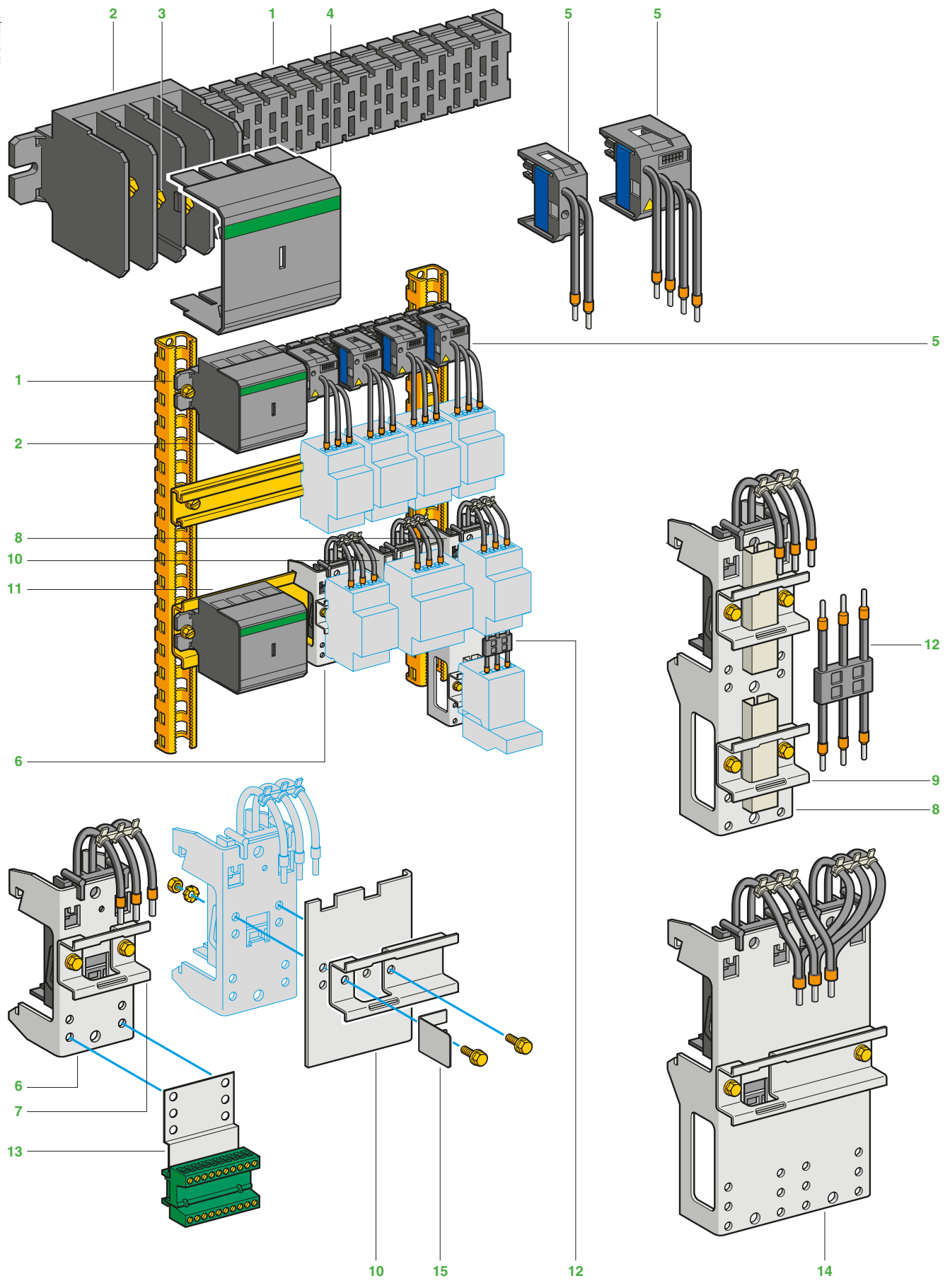
- Space saving in compact enclosures: the total volume is reduced to that of the motor starter assemblies
- Preserved continuity of service during modification and maintenance: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets, 23 mounting plates for motor starters up to 25 or 50 A
- Multi standard: conform to IEC and UL standards

### Detailed view: mounting plate back face

- Thanks to the plug and its pre-cabled wires the motor starter is safely assembled in the workshop, for immediate or later use.
- A piece of DIN profile rail is attached on the front face of the mounting plate for fastening the components.
- The metal mounting plate ensures a rigid and robust fastening on the omega rail.



DB404140 eps





The assembly of automated control and distribution panels requires the use of products that are not only safe but also simple and quick to mount and cable.

The Linergy HK pre-assembled busbar system meets all these criteria by incorporating prefabricated components which cater for 3 principal functions:

#### Carrying of electric current

By the pre-assembled 4-pole busbar system **1**, 160 A at 35 °C.

4-pole busbars can be used for 3-phase + Neutral or 3-phase + Common.

The busbars are available in 6 lengths: 344, 452, 560, 668, 992, 1100 mm.

An incoming supply terminal block **2** is located at the extreme left of the busbar.

"Knock-out" partitions allow connection of the power supply from above or below to connectors **3** which are protected by a removable cover **4**.

Upstream protection of the busbar is shown on page B1/20.

#### Current distribution

Tap-off units **5** (factory assembled) are available in 4 versions:

- 2-pole,
- 3-pole,
- 4-pole (3-phase + Neutral),
- 4-pole (3-phase + Common).

The tap-offs clip onto the busbar with instantaneous mechanical and electrical connection to the busbars.

2 ratings are available: 16 and 32 A.

The tap-off units ensure not only rapid mounting, but also a neat appearance for the power distribution system and complete safety when accessing under live circuit conditions.

#### Component mounting

Component mounting plates with incorporated tap-off allow mounting of and supply of power to components.

They are available in 25 A or 50 A ratings.

These mounting plates clip onto the mounting rail **11**, which also supports the busbar, and at the same time make electrical connection via the incorporated tap-off.

2 types of mounting plate are available:

- single plates **6** (height 105 mm), with bolt-on 35 mm wide rail **7**, which may be bolted on in one of two positions, allowing height adjustment of 10 mm.
- double plates **8** and **14** (height 190 mm), with two bolt-on, 35 mm wide rails **9** mounted on 100 mm fixing centres; each rail may be bolted on in one of 4 positions, allowing height adjustment in 10 mm steps. These plates are supplied with connectors **12** to allow wiring between control and protection devices.

Single mounting plates enable the following types of distribution:

- 2-pole (Ph + N) and (Ph + Ph)
- 3-pole,
- 4-pole (3 Ph + N or 3 Ph + common).

Double mounting plates enable the following types of distribution: 2-pole (Ph + N, Ph + Ph), 3-pole or 4-pole (3Ph+N and 3Ph + common).

Extension plates **10** can be bolted onto single and double mounting plates to enable mounting of wider components. Using a side stop **15** in conjunction with these extension plates also supports the Linergy HK busbar when used vertically.

A control terminal block **13** comprising a support plate bolted onto the single or double mounting plates and a 10-pole plug-in block, enables connection of the control circuit wires (c.s.a. 1.5 mm<sup>2</sup> max).

# Lineryg BZ, HK Busbar systems

## Lineryg HK

### Product references

Power busbar systems

PB112410\_Reps



AK5JB1●●

#### Busbars

The busbars can be screw-mounted onto any type of support. However, if it is to be used in conjunction with component mounting plates incorporating a tap-off, it is essential that it is mounted on the AM1DL201 rail.

When mounting tap-offs, the rated operational current of the busbar should be taken into account: 160 A at 35 °C.

Number of conductors	Number of tap-offs at 18 mm intervals	Length mm	Suitable for mounting in enclosure width mm	Reference	Weight kg
4 <sup>(1)</sup>	12	344	600	AK5JB143	0.700
	18	452	800	AK5JB144	0.900
	24	560	800	AK5JB145	1.100
	30	668	800	AK5JB146	1.300
	48	992	1200	AK5JB149	1.900
	54	1100	1200	AK5JB1410	2.100

#### Removable power sockets

Use	Number of points used on the busbar system		Thermal current	Cable lengths	Min. order qty	Unit reference
	Width	A	A	mm		
Single-phase + Neutral	1	9 mm	16	200	6 <sup>(2)</sup>	AK5PC12
			32	1000	6 <sup>(2)</sup>	AK5PC32L
2-phase	1	18 mm	16	200	6 <sup>(3)</sup>	AK5PC12PH
			32	1000	6 <sup>(3)</sup>	AK5PC32LPH
3-phase	2	18 mm	16	200	6	AK5PC13
			32	250	6	AK5PC33
			32	1000	6	AK5PC33L
3-phase + Neutral	2	18 mm	16	200	6	AK5PC14
			32	250	6	AK5PC34
3-phase + common	2	18 mm	16	200	6	AK5PC131
			10 (common)	250	6	AK5PC331
			32	250	6	AK5PC331
			10 (common)	250	6	AK5PC331

#### Accessories

Description	Maximum no. of connections	C.s.a. mm <sup>2</sup>	Sold in lots of	Unit reference
Cable guide	4	2.5 or 4	20	AK5GF1

<sup>(1)</sup> 4-pole: 3-phase + Neutral or 3-phase + Common.

<sup>(2)</sup> Total of 6 sockets supplied: 2 sockets (N + L1), 2 sockets (N + L2), 2 sockets (N + L3).

<sup>(3)</sup> Total of 6 sockets supplied: 2 sockets (L1 + L2), 2 sockets (L1 + L3), 2 sockets (L2 + L3).

<sup>(4)</sup> Cut and drill to suit use.

PB112411\_Reps



AK5PC12



PB112412\_Reps



AK5PC14

PB112405\_eps



AK5GF1

# Linergy BZ, HK Busbar systems

## Linergy HK

### Product references

FB112407\_Reps



AK5PA241

FB112408\_Reps



AK5PA242

FB503054\_Reps



AM1DL201

### Component mounting plates incorporating tap-off

#### Single plate (height 105 mm)

Use	No. of 18 mm points used on the busbar system	Phase	Thermal current A	Number of rails for component support	Min. order qty	Reference
Single-phase + neutral	3 (54 mm width)	Ph1+N	25	1	1	AK5PA211N1
		Ph2+N	25	1	1	AK5PA211N2
		Ph3+N	25	1	1	AK5PA211N3
2-phase	3	Ph1+Ph2	25	1	1	AK5PA211PH12
		Ph1+Ph3	25	1	1	AK5PA211PH13
		Ph2+Ph3	25	1	1	AK5PA211PH23
3-phase	3	–	25	1	1	AK5PA231
3-phase + common	3	–	25	1	1	AK5PA2311
3-phase + neutral	3	–	25	1	1	AK5PA241

#### Double plate (height 190 mm)

Prefabricated 25 A connectors are supplied for connecting the 2 protection and control devices.

Single-phase + neutral	3	Ph1+N	25	2	1	AK5PA212N1	
		Ph2+N	25	2	1	AK5PA212N2	
		Ph3+N	25	2	1	AK5PA212N3	
2-phase	3	Ph1+Ph2	25	2	1	AK5PA212PH12	
		Ph1+Ph3	25	2	1	AK5PA212PH13	
		Ph2+Ph3	25	2	1	AK5PA212PH23	
3-phase	3	–	25	2	1	AK5PA232	
		6 (108 mm width)	–	25	2	1	AK5PA232S
			–	50	1	1	AK5PA532
3-phase + neutral	3	–	25	2	1	AK5PA242	
3-phase + common	3	–	25 (10 common)	2	1	AK5PA2312	
		–	25 (10 common)	2	1	AK5PA2312S	
		–	50 (10 common)	1	1	AK5PA5312	
3-phase + neutral	6	–	50	1	1	AK5PA542	

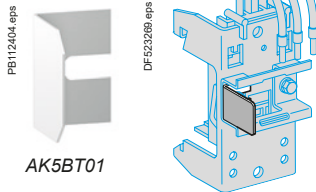
#### Omega rail, width 75 mm

This rail is designed to accommodate the busbar system when it is used with Linergy HK mounting plates incorporating tap-offs. It supports the busbar system. The plates simply clip onto the rail.

Material and surface treatment	Depth	Length	Min. order qty	Reference	Weight
	mm	mm			kg
2 mm sheet steel	15	2000 <sup>(4)</sup>	6	AM1DL201	3.000

Power busbar systems





### Extension plates

These plates bolt onto the equipment support plates, after having removed them from the rails, to be able to mount wider components.

Use	Number of tap-offs at 18 mm intervals	Reference
For mounting plates incorporating single tap-off	4	AK5PE17
For mounting plates incorporating double tap-off	4	AK5PE27

### Side stop (AK5JB mounted vertically)

Use	Set of	Reference
For extension plate (for AK5PA●●●)	50	AK5BT01

### Control terminal blocks

Description	Thermal current A	Set of	Reference
<b>10-pole terminal blocks, for screwing onto plate AK5 PA●●●</b>			
	10	10	AK5SB1

### Accessories

Description	Marking	Set of	Reference
Strips of clip-in markers 10 identical numbers, signs or capital letters per strip	0...9	25	AB1R● <sup>(1)</sup>
	+	25	AB1R12
	-	25	AB1R13
	A...Z	25	AB1G● <sup>(1)</sup>

(1) Replace the ● in the selected reference with the number or letter required. Example: AB1R1 or AB1GA.

#### Note:

■ if the equipment is wider than the mounting plate, an extension plate can be used to increase the width of the support plate.

■ for upstream protection, see page B1/20.

# Lineryg BZ, HK

## Technical Data for Designers

### Contents

#### Lineryg BZ:

- > characteristics ..... B1/18
- > curves ..... B1/19

#### Lineryg HK:

- > characteristics ..... B1/20 and B1/21
- > dimensions ..... B1/22 and B1/23

# Linery BZ, HK Busbar systems

## Linery BZ

### Characteristics

Power busbar systems



LA9ZX01495



LA9ZX01485



LA9ZX01508



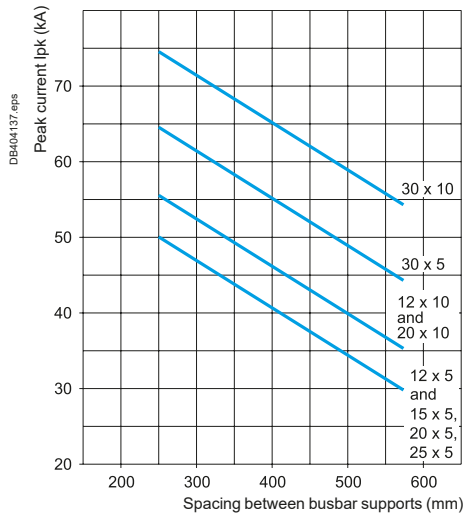
General characteristics									
		LA9ZX01495 and LA9ZX01485 (IEC 6.439-1)							
Bar dimensions compatibility	mm	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Max. rated operating current	A	200	250	320	400	450	360	520	630
Min. peak permissible rated current	kA	30	30	30	30	45	35	35	53
Distance max. between 2 busbars supports	mm	570	570	570	570	570	570	570	570
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated insulation voltage	V	690							
Rated operating voltage	V	690							
		LA9ZX01508 (UL) 508 A							
Bar dimensions compatibility	mm	12 x 5	20 x 5	30 x 5	12 x 10	20 x 10	30 x 10		
Rated operating current	A	150	362	500	300	564	630		
I <sub>eff</sub> (RMS) surge current	kA	18	18	22 - 25	18	18	22 - 25		
SCCR (protected by 250 A 480 V AC)	kA	65	-	-	65	-	-		
(protected by 250 A 600 V AC)		25	-	-	25	-	-		
Compact NSX circuit breaker)		-	65	65	-	65	65		
400 A 480 V AC		-	35	35	-	35	35		
500 A 480 V AC		-	-	65	-	-	65		
600 A 600 V AC		-	-	35	-	-	-		
600 A 480 V AC		-	-	50	-	-	50		
600 A 600 V AC		-	-	25	-	-	25		
SCCR (protected by fuses Class J or T ...)		100	100	100	100	100	100		
500 A 480 V AC		-	-	100	-	-	100		
500 A 600 V AC		-	-	100	-	-	100		
Distance max. between 2 busbars supports (busbar protected)	mm	400	800	800	400	800	800		
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated operating voltage	V	600							

# Linergy BZ, HK Busbar systems

## Linergy BZ

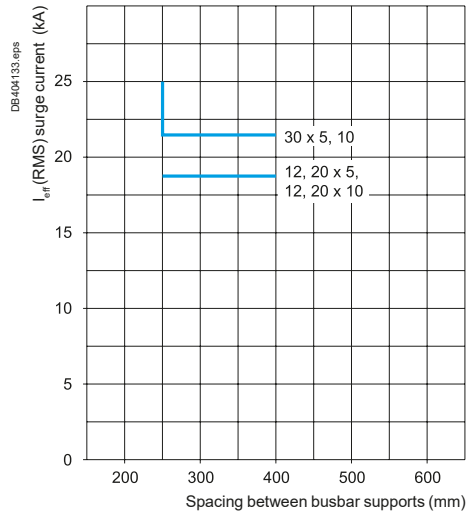
### Curves

#### Determining the spacing between busbar supports (LA9ZX01495 and LA9ZX01485), according to IEC 61439-1 <sup>(1)</sup>



(1) Depending on the short-circuit current.

#### Short-circuit strength diagram according to UL845 (LA9ZX01508)

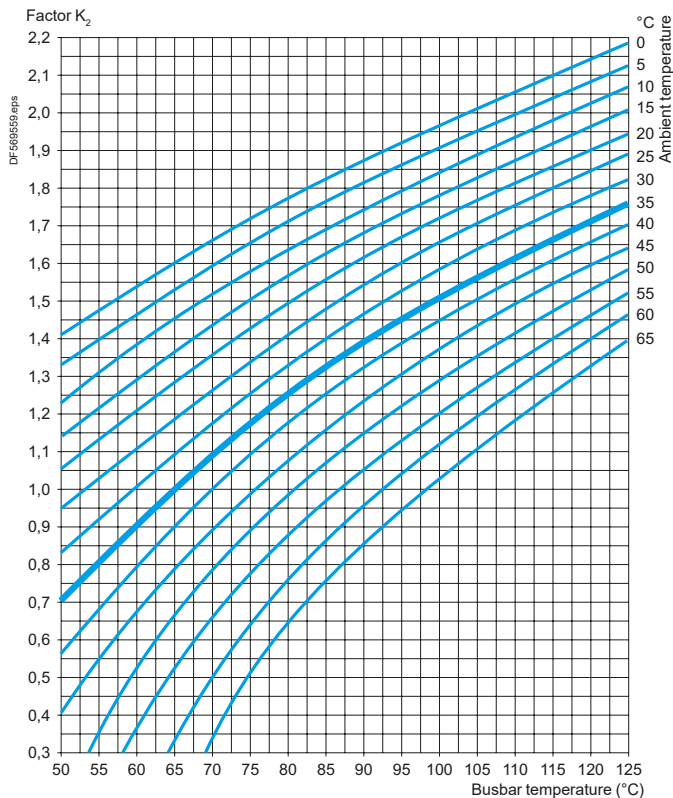


#### Load resistance of busbar assemblies in IEC applications

For an ambient temperature of 35 °C and a busbar temperature of 65 °C

Cross section	mm <sup>2</sup>	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Permissible current	A	200	250	320	400	450	360	520	630

In the event of changes in climatic conditions, the following curve indicates the correction factor  $K_2$  to be applied.



**Example:** In normal operating conditions, a tinned busbar of 30 x 10 can permanently withstand 630 A.

For a load of 800 A, the correction factor  $K_2$  to be applied will be 1.3 ( $\frac{800 \text{ A}}{630 \text{ A}}$ ). As a result, the temperature rise in the busbars will reach 82.5 °C.

Introduction:  
page B1/5

References:  
pages B1/6 to B1/9

Characteristics:  
page B1/18

# Lineryg BZ, HK Busbar systems

## Lineryg HK

### Characteristics

Power busbar systems

i  
Ref.  
↑↓

Busbar system characteristics								
Conforming to standards			IEC 60439					
Product certifications			UL, CSA, DNV, LROS					
Degree of protection	Against access to live parts		IP XXB conforming to IEC 60529					
Flame resistance	Conforming to IEC 60695	°C	850 (incandescent wire)					
	Conforming to standard UL 94		V0					
Number of conductors	AK5JB14●		4					
Supply current			~					
Rated operational frequency		Hz	50 or 60					
Rated operational current	Ambient temperature 35 °C	A	160					
	Coefficient K to be applied according to the ambient temperature	°C	35	40	45	50	55	60
		K	1	0.96	0.92	0.88	0.83	0.78
Rated insulation voltage	Conforming to IEC 60439-1	V	690					
	Conforming to UL and CSA	V	600					
Operational voltage	Off-load plugging-in and unplugging, with supply switched on							
	Conforming to IEC 60439-1	V	400					
	Conforming to UL, CSA	V	480					
	Plugging-in and unplugging, with supply switched off							
	Conforming to IEC 60439-1	V	690					
	Conforming to UL, CSA	V	600					
Maximum permissible peak current		kA	25					
Maximum let-through energy		A²s	1 x 10 <sup>7</sup>					
Upstream short-circuit <sup>(1)</sup> and overload protection	Type of protection		Schneider Electric circuit-breaker		Fuses			
			NSX 160 N	NSX 160 H	aM	gF		
	Rating	A	160	160	160	160		
	Prospective short-circuit current	kA	36	70	100	100		
	Operational current	A	160	160	160	160		
Cabling			Maximum c.s.a.		Minimum c.s.a.			
	Flexible cable with cable end	mm²	70		2.5			
	Solid cable	mm²	70		2.5			
	Tightening torque	Nm	10					
Mounting position	Horizontal or vertical <sup>(2)</sup>		Fixing with screws provided					

(1) For conditions where conditional short-circuit current exceeds 25 kA.

(2) Using side stop AK5BT01 on mounting plates AK5PA.



# Linergy BZ, HK Busbar systems

## Linergy HK

### Characteristics

Tap-off characteristics												
Type		AK5 PC12	AK5 PC12PH	AK5 PC13	AK5 PC14	AK5 PC131	AK5 PC32L	AK5 PC32LPH	AK5 PC33 PC33L	AK5 PC34 PC34L	AK5 PC331	
Conforming to standards		IEC 60439										
Product certifications		UL, LROS, CSA, DNV										
Degree of protection		Against access to live parts: IP XXB conforming to IEC 529										
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	
Conductor c.s.a. (UL cables)	mm <sup>2</sup>	2 x 2.5	2 x 2.5	3 x 2.5	4 x 2.5	3 x 2.5 1 x 1.5	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5	
Conductor colours		Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White	Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White (Common)	
Permissible current	A	16	16	16	16	16 10 (Common)	32	32	32	32	32 10 (Common)	
Rated insulation voltage	V	690 conforming to IEC 60439-1										
Rated peak current	kA	6										
Maximum let-through energy	A <sup>2</sup> s	100 000					200 000					
Type of conductor insulation		PVC 105 °C										

Power  
busbar  
systems



Tap-off characteristics									
Type		AK5 PA211N1 PA211N2 PA211N3 PA212N1 PA212N2 PA212N3	AK5 PA211PH12 PA211PH13 PA211PH23 PA212PH12 PA212PH13 PA212PH23	AK5 PA231 PA232 PA232S	AK5 PA241 PA242	AK5 PA2311 PA2312 PA2312S	AK5 PA532	AK5 PA542	AK5 PA5312
Conforming to standards		IEC 60439							
Product certifications		UL, LROS, CSA, DNV							
Degree of protection		Against access to live parts: IP XXB conforming to IEC 60529							
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	3-phase	3-phase + Neutral	3-phase + Common
Conductor c.s.a. (UL cables)	mm <sup>2</sup>	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5	2 x (3 x 4)	2 x (4 x 4)	2 x (3 x 4) 1 x 1.5
Permissible current	A	25	25	25	25	25 10 (Common)	50	50	50 10 (Common)
Rated insulation voltage	V	690 conforming to IEC 60439-1							
Rated peak current	kA	6							
Maximum let-through energy	A <sup>2</sup> s	200 000							
Type of conductor insulation		PVC 105 °C							

Characteristics of mounting rails AM1DL201	
Type	Omega  (width 75 mm, depth 15 mm)
Material	2 mm sheet steel
Surface treatment	Galvanized

# Linery BZ, HK Busbar systems

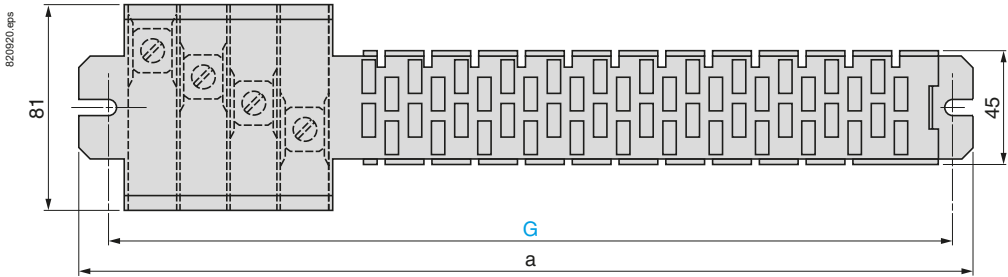
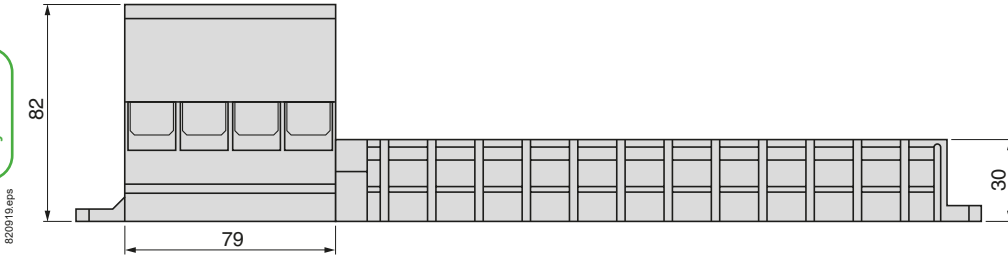
## Linery HK

### Dimensions

Power busbar systems

#### Busbars

##### AK5JB●●●

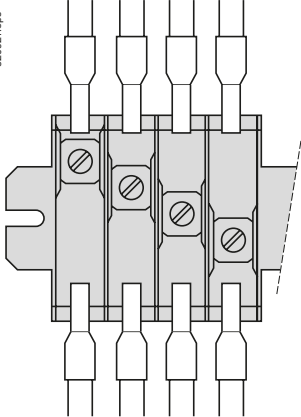


AK5	a	G	No. of 18 mm points
JB143	344	330	12
JB144	452	438	18
JB145	560	546	24
JB146	668	654	30
JB149	992	978	48
JB1410	1100	1086	54

#### Busbar feed units

##### AK5JB●●●

#### Installation of AK5JB●●● busbar systems

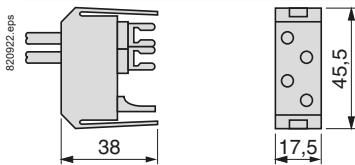


Connection	C.s.a. in mm <sup>2</sup>	
	min	max
Flexible cable with or without cable end	1 x 2.5 2 x 2.5	1 x 70 <sup>(1)</sup> 2 x 35
Flexible bar	-	2 x (9 x 4)
Flexible bar + flexible cable with or without cable end	9 x 4 + 1 x 2.5	9 x 4 + 1 x 35

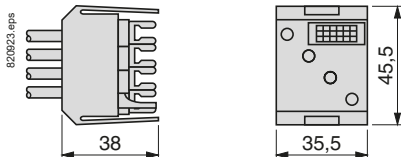
(1) Maximum c.s.a. or connection of conductor without cable end.

#### Removable power sockets 16 and 32 A

##### AK5PC12●. AK5PC32L●

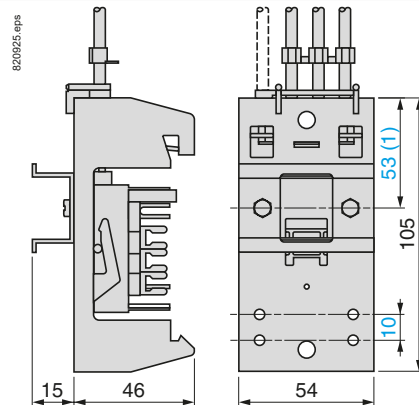


##### AK5PC●3. AK5PC33L AK5PC●4. AK5PC34L AK5PC●31



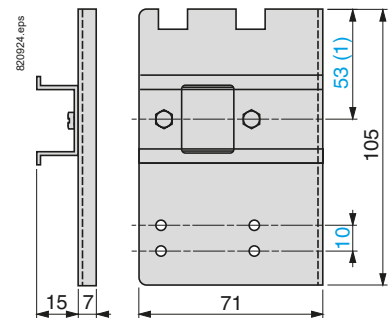
#### Mounting plates incorporating tap-offs, 25 A

##### AK5PA2●1. AK5PA2311. AK5PA211●●●●



#### Single width extension plates

##### AK5PE17



Note: It is recommended that the power sockets or the removable plates are connected as close as possible to the busbar feed unit.

(1) Can be fixed at 43 mm.

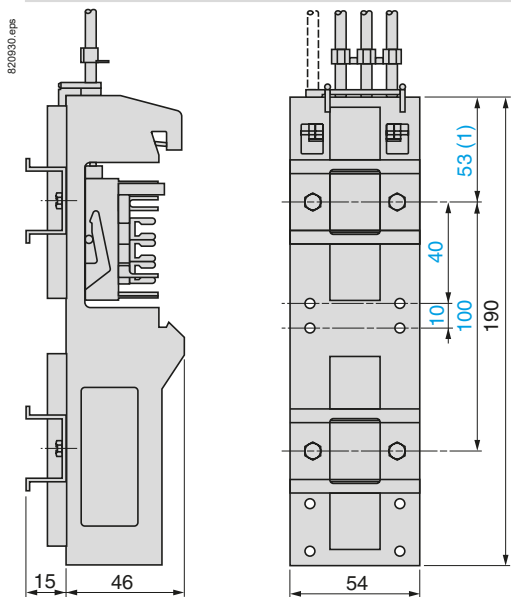
# Linergy BZ, HK Busbar systems

## Linergy HK

### Dimensions

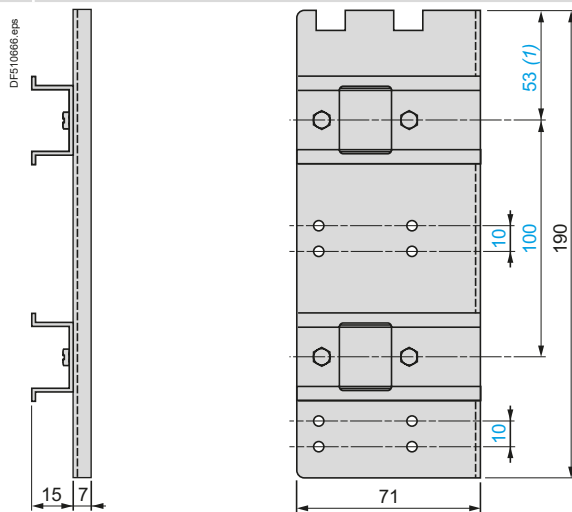
#### Component mounting plates incorporating tap-off

AK5PA232. AK5PA2312. AK5PA242



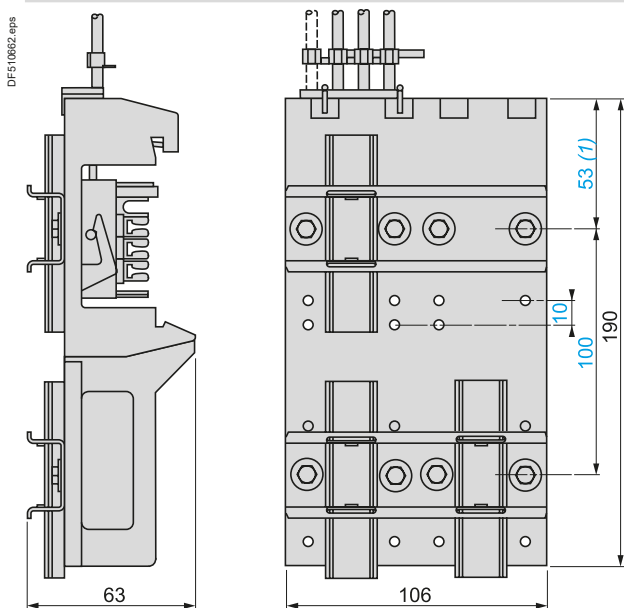
#### Double extension plate

AK5PE27

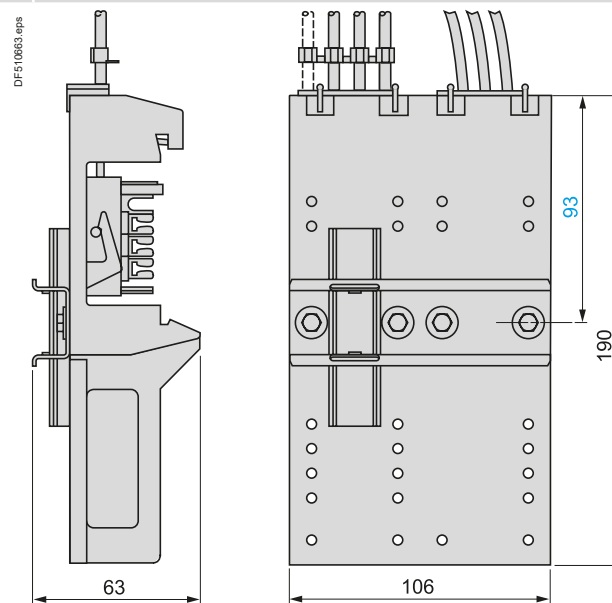


#### Component mounting plates incorporating tap-off

AK5PA232S. AK5PA2312S

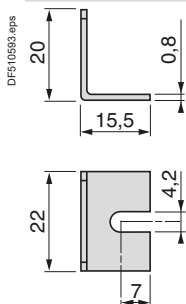


AK5PA532. AK5PA5312. AK5PA542



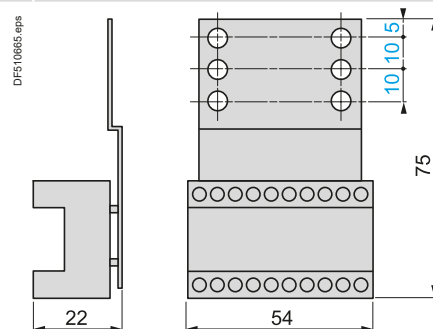
#### Side stop

AK5BT01



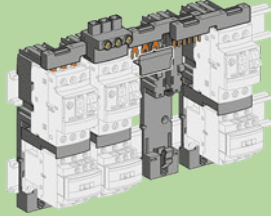
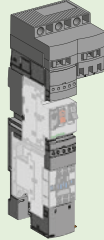

#### Control terminal block

AK5SB1

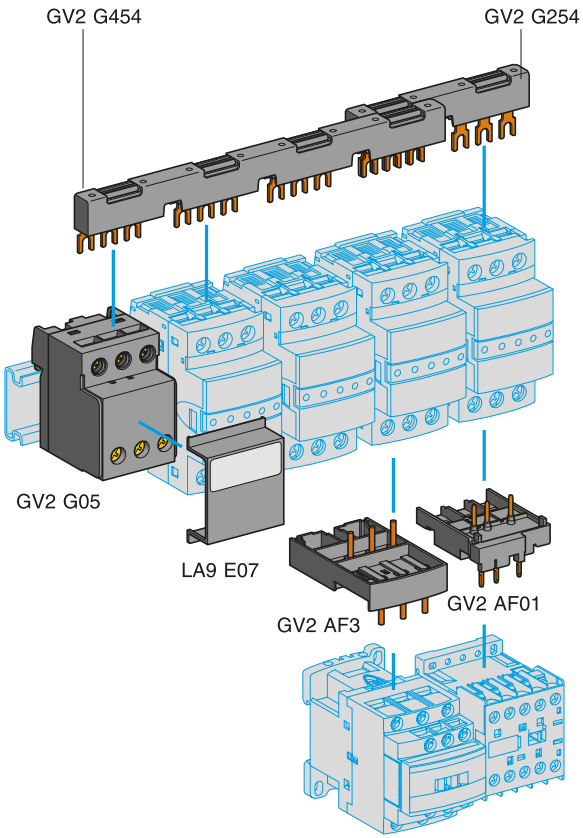


(1) Can be fixed at 43 mm.

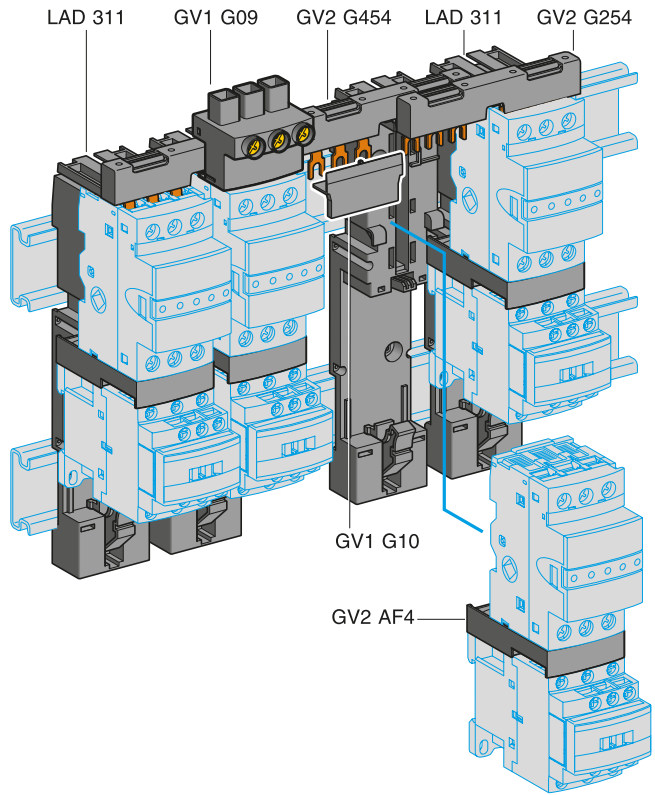


Power wiring systems for motor starters	
Type of product	Pages
<p>Power wiring system for motor starter assemblies: screw clamp connection</p> 	B2/2
<p>Power wiring system for motor starter assemblies: spring terminals connection</p> 	B2/4
RJ45 Control wiring systems for motor starters	
<p>Motor starters-to-PLC Control wiring architectures Selection tables</p>	B2/6
<p>RJ45 connection module for Ultra motor starter Pluggable</p> 	B2/8

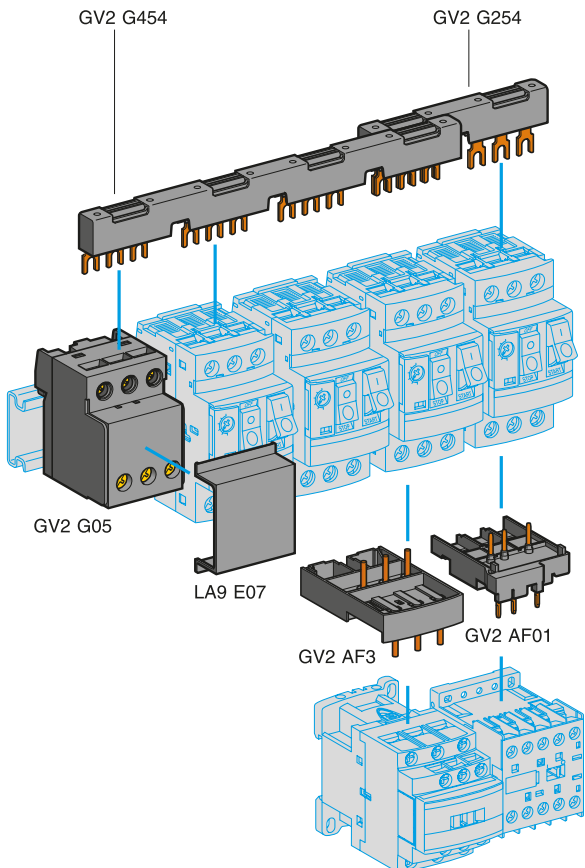
Group of fuse carriers directly mounted on DIN rail



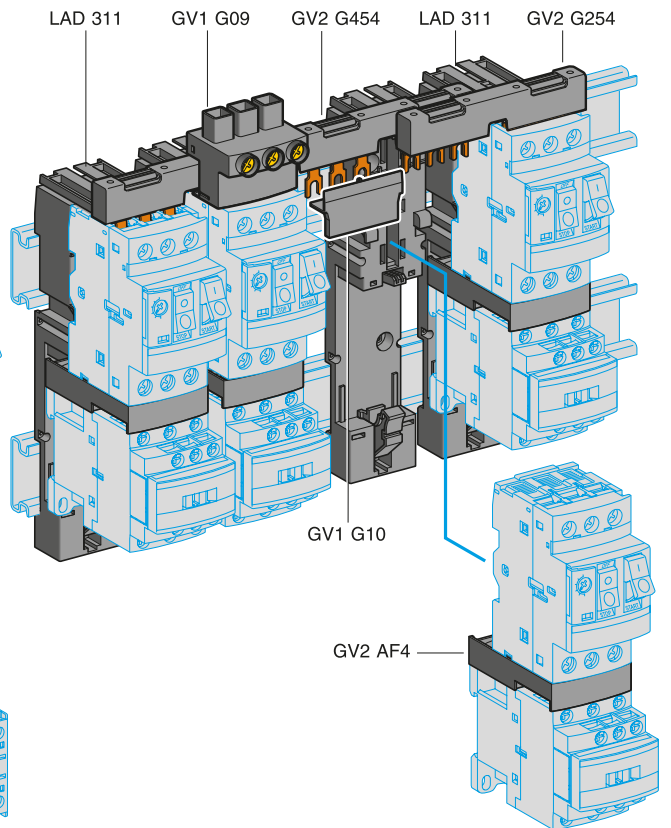
Group of fuse carriers + contactors mounted on adapter plates



Group of circuit breakers directly mounted on DIN rail



Group of circuit breakers + contactors mounted on adapter plates



# TeSys Control

## Power wiring system for Deca motor starter assemblies

### Product references

This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + Deca (LC1D) contactor
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor.

#### Upstream busbars and terminals

Description	Application	Pitch (mm)	Unit reference
Sets of 3-pole 63 A busbars	2 tap-offs	45	GV2G245
		54	GV2G254
		72	GV2G272
	3 tap-offs	45	GV2G345
		54	GV2G354
	4 tap-offs	45	GV2G445
		54	GV2G454
		72	GV2G472
	5 tap-offs	54	GV2G554
	Description	Application	Sold in lots of
Terminal block for supply to one or more GV2G busbar sets	Connection from the top	1	GV1G09
	Can be fitted with current limiter GV1L3 (GV2ME and GV2P)	1	GV2G05
Cover for terminal block	For mounting in modular panels	10	LA9E07
Protective end cover	For unused busbar outlets	5	GV1G10

#### Assembling components

Description	Application	Sold in lots of	Unit reference
Combination blocks	Between GV2 and contactor LC1K or LP1K <sup>(1)</sup>	10	GV2AF01
	Between GV2 and contactor LC1D09...D38 <sup>(1)</sup>	10	GV2AF3
	Between GV2 mounted on LAD311 and contactor LC1D09...D38	10	GV2AF4
Adapter plates	For mounting a GV2ME and contactor LC1D09...D38 with front faces aligned	1	LAD311
Height compensation plate	7.5 mm	10	GV1F03

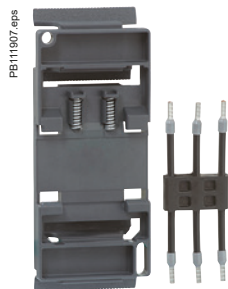
<sup>(1)</sup> Ensures both the connection and a rigid support to the contactor. No extra fixing mean required.

#### Accessories

Description	Application	Sold in lots of	Unit reference
Adapter plates	For mounting a GV2 by screw fixing	10	GV2AF02
Motor starter adapter plate	For mounting a GV2 and a contactor LC1D09...D25. Item delivered with a GV1G02 flexible connection	1	GK2AF01
Flexible 3-pole connection for connecting a GV2 to a contactor LC1-D09...D25	Centre distance between mounting rails: 100...120 mm	10	GV1G02
Incoming line spacer for UL 508 Type E applications	For GV2P (except 32 A)	1	GV2GH7
Clip-in marker holders (supplied with each circuit breaker)	For GV2 P, GV2L, GV2LE and GV2RT (8 x 22 mm)	100	LA9D92



GV2AF02



GK2AF01



GV1G02

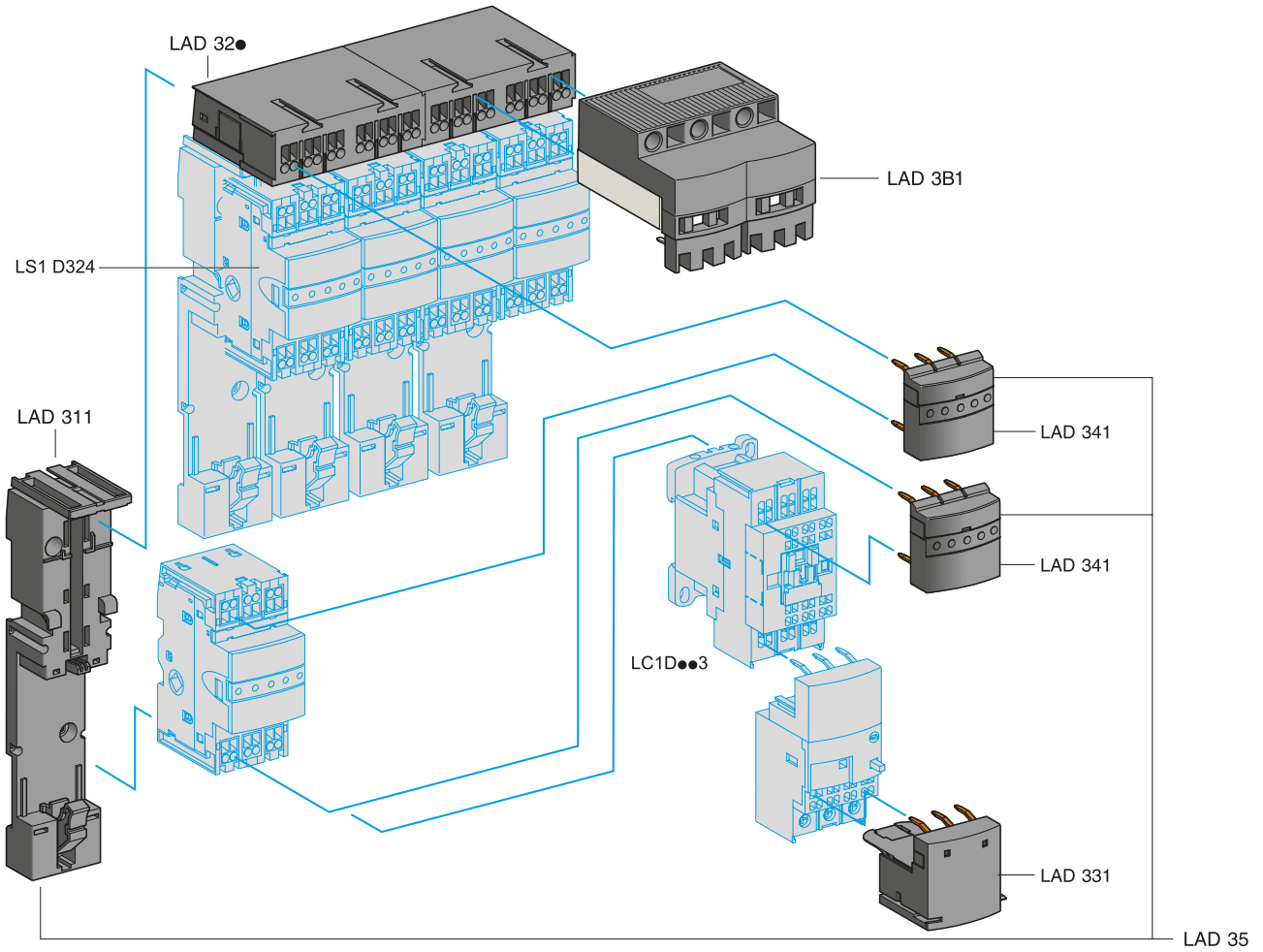
Dimensions:  
page B2/13



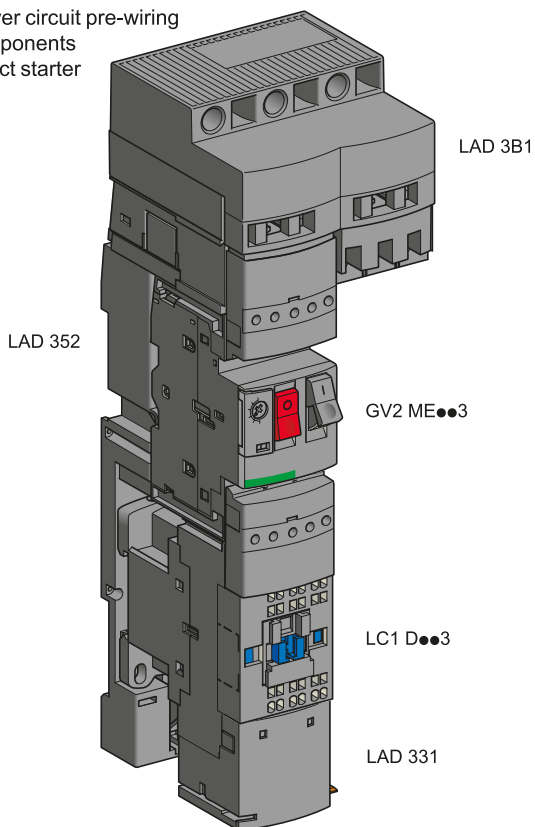
Group of fuse carriers + contactors mounted on adapter plates

D6443877.eps

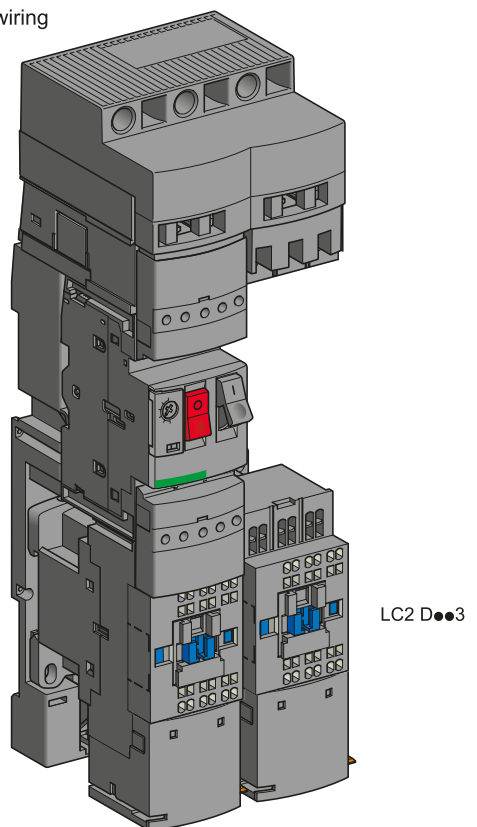
Wiring systems



Power circuit pre-wiring components  
Direct starter



Power circuit pre-wiring components  
Reversing starter





# TeSys Control

## Power wiring system for motor starter assemblies

### Product references



LAD3B1



LAD324



LAD311



LAD341



LAD331

This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + Deca (LC1D) contactor.
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor

#### Upstream terminal and splitter blocks

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Upstream terminal block	16 mm <sup>2</sup> <sup>(1)</sup>	Power supply of 1 or 2 power splitter boxes	1	LAD3B1
Description	Extension by	Number of starters		Reference
Power splitter box, 60 A	LAD32●	2	1	LAD322
		4	1	LAD324

#### Assembling components

Description	Composition	Sold in lots of	Reference
Plate for mounting a GV2ME circuit breaker and a contactor	For 1 starter	10	LAD311
Power connection module	For 1 starter	10	LAD341
Power connection kit for direct starter <sup>(2)</sup>	1 plate LAD311 for GV2ME and 2 power connection modules LAD341		LAD352

#### Downstream terminal and accessory

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Downstream terminal block	6 mm <sup>2</sup>	Connection of motor cables	10	LAD331
Cable end reducer	-	For connection of conductors from 1 to 1.5 mm <sup>2</sup>	20	LAD99

- <sup>(1)</sup> Cables with one end pre-crimped are available to allow fast connection. References:  
 1 set of 3 x 6 mm<sup>2</sup> cables (length 1 m: LAD3B061, length 2 m: LAD3B062 and length 3 m: LAD3B063),  
 1 set of 3 x 10 mm<sup>2</sup> cables (length 1 m: LAD3B101, length 2 m: LAD3B102 and length 3 m: LAD3B103),  
 1 set of 3 x 16 mm<sup>2</sup> cables (length 1 m: LAD3B161, length 2 m: LAD3B162 and length 3 m: LAD3B163).
- <sup>(2)</sup> To build a reversing starter, order 2 kits LAD352.



# TeSys Control

## Motor starter-to-PLC control wiring architectures

### Selection table

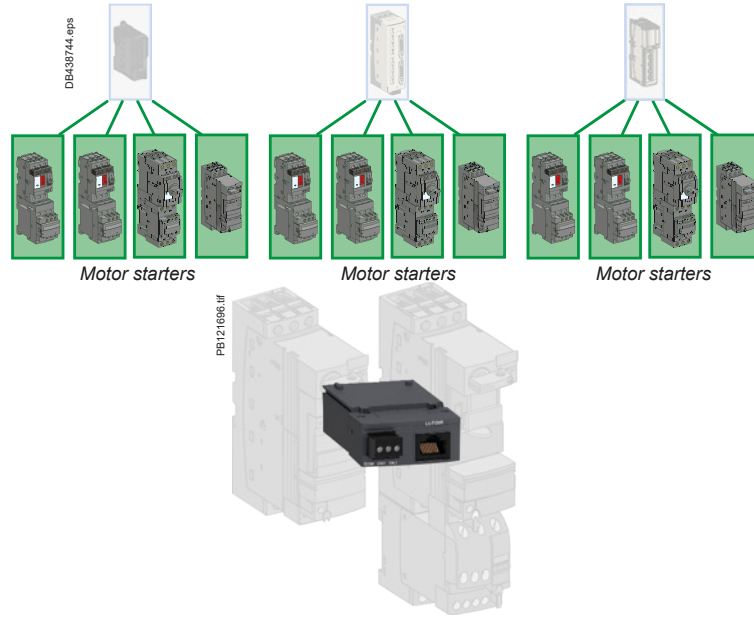
Wiring systems

Product type	Connection interfaces for a group of motor starters		
IO system name	Modicon TM3	Modicon Telefast	Modicon STB
Architecture	<p>DB415974.eps</p>	<p>DB415975.eps</p>	<p>DB415976.eps</p>
	<p>PFI3038DC.eps</p>	<p>PB121281.eps</p>	<p>PB121282.eps</p>
Application	Control of single or multiple motor-starters assemblies by mean of a logic controller. Machines or processes requiring easy, fast cabling and replacement of motor starters.		
Function	<b>IO module:</b> Ensures the direct connection of up to <b>4 motor starters</b> to logic controller (Modicon M221, M241, M251)	<b>Splitter box:</b> Ensures the connection of up to <b>8 motor starters</b> to a logic controller via Modicon Telefast multiwire cable	<b>IO module:</b> Ensures the connection of up to <b>4 motor starters</b> to a logic controller via an automation island (Modicon STB distributed IO architecture)
Upstream compatibility	With Modicon M221, M241, M251 logic controller, via logic controller internal bus	With any logic controller equipped with HE10 inputs/ outputs module	With Modicon STB automation island, via automation island internal bus
Upstream connectors	Backplane bus connector	HE10 connector	Backplane bus connector
Compatibility	<b>Motor circuit breaker - Type</b> <b>Contactor - Type / Amp</b> <b>Motor circuit breaker + Contactor - terminals</b> All types of motor starters equipped with RJ45 connection system		
Motor control	Reversing / Non reversing		
Number of motor starters	4	8	4
Downstream connector type	RJ45		
Reference	<b>TM3XTYS4</b>	<b>LU9G02 / LU9G03</b>	<b>STBEPI2145K *</b>
Pages	Refer to Modicon M221/M241/ M251 catalogue	Ultra motor starters - pages B2/8 and A4/20	Refer to IP20 distributed IO Modicon STB catalogue

\* STBEPI2145K: GV2 + contactor D09 to D32, Ultra only.

## RJ45 connection components for motor starter

Common components for Modicon TM3, Modicon Telefast, Modicon STB systems



Wiring systems

### Connection module:

ensures the compatibility Ultra motor starters to the RJ45 connection system

TM3XTYS4 / LU9G02 / LU9G03 / STBEPI2145K

RJ45

Ultra motor starters  
12 to 38 A

Screw-clamp

Reversing or Non reversing

Plugin module

**LUFC00**

B2/8

# TeSys Control

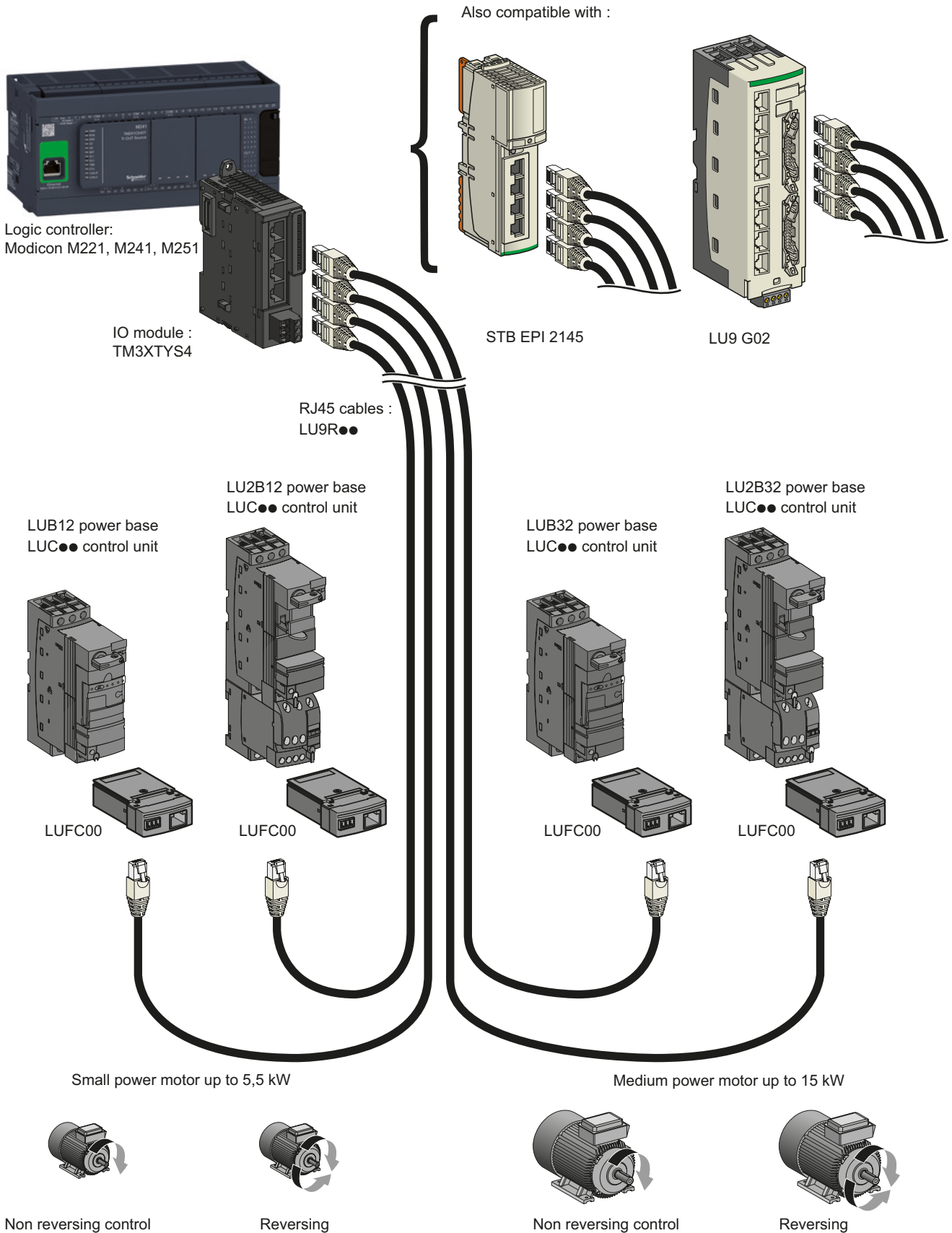
## Ultra control wiring system

### RJ45 wiring architecture

#### Description

DB433738\_01gs

Wiring systems



### "Plug and play", for single or reversing motor starters

The LUF00 parallel connection module provides a simple and efficient solution for control and monitoring of a Ultra direct or reverse motor starter.

#### Compact, fast cabling

The connection to the Ultra power base is simply achieved by insertion of the module into it. The status and control signals are carried by a simple pre-connectorized RJ45 cable (LU9R●●) between an IO module or splitter box and Ultra motor starter.

#### Features

- On / OFF / Reverse control (functions non provided with LUB12, 32, 38 power bases).
- Handle position, power contacts position monitoring (function provided with all power bases).

#### Compatibility

12, 32 or 38 A direct motor starters: LUB12, LUB32 or LUB38 power base + LUC●● control unit (coil code BL),  
LUB120, LUB320 or LUB380 power base + LU9N11C connector + LUC●● control unit (coil code BL)

12, 32 or 38 A reversing motor starters: LU2B12, LU2B32 or LU2B38 power base + LU9MRC connector + LUC●● control unit (coil code BL).



LUF00



LU9MRC



LU9BN11C

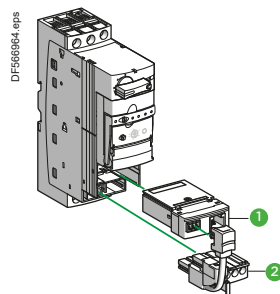
Ultra RJ45 connection module	
Designation	Commercial ref
1 Parallel wiring module	LUF00
Ultra coil connector	
Designation	Commercial ref
2 Pre wired coil connector for LUB120, LUB320 or LUB380 power base	LU9BN11C
3 Pre wired coil connector for LU2B12, LU2B32 or LU2B38 power base	LU9MRC

### Design / Installation

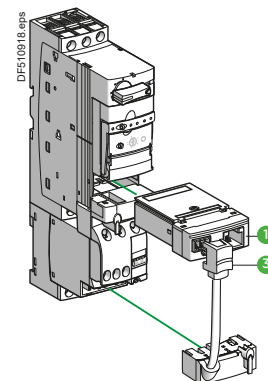
The LUF00 parallel (RJ45) connection module acts as a connection interface for controlling the coil (except with LUB12, 32, 38) and the monitoring of the auxiliary contacts. As a necessary complement, a pre wired connector is needed for carrying the signal to the coil and collecting:

- the status of the protection device (OK / Alarm) with LU9BN11C,
- the electrical interlock contacts with LU9MRC.

As the "reversing" is higher than the "direct" power base, the LU9MRC link is longer than the LU9BN11C.



Direct motor starter  
(LUB120, 320, 380 power base).



Reversing motor starter  
(LU2B12, 32, 38 power base).


# TeSys Control

## Wiring systems for motor starters

### Product references

Wiring  
systems

GV1F03	GV2GH7
GV1G02	LA9D92
GV1G09	LA9E07
GV1G10	LAD311
GV2AF01	LAD322
GV2AF02	LAD324
GV2AF3	LAD331
GV2AF4	LAD341
GV2AF5	LAD351
GV2G05	LAD352
GV2G245	LAD3B1
GV2G254	LU9BMRC
GV2G272	LU9BN11C
GV2G345	LU9G02
GV2G354	LU9G03
GV2G445	LUFC00
GV2G454	STBEPI2145K
GV2G472	TM3XTYS4
GV2G554	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

## Technical Data for Designers

### Contents

Power wiring systems for motor starter assemblies:

- > Dimensions (GV2 + LAD311 assembly)..... B2/12
- > Dimensions (GV2G●●● busbars) ..... B2/13

IO module, splitter box, for motor starters control circuits

- > Dimensions ..... B2/14

# TeSys Control

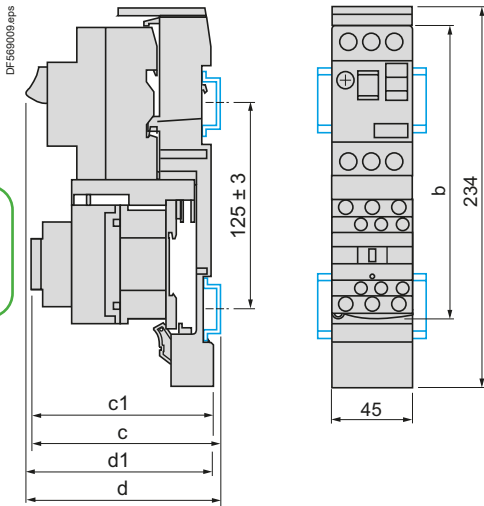
## Power wiring system for motor starter assemblies

### Dimensions

#### GV2AF4 + LAD311

Combination GV2ME + Deca contactor

Wiring systems



GV2ME +	LC1D09...D18	LC1D25 and D32
<b>b</b>	176.4	186.8
<b>c1</b>	103.1	136.4
<b>c</b>	135.6	141.9
<b>d1</b>	107	107
<b>d</b>	112.5	112.5

Ref.

#### 7.5 mm height compensation plate GV1F03





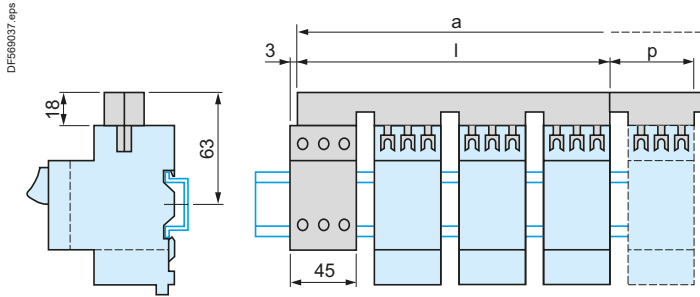
# TeSys Control

## Power wiring system for motor starter assemblies

### Dimensions

#### Deca Frame 2 (GV2ME, GV2P, GV2L, GV2LE)

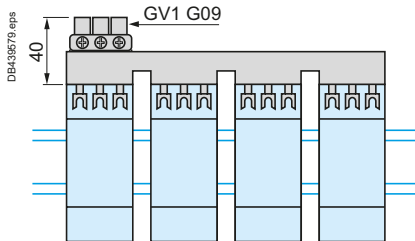
Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05



	l	p
GV2G445 (4 x 45 mm)	179	45
GV2G454 (4 x 54 mm)	206	54
GV2G472 (4 x 72 mm)	260	72

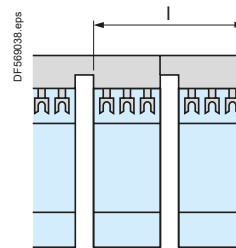
Number of tap-offs	a			
	5	6	7	8
GV2G445	224	269	314	359
GV2G454	260	314	368	422
GV2G472	332	404	476	548

#### Sets of busbars GV2G●●● with terminal block GV1G09

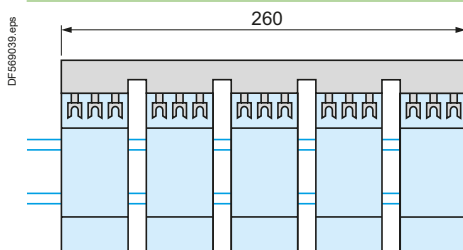


	l
GV2G245 (2 x 45 mm)	89
GV2G254 (2 x 54 mm)	98
GV2G272 (2 x 72 mm)	116

#### Sets of busbars GV2G245, GV2G254, GV2G272

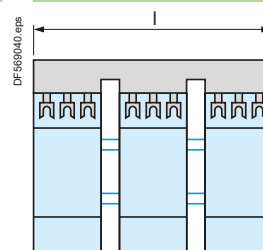


#### Sets of busbars GV2G554



	l
GV2G345 (3 x 45 mm)	134
GV2G354 (3 x 54 mm)	152

#### Sets of busbars GV2G345 and GV2G354



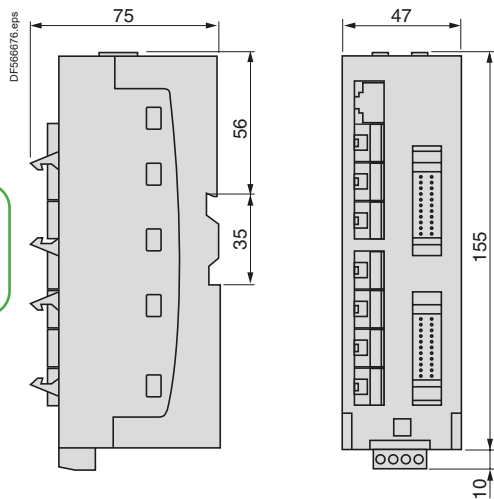
# TeSys Control

## LU9G02 RJ45 splitter box

### Dimensions

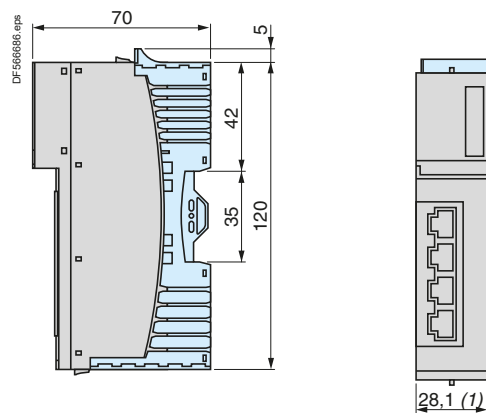
#### Parallel RJ45 wiring modules

##### Splitter box LU9G02



Wiring systems

##### Parallel wiring module Advantys STBEPI2145



(1) Dimension to be multiplied by the number of **STBEPI2145** modules present in the configuration.

Door mounting isolation switch		
Type of product	Range	Pages
Switch-disconnectors	Up to 12 or 20 A	B3/2
Switch-disconnectors, high performance applications	From 12 to 175 A	B3/6
Accessories for switch-disconnectors		B3/8

Switch-  
disconnectors

Technical Data for Designers	B3/17
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VCDN20

Switch-disconnectors



VCCDN20



VBDN20

## Switch-disconnectors for standard applications

- 3-pole rotary switch-disconnectors, 12 to 20 A
- Marking on operator
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

### Main and Emergency stop switch-disconnectors for door mounting

Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCDN12
			20	VCDN20

### Main and Emergency stop switch-disconnectors for mounting at back of an enclosure <sup>(1)</sup>

Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCCDN12
			20	VCCDN20

### Main switch-disconnectors for door mounting

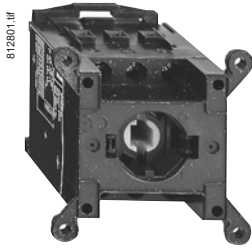
Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	Ø22.5	12	VBDN12
			20	VBDN20

<sup>(1)</sup> Switches supplied with a shaft extension VZN17 and a door interlock plate KZ32 (see page B3/5).

# TeSys Control

## Switch-disconnectors

### Product references



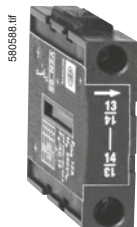
VN20



VZN11



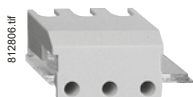
VZN14



VZN05



VZN26



VZN08

## Switch-disconnectors for standard applications

### Switch bodies

Description	Rating A	Reference
3-pole switch-disconnectors	12	VN12
	20	VN20

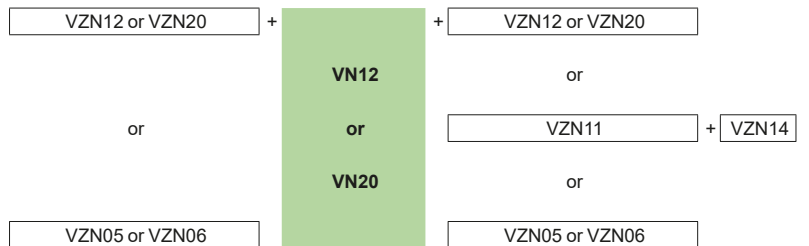
### Add-on modules

Description	Rating A	Reference
Main pole modules	12	VZN12
	20	VZN20
Neutral pole module with early make and late break contacts	12 and 20	VZN11
Earthing module	12 and 20	VZN14
Auxiliary contact block modules	1 N/O late make contact	VZN05
	1 N/C early break contact	VZN06
Input terminal protection shrouds	For add-on pole modules or auxiliary contact block modules (single-pole shroud)	VZN26
	For switch bodies (3-pole shroud)	VZN08

Switch-disconnectors

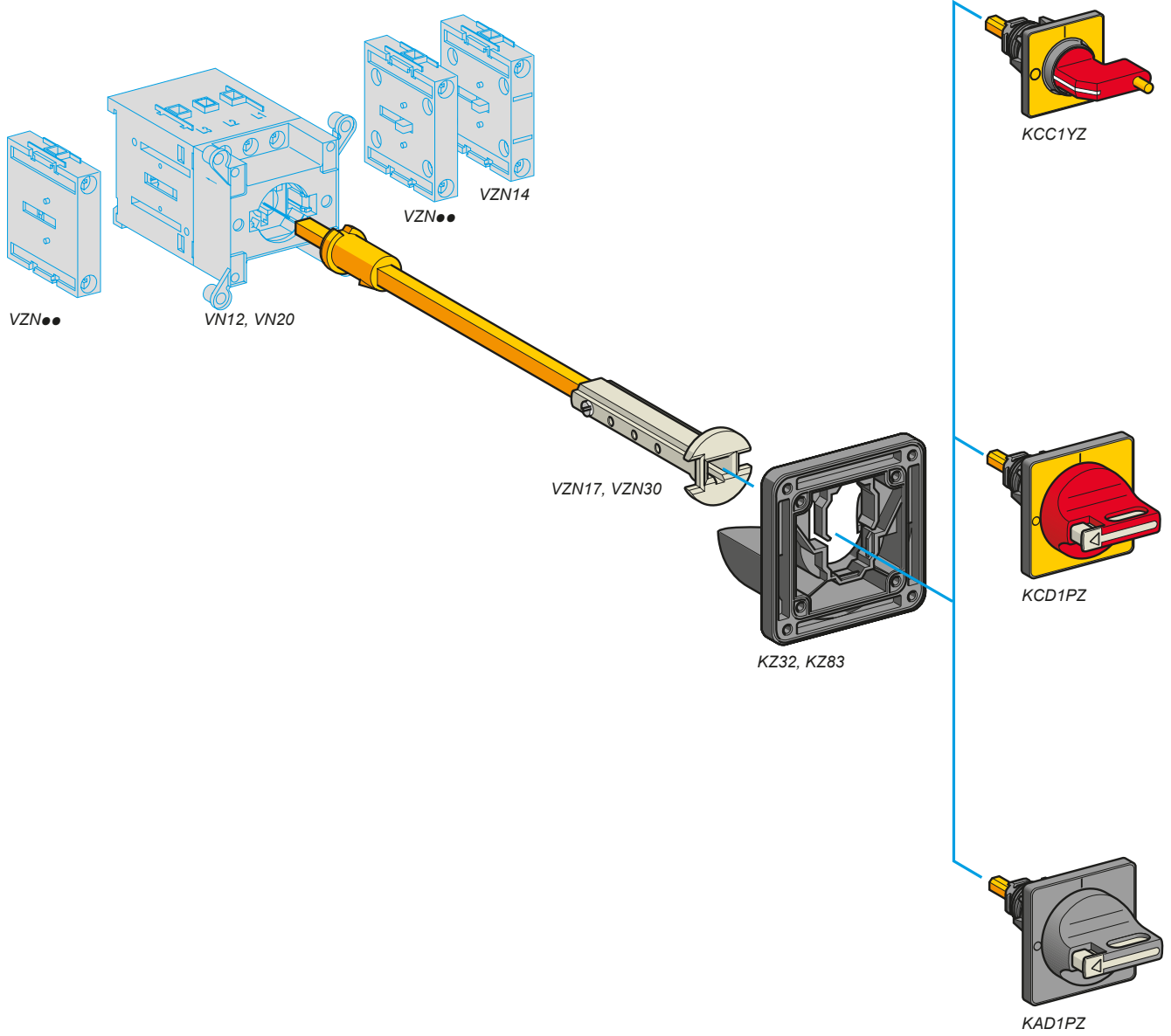


### Maximum number of add-on modules that can be fitted on a switch body




DP590544.eps

Switch-disconnectors



## Switch-disconnectors for standard applications

- Degree of protection IP 65.
- Marking on operator .
- Padlockable operating handle (padlocks not supplied).
- Operator fixing by 1 Ø22.5 hole; for other operators see pages B3/11 and B3/13.
- For other accessories and empty enclosures, see pages B3/14, B3/15 and chapter A1.

### Operators for main and Emergency stop switch-disconnectors

Handle	Front plate mm	Reference
Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow 45 x 45	KCC1YZ
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	KCD1PZ

### Operators for main switch-disconnectors

Handle	Front plate mm	Reference
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	KAD1PZ

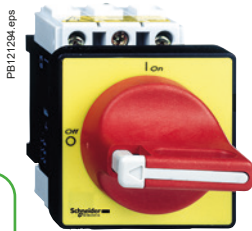
### Accessories for door interlocking

For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator

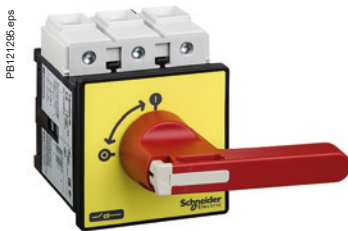
Description	Front plate mm	Distance enclosure back/door mm	Sold in lots of	Unit reference
Shaft extensions	–	300...330	1	VZN17
		400...430	1	VZN30
Door interlock plate	45 x 45 or 60 x 60	–	5	KZ32
Plate for door mounting	45 x 45 or 60 x 60	–	5	KZ83

Switch-disconnectors





VCF0



VCF5



VCCF0

## Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator  $\text{O} \downarrow$
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

### Main and Emergency stop switch-disconnectors for door mounting

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCD02	0.215
			20	VCD01	0.215
			25	VCD0	0.215
			32	VCD1	0.215
			40	VCD2	0.215
4 screws	Yellow 90 x 90	4 screws	12	VCF02	0.250
			20	VCF01	0.250
			25	VCF0	0.250
			32	VCF1	0.250
			40	VCF2	0.250
			63	VCF3	0.560
			80	VCF4	0.560
			125	VCF5	1.200
175	VCF6	1.200			

### Main and Emergency stop switch-disconnectors for mounting at back of an enclosure <sup>(1)</sup>

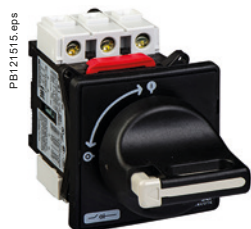
Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCCD02	0.392
			20	VCCD01	0.392
			25	VCCD0	0.392
			32	VCCD1	0.392
			40	VCCD2	0.392
4 screws	Yellow 90 x 90	4 screws	12	VCCF02	0.527
			20	VCCF01	0.527
			25	VCCF0	0.527
			32	VCCF1	0.527
			40	VCCF2	0.527
			63	VCCF3	0.440
			80	VCCF4	0.680
			125	VCCF5	1.320
175	VCCF6	1.320			

<sup>(1)</sup> Unit supplied with a shaft extension VZN17 or VZ18 and a door interlock plate KZ32 or KZ74 (see page B3/14).



## Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator  $\circ \downarrow$ .
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.



VBD01



VBF4



VVE1

### Main switch-disconnectors for door mounting

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	Ø22.5	12	VBD02	0.215
			20	VBD01	0.215
			25	VBD0	0.215
			32	VBD1	0.215
			40	VBD2	0.215
Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 90 x 90	4 screws	12	VBF02	0.250
			20	VBF01	0.250
			25	VBF0	0.250
			32	VBF1	0.250
			40	VBF2	0.250
			63	VBF3	0.560
			80	VBF4	0.560
Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 90 x 90	4 screws	125	VBF5	1.200
			175	VBF6	1.200

### Main and Emergency stop switch-disconnectors

#### For mounting in an enclosure or for modular distribution boards

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow 45 x 45	4 screws	25	VVE0	0.250
			32	VVE1	0.250
			40	VVE2	0.250
			63	VVE3	0.530
			80	VVE4	0.530

### Main switch-disconnectors

#### For mounting in an enclosure or for modular distribution boards

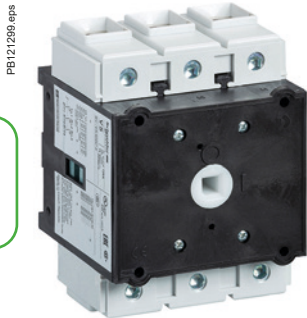
Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Black, not padlockable	Black 45 x 45	4 screws	25	VVD0	0.250
			32	VVD1	0.250
			40	VVD2	0.250
			63	VVD3	0.560
			80	VVD4	0.560



## Switch-disconnectors for high performance applications

### Switch bodies

Description	Rating A	Reference
3-pole switch-disconnectors <sup>(1)</sup>	12	V02
	20	V01
	25	V0
	32	V1
	40	V2
	63	V3
	80	V4
	125	V5
	175	V6



V5

Switch-disconnectors



VZ0



VZ11



VZ15



VZ20

### Add-on modules

Description	Rating A	Reference
Main pole modules	12	VZ02
	20	VZ01
	25	VZ0
	32	VZ1
	40	VZ2
	63	VZ3
	80	VZ4
Neutral pole modules with early make and late break contacts <sup>(1)</sup>	12 to 40	VZ11
	63 to 80	VZ12
	125 and 175	VZ13
Earthing modules	12 to 40	VZ14
	63 and 80	VZ15
	125 and 175	VZ16

### Auxiliary contact block modules

Description	Type	Reference
Auxiliary contact block modules with 2 auxiliary contacts	N/O + N/C <sup>(2)</sup>	VZ7
	N/O + N/O	VZ20

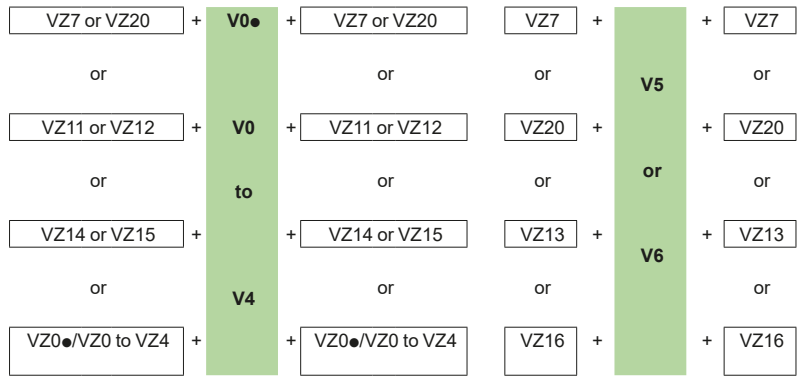
<sup>(1)</sup> Protection shrouds are available if required: see page B3/14.

<sup>(2)</sup> Late make N/O, early break N/C contacts

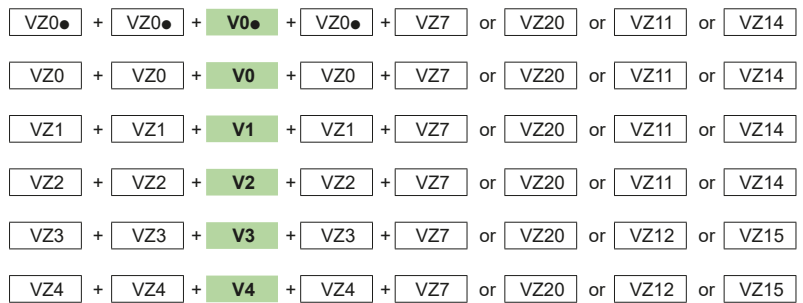
## Switch-disconnectors for high performance applications

### Maximum number of add-on modules that can be fitted on a switch body

1 add-on module on each side of the switch body

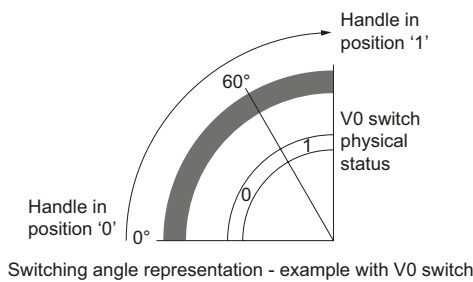


2 add-on modules on each side of the switch body



**Note:** The add-on modules mounted next to the switch body are main pole modules. Maximum of 3 main pole modules per switch body.

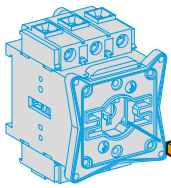
## Auxiliary switch switching angles



Switching angle representation - example with V0 switch

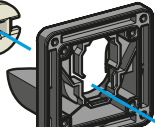
		0: contact open 1: contact close			
		Handle travel 0 > 1			
		0°	30°	60°	90°
3-pole switch-disconnectors				60°	
V02 / V01 / V0 / V1 / V2 / V3 / V4 / V5 / V6			0	1	
Main pole modules				60°	
VZ02 / VZ01 / VZ0 / VZ1 / VZ2 / VZ3 / VZ4			0	1	
Neutral pole modules with early make and late break contacts				45°	
VZ11 / VZ12 / VZ13			0	1	
Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ7					75°
Late make N0 and earlier break NC		N/0	0		1
Early break N0 and late make NC for travel 1-0)		N/C	1	0	
			20°		
				60°	
Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ20			0	1	
			0	1	
				60°	

DF503798.eps

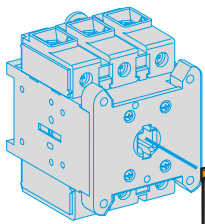


VN12, VN20  
V02...V2

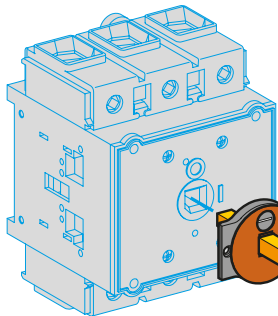
VZN17, VZN30



KZ32, KZ83

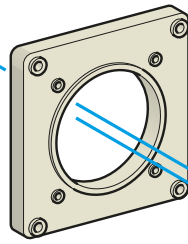


V3, V4



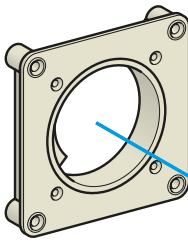
V5, V6

VZ18, VZ31



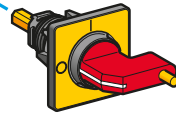
KZ81

VZ18, VZ31

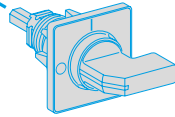


KZ74

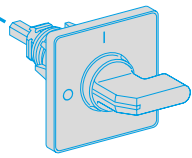
Switch-disconnectors



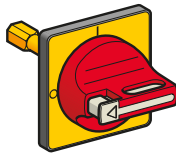
KC•1YZ



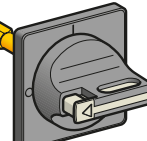
KC•1LZ



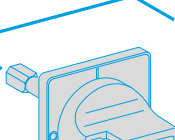
KA•1BZ



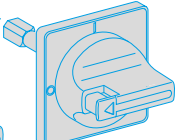
KC•1PZ



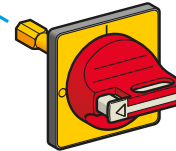
KA•1PZ



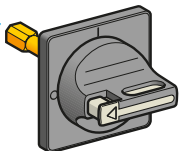
KD•1PZ



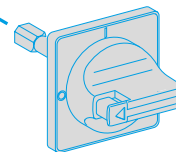
KB•1PZ



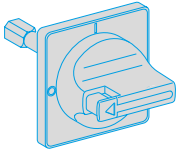
KCF2PZ



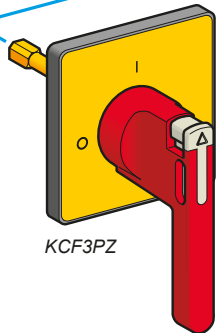
KAF2PZ



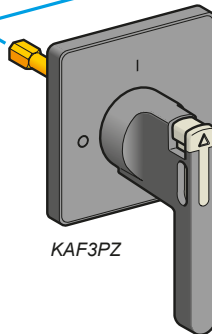
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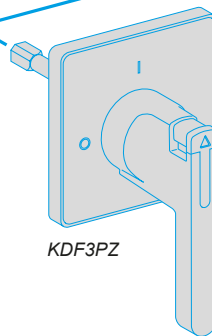
KBF2PZ



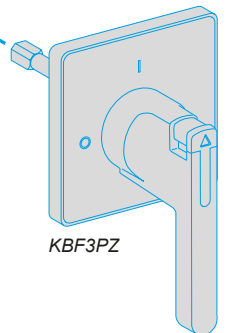
KCF3PZ



KAF3PZ



KDF3PZ



KBF3PZ

- Marking on operator  $\circ \downarrow$ .
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

#### Handles and front plates for main and Emergency stop switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
		mm		
VN12, VN20 V02...V2	Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow	Ø22.5	<b>KCC1YZ</b>
		45 x 45	4 screws	<b>KCE1YZ</b>
	Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow	Ø22.5	<b>KCD1PZ</b>
		60 x 60	4 screws	<b>KCF1PZ</b>
V3 and V4	Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow	4 screws	<b>KCF2PZ</b>
V5 and V6	Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow	4 screws	<b>KCF3PZ</b> <sup>(1)</sup>
		90 x 90		

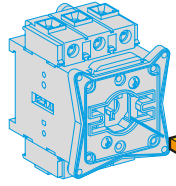
#### Handles and front plates for main switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
		mm		
VN12, VN20 V02...V2	Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black	Ø22.5	<b>KAD1PZ</b>
		60 x 60	4 screws	<b>KAF1PZ</b>
V3 and V4	Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black	4 screws	<b>KAF2PZ</b>
V5 and V6	Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black	4 screws	<b>KAF3PZ</b> <sup>(1)</sup>
		90 x 90		

<sup>(1)</sup> For door mounting of 63 and 80 A switch-disconnectors, adapter plate **KZ106** must be ordered separately (see page B3/14).

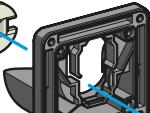


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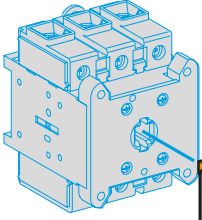


VN12, VN20  
V02...V2

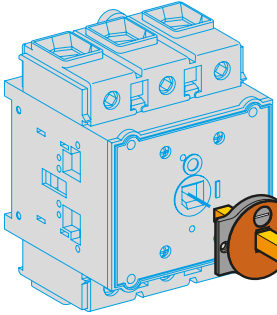
VZN17, VZN30



KZ32, KZ83

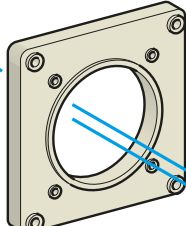


V3, V4



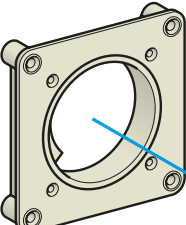
V5, V6

VZ18, VZ31



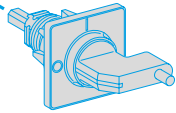
KZ81

VZ18, VZ31

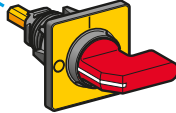


KZ74

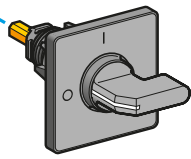
Switch-disconnectors



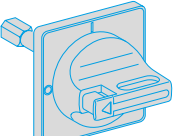
KC•1YZ



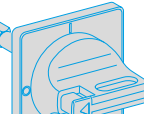
KC•1LZ



KA•1BZ



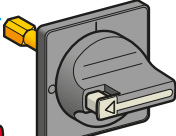
KC•1PZ



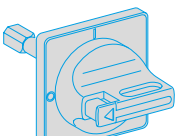
KA•1PZ



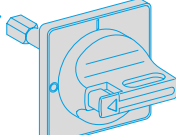
KD•1PZ



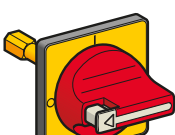
KB•1PZ



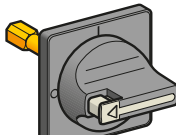
KCF2PZ



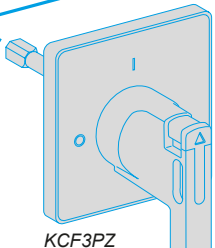
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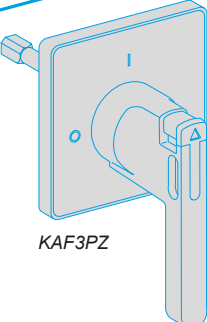
KDF2PZ



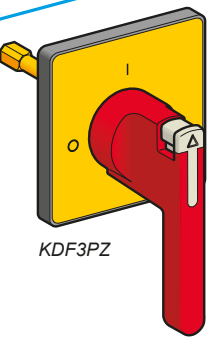
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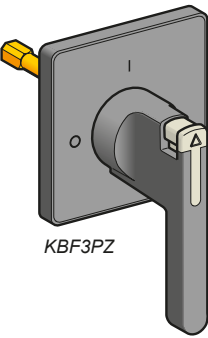
KCF3PZ



KAF3PZ



KDF3PZ



KBF3PZ

- Marking on operator  $\circ \downarrow$ .
- Degree of protection IP 65.

#### Handles and front plates for Emergency stop switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
VN12, VN20 V02...V2	Red, not padlockable	Yellow	Ø22.5	<b>KCC1LZ</b>
		45 x 45	4 screws	<b>KCE1LZ</b>
		Yellow	Ø22.5	<b>KDD1PZ</b>
		60 x 60	4 screws	<b>KDF1PZ</b>
V3 and V4	Red, long, not padlockable	Yellow 60 x 60	4 screws	<b>KDF2PZ</b>
V5 and V6	Red, long, not padlockable	Yellow 90 x 90	4 screws	<b>KDF3PZ</b> <sup>(1)</sup>

#### Handles and front plates for switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
VN12, VN20 V02...V2	Black, not padlockable	Black	4 screws	<b>KAE1BZ</b>
		45 x 45	Ø22.5	<b>KBD1PZ</b>
		Black	4 screws	<b>KBF1PZ</b>
		60 x 60		
V3 and V4	Black, not padlockable	Black 60 x 60	4 screws	<b>KBF2PZ</b>
V5 and V6	Black, not padlockable	Black 90 x 90	4 screws	<b>KBF3PZ</b> <sup>(1)</sup>

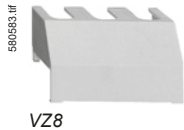
<sup>(1)</sup> For door mounting of 63 and 80 A switch-disconnectors, adapter plate **KZ106** must be ordered separately (see next page).



# TeSys Control

## Accessories for switch-disconnectors

### Product references



VZ8



VZ26



VZ29

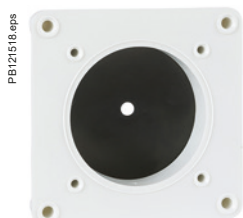
Switch-disconnectors



VZ31



KZ32



KZ81

### Input terminal protection shrouds

Description	For use on	Reference
For switch bodies (3-pole shroud)	V02...V2	<b>VZ8</b>
	V3 and V4	<b>VZ9</b>
	V5 and V6	<b>VZ10</b>
For add-on pole modules (single-pole shroud)	VZ02...VZ2, VZ11, VZ14	<b>VZ26</b>
	VZ3, VZ4, VZ12, VZ15	<b>VZ27</b>
	VZ13, VZ16	<b>VZ28</b>
For contact blocks with 2 auxiliary contacts	–	<b>VZ29</b>

### Components for door interlocking

For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator

Description	For use on	Distance enc. back/door mm	Sold in lots of	Unit reference
Shaft extensions	VN12, VN20 V02...V2	300...330	1	<b>VZN17</b> <sup>(1)</sup>
		400...430	1	<b>VZN30</b> <sup>(1)</sup>
	V02...V2	300...330	1	<b>VZ17</b>
		400...430	1	<b>VZ30</b>
	V3 and V4	300...320	1	<b>VZ18</b>
		400...420	1	<b>VZ31</b>
V5 and V6	330...350	1	<b>VZ18</b>	
	430...450	1	<b>VZ31</b>	
Door interlock plates	VN12, VN20 V02...V2	–	5	<b>KZ32</b>
	V3...V6	–	5	<b>KZ74</b>

Description	For use on	Front plate dimensions mm	Sold in lots of	Unit reference
Plates for door mounting of handles with 4 screw fixing	VN12, VN20 V02...V2	45 x 45 or 60 x 60	5	<b>KZ83</b>
	V3...V6	60 x 60 or 90 x 90	5	<b>KZ81</b>
Adapter plate for switch-disconnectors	V3 and V4	90 x 90	5	<b>KZ106</b>

<sup>(1)</sup> Can be used with V02 to V2 switches.



# TeSys Control

## Accessories for switch-disconnectors

### Product references



PB121519.eps

KZ15



PB121520.eps

KZ67



PB121521.eps

Z01

### Accessories for operators

Description	For use on	Front plate dimensions mm	Sold in lots of	Unit reference	
Legend holder with silver coloured blank legend plate	Front plate	45 x 45	5	KZ13	
		60 x 60	5	KZ15	
		90 x 90	5	KZ103	
Legend holders without legend plate	Front plate	45 x 45	20	KZ14	
		60 x 60	10	KZ16	
		90 x 90	5	KZ101	
Silver coloured blank legend plates for engraving by customer	KZ16	–	10	KZ77	
Seals	VN12, VN20	45 x 45	5	KZ65	
		V02...V2	60 x 60	5	KZ66
		V3 and V4	60 x 60	5	KZ62
		V3...V6	90 x 90	5	KZ67
Tightening tool	For operators with Ø22.5 fixing	–	5	Z01	

Switch-disconnectors




# TeSys Control

## Switch-disconnectors

### Product references

Switch-  
disconnectors

KAD1PZ	VBF4GE	VCFN20GE
KAD1XZ	VBF5	VCFN25GE
KAE1BZ	VBF5GEN	VCFN32GE
KAF1PZ	VBF6	VCFN40GE
KAF2PZ	VBF6GEN	VCFXGE1
KAF2XZ	VBFXGE1	VCFXGE2
KAF3PZ	VBFXGE2	VCFXGE4
KBD1PZ	VBFXGE4	VCFXGE6
KBF1PZ	VBFXGE6	VGP1
KBF2PZ	VC1GUN	VGPCLIP1
KBF3PZ	VC2GUN	VN12
KCC1LZ	VC3GUN	VN20
KCC1YZ	VC4GUN	VVD0
KCD1PZ	VC5GUN	VVD1
KCD1YZ	VC6GUN	VVD2
KCE1LZ	VCCD0	VVD3
KCE1YZ	VCCD01	VVD4
KCF1PZ	VCCD02	VVE0
KCF1YZ	VCCD1	VVE1
KCF2PZ	VCCD2	VVE2
KCF2YZ	VCCDN12	VVE3
KCF3PZ	VCCDN20	VVE4
KCG2YZ	VCCF0	VZ0
KDD1PZ	VCCF01	VZ01
KDF1PZ	VCCF02	VZ02
KDF2PZ	VCCF1	VZ1
KDF3PZ	VCCF2	VZ10
KZ32	VCCF3	VZ11
KZ74	VCCF4	VZ12
KZ80	VCCF5	VZ13
KZ81	VCCF6	VZ14
KZ82	VCD0	VZ15
KZ83	VCD01	VZ16
V0	VCD02	VZ17
V01	VCD1	VZ17L127
V02	VCD2	VZ17L69
V1	VCDN12	VZ18
V2	VCDN20	VZ2
V3	VCF0	VZ20
V4	VCF01	VZ26
V5	VCF01GE	VZ27
V6	VCF01GEGP	VZ28
VBD0	VCF02	VZ29
VBD01	VCF02GE	VZ3
VBD02	VCF02GEGP	VZ30
VBD1	VCF0GE	VZ31
VBD2	VCF0GEGP	VZ4
VBDN12	VCF1	VZ45
VBDN20	VCF1GE	VZ7
VBF0	VCF1GEGP	VZ8
VBF01	VCF1YZ	VZ9
VBF01GE	VCF2	VZN05
VBF02	VCF2GE	VZN06
VBF02GE	VCF3	VZN08
VBF0GE	VCF3GE	VZN11
VBF1	VCF4	VZN12
VBF1GE	VCF4GE	VZN14
VBF2	VCF5	VZN17
VBF2GE	VCF5GEN	VZN19
VBF3	VCF6	VZN20
VBF3GE	VCF6GEN	VZN26
VBF4	VCFN12GE	VZN30

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

## Technical Data for Designers

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> Dimensions ..... B3/22 to B3/23

> Schemes ..... B3/23

Switch-disconnectors for high performance applications:

> Dimensions ..... B3/24 to B3/25

> Schemes ..... B3/25

# TeSys Control

## Switch-disconnectors

### Characteristics

#### Characteristics

##### Environment

Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1
Conforming to standards	IEC/EN 60947-3 and UL/CSA 60947-4-1									
Product certifications	UL, CSA, UKCA	UL, CSA, DNV-GL, CCC, IEC, UKCA	UL, CSA, UKCA	UL, CSA, DNV-GL, IEC, EAC, CCC <sup>(1)</sup> , UKCA						
Degree of protection with protection shroud	IP 20 conforming to IEC 60529									
Ambient air temperature	° C -20...+50									
Flame resistance	° C 960 conforming to IEC 60695-2-11									
Shock resistance 1/2 sine wave = 11ms conforming to IEC60068-2-27	gn	15	30	15	30					
Vibration resistance 10...150 Hz conforming to IEC 60068-2-6	gn	5		1						

##### Electrical characteristics, a.c. operation

Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1	
Rated operational voltage (Ue)	V 690										
Rated impulse withstand voltage (Uimp)	kV 6		8		6		8				
Conventional thermal currents in free air (Ith) and rated uninterrupted (Iu)	A 12		20		25		32				
Conventional thermal current in enclosure (Ithe)	A 10		16		20		25				
Power dissipation per pole for the above operational currents	AC-23A		W -		1.25		2				
	AC-21A		W -		3.2		5				
Rated operational power and current	AC-21A/22A	230...690 V	A 12		20		25		32		
	AC-23A	230 V	A/kW 10.6/3		14/4		19.7/5.5				
		240 V	A/kW 10.6/3		14/4		19.9/5.5		18.9/5.5		
		400 V	A/kW 8.1/4		11/5.5		14.5/7.5		21.8/11		
		415 V	A/kW 8.1/4		11/5.5		14/7.5		21/11		
		500 V	A/kW 8.9/5.5		11.9/7.5		16.7/11				
Rated operational power	AC -3	230/240 V	kW 1.5		3		4				
		400/415 V	kW 3		4		5.5		7.5		
		500 V	kW 4		5.5		7.5				
		690 V	kW 4		5.5		7.5		11		
Intermittent duty class	30										
Characteristics in normal operating conditions	Rated making capacity AC-21A/22A/23A (I rms)	A/ 400 V 120		200		250		320			
	Rated breaking capacity AC-21A/22A/23A (I rms)	A/ 400 V 120		200		250					
Short-circuit characteristics	Permissible rms short time rating (Icw)	A/ 400V/1s 140		300		140		300		384	
	Rated making capacity under short-circuit conditions (Icm) I peak	kA/ 400 V 0.5		1		0.5		1			
	Rated conditional short-circuit current (I rms) with aM/gC fuses	kA/ 400 V 6		10		6		10			
		A 12		20		25		35			

(1) CCC: except for VVD, VVE switches.

References:  
page B3/3

Dimensions:  
page B3/22

Schemes:  
page B3/23

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Schneider  
Electric

Switch-disconnectors

Ref.



V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
IEC/EN 60947-3 and UL/CSA 60947-4-1								IEC/EN 60947-5-1, UL/CSA 60947-5-1	

UL, CSA, DNV-GL, IEC, EAC, CCC <sup>(1)</sup>, UKCA

IP 20 conforming to IEC 60529

-20...+50

960 conforming to IEC 60695-2-11

30

-

1

-

V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
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690

8

6

40	63	80	125	175	12	12
32	50	63	100	140	10	10
2.4	4.2	5.1	7.5	11	-	-
5.4	6.4	12.5	15	25	-	-
40	63	80	125	160	le/AC-15	
25.8/7.5	50.3/15	61.2/18.5	71.9/22	96.6/30	6 A	
24.8/7.5	48.2/15	58.5/18.5	68/22	92.7/30	6 A	
29/15	41.5/22	57/30	68.5/37	83/45	4 A	
28/15	40/22	55/30	66/37	80/45	4 A	
28.5/18.5	44/30	54/37	64.5/45	79/55	2 A	
17.5/15	25/22	33/30	42/37	49/45	1 A	
5.5	11	15	22	30	-	
11	18.5	22	30	37	-	
15	22	30	37	45	-	
11	18.5		30	37	-	
30					-	
400	630	800	1250	1750	-	
320	500	640	1000	1400	-	
480	756	960	1500	2100	-	
1	2.1		2.8		-	
10					1	
50	63	80	125	200	16	16

(1) CCC: except for VVD, VVE switches.

References:  
page B3/3

Dimensions:  
page B3/22

Schemes:  
page B3/23

Switch-  
disconnectors

Ref.



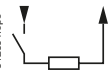
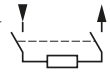
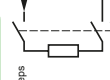

# TeSys Control

## Switch-disconnectors

### Characteristics

#### Characteristics

##### Electrical characteristics, d.c. operation

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1	
  	Rated operational current DC-1 (L/R = 1ms)	24 V	1 contact	A	12			25		32		
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
		48 V	1 contact	A	12			20		25		32
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
		60 V	1 contact	A	12			20		25		32
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
	110 V	1 contact	A	1.5			2		9		10	
		2 contacts	A	8			10		12		16	
		3 contacts	A	12			20		25		32	
	220 V	1 contact	A	1.5			2		2.5		3	
		2 contacts	A	7			8		10		12	
		3 contacts	A	10			14		16		20	
	250 V	1 contact	A	0.6			0.7		0.8		1	
		2 contacts	A	3			4		6		8	
		3 contacts	A	8			10		12		16	
<b>Ref.</b> 	Rated operational current DC-2 to DC-5 (L/R = 1ms)	24 V	1 contact	A	12			25		32		
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
		48 V	1 contact	A	12			20		25		32
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
		60 V	1 contact	A	10			14		16		20
			2 contacts	A	12			20		25		32
			3 contacts	A	12			20		25		32
		110 V	1 contact	A	1.5			2		2.5		3
			2 contacts	A	3			4		5		6
			3 contacts	A	12			20		25		32
		220 V	1 contact	A	0.4			0.5		0.5		0.8
			2 contacts	A	1.4			1.5		1.5		2
			3 contacts	A	1			2		3		4
		250 V	1 contact	A	0.3			0.4		0.5		0.8
			2 contacts	A	0.4			0.6		0.8		1
			3 contacts	A	1.2			2.4		1.6		2

##### Other characteristics

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1
Mechanical durability (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. AC-21 (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. DC-1 to 5 (operating cycles)				30000							
Suitable for isolation				Yes							
Cabling	Flexible cable + cable end	mm <sup>2</sup>	4	6	4	6					
	Solid cable	mm <sup>2</sup>	4	10	4	10					
Tightening torque		N.m	0.7	2.1	0.7	2.1					

References:  
page B3/3

Dimensions:  
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Schemes:  
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Electric

V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
35		40		50		60	70	4 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
12		20		25		30	37	2 (le/DC-1)	
20		63		80		125	175	–	
40		63		80		125	175	–	
4		6		8		12	15	1 (le/DC-1)	
14		25		30		40	50	–	
25		30		40		80	100	–	
2		4		5		3	10	0.8 (le/DC-1)	
12		20		25		30	40	–	
20		30		40		50	61	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
25		40		50		60	70	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
5		6		8		10	12	–	
8		10		20		22	24	–	
40		50		63		70	80	–	
1		1.5		2		2.2	2.4	–	
3		4		6		7	8	–	
7		10		15		16	13	–	
1		1.2		1.5		1.6	1.8	–	
2		3		6		7	8	–	
6		8		10		12	14	–	
V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
0.1		0.03						0.1	0.05
0.1		0.03						0.1 (AC-15)	0.05
30000								30000 (DC-1)	
Yes								–	
6		16				70		2 x 0.75...1.5	
10		25				95		2 x 1...2.5	
2.1		4				22.6		0.7	

Switch-  
disconnectors

Ref.



# TeSys Control

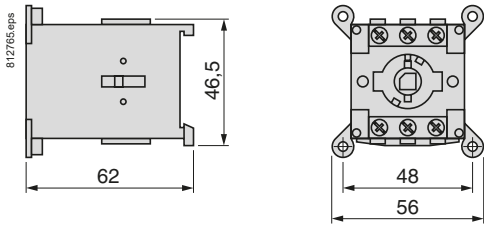
## Switch-disconnectors for standard applications

### Dimensions, mounting

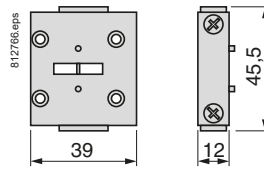
#### Dimensions

##### Switch-disconnectors

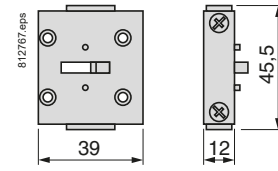
Switch bodies VN12, VN20



Add-on modules VZN12, VZN20



Add-on modules VZN11, VZN14 VZN05 and VZN06

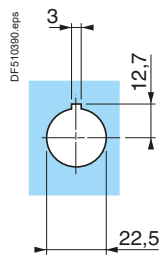
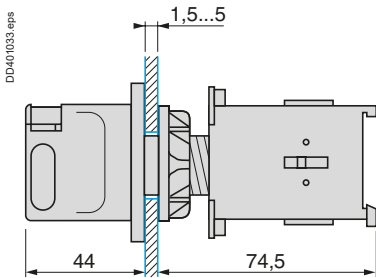


#### Mounting

##### Switch-disconnector mounted on enclosure door

VCDN12, VCDN20, VBDN12, VBDN20

Single hole fixing

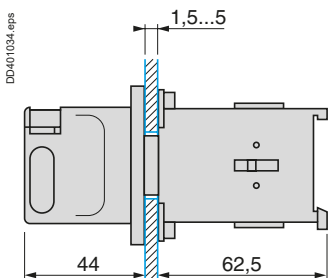


Switch-disconnectors

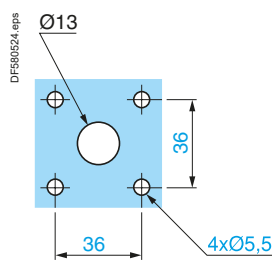
Ref.



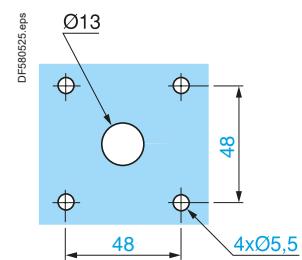
VN12, VN20  
4 screw fixing



45 x 45 front plate



60 x 60 front plate





# TeSys Control

## Switch-disconnectors for standard applications

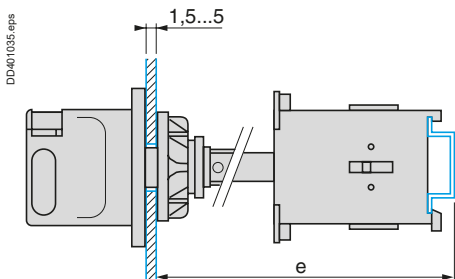
### Mounting, schemes

#### Mounting (continued)

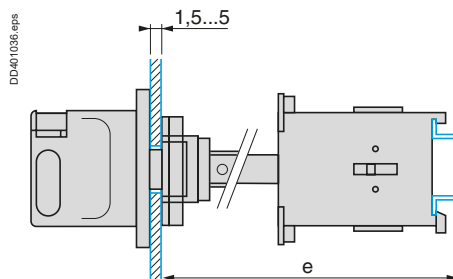
Switch-disconnector mounted at back of enclosure with shaft extension VZN17 or VZN30 (clip-on mounting on L rail)

VN12, VN20

Single hole fixing

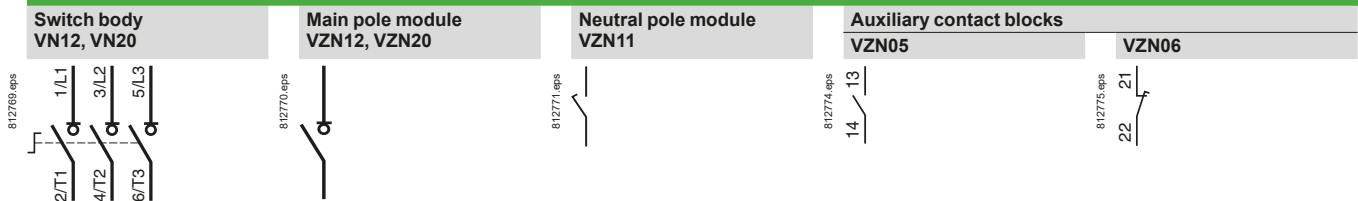


4 screw fixing



	Shaft extension	Distance (e) enclosure back/door mm
VN12, VN20	VZN17	300...330
	VZN30	400...430

#### Schemes



Switch-disconnectors

Ref.



# TeSys Control

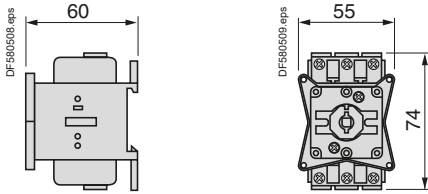
## Switch-disconnectors for high performance applications

### Dimensions, mounting

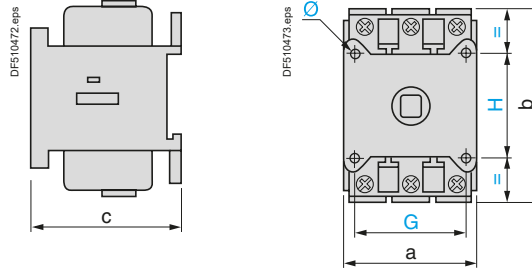
#### Dimensions

##### Switch-disconnectors

###### Switch bodies V0 $\bullet$ , V0 to V2

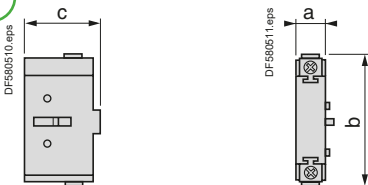


###### Switch bodies V3 to V6

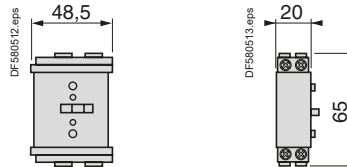


	a	b	c	G	H	Ø
V3, V4	60	83	65	48	48	5.5
V5, V6	90	125	90	68	68	5.5

###### Add-on modules VZ02 to VZ4 and VZ11 to VZ16



###### Add-on modules VZ7, VZ20

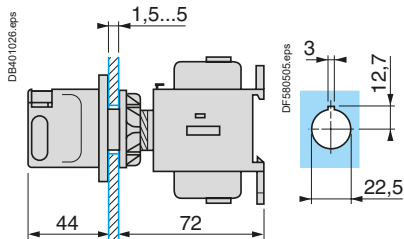


Ref.	a	b	c
VZ02 and VZ01, VZ0 to VZ2, VZ11, VZ14	16	74	35
VZ3, VZ4, VZ12, VZ15	20	83	46
VZ13, VZ16	30	125	63

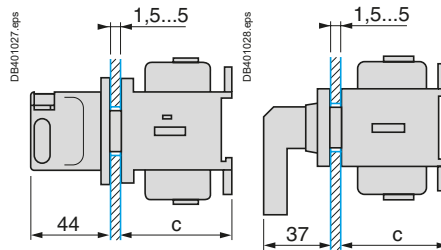
#### Mounting

##### Switch-disconnector mounted on enclosure door

###### Single hole fixing V0 $\bullet$ , V0 to V2

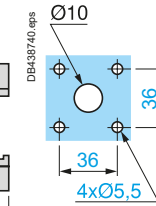


###### 4 screw fixing V0 $\bullet$ , V0 to V4

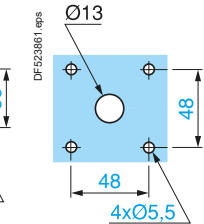


	c
V0 $\bullet$ , V0 to V2	60
V3, V4	65

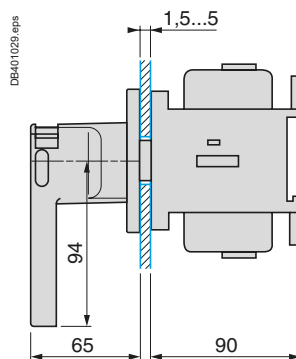
###### 4 screw fixing 45 x 45 front plate V0 $\bullet$ , V0 to V2



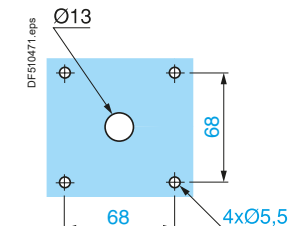
###### 4 screw fixing 60 x 60 front plate V0 $\bullet$ , V0 to V4



###### V5 and V6. 4 screw fixing



###### 90 x 90 front plate



# TeSys Control

## Switch-disconnectors for high performance applications

### Mounting, schemes

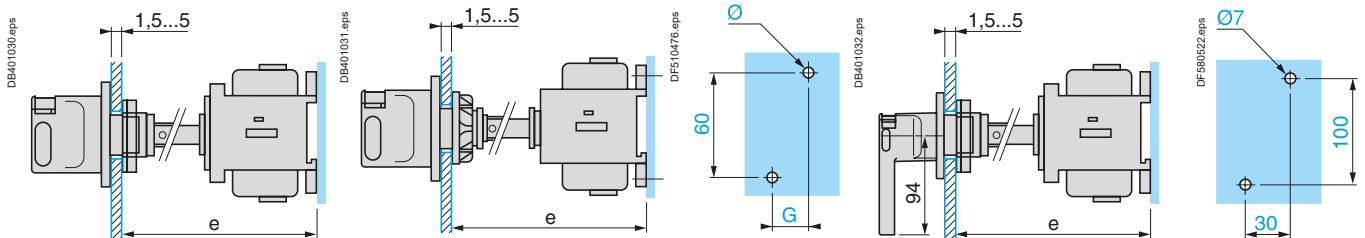
#### Mounting (continued)

##### Switch-disconnector mounted at back of enclosure

4 screw fixing  
V0 $\bullet$ , V0 to V2 with shaft extension VZ17 or VZ30 (clip-on mounting on  $\perp$  rail possible for V0 $\bullet$  to V2)

Single hole fixing  
V3 to V4 with shaft extension VZ18 or VZ31

V5 and V6 with shaft extension VZ18 or VZ31



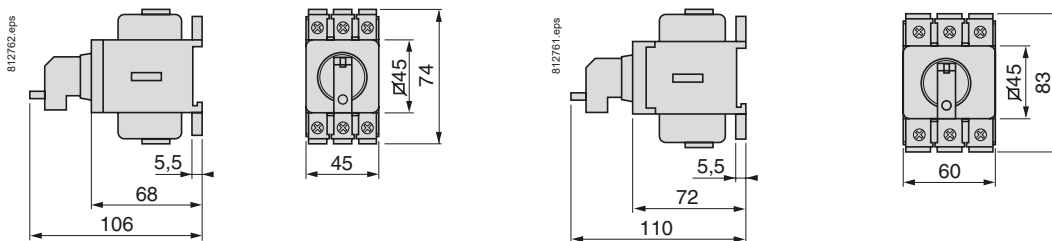
	Shaft extension	Distance (e) enc.back/door mm	$\varnothing$	G
V02 and V01 V0 to V2	VZ17	300...330	2 x 4.2	15
	VZ30	400...430	2 x 4.2	15
V3 and V4	VZ18	300...320	2 x 5	20
	VZ31	400...420	2 x 5	20

	Shaft extension	Distance (e) enc.back/door mm
V5 and V6	VZ18	300...350
	VZ31	430...450

##### Switch-disconnectors for modular distribution boards

###### VV $\bullet$ 0 to VV $\bullet$ 2

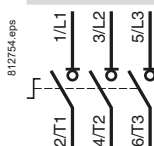
###### VV $\bullet$ 3 to VV $\bullet$ 4



#### Schemes

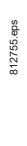
##### Switch body

V02 and V01  
V0 to V6



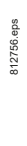
##### Main pole module

VZ02 and VZ01  
VZ0 to VZ4



##### Neutral pole module

VZ11 to VZ13



##### Auxiliary contact blocks

VZ7



VZ20





Fuse carriers		
Type of product	Range	Pages
<b>Introduction</b>		B4/2
For protection of control circuits or transformer	Up to 25, 32, 50 or 125 A	B4/3
For protection of control circuits or transformer For North American market	Up to 30 A	B4/5
For protection of motors or transformers	Up to 25, 32, 50 A	B4/6
<b>Technical Data for Designers</b>		B4/11

Fuse carriers

### Operation: safety

The fuse carrier performs two basic functions:

- it isolates the downstream circuit by means of a visible break and wide opening contacts,
- it holds the cartridge fuses designed to protect the installation against short-circuits.

The type of cartridge fuse needed to protect the circuit must be determined before selecting the fuse carrier.

### Cartridge fuse selection (type, rating, size)

#### Type

<b>Application</b>	<ul style="list-style-type: none"> <li>■ Motor protection.</li> <li>■ Transformer protection.</li> </ul>
<b>Solution</b>	<ul style="list-style-type: none"> <li>■ <b>aM type</b> fuses. These fuses are designed to withstand high current peaks of a very short duration. They must be combined with a thermal overload relay coupled with a contactor.</li> </ul>
<b>Application</b>	<ul style="list-style-type: none"> <li>■ Lighting circuit protection.</li> <li>■ Supply line protection.</li> <li>■ Furnace protection.</li> </ul>
<b>Solution</b>	<ul style="list-style-type: none"> <li>■ <b>gG</b> type fuses, which are more widely used but whose limiting capacity is weaker than that of <b>aM</b> type fuses.</li> </ul>

#### Rating

<b>gG fuses</b>	See standard NF C 15-100.						
<b>aM fuses</b>	Table 53 A paragraph 532-2-1 and table 52 C paragraph 523-1.						
	<b>Motors 3 x 220 V</b>		<b>Motors 3 x 400 V</b>		<b>Cartridge fuses type aM</b>		<b>Fuse carrier</b>
	<b>P</b>	<b>in</b>	<b>P</b>	<b>in</b>	<b>Size</b>	<b>Rating</b>	
	<b>kW</b>	<b>A</b>	<b>kW</b>	<b>A</b>		<b>A</b>	
	9	32	15	28.5	10 x 38	32	<b>LS1D32</b>
	11	39	22	44	14 x 51	50	<b>GK1EK</b>
	22	75	37	73	22 x 58	80	<b>GK1FK</b>

#### Size

Use the "fuse characteristics" table opposite to select the correct fuse size according to:

- the nominal current of the circuit to be protected,
- the operational voltage.

### Fuse carrier selection

<b>Application</b>	<b>Isolation</b> of a circuit for safety reasons only.
<b>Solution</b>	The fuse carrier may be fitted with links. The maximum permissible current is indicated in the "pole characteristics" table opposite.
<b>Application</b>	<b>Isolation</b> of a circuit and its <b>protection</b> against short-circuits.
<b>Solution</b>	Select a fuse carrier according to: <ul style="list-style-type: none"> <li>■ the type of cartridge fuse required,</li> <li>■ the maximum permissible current in the fuse carrier poles (see "pole characteristics" table opposite). If the operational current is greater than the maximum permissible current in the poles of the fuse carrier corresponding to the cartridge fuse size selected, select the fuse carrier the next size up.</li> </ul> <p>The <b>safety</b> provided by using a fuse carrier can be increased by adding a padlocking device with up to three padlocks.</p>

### Recommendations for use

The fuse carrier conforms to utilisation category AC-21A/22A of standard IEC 60947-3. It is therefore recommended that the fuse carrier early break auxiliary contacts always be inserted in the coil circuit of the contactor with which it is in series. If the fuse carrier is not associated with a contactor, it is essential to ensure that it will be operated off-load.

# TeSys Power

## Fuse carriers

### Product references - DF type



DF101



DF141



DF221



DF101NV



DF141NV



DF221NV



DF103



DF143NC



DF223NC



DF103V



DF143VC



DF223VC

## For protection of control circuits or transformers

### Fuse carriers <sup>(1)</sup>

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A	mm			
25	8.5 x 32	1 P	12	DF81
		N	12	DF10N
		1 P + N <sup>(2)</sup>	6	DF81N
		2 P	6	DF82
		3 P	4	DF83
3 P + N <sup>(2)</sup>	3	DF83N		
32	10 x 38	1 P	12	DF101
		N	12	DF10N
		1 P + N <sup>(2)</sup>	6	DF101N
		2 P	6	DF102
		3 P	4	DF103
3 P + N <sup>(2)</sup>	3	DF103N		
50	14 x 51	1 P	6	DF141
		N	6	DF14N
		1 P + N <sup>(2)</sup>	3	DF141N
		2 P	3	DF142
		3 P	2	DF143C <sup>(3)</sup>
3 P + N <sup>(2)</sup>	1	DF143NC <sup>(3)</sup>		
125	22 x 58	1 P	6	DF221
		N	6	DF22N
		1 P + N <sup>(2)</sup>	3	DF221N
		2 P	3	DF222
		3 P	2	DF223C <sup>(3)</sup>
3 P + N <sup>(2)</sup>	1	DF223NC <sup>(3)</sup>		

### Fuse carriers with "blown fuse" indicators (LED) <sup>(1) (4)</sup>

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A	mm			
25	8.5 x 32	1 P	12	DF81V
		1 P + N <sup>(2)</sup>	6	DF81NV
		2 P	6	DF82V
		3 P	4	DF83V
		3 P + N <sup>(2)</sup>	3	DF83NV
32	10 x 38	1 P	12	DF101V
		1 P + N <sup>(2)</sup>	6	DF101NV
		2 P	6	DF102V
		3 P	4	DF103V
		3 P + N <sup>(2)</sup>	3	DF103NV
50	14 x 51	1 P	6	DF141V
		1 P + N <sup>(2)</sup>	3	DF141NV
		2 P	3	DF142V
		3 P	2	DF143VC <sup>(3)</sup>
		3 P + N <sup>(2)</sup>	1	DF143NVC <sup>(3)</sup>
125	22 x 58	1 P	6	DF221V
		1 P + N <sup>(2)</sup>	3	DF221NV
		2 P	3	DF222V
		3 P	2	DF223VC <sup>(3)</sup>
		3 P + N <sup>(2)</sup>	1	DF223NVC <sup>(3)</sup>

<sup>(1)</sup> Each pole can be marked. A clip-in marker holder is provided for this purpose. Clip-in markers type AB1R● or AB1G● can also be used. DF8●●● and DF10●●● are pad lockable fuse carriers.

<sup>(2)</sup> N: neutral pole fitted with a locked tubular link as standard.

<sup>(3)</sup> A letter "C" in the reference indicates that the fuse carrier can be fitted with auxiliary early break, "blown fuse" signalling and "fuse present" signalling contacts.

<sup>(4)</sup> Operational voltage of the blown fuse indicator: 110 V...690 V.

Introduction:  
page B4/2

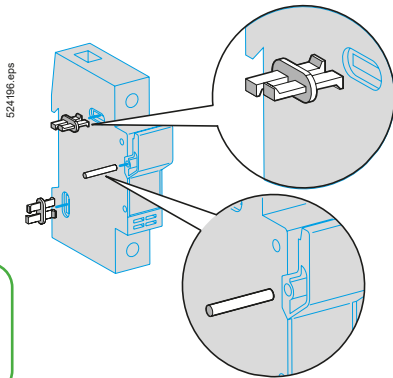
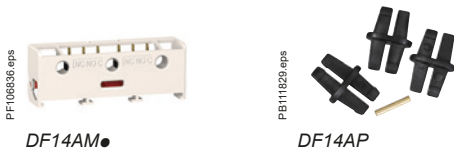
Characteristics:  
page B4/12

Dimensions:  
page B4/13

Schemes:  
page B4/13

Fuse carriers





Detail of assembly clip and pin mounting

Fuse carriers



## Accessories

### Auxiliary early break and "blown fuse" signalling contacts <sup>(1)</sup>

Fuse carriers to be equipped	Size of cartridge fuse or link	Number of contacts	Sold in lots of	Unit reference
DF14 (3 P or 3 P + N)	14 x 51	1	1	DF14AM1
		2	1	DF14AM2
DF22 (3 P or 3 P + N)	22 X 58	1	1	DF22AM1
		2	1	DF22AM2

### Fuse carrier assembly kits <sup>(2)</sup>

Fuse carriers to be assembled	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
DF8	8.5 x 32	1 pin, 2 clips	12	DF10AP
DF10	10 x 38			
DF14	14 x 51	1 pin, 3 clips	10	DF14AP
DF22	22 x 58	1 pin, 3 clips	10	DF22AP

### Marking accessories

Description	Composition	Marking	Sold in lots of	Unit reference
Clip-in markers	Strip of 10 identical numbers or letters	0...9 A...Z	25	AB1R● <sup>(3)</sup> AB1G● <sup>(3)</sup>

## Substitution

### Fuse carriers

Old range			New range	
Reference	Size of cartridge fuse or link	Composition	Reference w/o indicator	Reference with indicator
DF6AB08	8.5 x 32	1 P	DF81	DF81V
DF6AB10	10 x 38	1 P	DF101	DF101V
DF6N10	8.5 x 32 or 10 x 38	1 N	DF10N	–
GK1CC	8.5 x 32	1 P + N	DF81N	DF81NV
GK1CD	8.5 x 32	2 P	DF82	DF82V
GK1CF	8.5 x 32	3 P	DF83	DF83V
GK1CH	8.5 x 32	3 P + N	DF83N	DF83NV
GK1DC	10 x 38	1 P + N	DF101N	DF101NV
GK1DD	10 x 38	2 P	DF102	DF102V
GK1DF	10 x 38	3 P	DF103	DF103V
GK1DH	10 x 38	3 P + N	DF103N	DF103NV
GK1EB	14 x 51	1 P	DF141	DF141V
GK1EN	14 x 51	1 N	DF14N	–
GK1EC	14 x 51	1 P + N	DF141N	DF141NV
GK1ED	14 x 51	2 P	DF142	DF142V
GK1EF	14 x 51	3 P	DF143C	DF143VC
GK1EH	14 x 51	3 P + N	DF143NC	DF143NVC
GK1FB	22 x 58	1 P	DF221	DF221V
GK1FN	22 x 58	1 N	DF22N	–
GK1FC	22 x 58	1 P + N	DF221N	DF221NV
GK1FD	22 x 58	2 P	DF222	DF222V
GK1FF	22 x 58	3 P	DF223C	DF223VC
GK1FH	22 x 58	3 P + N	DF223NC	DF223NVC

### Fuse carrier assembly kits

Old range		New range
Reference	Size of cartridge fuse or link	Reference
GK1AP2	8.5 x 32 or 10 x 38	DF10AP
GK1AP3	8.5 x 32 or 10 x 38	DF10AP
	14 x 51	DF14AP
GK1AP4	8.5 x 32 or 10 x 38	DF10AP
	22 x 58	DF22AP
GK1AP5	14 x 51	DF14AP
GK1AP6	14 x 51	DF14AP
	22 x 58	DF22AP
GK1AP9	22 x 58	DF22AP

<sup>(1)</sup> These auxiliary contacts provide the following functions: early break, "blown fuse" signalling (if the fuse carrier is fitted with striker fuses) and "fuse present" signalling.

<sup>(2)</sup> 1 pin and 2 clips are required to assemble two DF8 or DF10 fuse carriers together.  
1 pin and 3 clips are required to assemble two DF14 or DF22 fuse carriers together.

<sup>(3)</sup> When ordering, replace the ● in the reference with the number or letter required. Example: AB1-R1 or AB1-GA.



# TeSys Power

## Fuse carriers for North American market

### Product references - DF type

## For protection of control circuits or transformers

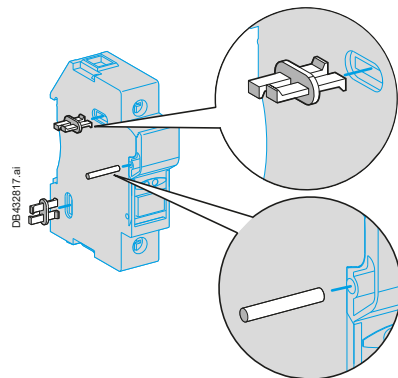
### References



DFCC1



DFCC3V



Detail of assembly clip and pin mounting

Fuse carriers <sup>(1)</sup>				
Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
<b>A</b>				
30	Class CC	1 P	12	DFCC1
		2 P	12	DFCC2
		3 P	6	DFCC3

Fuse carriers with "blown fuse" indicators (LED) <sup>(1) (2)</sup>				
Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
<b>A</b>				
30	Class CC	1 P	12	DFCC1V
		2 P	6	DFCC2V
		3 P	6	DFCC3V

Fuse carrier assembly kits <sup>(3)</sup>				
Fuse carriers to be assembled	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
DFCC	Class CC	1 pin, 2 clips	12	DF10AP

Marking accessories				
Description	Composition	Marking	Sold in lots of	Unit reference
Clip-in markers	Strip of 10 identical numbers or letter	0...9	25	AB1R● <sup>(4)</sup>
		A...Z	25	AB1G● <sup>(4)</sup>

<sup>(1)</sup> Each pole can be marked. A clip-in marker holder is provided for this purpose.

Clip-in markers type AB1R● or AB1G● can also be used.

DFCC fuse holders are pad lockable.

<sup>(2)</sup> Operational voltage of the blown fuse indicator: 230 V...690 V.

<sup>(3)</sup> 1 pin and 2 clips are required to assemble two DFCC fuse carriers together.

<sup>(4)</sup> When ordering, replace the p in the reference with the number or letter required.

Example: AB1R1 or AB1GA.

Fuse carriers





PE111831.eps

LS1D323



PE111830.eps

LS1D32



PE121302.eps

GK1EK



PE111830.eps

LS1D32



PE121303.eps

+ LA8D324

Fuse carriers



## For protection of motors or transformers

### 3-pole basic blocks

#### Connection by spring terminals

Rating	Cartridge fuse size	Number of early break contacts <sup>(1)</sup>	Single-phase protection device <sup>(2)</sup>	Reference <sup>(3)</sup>	Weight kg
25 A	10 x 38	– <sup>(4)</sup>	Without	LS1D323	0.270

#### Connection by screw clamp terminals or connectors

32 A	10 x 38	– <sup>(4)</sup>	Without	LS1D32	0.300	
50 A	14 x 51	1	Without	GK1EK	0.430	
			With	GK1EV	0.470	
			2	Without	GK1ES	0.470
				With	GK1EW	0.510

### 4-pole basic blocks

#### Connection by screw clamp terminals or connectors

32 A	10 x 38	– <sup>(4)</sup>	Without	LS1D32 + LA8D324 <sup>(5)</sup>	0.300	
50 A	14 x 51	1	Without	GK1EM	0.570	
			With	GK1EY	0.600	
			2	Without	GK1ET	0.610
				With	GK1EX	0.650

### Fuse carriers for the North American market

25 and 30 A basic blocks: please consult your Regional Sales Office.

- (1) With 1 or 2 early break contacts to be inserted in the contactor control circuit.
- (2) Fuse carriers with single-phase protection device must be fitted with striker fuses.
- (3) LS1D: clips directly onto a 35 mm rail or screw fixing.  
GK1: clips directly onto a 35 mm rail or Telequick mounting plate.
- (4) Addition of add-on contact block, see page B4/7.
- (5) Can be mounted on left-hand or right-hand side of the basic block.

# TeSys Power

## Fuse carriers - Handles and accessories

### Product references - for LS, GK type

PC112152.eps



GK1AP05

#### Add-on contact blocks

Description	For use on	Mounting	Maximum number	Type of contacts	Sold in lots of	Unit reference
Instantaneous auxiliary contacts (early break contacts)	LS1D32	Front	1	N/O + N/C	10	GVAE11
				N/O + N/O	10	GVAE20
	LS1D323	Front	1	N/O + N/C	10	GVAE113
				N/O + N/O	10	GVAE203

#### Operators

For fuse carrier		For mounting on	Reference
Rating	Number of poles		
<b>Side handles</b>			
125 A	3 or 4	Right-hand side	GK1AP07
		Left-hand side	GK1AP08

#### Front handles <sup>(1)</sup>

32 - 50 - 125 A	Fitted as standard
-----------------	--------------------

#### External handles

32 A	3 or 4	Right-hand side (IP54)	LS1D32005 <sup>(2)</sup>
		Left-hand side (IP54)	LS1D32006
50 A	3 or 4	Right-hand side	GK1AP05
		Left-hand side	GK1AP06

#### Padlocking devices <sup>(3)</sup>

For fuse carrier		Single-phase protection device	Reference
Rating	Number of poles		
32 A	3 or 4	Without	integral
50 A	3	Without	GK1AV07
		With	GK1AV08
	4	Without	GK1AV08
		With	GK1AV09

#### Links

##### Tubular links

For fuse carrier		Sold in lots of	Unit reference
Rating	Number of poles		
32 A	3 or 4	10	DK1CB92 <sup>(4)</sup>
50 A	3 or 4	10	DK1EB92 <sup>(5)</sup>
125 A	3 or 4	10	DK1FA92 <sup>(5)</sup>

<sup>(1)</sup> Fitted as standard on 32, 50 and 125 A fuse carriers type GK1.

<sup>(2)</sup> Reference LS1D32005 replaces reference DK1FB005.

<sup>(3)</sup> For the 125 A rating, use side handles GK1AP07 or GK1AP08.

<sup>(4)</sup> For use on a neutral circuit, the tubular link can be interlocked with special device LA8D25906 (sold in lots of 10).

<sup>(5)</sup> 50 A fuse carriers type GK1 are fitted with an interlocked neutral tubular link as standard.

Fuse carriers



# TeSys Power

## Fuse carriers - Accessories

### Product references - for LS type

Fuse carriers



#### Accessories for LS1D32 (screw clamp terminals)

Description	Application	Sold in lots of	Unit reference
Plate for mounting	LS1D32 and contactor LC1D09...D38 with front faces aligned	1	LAD311
Combination blocks	Between LS1D32 and contactor LC1K or LP1K	10	GV2AF01
	Between LS1D32 and contactor LC1D09...D38	10	GV2AF3
	Between LS1D32 mounted on LAD311 and contactor LC1D09...D38	10	GV2AF4

Description	Application	Pitch mm	Reference
Sets of 3-pole 63 A busbars	2 tap-offs	45	GV2G245
		54	GV2G254
		72	GV2G272
	3 tap-offs	45	GV2G345
		54	GV2G354
	4 tap-offs	45	GV2G445
		54	GV2G454
		72	GV2G472
	5 tap-offs	54	GV2G554

Description	Application	Sold in lots of	Unit reference
Protective end cover	For unused busbar outlets	5	GV1G10
Terminal block Connection from the top	For supply to one or more GV2G busbar sets	1	GV1G09
Cover for terminal block	For mounting in modular panels	10	LA9E07
Padlocking device	For use with up to 4 padlocks (not supplied) Ø6 mm shank max	1	GV2V03

#### Accessories for LS1D323 (spring terminals)

Description	Application	Reference
Plate for mounting	LS1D323 and contactor LC1D09...D38 with front faces aligned	LAD311

Description	Extension by	Number of starters	Reference
Power splitter box, 63 A	LAD32●	2	LAD322
		4	LAD324

Description	Kit contents	Reference
Assembly and power connection kit for LS1D323 and LC1D093...D323	1 LAD311 plate for mounting LS1D323 2 LAD341 power connection modules - between LS1D323 and power splitter box - between LS1D323 and contactor	LAD352

Description	Maximum capacity	Application	Sold in lots of	Unit reference
Upstream terminal block	16 mm <sup>2</sup>	Power supply to 1 or 2 power splitter boxes	1	LAD3B1
Downstream terminal block	16 mm <sup>2</sup>	Connection of motor cables	1	LAD331
Cable end reducer	–	For connection of conductors from 1 to 1.5 mm <sup>2</sup>	20	LAD99




# TeSys Power

Fuse carriers, handles and accessories

## Product references

Fuse  
carriers

DF101	DF81N
DF101N	DF81NV
DF101NV	DF81V
DF101PV	DF82
DF101V	DF82V
DF102	DF83
DF102V	DF83N
DF103	DF83NV
DF103N	DF83V
DF103NV	DFCC1
DF103V	DFCC1V
DF10AP	DFCC2
DF10N	DFCC2V
DF141	DFCC3
DF141N	DFCC3V
DF141NV	DK1CB92
DF141V	DK1EB92
DF142	DK1FA92
DF142V	DK1HC92
DF143C	DK1KC92
DF143NC	GK1AP05
DF143NVC	GK1AP06
DF143VC	GK1AP07
DF14AM1	GK1AP08
DF14AM2	GK1AV07
DF14AP	GK1AV08
DF14N	GK1AV09
DF221	GK1EK
DF221N	GK1EM
DF221NV	GK1ES
DF221V	GK1ET
DF222	GK1EV
DF222V	GK1EW
DF223C	GK1EX
DF223NC	GK1EY
DF223NVC	LA8D324
DF223VC	LS1D30
DF22AM1	LS1D32
DF22AM2	LS1D32005
DF22AP	LS1D32006
DF22N	LS1D323
DF81	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Contents

### DF type:

- > Characteristics ..... B4/12
- > Dimensions and schemes ..... B4/13

### DF type for the North American market:

- > Characteristics ..... B4/14
- > Dimensions and schemes ..... B4/15

### LS, GK type:

- > Characteristics ..... B4/16
- > Dimensions ..... B4/17
- > Schemes ..... B4/18

#### Environment characteristics

Fuse carrier type		DF8	DF10	DF14	DF22
Conforming to standards		IEC/EN 60947-3, IEC/HD 60269-2	IEC/EN 60947-3 <sup>(1)</sup> , IEC/HD 60269-2, R22HL2, UL 4248-1 <sup>(2)</sup> , CSA C22.2 No 4248-1 <sup>(2)</sup>	IEC/EN 60947-3, UL 4248-1, CSA C22.2 No 4248-1	
Product certification		IEC, EAC, CCC, UKCA	IEC, UL, CSA, EAC, DNV-GL, CCC, UKCA	IEC, UL, CSA, EAC, UKCA	
Degree of protection	Conforming to IEC 60529	IP 20			
Ambient air temperature	Storage	°C -40...+80			
	For operation, with derating <sup>(1)</sup>	°C -20...+60			
Operating positions		± 23° in relation to normal mounting plane			
Flame resistance	Conforming to IEC 60695-2-1	°C 960			

#### Pole characteristics

Fuse size	mm	8.5 x 32	10 x 38	14 x 51	22 x 58				
Rated insulation voltage (Ui) with tubular links, a.c. or D.C. supply	V	500	690	690	690				
Rated impulse withstand voltage (Uimp)	kV	6	6	8	8				
Conventional thermal current (Ith) for ambient air temperature ≤ 20 °C <sup>(3)</sup>									
	With tubular links	A 25	32	50	125				
	With aM cartridge fuses	A 25	32	50	125				
	With gG cartridge fuses	A 25	32	50	100				
Rated conditional short-circuit current Conforming to IEC 60947-3									
	400 V	kA 20	120	120	120				
	500 V	kA –	120	120	120				
	690 V	kA –	–	80	80				
Peak withstand current (dynamic stress) Conforming to IEC 60269-1									
	With tubular links	kA 11	15	15	19				
Cabling (number of conductors x c.s.a.)		<b>Min.</b>	<b>Max.</b>	<b>Min.</b>	<b>Max.</b>	<b>Min.</b>	<b>Max.</b>	<b>Min.</b>	<b>Max.</b>
	Solid cable	mm <sup>2</sup> 1 x 1.5	1 x 16 2 x 6	1 x 1.5	1 x 16 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 25
	Flexible cable without cable end	mm <sup>2</sup> 1 x 1.5	1 x 10 2 x 6	1 x 1.5	1 x 10 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 16
	Flexible cable with cable end	mm <sup>2</sup> 1 x 1.5	1 x 10 2 x 6	1 x 1.5	1 x 10 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 16
Tightening torque	Nm	2.2		3.5		4			

#### Characteristics of early break and signalling contacts DF14 AM and DF22 AM

Rated insulation voltage (Ui) a.c. supply	V	250			
Conventional thermal current (Ith) for ambient air temperature ≤ 20 °C <sup>(1)</sup>	A	5			
Rated operational current		<b>24 V</b>	<b>48 V</b>	<b>127 V</b>	<b>240 V</b>
	Category AC-15	A 4	4	3	2.5
	Category DC-13	A 3	1	0.2	0.1
Definition of rated characteristics Conforming to IEC 60947-5-1		B300			
Low load operating characteristics	Minimum voltage	V 10			
	Minimum current	mA 30			
Cabling		Faston connectors			

<sup>(1)</sup> DF101PV excluded.

<sup>(2)</sup> DF101PV add UL/CSA 4248-19.

<sup>(3)</sup> For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:

Maximum temperature	20 °C	30 °C	40 °C	50 °C	60 °C
Max. relative humidity	95 %	90 %	80 %	50 %	50 %
Current derating coefficient	1	0.95	0.9	0.8	0.7

Number of poles (each side)	1 to 3	4 to 6	≥ 7
Current derating coefficient	1	0.95	0.9



# TeSys Power

## Fuse carriers

### Dimensions, schemes - DF type

#### Dimensions

##### Modular fuse carriers 25 A and 32 A

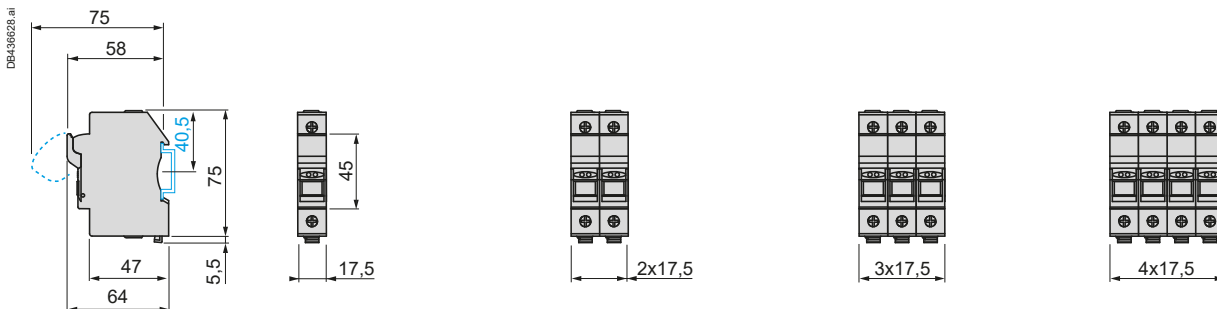
Mounting on 35 mm L rail

DF81 and DF81V  
DF101 and DF101V  
DF10N

DF81N and DF81NV  
DF82 and DF82V  
DF101N and DF101NV  
DF102 and DF102V

DF83 and DF83V  
DF103 and DF103V

DF83N and DF83NV  
DF103N and DF103NV



##### Modular fuse carriers 50 A

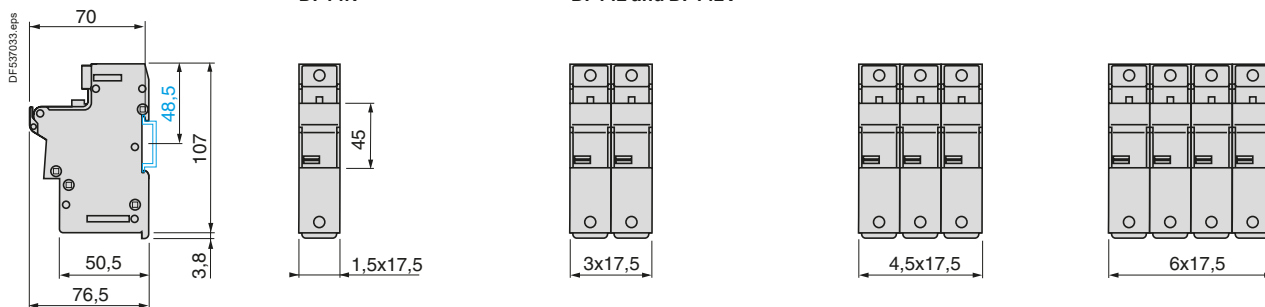
Mounting on 35 mm L rail

DF141 and DF141V  
DF14N

DF141N and DF141NV  
DF142 and DF142V

DF143C and DF143VC

DF143NC and DF143NVC



##### Modular fuse carriers 125 A

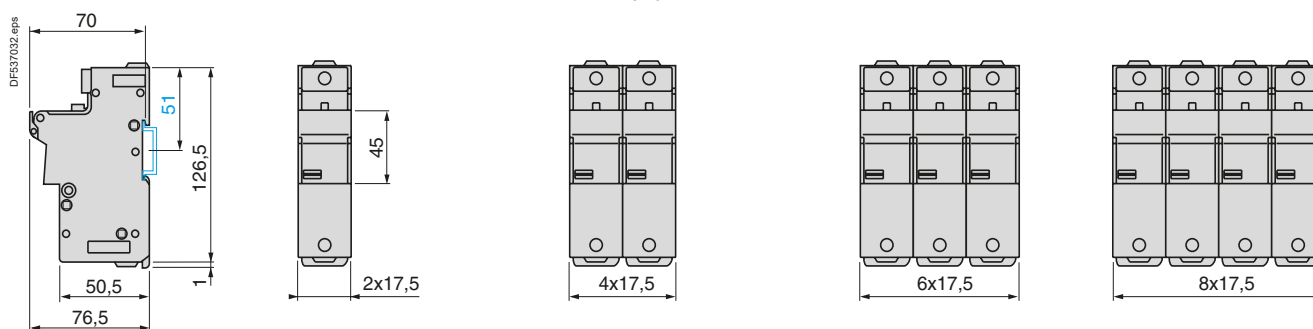
Mounting on 35 mm L rail

DF221 and DF221V  
DF22N

DF221N and DF221NV  
DF222 and DF222V

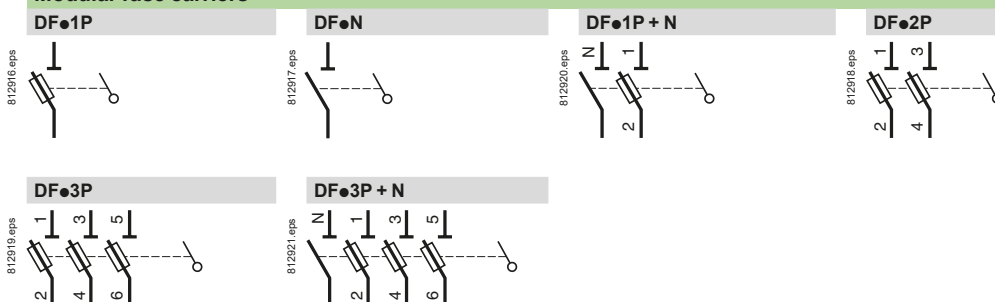
DF223C and DF223VC

DF223NC and DF223NVC



#### Schemes

##### Modular fuse carriers



# TeSys Power

## Fuse carriers for North American market

### Characteristics - DF type

Fuse carriers



Ref.



Environment characteristics			
<b>Fuse carrier type</b>		<b>DFCC</b>	
<b>Conforming to standards</b>		UL 4248-1 & 4, CSA 22-2 No 4248-1 & 4	
<b>Product certification</b>		UL, CSA, CCC, UKCA	
<b>Degree of protection</b>	Conforming to IEC 60529	IP 20	
<b>Ambient air temperature</b>	Storage	°C	-40...+80
	For operation, with derating <sup>(1)</sup>	°C	-20...+60
<b>Operating positions</b>	Without derating	±23° in relation to normal vertical mounting plane	
<b>Flame resistance</b>	Conforming to IEC 60695-2-1	°C	960

Pole characteristics				
<b>Fuse carrier type</b>		<b>DFCC</b>		
<b>Fuse size</b>		Class CC		
<b>Rated insulation voltage (U<sub>i</sub>)</b> with tubular links, a.c. supply	<b>V</b>	600		
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>	<b>kV</b>	6		
<b>Conventional thermal current (I<sub>th</sub>)</b> for ambient air temperature ≤ 40 °C <sup>(1)</sup>	With tubular links	<b>A</b>	30	
	With aM cartridge fuses	<b>A</b>	30	
	With gG cartridge fuses	<b>A</b>	30	
	<b>Short-circuit current withstand</b> With UL 248-4 Class CC fuses			
Conforming to UL 512 at 600 V	<b>kA</b>	200		
<b>Cabling</b> (number of conductors x c.s.a.)	Solid cable	<b>mm<sup>2</sup></b>	<b>Min.</b>	<b>Max.</b>
			1 x 1.5	1 x 16 2 x 6
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 1.5	1 x 10 2 x 6
	Flexible cable with cable end	<b>mm<sup>2</sup></b>	1 x 1.5	1 x 10 2 x 6
<b>Tightening torque</b>	<b>Nm</b>	2.2		

<sup>(1)</sup> For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:

Maximum temperature	20 °C	30 °C	40 °C	50 °C	60 °C
Max. relative humidity	95 %	90 %	80 %	50 %	50 %
Current derating coefficient	1	0.95	0.9	0.8	0.7


# TeSys Power

## Fuse carriers for North American market

### Dimensions, schemes - DF type

#### Dimensions

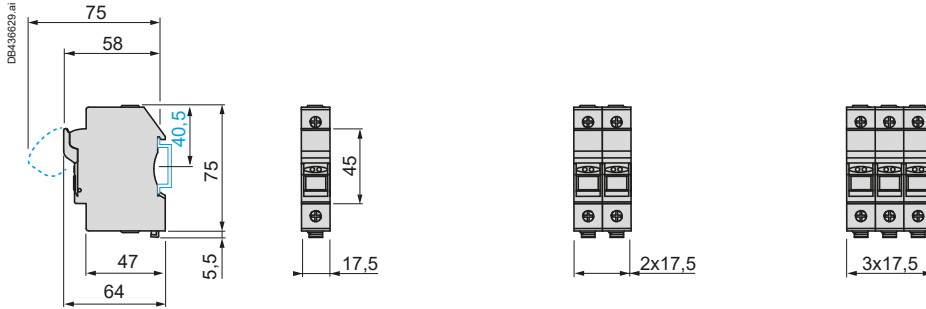
##### Modular fuse carriers 30 A

Mounting on 35 mm  rail

DFCC1 and DFCC1V

DFCC2 and DFCC2V

DFCC3 and DFCC3V



#### Schemes

##### Modular fuse carriers

DFCC1P

DFCC2P

DFCC3P



Fuse carriers





Environment				
Fuse carrier type		LS1D32	LS1D323	GK1E●
Conforming to standards	NF EN 60947-3	●		●
	IEC 60947-3	●		●
Product certifications		BV, UR		–
Ambient air temperature for operation with links without derating	°C	-50...+70		-50...+70
Maximum tilt in relation to normal vertical mounting plane		±23°		±23°

Pole characteristics				
Fuse size		10 x 38	10 x 38	14 x 51
Rated operational voltage with links, a.c. supply	V	690	690	690
Maximum continuous current at ambient temperature ≤ 40 °C <sup>(1)</sup> (Min. cable Ø/le)	With tubular links	mm <sup>2</sup> /A 6/32 or 4/25 or 2.5/16	4/25 or 2.5/16	10/50 or 6/40
	With aM fuses	mm <sup>2</sup> /A 6/32 or 4/22 or 2.5/20	4/25 or 2.5/20	10/50 or 6/35
	With gG fuses	mm <sup>2</sup> /A 4/25 or 2.5/20 or 1.5/16	2.5/20 or 1.5/16	10/40 or 6/32

Early break contact characteristics					
Rated operational voltage	V	~ 250. --- 60	~ 250. --- 60	~ 500	--- 48
Conventional thermal current	A	2.5	2.5	6	3

Blow fuse contact characteristics 95/96-98					
Rated operational voltage	V	–	–	~ 250	--- 24
Conventional thermal current	A	–	–	6	3

Cartridge fuse characteristics					
Fuse size			10 x 38	10 x 38	14 x 51
Type aM	~ 400 V	A	32 <sup>(2)</sup>	25	50
	~ 500 V	A	20	20	40
	~ 660 V	A	–	–	25
Type gG	~ 400 V	A	25 <sup>(2)</sup>	25	40
	~ 500 V	A	25	25	40
	~ 660 V	A	–	–	25
Maximum power dissipated by fuse	W		3	3	8.5

Cabling								
Connection by screw clamp terminals or connectors								
Number and c.s.a. of conductors	Solid cable	mm <sup>2</sup>	Min. 2 x 1	Max. 2 x 6	Min. –	Max. –	Min. 1 x 2.5	Max. 1 x 25
	Flexible cable without cable end	mm <sup>2</sup>	2 x 1.5	2 x 6	–	–	1 x 2.5	1 x 25
	Flexible cable with cable end	mm <sup>2</sup>	2 x 1	2 x 4	–	–	1 x 2.5	1 x 16
Connection			Screw clamp terminals	–	–	–	Connector	
Tightening torque	Nm		1.7	–	–	–	2	

Connection by spring terminals								
Number and c.s.a. of conductors	Solid cable	mm <sup>2</sup>	Min. –	Max. –	Min. 2 x 1 <sup>(3)</sup>	Max. 2 x 4	Min. –	Max. –
	Flexible cable without cable end	mm <sup>2</sup>	–	–	2 x 1.5 <sup>(1)</sup>	2 x 4	–	–

(1) For use in an installation with ambient temperature > 55 °C, apply a derating coefficient equivalent to  $\sqrt{\frac{120 - \text{ambient temperature}}{80}}$

(2) These values are for fuse carriers mounted side by side with a gap of 10 mm between them or mounted with sets of busbars GV2●54. If mounted side by side without a gap, use the following fuse sizes: aM fuse: 25 A and gG fuse: 20 A.

(3) For cross-sections 1 to 1.5 mm<sup>2</sup>, the use of an LA9D99 cable end reducer is recommended.

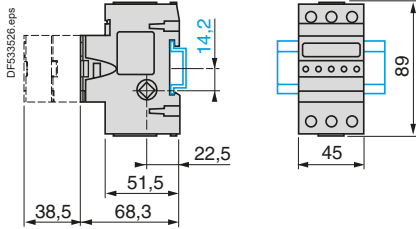
# TeSys Power

## Fuse carriers

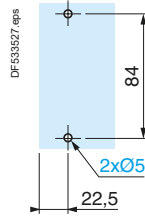
### Dimensions, mounting - LS, GK type

#### LS1D32

Mounting on rail NSYDPR200BD



Panel mounting

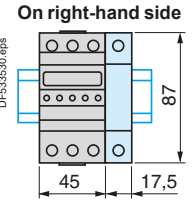
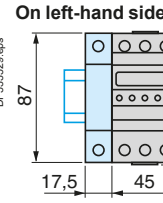


#### LS1D32 + LA8D324

Mounting on rail NSYDPR200BD

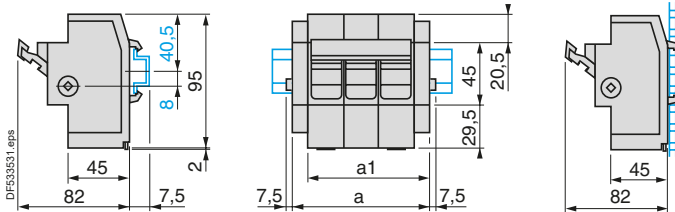


Mounting of 4th pole

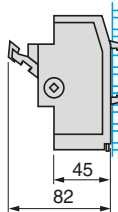


#### GK1EK, EM, ES, ET, EV, EW, EX, EY

Mounting on rail NSYDPR200BD



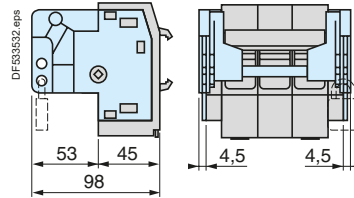
Mounting on pre-slotted plate AM1P



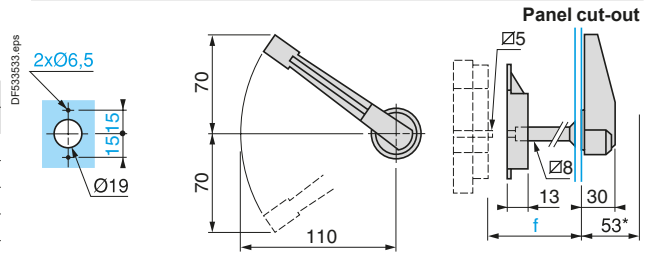
a: with single-phase protection device.  
a1: without single-phase protection device.

GK1	a		a1	
	3 P	4 P	3 P	4 P
EK	-	-	88	-
EM	-	-	-	114
ES	-	-	97	-
ET	-	-	-	123
EV	106	-	-	-
EW	115	-	-	-
EX	-	141	-	-
EY	-	132	-	-

#### GK1E + GK1AV (padlocking device)



#### External operator GK1AP05 right-hand, GK1AP06 left-hand



External operator, RH or LH side

	f
GK1EK, EM, ES, ET	29...114
GK1EV, EW, EX, EY	29...114

Fuse carriers



# TeSys Power

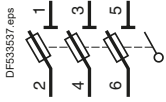
## Fuse carriers

### Schemes - LS, GK type

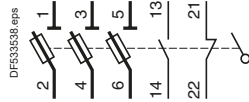
#### Fuse carriers without single-phase protection device

##### 3-pole

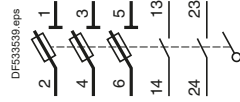
###### LS1D32, D323



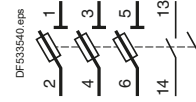
###### LS1D32, D323 + GVAE11●



###### LS1D32, D323 + GVAE20●

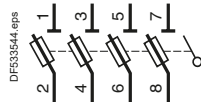


###### GK1EK

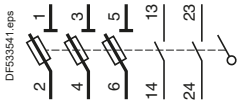


##### 4-pole

###### LS1D32 + LA8D324

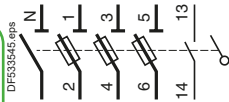


###### GK1ES

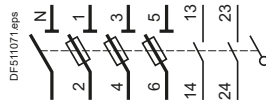


#### 3-pole + Neutral

###### GK1EM



###### GK1ET

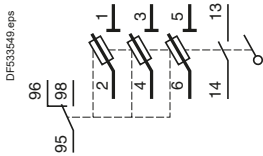


Fuse carriers

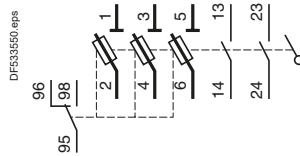
#### Fuse carriers with single-phase protection device

##### 3-pole

###### GK1EV

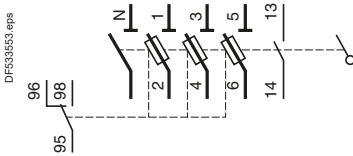


###### GK1EW

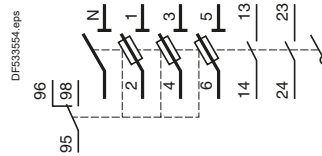


#### 3-pole + Neutral

###### GK1EY





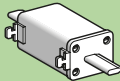
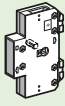



###### GK1EX



**Introduction** B5/2

**Switch-disconnector fuses**

Type of product	Range		Pages
IEC - Switch-disconnector fuses For NFC / DIN fuses	From 32 to 1250 A		B5/4
IEC - Switch-disconnector fuses For BS fuses	From 32 to 1250 A		B5/6
UL - Switch-disconnector fuses For CC / J fuses	From 30 to 800 A		B5/8
NFC - Cartridge fuses Type aM, gG	From 0.16 to 125 A		B5/10
DIN - Cartridge fuses Type aM, gG	From 10 to 1250 A		B5/11
Auxiliary contacts for IEC and UL switch-disconnector fuses	From 32 to 1250 A		B5/12
Handles	From 32 to 1250 A		B5/13
Other accessories	From 32 to 1250 A		B5/14

Switch-disconnector fuses

**Technical Data for Designers** B5/17

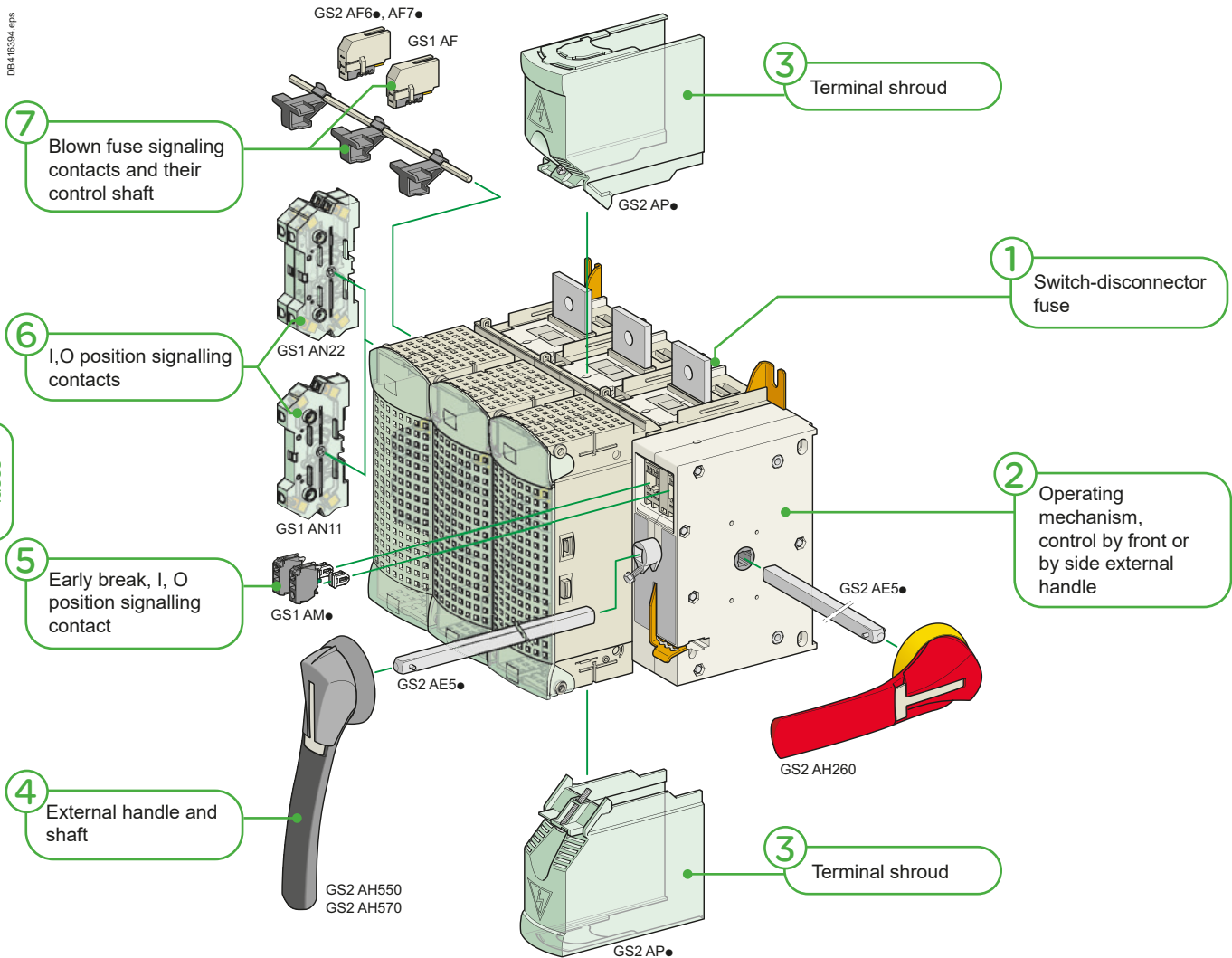
# TeSys Power

## Switch-disconnector fuses

### Introduction

#### A customizable functional block

Whatever its rating, the switch-disconnector fuse fits the need: particular position of the handle, triggering of an automatic control before full opening, enhanced protection of terminals...



Customizable

#### GS2630 A switch-disconnector fuse

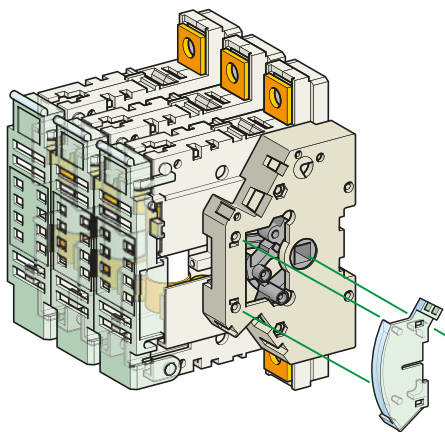
- 1 Switch-disconnector fuse**
  - NFC/DIN or BS fuse compatible
  - Enhanced isolation between poles
  - On-load making/breaking with double break isolation of the power circuit
- 2 Operating mechanism**
  - For one front or side external handle, right or left side
  - Cavity for early-break contacts
- 3 Terminal shrouds**
  - For use when the switch-disconnector fuse is installed outside an enclosure or when the operating voltage is over 500 V AC
- 4 Operating handle**
  - Padlockable in open position
- 5 GS1AM●●● Early-break signalling contacts**
  - Activated before the poles are opened
- 6 GS1AN●● Position signalling contacts**
  - Synchronized with the poles operation
- 7 GS1AF●● Blown fuse signalling contacts**
  - A missing fuse is also indicated



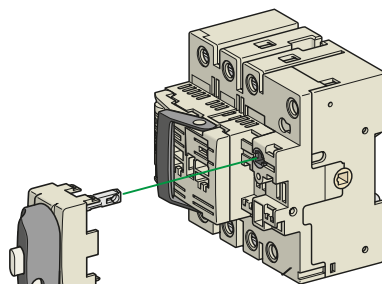
#### Simplicity of the direct operating

The mounting of an operating handle directly on the side of the switch-disconnector fuse is a simple operation. This handle will be for use by qualified personnel only. As the mechanical design is simplified, the manoeuvre will be immediately understood by the operator. Each handle can be padlocked in open position. Locking device for 3 padlocks.

DB416395.eps



DB416396.eps



GS1 AH103

Position of the handle, a free choice

**GS2DB3 - 32 A switch-disconnector fuse**  
Direct front operating

**GS1JD3 - 100 A switch-disconnector fuse**  
Direct lateral operating

GS1 AH01  
GS1 AH02

Switch-disconnector fuses

#### Performance remote operating

Located on the front or side panel of an enclosure, the operating handle provide complementary features:

- simple (IP55) or reinforced (IP65) protection against dust
- intermediate "Test" position
- door interlock when the handle is in "Close" position, opening by mean of a special tool is needed for opening.
- optional key-operated handle lock

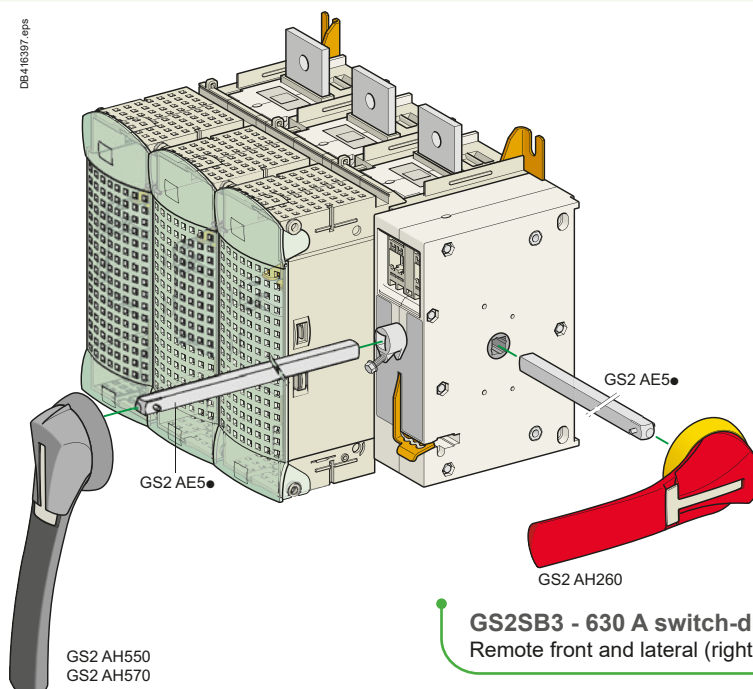


The handles are available in different lengths. They are chosen according the operating effort which depends on the rating of the switch-disconnector fuse.

The drive shaft can be cut to the ideal length.

The choice of a red and yellow handle (CNOMO standard) will identify an "Emergency Stop handle" among others handles, generally black and gray.

DB416397.eps



GS2 AH550  
GS2 AH570

**GS2SB3 - 630 A switch-disconnector fuse**  
Remote front and lateral (right only) operating

#### IEC - For NFC / DIN fuses - From 32 to 1250 A



GS1DD3



GS1FD3



GS1KD4

Rating	A		32		50		63		100		125	
Number of poles	3	3+N	3	4	3	4	3	4	3	4	3	4
Fuse size	10 x 38		14 x 51		Size 000		22 x 58		22 x 58			

#### For direct operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS1FD3	GS1FD4	GS1GD3	GS1GD4	GS1JD3	GS1JD4	GS1KD3	GS1KD4
Handle	Black	Black	Black	Black	Black	Black	Black	Black	Black	Black
Auxiliary contacts	O/I + Test	1NO + 1NC	-	-	-	-	-	-	-	-
	O/I + early break	2NO + 2NC	-	-	-	-	-	-	-	-
			GS1AM111 (1 OF)	GS1AM1 (1 OF)						
			GS1AM211 (2 OF)	GS1AM2 (2 OF)						
Blown fuse	-	-	GS1AF1	-	-	-	GS1AF23	GS1AF24	GS1AF23	GS1AF24

#### For external left hand side-mounted operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS2FG3	GS2FG4	GS2GG3	GS2GG4	GS2JG3	GS2JG4	GS2KG3	GS2KG4
Handle	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65
Auxiliary contacts	O/I + Test	1NO + 1NC	-	-	-	-	-	-	-	-
	O/I + early break	2NO + 2NC	-	-	-	-	-	-	-	-
			GS1AN11G	GS1AN22G						
Blown fuse	-	-	GS1AF1	-	-	-	GS1AF23	GS1AF24	GS1AF23	GS1AF24

#### For external front-mounted and right-hand side-mounted operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS2F3	GS2F4	GS2G3	GS2G4	GS2J3	GS2J4	GS2K3	GS2K4
Front-mounted handle	Black/Grey	IP55	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65
Front-mounted handle + Test position	Red/Yellow	IP65	Red/Yellow	IP65	Red/Yellow	IP65	Red/Yellow	IP65	Red/Yellow	IP65
RH side-mounted handle	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65	Black/Grey	IP65
Auxiliary contacts	O/I + Test	1NO + 1NC	-	-	-	-	-	-	-	-
			GS1AN11	GS1AN22						
			GS1ANT11	GS1ANT22						
			GS1AM110	GS1AM101						
Blown fuse	-	-	GS1AF1	-	-	-	GS1AF23	GS1AF24	GS1AF23	GS1AF24

#### Accessories

Shaft for external handle (mm)	200	GS2AE82	GS2AE22	
	320	GS2AE8	GS2AE2	
	400	GS2AE81	GS2AE21	
Terminal shroud	Integrated			GS1AP33 (3P), GS1AP34 (4P)

#### Dimensions

Direct front-mounted version	page B5/25	page B5/26
External front-mounted version	page B5/25	page B5/27

#### Handles

PF508069.tif



GS1AH01

PF508069.tif



GS1AH02

PF538656.tif



GS2AH10  
GS2AH20

PF538655.tif



GS2AH30  
GS2AH40

PF538654.tif



GS2AH50  
GS2AH60

PF538653.tif



GS2AH70  
GS2AH80



See details on handles page B5/13.



GS1KKD3



GS1LLD4



GS1ND3

125

3 4  
Size 00

160

3 4  
Size 00

3 4  
Size 0

250

3 4  
Size 1

400

3 4  
Size 2

630

3 4  
Size 3

1250

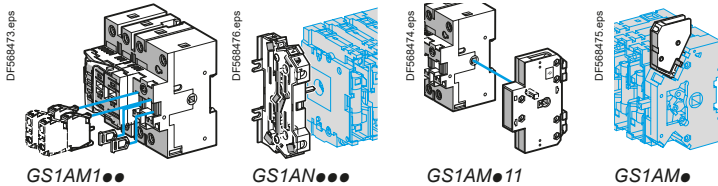
3 4  
Size 4

GS1KKD3	GS1KKD4	GS1LLD3	GS1LLD4	GS1LD3	GS1LD4	GS1ND3	GS1ND4	GS1QQD3	GS1QQD4	GS2S3	GS2S4	GS2V3	GS2V4
GS1AH02										GS2AH104		GS2AH105	
GS1AN11													
GS1AN22													
GS1AM1 (1 OF)											GS1AM110 (1 NO)		
GS1AM2 (2 OF)											GS1AM101 (1 NC)		
-				GS1AF33	GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
GS2KKG3	GS2KKG4	GS2LLG3	GS2LLG4	GS2LG3	GS2LG4	GS2NG3	GS2NG4	GS2QQG3	GS2QQG4	GS2SG3	GS2SG4	GS2VG3	
GS2AH330										GS2AH350			
GS2AH340										GS2AH360			
GS1AN11G													
GS1AN22G													
GS1AM110													
GS1AM101													
-				GS1AF33	GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
GS2KK3	GS2KK4	GS2LL3	GS2LL4	GS2L3	GS2L4	GS2N3	GS2N4	GS2QQ3	GS2QQ4	GS2S3	GS2S4	GS2V3	GS2V4
GS2AH535										-			
GS2AH530										GS2AH550		GS2AH570	
GS2AH540										GS2AH560		GS2AH580	
GS2AHT530										-			
GS2AHT540										-			
GS2AH235										-			
GS2AH230										GS2AH250			
GS2AH240										GS2AH260			
GS1AN11													
GS1AN22													
GS1ANT11										-			
GS1ANT22										-			
GS1AM110										-			
GS1AM101										-			
-				GS1AF33	GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
GS2AE22										GS2AE52			
GS2AE2										GS2AE5			
GS2AE21										GS2AE51			
GS1AP33 (3P), GS1AP34 (4P)						GS1AP43 (3P), GS1AP44 (4P)				GS2AP73	GS2AP64	GS2AP83	GS2AP84
page B5/26										page B5/28			
page B5/27										page B5/29			



Switch-disconnector fuses

### Auxiliary contacts



### Maximal number of auxiliary contacts

Switch rating (A)	Standard configuration	With additional bracket	Reference of additional bracket
30...32	4	4	GS1AD10 <sup>(1)</sup>
32...400	4	4	GS2AD20 <sup>(2)</sup>
200...400	8	8	GS2AD20 <sup>(2)</sup>
630...1250	8	-	-

<sup>(1)</sup> Only compatible with switch disconnector fuses starting by GS1D●●  
<sup>(2)</sup> Only compatible with switch disconnector fuses starting by GS2●●●

See details on auxiliary contacts, page B5/12.

# TeSys Power

## Switch-disconnector fuses

### Product references

#### IEC - For BS fuses - From 32 to 1250 A



GS1DDB3



GS2JB3

Rating	A	32		63		100		160			
Number of poles		3	3+N	3	4	3	4	3	4	3	4
Fuse size		A1		A1		A2-A3		A4		B1-B2	

#### For direct operators

Switch-disconnector fuses reference	GS1DDB3	GS1DDB4	-
Handle	Black	GS1AH103	-
Auxiliary contacts	O/I + Test	1NO + 1NC	-
		2NO + 2NC	-
	O/I + early break	GS1AM111 (1 OF)	-
		GS1AM211 (2 OF)	-

#### For external front-mounted and right-hand side-mounted operators

Switch-disconnector fuses reference	GS1DDB3	GS1DDB4	GS2DDB3	GS2DDB4	GS2GB3	GS2GB4	GS2JB3	GS2JB4	GS2LLB3	GS2LLB4	GS2LB3	GS2LB4
Front-mounted handle	Black/Grey IP55	GS2AH515					GS2AH535					
	Black/Grey IP65	GS2AH510					GS2AH530					
	Red/Yellow IP65	GS2AH520					GS2AH540					
Front-mounted handle + Test position	Black/Grey IP65	GS2AHT510					GS2AHT530					
	Red/Yellow IP65	GS2AHT520					GS2AHT540					
RH side-mounted handle	Black/Grey IP55	GS2AH215					GS2AH235					
	Black/Grey IP65	GS2AH210					GS2AH230					
	Red/Yellow IP65	GS2AH220					GS2AH240					
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11								
		2NO + 2NC	-	GS1AN22								
		1NO + 1NC + test	-	GS1ANT11								
		2NO + 2NC + test	-	GS1ANT22								
O/I + Test + early break	1NO	GS1AM110 - max 4 contacts										
	1NC	GS1AM101 - max 4 contacts										

#### Accessories

Shaft for external handle (mm)	200	GS2AE82	GS2AE22
	320	GS2AE8	GS2AE2
	400	GS2AE81	GS2AE21
Terminal shroud	Integrated	GS1AP33 (3P), GS1AP34 (4P)	

#### Dimensions

	Direct front-mounted version	page B5/25	page B5/26
	External front-mounted version	page B5/25	page B5/27



GS2MMB3



GS2SB3

200		250		315		400		630		800		1250	
3	4	3	4	3	4	3	4	3	4	3	4	3	4
B1-B2		B1...B3		B1...B3		B1...B4		C1-C2		C1...C3		D1	
-													
-													
-													
-													
-													
-													
GS2MMB3	GS2MMB4	GS2NB3	GS2NB4	GS2PPB3	GS2PPB4	GS2QQB3	GS2QQB4	GS2SB3	GS2SB4	GS2TB3	GS2TB4		GS2VB4
GS2AH535								-					
GS2AH530								GS2AH550				GS2AH570	
GS2AH540								GS2AH560				GS2AH580	
GS2AHT530								-					
GS2AHT540								-					
GS2AH235								-					
GS2AH230								GS2AH250					
GS2AH240								GS2AH260					
GS1AN11													
GS1AN22													
GS1ANT11								-					
GS1ANT22								-					
GS1AM110 - max 8 contacts													
GS1AM101 - max 8 contacts													
GS2AE22								GS2AE52					
GS2AE2								GS2AE5					
GS2AE21								GS2AE51					
GS1AP43 (3P), GS1AP44 (4P)								GS2AP73 (3P), GS2AP64 (4P)				GS2AP83 GS2AP84	
page B5/26								page B5/28					
page B5/27								page B5/29					



Switch-disconnector fuses

UL - For CC and J fuses - From 32 to 800 A



GS1DU3



GS2GU3N

Rating	30 Compact	30	60	100
Number of poles	3	3	3	3
Fuse size	CC      J	CC      J	J	J

For direct operators		GS1DDU3	GS1DU3	-	-
<b>Switch-disconnector fuses reference</b>		GS1DDU3	GS1DU3	-	-
Handle	Black	GS1AH106	-	-	-
Auxiliary contacts	O/I + Test	1NO + 1NC	-	-	-
		2NO + 2NC	-	-	-
O/I + early break	1NO	GS1AM110 + GS1AD10	-	-	-
	1NC	GS1AM101 + GS1AD10	-	-	-

For external front-mounted operators		GS1DDU3	GS1DU3	GS2EEU3	GS2EU3N	GS2GU3N	GS2JU3N
<b>Switch-disconnector fuses reference</b>		GS1DDU3	GS1DU3	GS2EEU3	GS2EU3N	GS2GU3N	GS2JU3N
Front-mounted handle	Black/Grey	1,3R, 12	GS2AH110	GS2AH130			
		4, 4X	GS2AH410	GS2AH430			
Front-mounted handle + Test position	Red/Yellow	1,3R, 12	GS2AH120	GS2AH140			
		4, 4X	GS2AH420	GS2AH440			
Auxiliary contacts	Black/Grey	1,3R, 12	GS2AHT110	GS2AHT130			
		4, 4X	GS2AHT410	GS2AHT430			
O/I + Test	Red/Yellow	1,3R, 12	GS2AHT120	GS2AHT140			
		4, 4X	GS2AHT420	GS2AHT440			
O/I + Test + early break	1NO + 1NC	-	-	GS1AN11			
	2NO + 2NC	-	-	GS1AN22			
	1NO + 1NC + test	-	-	GS1ANT11			
	2NO + 2NC + test	-	-	GS1ANT22			
1NO	GS1AM110 - max 4 contacts <sup>(1)</sup>		GS1AM110 - max 4 contacts <sup>(1)</sup>				
	GS1AM101 - max 4 contacts <sup>(1)</sup>		GS1AM101 - max 4 contacts <sup>(1)</sup>				

Accessories		GS2AE8	GS2AE2
Shaft for external handle (mm)	320	GS2AE8	GS2AE2
	400	GS2AE81	GS2AE21
Terminal shroud		Integrated	

Dimensions		page B5/25	page B5/26
Direct front-mounted version	External front-mounted version	page B5/25	page B5/27
	External front-mounted version	page B5/25	page B5/27

(1) 4 more contacts allowed with GS1AD10 additional bracket.

Switch-disconnector fuses



GS2QU3N



GS2TU3

	200	400	600	800
	3	3	3	3
	J	J	J	J
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	GS2MU3N	GS2QU3N	GS2SU3	GS2TU3
	GS2AH130		-	
	GS2AH430		GS2AH150	
	GS2AH140		-	
	GS2AH440		GS2AH160	
	GS2AHT130		-	
	GS2AHT430		-	
	GS2AHT140		-	
	GS2AHT440		-	
	GS1AN11			
	GS1AN22			
	GS1ANT11		-	
	GS1ANT22		-	
	GS1AM110 - max 8 contacts <sup>(1)</sup>		GS1AM110 - max 8 contacts only	
	GS1AM101 - max 8 contacts <sup>(1)</sup>		GS1AM101 - max 8 contacts only	
	GS2AE2		GS2AE5	
	GS2AE21		GS2AE51	
	GS2AP43	GS2AP53	GS2AP73	
	page B5/26		page B5/28	
	page B5/27		page B5/29	

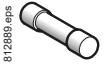
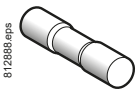


Switch-disconnector fuses

# TeSys Power

## Switch-disconnector fuses

### Product references

NFC Cartridge fuses - Type aM / gG - From 0.25 to 125 A							
Fuse type	Maximum rated voltage	Rating	Sold in lots of	Fuses without striker			
				Unit reference			
	V ~	A		aM	gG		
 812889.eps DF2CA●●●● DF2CN●●	Cylindrical 8.5 x 31.5	400	1	10	-	DF2BN0100	
			2	10	DF2BA0200	DF2BN0200	
			4	10	DF2BA0400	DF2BN0400	
			6	10	DF2BA0600	DF2BN0600	
			8	10	-	DF2BN0800	
			10	10	-	DF2BN1000	
			12	10	-	DF2BN1200	
			16	10	-	DF2BN1600	
			20	10	-	DF2BN2000	
			 812888.eps DF2EA●●●● DF2EN●●	Cylindrical 10 x 38	500	0.50	10
1	10	DF2CA01				-	
2	10	DF2CA02				DF2CN02	
4	10	DF2CA04				DF2CN04	
6	10	DF2CA06				DF2CN06	
8	10	DF2CA08				DF2CN08	
10	10	DF2CA10				DF2CN10	
12	10	DF2CA12				DF2CN12	
16	10	DF2CA16				DF2CN16	
20	10	-				DF2CN20	
400	20	10				DF2CA20	-
	25	10				DF2CA25	DF2CN25
	32	10				DF2CA32	DF2CN32
	Cylindrical 14 x 51	690				0.25	10
		500	0.50	10	DF2EA005	-	
			16	10	DF2EA16	-	
20			10	DF2EA20	-		
25	10		DF2EA25	DF2EN25			
32	10		DF2EA32	DF2EN32			
40	10		DF2EA40	DF2EN40			
400	50	10	DF2EA50	DF2EN50			
Cylindrical 22 x 58	690	500	10	10	-	DF2FN10	
			20	10	-	DF2FN20	
			25	10	-	DF2FN25	
			32	10	-	DF2FN32	
			40	10	DF2FA40	DF2FN40	
			50	10	DF2FA50	DF2FN50	
			400	63	10	DF2FA63	DF2FN63
				80	10	DF2FA80	DF2FN80
				100	10	DF2FA100	DF2FN100
				125	10	DF2FA125	-

Switch-disconnector fuses



For protection of equipment with current peaks  
For protection of circuits without significant current peaks



# TeSys Power

## Switch-disconnector fuses

### Product references

PB121654.eps



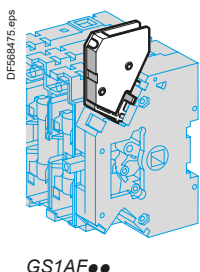
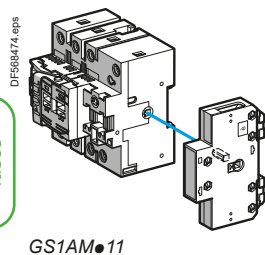
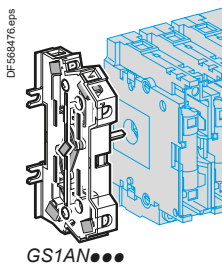
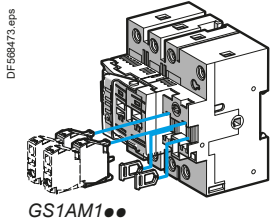
DF2HA1161

DIN Cartridge fuses - Type aM /gG - From 10 to 1250 A								
Fuse type	Maximum rated voltage	Rating	Sold in lots of		Fuses without striker		Fuses with striker	
			aM	gG	Unit reference		Unit reference	
	V ~	A	aM	gG	aM	gG	aM	gG
Blade size 00	690	100	3	10	-	DF2FGN100	-	-
		125	3	10	-	DF2FGN125	-	-
		500	-	10	-	DF2FGN160	-	-
Blade size 1	690	160	3	3	DF2HA1161	-	-	-
		200	3	3	DF2HA1201	DF2HN1201	-	-
		250	3	-	DF2HA1251	-	-	-
		500	-	3	-	DF2HN1251	-	-

Switch-disconnector fuses



For protection of equipment with current peaks  
For protection of circuits without significant current peaks



### Auxiliary contacts for IEC and UL switch-disconnector fuses

#### Auxiliary early break and/or O, I and Test position signalling contacts <sup>(1) (2) (3)</sup>

Switch rating	Contact type	Type of operator	Rated operating current I <sub>e</sub> (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)	A (UL)				
32...1250	30 Compact 30...800	1 N/O 1 N/C	2.8	3	GS1AM110 GS1AM101
			2.8	3	

#### Auxiliary O, I and Test position signalling contacts <sup>(3) (5)</sup>

Switch rating	Contact type	Type of operator	Rated operating current I <sub>e</sub> (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)	A (UL)				
50...1250	30...800	1 N/C + 1 N/O Direct	–	10	GS1AN11
		External, LH side	–	10	GS1AN11G*
		2 N/C + 2 N/O Direct	–	10	GS1AN22
		External, front or RH side-mounted	–	10	
		External, LH side	–	10	GS1AN22G*

#### Auxiliary O, I and Test position signalling contacts <sup>(3)</sup>

Switch rating	Contact type	Type of operator	Rated operating current I <sub>e</sub> (A)		Reference
			–	10	
50...400	30...400	1 N/C + 1 N/O 2 N/C + 2 N/O	–	10	GS1ANT11 GS1ANT22
		External, front side-mounted	–	10	
		External, front side-mounted	–	10	

#### Auxiliary early break O and I position signalling contacts

Switch rating	Contact type	Type of operator	Rated operating current I <sub>e</sub> (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)					
32	1 C/O 2 C/O	–	12	4	GS1AM111* GS1AM211*
50...400	1 C/O 2 C/O	Direct, RH side Direct, RH side	12	4	GS1AM1* GS1AM2*

#### Auxiliary "blown fuse" signalling contacts for use with NF C and DIN fuses <sup>(6)</sup>

Contact type	Switch rating	Fuse size	Number of poles	Rated operating current I <sub>e</sub> (A)		Reference
				< 24 V DC	< 240 V AC	
	A (CEI)					
1 <sup>st</sup> C/O	50	14 x 51	3 or 4	12	4	GS1AF1*
	100 and 125	22 x 58	3	12	4	GS1AF23*
			4	12	4	GS1AF24*
	160	Size 0	3	12	4	GS1AF33*
			4	12	4	GS1AF34*
	250 and 400	Size 1 and Size 2	3	12	4	GS1AF43*
			4	12	4	GS1AF44*
	630	Size 3	3	12	4	GS2AF63*
			4	12	4	GS2AF64*
	1250	Size 4	3	12	4	GS2AF73*
			4	12	4	GS2AF74*
2 <sup>nd</sup> C/O	50...1250	–	3 or 4	12	4	GS1AF*

(\* Not for UL switch-disconnector.

(1) For 32 A (CEI), 30 (UL) switch-disconnector fuses, these auxiliary contacts allow:

- early break and O and I position signalling, - O and I position signalling,
- O, I and Test position signalling, - Test position signalling.

For 50 to 400 A (CEI), 30-400 A (UL) switch-disconnector fuses, they allow:

- early break, - O and I position signalling,
- O, I and Test position signalling, - Test position signalling.

For 630 and 1250 A (CEI), 630 and 800 A (UL) switch-disconnector fuses, they allow:

- early break and O and I position signalling,

(2) Maximum number of auxiliary contacts:

Switch rating	Standard	With additional bracket	Reference of additional bracket
A (CEI)	A (UL)		
32 <sup>(7)</sup>	30 Compact	CC 4 J 2	GS1AD10 GS1AD10
32 <sup>(8)</sup> ...160	30...100	4	GS2AD20
200...400	200 and 400	8	GS2AD20
630...1250	600 and 800	8	–

(3) The Test position allows testing of the control circuits off-load. Auxiliary contacts GS1AM110, GS1AM101 and GS1ANT●● only allow the test function with external handles GS2AHT●●.

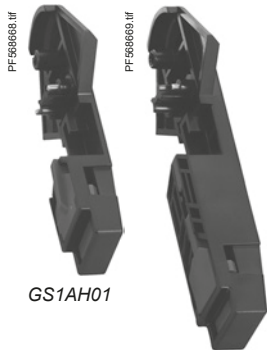
(4) These auxiliary contacts can also be used with 630, 800 and 1250 A switch-disconnector fuses fitted with a direct front-mounted operator.

(5) Reversible add-on attachments for converting an N/C contact to an N/O contact and vice versa.

(6) For striker fuses (BS fuses are not available with striker).

(7) For GS1DDB3 fuse switch disconnector only.

(8) For 32 A: for fuse switch disconnector GS2DB3 only.

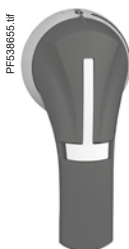


GS1AH01

GS1AH02



GS2AH●10  
GS2AH●20



GS2AH●30  
GS2AH●40



GS2AH●50  
GS2AH●60



GS2AH●70  
GS2AH●80

## Handles for IEC and UL switch-disconnector fuses

### Handles for direct operators

Switch rating A (CEI)	A (UL)	Type of operator	Handle colour	Reference
<b>Handles for direct operators, padlockable</b>				
-	30 Compact	Front-mounted	Black	GS2AH106
32	-	Front	Black	GS1AH103
50 and 63	-	RH side	Black	GS1AH01
100...400	-	RH side	Black	GS1AH02
-	600 and 800	Front-mounted	Black	GS2AH107
630 and 800	-	Front	Black	GS2AH104
1250	-	Front	Black	GS2AH105

### Handles for external operator

Switch rating A (CEI)	A (UL)	Handle colour	Degree of protection	Protection index Nema	Reference
<b>Handles for front-mounted external operators, padlockable and lockable in position O<sup>(1)</sup></b>					
<b>Door interlock in I position<sup>(2)</sup></b>					
32...63	-	Black/Grey	IP 65	-	GS2AH510
			IP55	-	GS2AH515
100...400	-	Black/Grey	IP 65	-	GS2AH520
			IP55	-	GS2AH530
630 and 800	-	Black/Grey	IP 65	-	GS2AH535
			IP65	-	GS2AH540
1250	-	Black/Grey	IP65	-	GS2AH550
			IP65	-	GS2AH560
-	30 Compact	Black/Grey	IP65	-	GS2AH570
			IP65	-	GS2AH580
-	30...400	Black/Grey	-	1, 3R, 12	GS2AH110
			-	1, 3R, 12	GS2AH120
			-	1, 3R, 4, 4X, 12	GS2AH410
			-	1, 3R, 4, 4X, 12	GS2AH420
-	30...400	Red/Yellow	-	1, 3R, 12	GS2AH130
			-	1, 3R, 12	GS2AH140
			-	1, 3R, 4, 4X, 12	GS2AH430
			-	1, 3R, 4, 4X, 12	GS2AH440
-	600 and 800	Black/Grey	-	1, 3R, 12	GS2AH150
			-	1, 3R, 12	GS2AH160

### Handles for front-mounted external operators with test facility<sup>(3)</sup>, padlockable and lockable in "O" position<sup>(1)</sup>. Door interlock in "I" position<sup>(2)</sup>

32...63	-	Black/Grey	IP 65	-	GS2AHT510
			IP65	-	GS2AHT520
100...400	-	Black/Grey	IP65	-	GS2AHT530
			IP65	-	GS2AHT540
-	30 Compact	Black/Grey	-	1, 3R, 12	GS2AHT110
			-	1, 3R, 12	GS2AHT120
			-	1, 3R, 4, 4X, 12	GS2AHT410
			-	1, 3R, 4, 4X, 12	GS2AHT420
-	30...400	Black/Grey	-	1, 3R, 12	GS2AHT130
			-	1, 3R, 12	GS2AHT140
			-	1, 3R, 4, 4X, 12	GS2AHT430
			-	1, 3R, 4, 4X, 12	GS2AHT440

### Handles for external right-hand side-mounted operators, padlockable and lockable in "O" position<sup>(1)</sup>

32...63	-	Black/Grey	IP 65	-	GS2AH210
			IP55	-	GS2AH215
100...400	-	Black/Grey	IP65	-	GS2AH220
			IP55	-	GS2AH235
630...1250	-	Black/Grey	IP65	-	GS2AH240
			IP65	-	GS2AH250
-	-	Red/Yellow	IP65	-	GS2AH260

### Handles for external left-hand side-mounted operators, padlockable and lockable in "O" position<sup>(1)</sup>

32...63	-	Black/Grey	IP 65	-	GS2AH310
			IP65	-	GS2AH320
100...400	-	Black/Grey	IP65	-	GS2AH330
			IP65	-	GS2AH340
630...1250	-	Black/Grey	IP65	-	GS2AH350
			IP65	-	GS2AH360

<sup>(1)</sup> Lockable with device **GS2AX1**, to be ordered separately.

<sup>(2)</sup> Door interlock override by means of a tool.

<sup>(3)</sup> The Test facility allows testing of the control circuits off-load, by using auxiliary contacts **GS1AM110**, **GS1AM101** or **GS1ANT●●**. In the "Test" position, the enclosure door can be opened.

PB121455.eps



GS2AE5

PB121456.eps



GS2AE2 - GS2AE21

PB121457.tif



GS2AE8 - GS2AE81

Switch-disconnector fuses

## Accessories for IEC and UL switch-disconnector fuses

### Shafts for external operators

Switch rating A (CEI)	A (UL)	Shaft length mm	Shaft cross section mm	Reference
32	30 Compact	200	5 x 5	GS2AE82
		320	5 x 5	GS2AE8
		400	5 x 5	GS2AE81
50...400	30...400	200	10 x 10	GS2AE22
		320	10 x 10	GS2AE2
		400	10 x 10	GS2AE21
630...1250	600 and 800	200	12 x 12	GS2AE52
		320	12 x 12	GS2AE5
		40	12 x 12	GS2AE51

### Terminal protection shrouds for upstream or downstream connector plates

Switch rating A (CEI)	A (UL)	Number of poles	Reference
50 and 63	30 Compact, 30...60 (3P)	3 or 4	(1)
100...160	100	3	GS1AP33
		4	GS1AP34
200...400	200	3	GS1AP43
		4	GS1AP44
-	400	3	GS1APU53
		4	GS1APU54
630...800	600 and 800	3	GS2AP73
		4	GS2AP64
1250	-	3	GS2AP83
		4	GS2AP84

### Devices for locking fuse covers in "I" position (2)

Switch rating A	Fuse size	Number of poles	Reference
50	14 x 51	3 or 4	(3)
63	Size 00C	3 or 4	GS1AV1
100...160	22 x 58, Size 00	3 or 4	GS1AV2
160	Size 0	3	GS1AV33
250	Size 1	3	GS1AV53
		4	GS1AV54
400	Size 2	3	GS1AV73
		4	GS1AV74

### Cage terminals for connection of bare cables (without lug)

Switch rating A	Number of poles	Reference
50 and 63	3 or 4	(4)
100...160	3	GS1AW33
	4	GS1AW34
200...250	3	GS1AW43
	4	GS1AW44

### External handle locking device

Switch rating A	Description	Reference
32...1250	Device for RONIS EL11AP keylock (lock to be ordered separately).	GS2AX1

### Flat mounting kit

Switch rating A	Description	Reference
50...400	The kit, for use with a front-mounted external handle, includes: <ul style="list-style-type: none"> <li>■ a 200 mm shaft, cross section 10 x 10 mm,</li> <li>■ an adapter plate</li> </ul>	GS2ADL2

(1) For these ratings, the switch-disconnector fuses are fitted with terminal covers as standard.

(2) For NF C and DIN switch-disconnector fuses fitted with right-hand mounted direct operator.

(3) For this rating, switch-disconnector fuses are fitted with a cover locking device as standard.

(4) For these ratings, switch-disconnector fuses are fitted with cage terminals as standard.

Switch-  
disconnect  
fuses


# TeSys Power

## Switch-disconnector fuses

### Product references

GS1AD010	GS1DDB3	GS2AH250	GS2J4
GS1AD10	GS1DDB4	GS2AH260	GS2JB3
GS1AE6	GS1DDU3	GS2AH310	GS2JB4
GS1AE7	GS1DU3	GS2AH320	GS2JG3
GS1AF	GS1FD3	GS2AH330	GS2JG4
GS1AF1	GS1FD4	GS2AH340	GS2JU3N
GS1AF23	GS1GD3	GS2AH350	GS2K3
GS1AF24	GS1GD4	GS2AH360	GS2K4
GS1AF33	GS1JD3	GS2AH36F	GS2KKG3
GS1AF34	GS1JD4	GS2AH410	GS2KG4
GS1AF43	GS1KD3	GS2AH420	GS2KK3
GS1AF44	GS1KD4	GS2AH430	GS2KK4
GS1AH01	GS1KKD3	GS2AH440	GS2KKG3
GS1AH02	GS1KKD4	GS2AH460F	GS2KKG4
GS1AH101	GS1LD3	GS2AH510	GS2L3
GS1AH102	GS1LD4	GS2AH515	GS2L4
GS1AH103	GS1LLD3	GS2AH520	GS2LB3
GS1AH110	GS1LLD4	GS2AH530	GS2LB4
GS1AH130	GS1ND3	GS2AH535	GS2LG3
GS1AH160	GS1ND4	GS2AH540	GS2LG4
GS1AH220	GS1QQD3	GS2AH550	GS2LL3
GS1AH440	GS1QQD4	GS2AH560	GS2LL4
GS1AM1	GS2AD030N	GS2AH570	GS2LLB3
GS1AM101	GS2AD040N	GS2AH580	GS2LLB4
GS1AM110	GS2AD20	GS2AH60F	GS2LLG3
GS1AM111	GS2ADL2	GS2AHT110	GS2LLG4
GS1AM2	GS2AE2	GS2AHT120	GS2MLU3N
GS1AM211	GS2AE21	GS2AHT130	GS2MMB3
GS1AN11	GS2AE22	GS2AHT140	GS2MMB4
GS1AN11G	GS2AE23	GS2AHT410	GS2MU3N
GS1AN22	GS2AE5	GS2AHT420	GS2N3
GS1AN22G	GS2AE51	GS2AHT430	GS2N4
GS1ANT11	GS2AE52	GS2AHT440	GS2NB3
GS1ANT22	GS2AE61	GS2AHT510	GS2NB4
GS1AP33	GS2AE8	GS2AHT520	GS2NG3
GS1AP34	GS2AE81	GS2AHT530	GS2NG4
GS1AP43	GS2AE82	GS2AHT540	GS2PPB3
GS1AP44	GS2AEH12	GS2AP43	GS2PPB4
GS1AP63	GS2AESB	GS2AP53	GS2QQ3
GS1AP83	GS2AF63	GS2AP64	GS2QQ4
GS1AV1	GS2AF64	GS2AP73	GS2QQB3
GS1AV2	GS2AF73	GS2AP83	GS2QQB4
GS1AV33	GS2AF74	GS2AP84	GS2QQG3
GS1AV54	GS2AH100TO200	GS2AX1	GS2QQG4
GS1AV73	GS2AH104	GS2DB3	GS2QU3N
GS1AW303	GS2AH106	GS2DB4	GS2S3
GS1AW306	GS2AH110	GS2EEU3	GS2S4
GS1AW33	GS2AH120	GS2EU3N	GS2SB3
GS1AW34	GS2AH130	GS2F3	GS2SB4
GS1AW403	GS2AH140	GS2F4	GS2SB3
GS1AW406	GS2AH150	GS2FG3	GS2SG4
GS1AW43	GS2AH160	GS2FG4	GS2SU3
GS1AW44	GS2AH170	GS2G3	GS2TB3
GS1AW503	GS2AH180	GS2G4	GS2TB4
GS1AW506	GS2AH210	GS2GB3	GS2TU3
GS1AW603	GS2AH215	GS2GB4	GS2V3
GS1AW606	GS2AH220	GS2GG3	GS2V4
GS1AW903	GS2AH230	GS2GG4	GS2VG3
GS1DD3	GS2AH235	GS2GU3N	LC1BL
GS1DD4	GS2AH240	GS2J3	

Switch-  
disconnector  
fuses

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Contents

### Characteristics:

- > switch-disconnector fuses.... B5/18 to B5/23
- > auxiliary contacts .....B5/24

Dimensions ..... B5/25 to B5/33

Schemes .....B5/33

# TeSys Power

## Switch-disconnector fuses

### Characteristics

#### IEC - For NFC / DIN fuses - From 32 to 1250 A

##### Switch-disconnector-fuse characteristics

Type			GS1DD	GS•F	GS•G	GS•J
<b>Environment</b>						
Conforming to standards	Switch-disconnector fuses		IEC 60947-3			
	Fuses		IEC 60269-1 and 2			
Product certifications			ASEFA/LOVAG, LROS, UKCA			
Degree of protection conforming to IEC 60529	On front panel with terminal covers		IP 20			
Ambient air temperature around the device	Storage	°C	-40...+80			
	Operation	°C	-20...+70			
Flame resistance conforming to IEC 60695-2-1	Body	°C	960	960		
	Fuse cover	°C	–		850	
<b>Pole characteristics</b>						
	Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C	A	32	50	63	100
	Fuse size		10 x 38	14 x 51	T00C	22 x 58
	Rated insulation voltage (U <sub>i</sub> )	V	800	750	750	750
	Rated impulse withstand voltage (U <sub>imp</sub> )	kV	8	8	8	8
Rated operational current (I <sub>e</sub> )	Cat. AC-23A/B <sup>(1)</sup> ~ 400 V	A	32	50	63	100
	~ 500 V	A	32	50	63	100
	~ 690 V	A	32	50	63	100 <sup>(3)</sup>
	Cat. DC-23A/B <sup>(1)</sup> ∴ 440 V <sup>(2)</sup>	A	20	40	40	100
Rated operational power	Cat. AC-23A/B <sup>(1)</sup> ~ 400 V	kW	15	25	30	51
	~ 500 V	kW	18.5	33	40	63
	~ 690 V	kW	25	45	55	90
Rated conditional short-circuit current	I <sub>rms</sub> at ~ 400 V with protection by gG (gl) fuses	kA	100	100	100	100
	Rating of associated fuses	A	32	50	63	100
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to IEC 60269-1 ~ 400 V	kA	5.5	7.6	10.6	20
Rated making capacity	I <sub>rms</sub> at 400 V Cat. AC-23B	A	320	500	630	1000
Rated breaking capacity	I <sub>rms</sub> at 400 V Cat. AC-23B	A	256	400	500	800
Mechanical durability	Number of operating cycles		20000	10000	10000	10000
Electrical durability	Number of operating cycles cat. AC/DC-23A/B <sup>(1)</sup>		1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)	mm <sup>2</sup>	2.5/16	6/25	10/25	25/95
	Bars (max width)	mm	–	–	–	20
Tightening torque		N.m	3	3.2	3.2	12

<sup>(1)</sup> Category "A": frequent operating cycles, category "B": infrequent operating cycles.

<sup>(2)</sup> 2 poles in series per phase.

<sup>(3)</sup> With terminal covers.

<sup>(4)</sup> Poles not juxtaposed.





	GS●K	GS●KK	GS●LL	GS●L	GS●N	GS●QQ	GS2S	GS2V
	IEC 60947-3							
	IEC 60269-1 and 2							
	ASEFA/LOVAG, LROS, UKCA							
	IP 20							
	-40...+80							
	-20...+70							
	960							
	850							
	125	125	160	160	250	400	630	1250
	22 x 58	T00	T00	T0	T1	T2	T3	T4
	750	750	750	750	750	800	1000	1000
	8	8	8	8	8	8	12	12
	125	125	160	160	250	400	630	1000
	125	125	160	160	250	315	500	800
	100 <sup>(3)</sup>	100 <sup>(3)</sup>	125 <sup>(3)</sup>	125 <sup>(3)</sup>	250 <sup>(3)</sup>	250/315	315/400	630
	100	100	125	125	200	200/315 <sup>(4)</sup>	400/630 <sup>(4)</sup>	1000
	63	63	80	80	132	220	355	560
	90	90	110	110	160	220	355	560
	80	80	110	110	220	220/295	295/400	400/475
	100	100	100 (50)	100	100	50	100	100
	125	125	125 (160)	160	250	400	630	1250
	20	20	22.7	20	32.5	40	70	90
	1250	1250	1600	1600	2500	4000	6300	10 000
	1000	1000	1280	1280	2000	3200	5040	8000
	10000	10000	10000	10000	10000	10000	8000	5000
	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	500/100
	35/95	35/95	50/95	50/95	95/240	185/240	2 x 150 / 2 x 300	- / 4 x 185
	20	20	20	20	32	45	63	80
	12	12	12	12	25	25	44	44

Ref.



Switch-disconnector fuses

# TeSys Power

## Switch-disconnector fuses

### Characteristics

#### IEC - For BS fuses - From 32 to 1250 A

Switch-disconnector-fuse characteristics		GS1DDB	GS2DB	GS2GB	GS2JB	
<b>Environment</b>						
Conforming to standards	Switch-disconnector fuses		IEC 60947-3			
	Fuses		IEC 60269-1 and 2			
Product certifications			ASEFA/LOVAG, LROS, UKCA			
Degree of protection conforming to IEC 60529	On Front panel, with terminal covers		IP 20			
Ambient air temperature around the device	Storage	°C	-40...+80			
	Operation	°C	-20...+70			
Flame resistance conforming to IEC 60695-2-1	Body	°C	960			
	Fuse cover	°C	-		850	
<b>Pole characteristics</b>						
Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	32	32	63	100
Fuse size			A1	A1	A2-A3	A4 Ø ≤ 31 mm
Rated insulation voltage (U <sub>i</sub> )		<b>V</b>	800	750	750	750
Rated impulse withstand voltage (U <sub>imp</sub> )		<b>kV</b>	8	8	8	8
Rated operational current (I <sub>e</sub> )	Cat. AC-23A/B <sup>(1)</sup> ~ 400 V	<b>A</b>	32	32	63	100
	~ 500 V	<b>A</b>	32	32	63	100
	~ 690 V	<b>A</b>	32	32	63	100 <sup>(4)</sup>
	Cat. DC-23A/B <sup>(1)</sup> ~ 440 V <sup>(2)</sup>	<b>A</b>	20	20	40	100
Rated operational power	Cat. AC-23A/B <sup>(1)</sup> ~ 400 V	<b>kW</b>	15	15	30	51
	~ 500 V	<b>kW</b>	18.5	18.5	40	63
	~ 690 V	<b>kW</b>	25	25	55	90
Rated conditional short-circuit current	I rms at ~ 400 V with protection by gG (gl) fuses	<b>kA</b>	80	80	80	80
	Rating of associated fuses	<b>A</b>	32	32	63	100
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to ~ 400 V IEC 60269-1	<b>kA</b>	5.5	9	10.6	20
Rated making capacity	I rms at 400 V Cat. AC-23B	<b>A</b>	320	320	630	1000
Rated breaking capacity	I rms at 400 V Cat. AC-23B	<b>A</b>	256	256	500	800
Mechanical durability	Number of operating cycles		20000	10000	10000	10000
Electrical durability	Number of operating cycles cat. AC/DC-23A/B <sup>(1)</sup>		1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)	<b>mm<sup>2</sup></b>	2.5/16	6/25	10/25	25/95
	Bars (max width)	<b>mm</b>	-	-	-	20
Tightening torque		<b>N.m</b>	3	3.2	3.2	12

(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.

(2) 2 poles in series per phase.

(3) Fit switch-disconnector fuses **GS2LB** with B1 or B2 fuses and **GS2LLB** with A4 fuses.

(4) With terminal covers.

(5) Poles not juxtaposed.

	GS2LB or LLB <sup>(3)</sup>	GS2MMB	GS2NB	GS2PPB	GS2QQB	GS2SB	GS2TB	GS2VB
	IEC 60947-3							
	IEC 60269-1 and 2							
	ASEFA/LOVAG, LROS, UKCA							
	IP 20							
	-40...+80							
	-20...+70							
	960							
	850							
	160	200	250	315	400	630	800	1250
	A4, B1-B2 <sup>(3)</sup>	B1-B2	B1...B3	B1...B3	B1...B4	C1-C2	C1...C3	D1
	750	750	750	800	800	1000	1000	1000
	8	8	8	8	8	12	12	12
	160	200	250	315	400	630	800	1000
	160	200	250	315	315	500	630	800
	125 <sup>(4)</sup>	200/160 <sup>(4)</sup>	250 <sup>(4)</sup>	250/315 <sup>(4)</sup>	250/315	315/400	630	630
	125	200	200	200	200/315 <sup>(5)</sup>	400/630 <sup>(5)</sup>	800	1000
	80	100	132	150	220	355	450	560
	110	140	160	220	220	355	450	560
	110	150/185	220	220/295	220/295	295/400	400	400/475
	80	80	80	80	50	80	80	80
	160	200	250	315	400	630	800	1250
	22.7	32.5	32.5	40	40	70	80	90
	1600	2000	2500	3150	4000	6300	8000	10 000
	1280	1600	2000	2520	3200	5040	6400	8000
	10000	10000	10000	10000	10000	8000	8000	5000
	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	500/100	500/100
	50/95	95/240	95/240	185/240	185/240	2 x 150 / 2 x 300	2 x 185 / 2 x 300	- / 4 x 185
	20	32	32	45	45	63	63	80
	12	25	25	25	25	44	44	44

Ref.



Switch-disconnector fuses

# TeSys Power

## Switch-disconnector fuses

### Characteristics

#### UL, CSA, IEC - For CC and J fuses - From 32 to 800 A

##### Switch-disconnector-fuse characteristics

Type		GS1DDU3	GS1DU3	GS2EEU3	GS2EU3N		
<b>Environment</b>							
Conforming to standards	Switch-disconnector fuses	UL 489, CSA 22.2 n°5, IEC 60947-3		UL 98, UL 248, CSA 22.2 n°4, IEC 60947-3			
	Fuses	UL 248					
Degree of protection conforming to IEC 60529	With terminal covers	IP 20					
Ambient air temperature around the device	Storage	°C	-40...+80				
	Operation	°C	-20...+70				
Flame resistance conforming to IEC 60695-2-1	Body	°C	960	960	960		
	Fuse cover	°C	-	-	850		
<b>Pole characteristics</b>							
Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	30	30	30	30	
Fuse size			CC	J	CC	J	
Rated insulation voltage (U <sub>i</sub> )		<b>V</b>	800	800	750	750	
Rated impulse withstand voltage (U <sub>imp</sub> )		<b>kV</b>	8	8	8	8	
Rated operational current (I <sub>e</sub> )	Cat. AC-23A/B <sup>(1)</sup>	~ 400 V	<b>A</b>	32	32	32	32
		~ 500 V	<b>A</b>	32	32	32	32
		~ 690 V	<b>A</b>	32	32	32	32
Rated operational power	Cat. AC-23A/B <sup>(1)</sup>	~ 400 V	<b>kW</b>	15	15	15	15
		~ 500 V	<b>kW</b>	18.5	18.5	18.5	18.5
		~ 690 V	<b>kW</b>	25	25	25	25
Prospective short-circuit current withstand	Conforming to UL 98 / UL 489	~ 600 V	<b>kA</b>	100	100	200	200
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to IEC 60269-1	~ 400 V	<b>kA</b>	5.5	5.5	7.6	17.6
Rated making capacity	I <sub>rms</sub> at 400 V	Cat. AC-23B	<b>A</b>	300	300	300	300
Rated breaking capacity	I <sub>rms</sub> at 400 V	Cat. AC-23B	<b>A</b>	240	240	240	240
Mechanical durability	Number of operating cycles			10000	10000	10000	10000
Electrical durability	Number of operating cycles			1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)		<b>mm<sup>2</sup></b>	2.5/6	2.5/6	2.5/6	2.5/16
			<b>AWG</b>	#14/#10	#14/#10	#14/#10	#14/#6
	Bars (max width)		<b>mm</b>	-	-	-	-
Tightening torque			<b>N.m</b>	3 (for wire)	4 (for wire)	5.5 (for wire)	3.5 (for wire)
			<b>lb-in</b>	27	27	48	31

(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.

	GS2GU3N	GS2JU3N	GS2MU3N	GS2QU3N	GS2SU3	GS2TU3
	UL 98, CSA 22.2 n°4, IEC 60947-3					
	UL 248					
	IP 20					
	-40...+80					
	-20...+70					
	960					
	850					
	60	100	200	400	600	800
	J	J	J	J	J	L
	750	750	750	800	1000	1000
	8	8	8	8	12	12
	63	100	200	400	630	800
	63	100	200	315	630	630
	63	100	200	250	630	630
	30	51	100	220	355	450
	40	63	140	220	450	560
	55	90	185	220	600	600
	100	200	200	200	200	200
	17.6	22	32	36	80	80
	600	1000	2000	4000	6000	8000
	480	800	1600	3200	4800	6400
	10000	10000	8000	6000	5000	5000
	1500/300	1500/300	1000/200	1000/200	1000/200	500/100
	2.5/16	4/50	16/150	25/300	2 x 150	-
	#14/#6	#12/#1	#6/300 Kcmil	#4/600 Kcmil	#2/600 Kcmil	-
	-	20	32	45	100	100
	3.5 (for wire)	4 (for wire)	18 (for lug)	35 (for lug)	35 (for lug)	35 (for lug)
	31	35.4	160	310	310	310

Ref.



Switch-disconnector fuses

# TeSys Power

## Switch-disconnector fuses

### Characteristics

#### Auxiliary contacts

##### GS1AM11, GS1AM1 and GS1AM2 early break and signalling contact characteristics

Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	16
Rated operational current (I <sub>e</sub> )	Cat. AC-15	<b>A</b>	127 V: 5 - 230 V: 4 - 400 /415 V: 3 - 440 V: 2
	Cat. DC-13	<b>A</b>	24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4
Durability	Number of operating cycles		Mechanical: 1000000 Electrical: cat. AC-15: 30000
Fuse protection	gG	<b>A</b>	6 max
Cabling		<b>mm</b>	Faston connectors: 1 x 6.35 or 2 x 2.8

##### GS1AN and GS1ANT signalling contact characteristics

Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	20
Rated operational current (I <sub>e</sub> )	Cat. AC-15	<b>A</b>	127 V: 12 - 230 V: 10 - 400/415 V: 8 - 440 V: 6
	Cat. DC-13	<b>A</b>	48 V: 4 - 110 V: 1.2 - 220 V: 1
Durability	Number of operating cycles		Mechanical: 30000 Electrical: cat. AC-15: 30000
Fuse protection	gG	<b>A</b>	16 max
Cabling	Cable (c.s.a. min/max)	<b>mm<sup>2</sup></b>	Min: 1.5 - max: 10

##### GS1AM110 and GS1AM101 early break and signalling contact characteristics

Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	10
Rated operational current (I <sub>e</sub> )	Cat. AC-15	<b>A</b>	120 V: 6 - 240 V: 3 - 400 V: 1.8 - 480 V: 1.5
	Cat. DC-13	<b>A</b>	24 V: 2.8 - 48 V: 1.4 - 125 V: 0.55 - 250 V: 0.27 - 400 V: 0.15
Durability	Number of operating cycles		Mechanical: 5000000 Electrical: cat. AC-15: 1000000
Cabling	Cable (c.s.a. min/max)	<b>mm<sup>2</sup></b>	Min: 1 x 0.22 - max: 2 x 2.5

##### GS1AF "blown fuse" signalling contact characteristics

Conventional thermal current (I <sub>th</sub> ) for ambient temperature ≤ 40 °C		<b>A</b>	16
Rated operational current (I <sub>e</sub> )	Cat. AC-15	<b>A</b>	230 V: 4 - 400 V: 3
	Cat. DC-13	<b>A</b>	24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4
Durability	Number of operating cycles		Mechanical: 30000 Electrical: cat. AC-15: 30000
Cabling		<b>mm</b>	Faston connectors: 1 x 6.35

Ref.



Switch-disconnector fuses

# TeSys Power

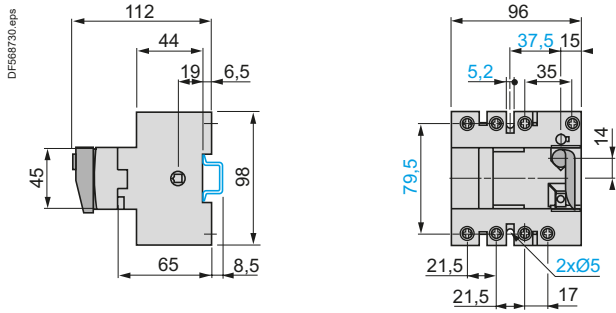
## Switch-disconnector fuses

### Dimensions

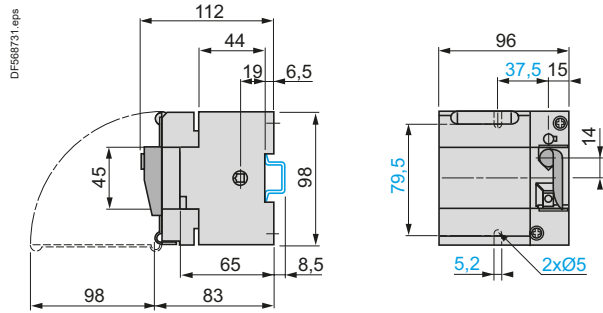
#### IEC - GS1●● (32 A) Switch-disconnector-fuse

Direct front-mounted operator

**GS1DD**

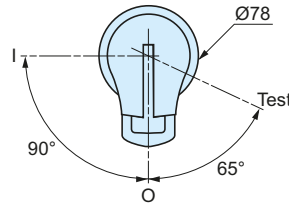
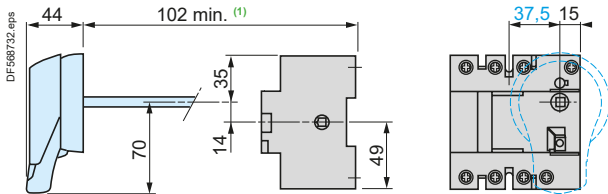


**GS1DDB**

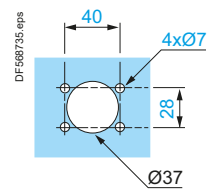


External front-mounted operator

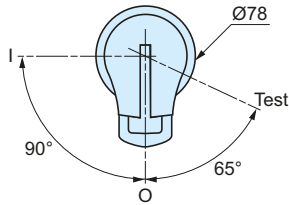
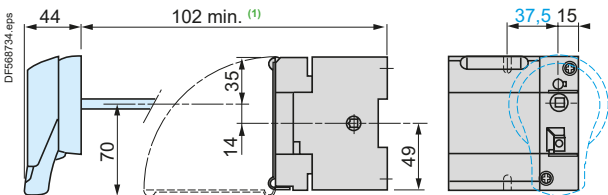
**GS1DD**



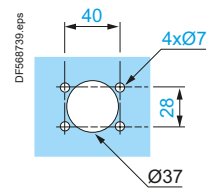
Door cut-out



**GS1DDB**



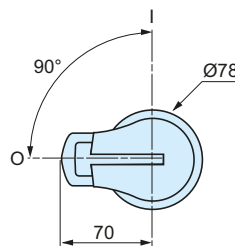
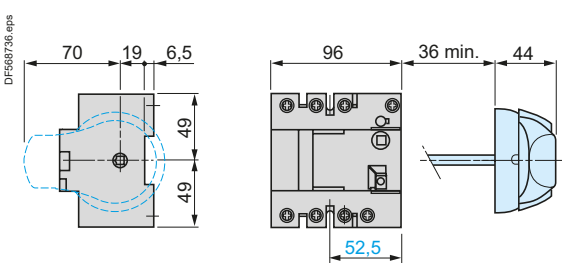
Door cut-out



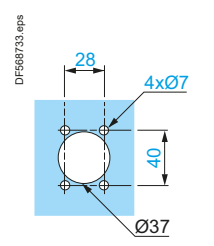
- (1) With 1 or 2 auxiliary contacts GS1AM1●●: 130 mm.
- (2) With 3 or 4 auxiliary contacts GS1AM1●●: 155 mm.

External right-hand side-mounted operator

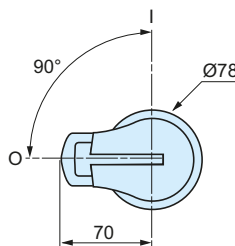
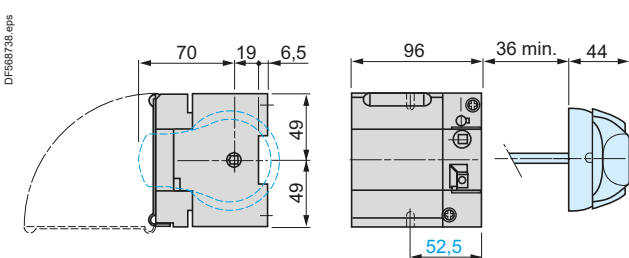
**GS1DD**



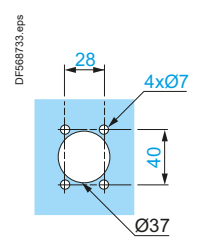
Door cut-out



**GS1DDB**



Door cut-out



# TeSys Power

## Switch-disconnector fuses

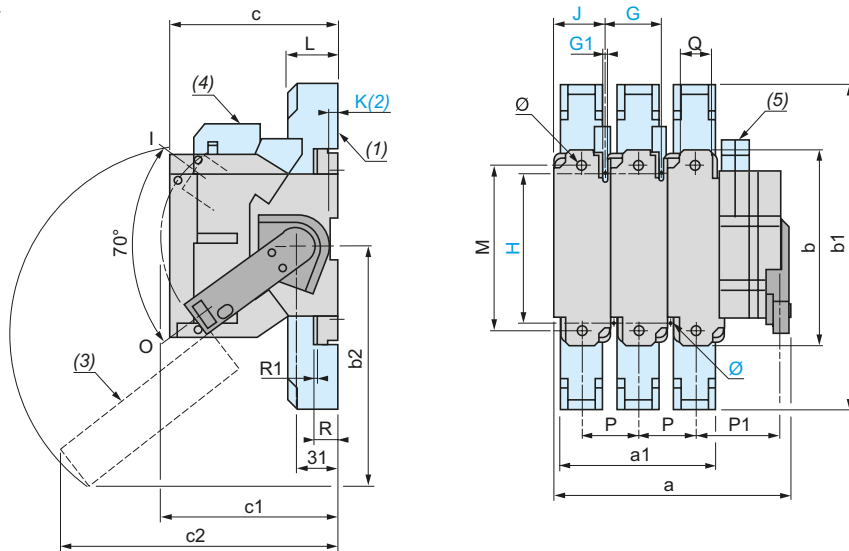
### Dimensions

#### IEC - GS1●● (50...400 A) Switch-disconnector-fuse

Direct right-hand side-mounted operator

GS1FD (50 A), GD (63 A), JD (100 A), KD, KKD (125 A), LD, LLD (160 A), ND (250 A) and QQD (400 A)

DF538732.eps



Ref.



Switch-disconnector fuses

GS1		a	a1	b	b1	b2	c	c1	c2	G	G1	H	J	K	Ø	L	M	P	P1	Q	R	R1	Ø
FD	3P	118	-	118	-	-	87	134	-	27	5.4	106	31	6.5	5	-	-	27	33.5	-	-	-	-
	4P	145	-	118	-	-	87	134	-	27	5.4	106	31	6.5	5	-	-	27	33.5	-	-	-	-
GD	3P	133	-	118	-	159	116.5	134	145	32	5.4	106	36	6.5	5	-	-	32	36	-	-	-	-
	4P	165	-	118	-	159	116.5	134	145	32	5.4	106	36	6.5	5	-	-	32	36	-	-	-	-
JD, KD	3P	150	108	162	268	-	116	173	-	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
	4P	186	144	162	268	-	116	173	-	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
KKD, LLD	3P	150	108	162	268	141	126.5	173	193	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
	4P	186	144	162	268	141	126.5	173	193	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
LD	3P	192	136	162	268	174	136.5	173	229	50	5.4	140	54	-	5	44	141	50	45	20	19.5	2.5	8.5
	4P	242	172	162	268	174	136.5	173	229	50	5.4	140	54	-	5	44	141	50	45	20	19.5	2.5	8.5
ND	3P	253	180	195	345	185	146	173	251	60	6.4	162	64	-	6	65	166	60	81	32	19.5	2.5	11
	4P	313	240	195	345	185	146	173	251	60	6.4	162	64	-	6	65	166	60	81	32	19.5	2.5	11
QQD	3P	271	192	205	355	200	149	173	260	66	6.4	172	70	-	6	65	175	66	86	50	20	3	11
	4P	337	258	205	355	200	149	173	260	66	6.4	172	70	-	6	65	175	66	86	50	20	3	11

(1) Terminal cover.

(2) Mounting on rail only for GS1FD and GS1GD (50 and 63 A).

(3) Protective screen, lockable in I position.

(4) 1 or 2 auxiliary contacts GS1AF●●.

(5) 1 or 2 auxiliary contacts GS1AM●.



# TeSys Power

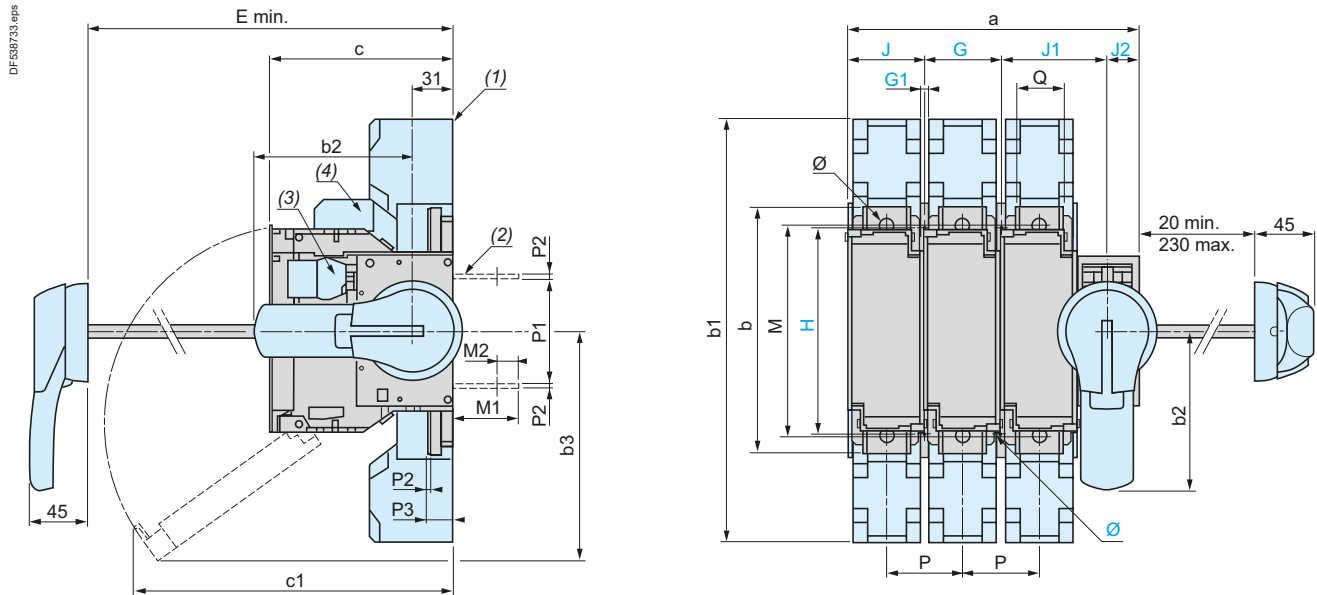
## Switch-disconnector fuses

### Dimensions

#### IEC - GS2●● (32...400 A) Switch-disconnector-fuse

External front and right-hand side-mounted operator

GS2DB (32 A), F (50 A), G, GB, JB (63 A), J (100 A), K, KK (125 A), L, LL, LB, LLB (160 A), MMB (200 A), N, NB (250 A), PPB (315 A), QQ and QQB (400 A)

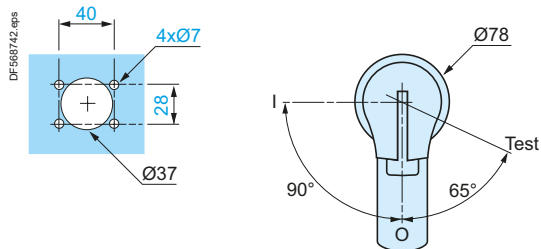


GS2	a	b	b1	b2	b3	c	c1	E min.	G	G1	H	J	J1	J2	Ø	M	M1	M2	P	P1	P2	P3	Q	Ø	
F, DB	3P	121	118	-	70	85	87 <sup>(5)</sup>	153	100 <sup>(5)</sup>	27	5.4	106	31	45	18	5	-	15	6	27	59	2	-	12	-
	4P	148	118	-	70	85	87 <sup>(5)</sup>	153	100 <sup>(5)</sup>	27	5.4	106	31	45	18	5	-	15	6	27	59	2	-	12	-
G, GB	3P	136	118	-	70	159	116.5 <sup>(6)</sup>	145	125	32	5.4	106	36	50	18	5	-	15	6	32	59	2	-	12	-
	4P	168	118	-	70	159	116.5 <sup>(6)</sup>	145	125	32	5.4	106	36	50	18	5	-	15	6	32	59	2	-	12	-
J, JB, K	3P	148	162	268	125	141	116 <sup>(6)</sup>	187	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
	4P	184	162	268	125	141	116 <sup>(6)</sup>	187	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
KK, LL	3P	148	162	268	125	141	126.5 <sup>(6)</sup>	193	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
	4P	184	162	268	125	141	126.5 <sup>(6)</sup>	193	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
L, LB, LLB	3P	190	162	268	125	174	136.5	229	145	50	5.4	140	54	64	18	5	141	41	8	50	62	2.5	19.5	20	8.5
	4P	240	162	268	125	174	136.5	229	145	50	5.4	140	54	64	18	5	141	41	8	50	62	2.5	19.5	20	8.5
MMB, NB, N	3P	234	195	345	125	185	146	251	154	60	6.4	162	64	86	25	6	166	52	17	60	84	2.5	19.5	32	11
	4P	294	195	345	125	185	146	251	154	60	6.4	162	64	86	25	6	166	52	17	60	84	2.5	19.5	32	11
PPB, QQB, QQ	3P	252	205	355	125	200	149	260	157	66	6.4	172	70	91	25	6	175	54	14.5	66	84	3	20	50	11
4P	318	205	355	125	200	149	260	157	66	6.4	172	70	91	25	6	175	54	14.5	66	84	3	20	50	11	

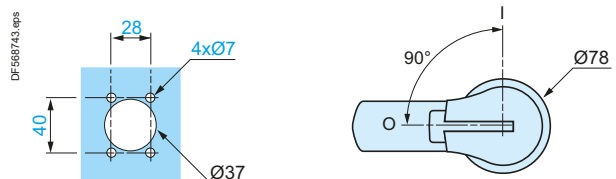
- (1) Terminal cover.
- (2) Rear access connector plates (option).
- (3) 1 to 8 auxiliary contacts GS1AM1●●.
- (4) 1 or 2 auxiliary contacts GS1AF●●.
- (5) 1 auxiliary contact GS1AM1●●: + 23.5 mm, 2 auxiliary contacts GS1AM1●●: + 47 mm.
- (6) 132 mm with 2 auxiliary contacts GS1AM1●●.

#### Door cut-out

##### For external front-mounted operator



##### For external right-hand side-mounted operator



# TeSys Power

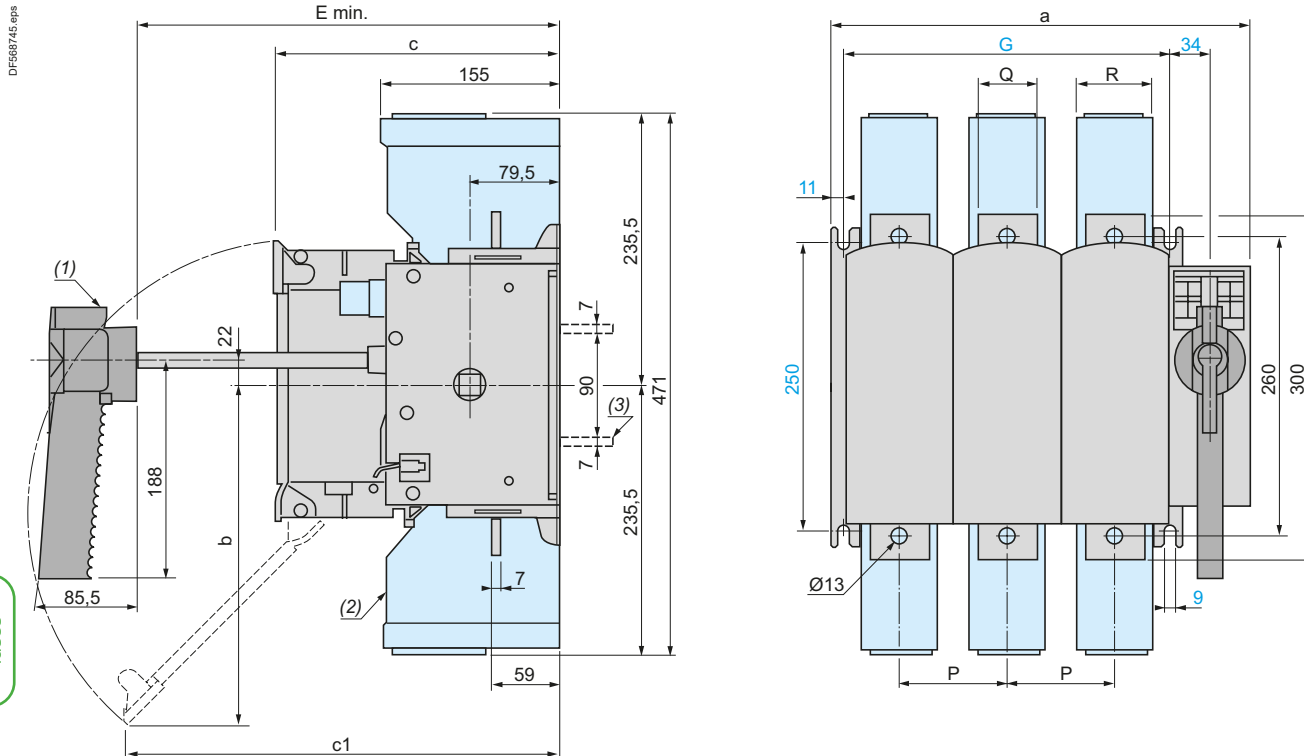
## Switch-disconnector fuses

### Dimensions

#### IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

Direct front-mounted operator

GS2S, SB (630 A), TB (800 A), V and VB (1250 A)



GS2		a	b	c	c1	E min.	G	P	Q	R
S, SB, TB	3P	364	300	250	380	265	284	94	51	65
	4P	458	300	250	380	265	378	94	51	65
V, VB	3P	442	355	289	295	304	362	120	77	88
	4P	562	355	289	295	304	482	120	77	88

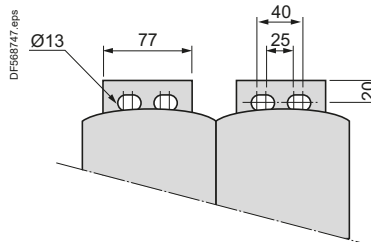
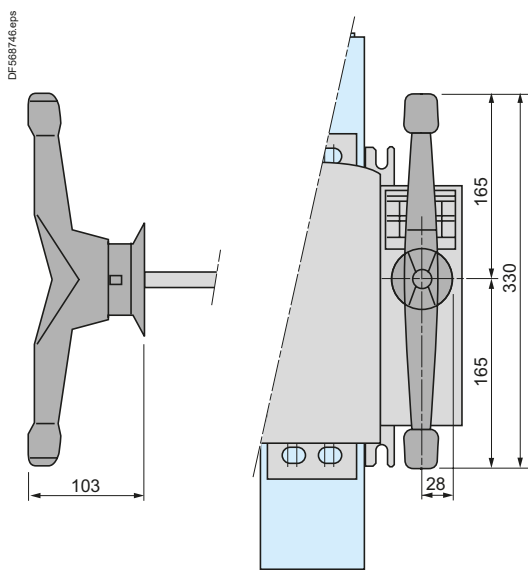
(1) Handle GS2AH104 for GS2S, GS2SB and GS2TB.

(2) Terminal cover.

(3) Rear access connector plates (GS2V and GS2VB).

Handle GS2AH105 for GS2V and GS2VB  
(direct front-mounted operator)

Connector plates for GS2V and GS2VB



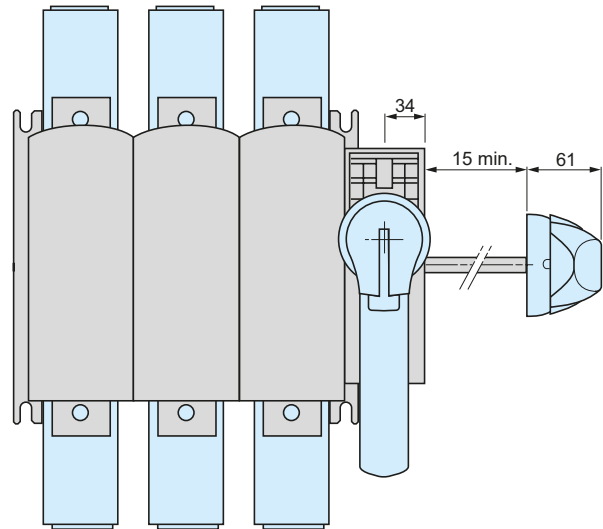
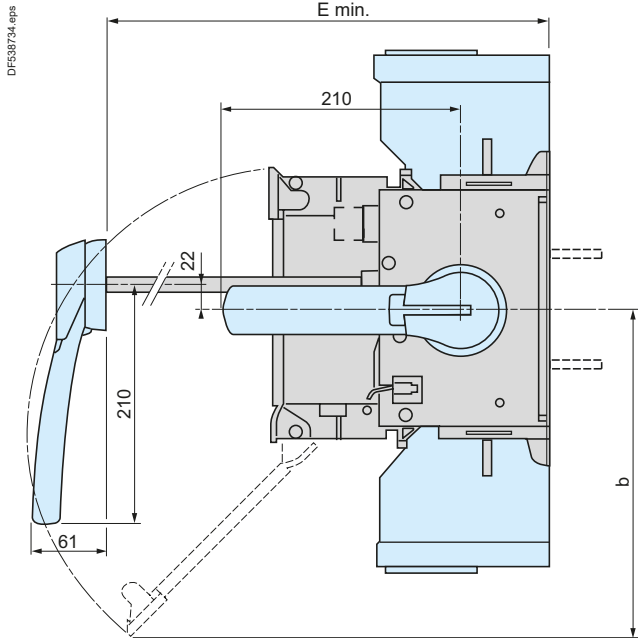
# TeSys Power

## Switch-disconnector fuses

### Dimensions

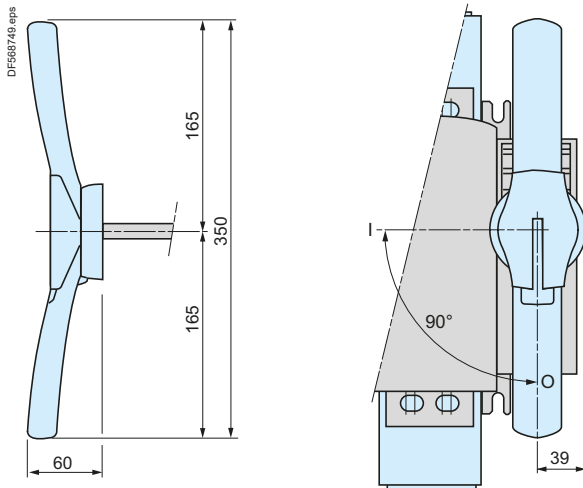
#### IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

External front and right-hand side-mounted operator  
**GS2S, SB (630 A), TB (800 A), V and VB (1250 A)**



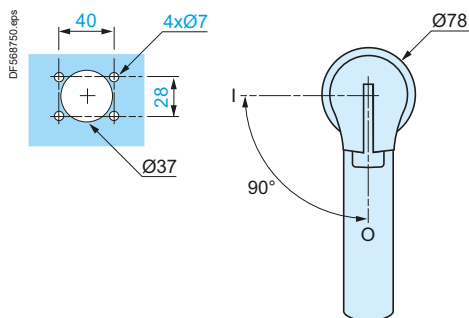
Handle GS2AH570 or GS2AH580 for GS2V and GS2VB (external front-mounted operator)

GS2		b	E min.
S, SB, TB	3P	297	265
	4P	297	265
V, VB	3P	350	304
	4P	350	304

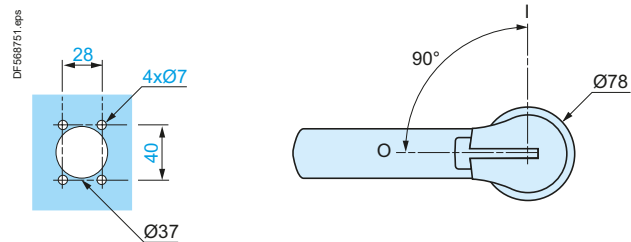


#### Door cut-out

For external front-mounted operator



For external right-hand side-mounted operator



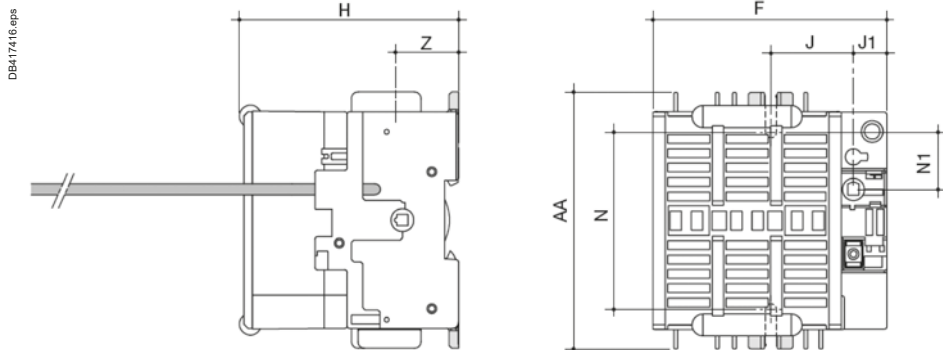
# TeSys Power

## Switch-disconnector fuses

### Dimensions

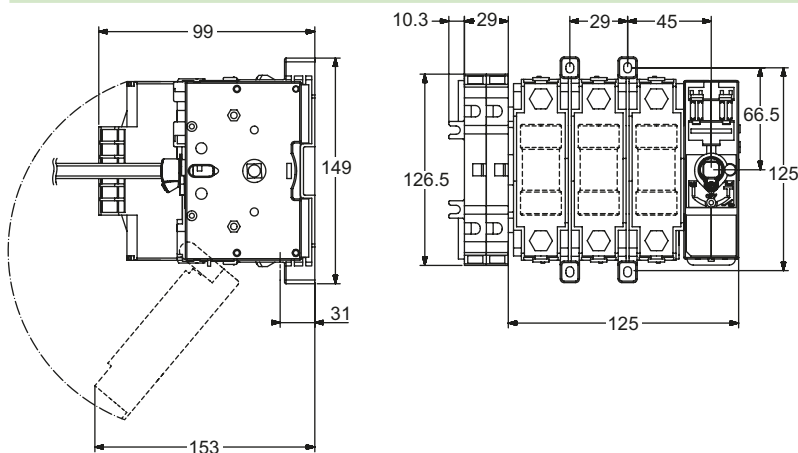
#### UL, CSA, IEC - GS1●● GS2●● Switch-disconnector fuses (30 and 60 A)

GS1DU3 (30 A) class CC fuses, GS1DDU3 (30 A) class J fuses

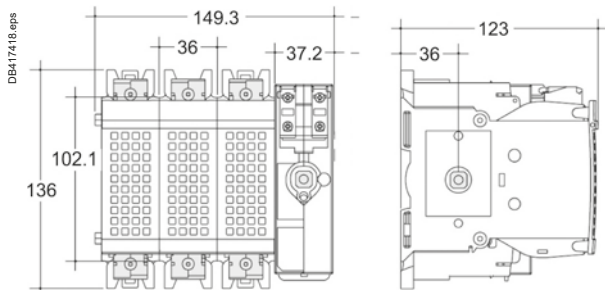


Rating	F	H	J	J1	N	N1	AA	Z
30 / CC	96	83.5	37.5	15	79.5	25.5	116	28.5
30 / J	105	99	37.5	15	79.5	25.5	116	28.5

#### GS2EU3 (30 A) class CC fuses



#### GS2EU3N, GS2GU3N (60 A) class J fuses



### Accessories

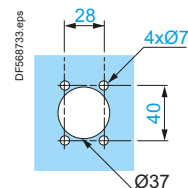
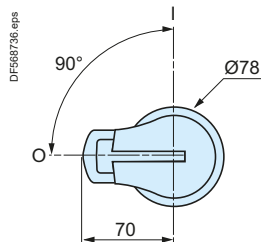
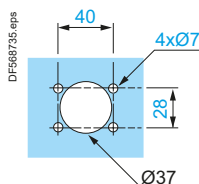
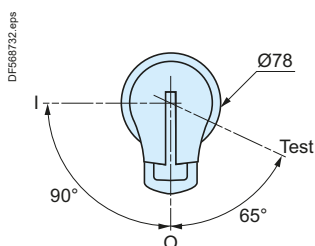
#### Handle for 30 and 60 A switch-disconnector fuses

External front handle

Door cut-out

External side handle

Door cut-out



References:  
pages B5/8 and B5/9

Characteristics:  
pages B5/22 and B5/23

Schemes:  
page B5/33

B5/30

Life Is On

Schneider  
Electric

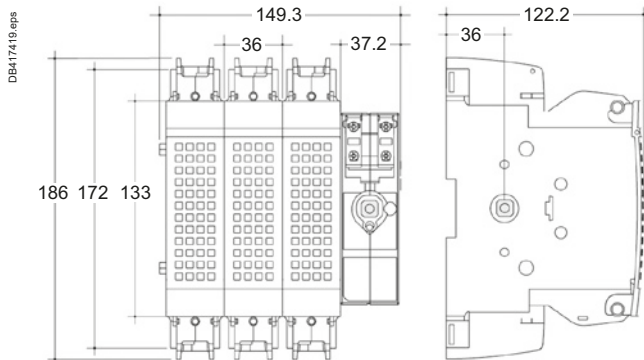
# TeSys Power

## Switch-disconnector fuses

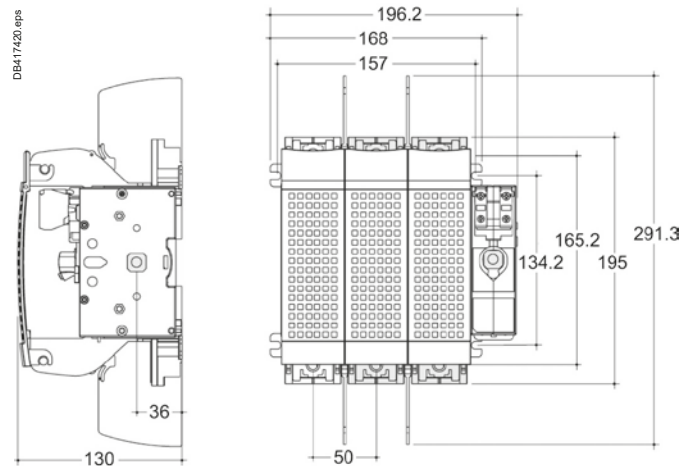
### Dimensions

#### UL, CSA, IEC - GS2●● Switch-disconnector fuses (100 and 400 A)

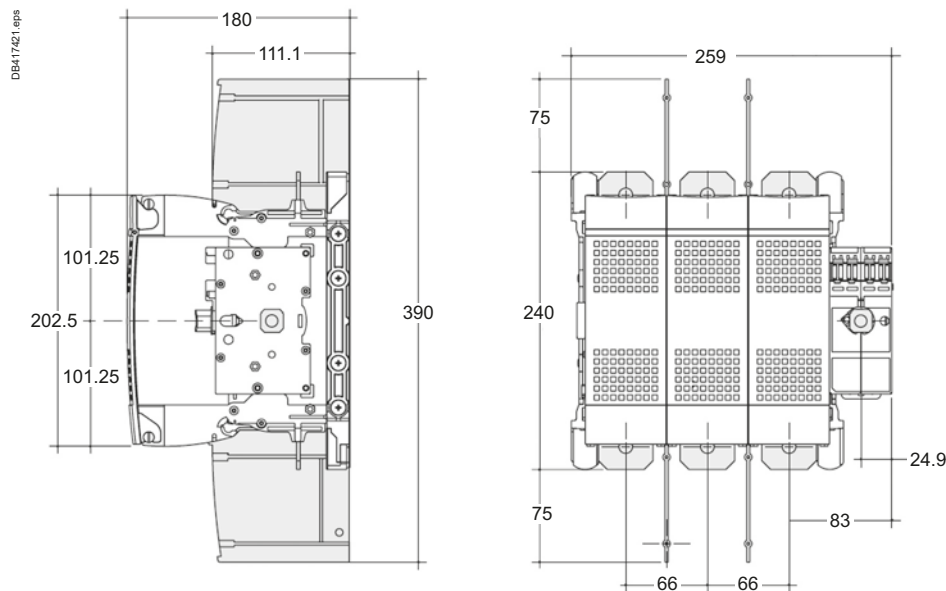
##### GS2JU3N (100 A) class J fuses



##### GS2MU3N (200 A) class J fuses



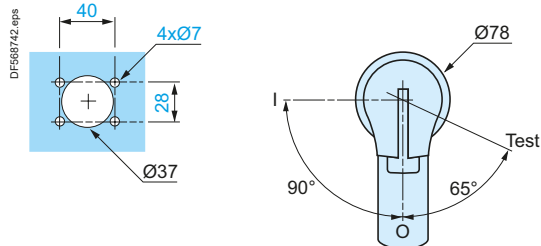
##### GS2QU3N (400 A) class CC fuses



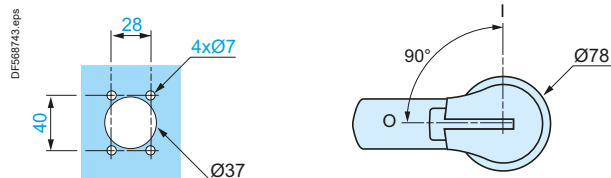
#### Accessories

##### Handle for 100, 200 and 400 A switch-disconnector fuses

###### For external front-mounted operator



###### For external right-hand side-mounted operator



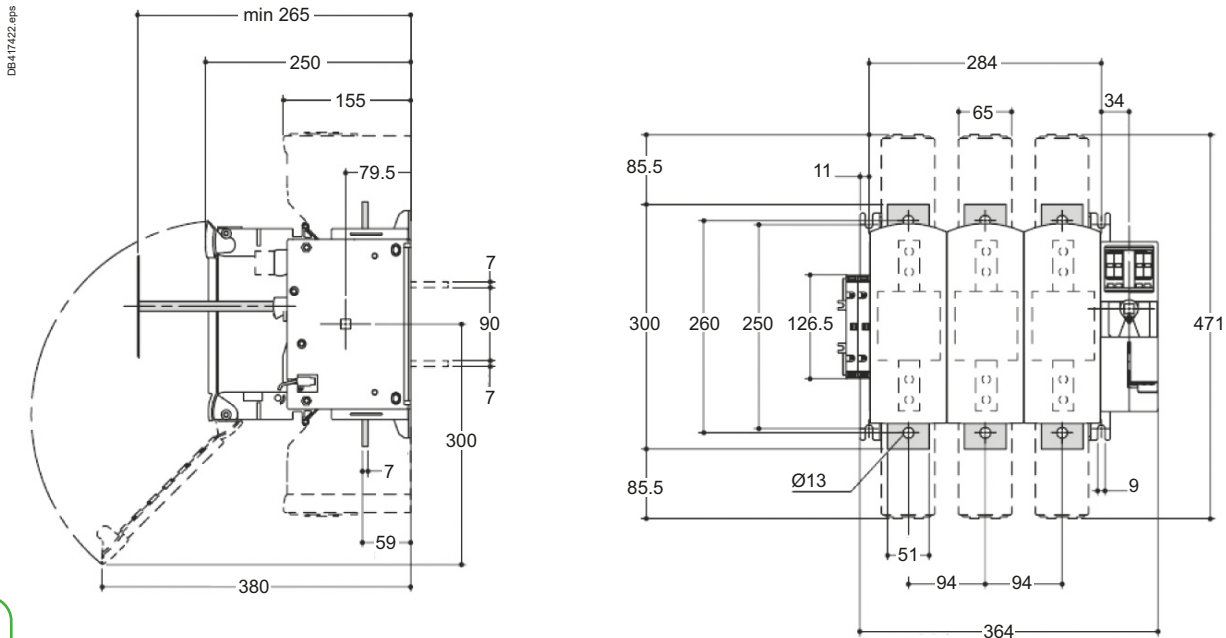
# TeSys Power

## Switch-disconnector fuses

### Dimensions

#### UL, CSA, IEC - GS2●● Switch-disconnector fuses (600 and 800 A)

#### GS2SU3 (600 A), GS2TU3 (800 A) class J fuses



Ref.



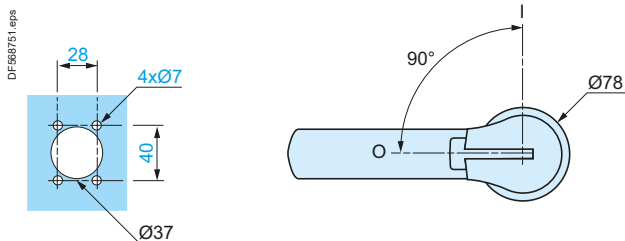
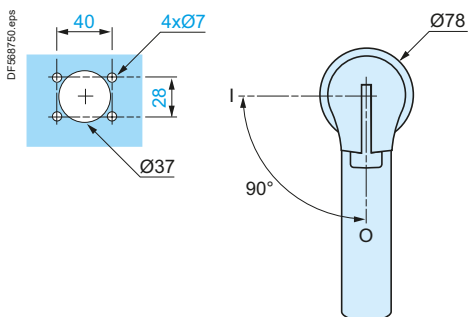
Switch-disconnector fuses

#### Accessories

##### Handle for 600 and 800 A switch-disconnector fuses

##### For external front-mounted operator

##### For external right-hand side-mounted operator



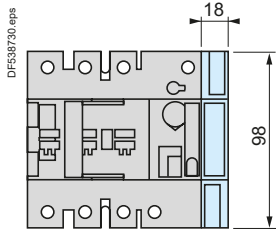
# TeSys Power

## Switch-disconnector fuses

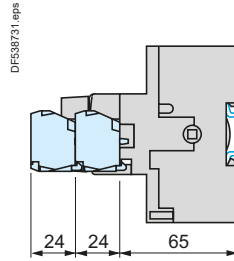
### Dimensions, schemes

#### Auxiliary contacts

GS1AM111, GS1AM211

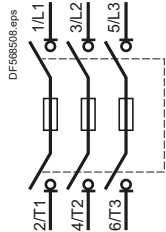


GS1AM110, GS1AM101

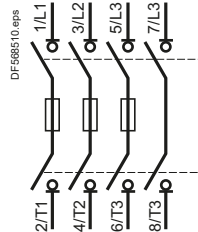


#### Schemes

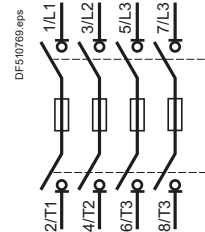
3-pole GS  
32 to 1250 A



4-pole GS  
32 A



50 to 1250 A



#### Auxiliary contacts

GS1AM110  
1 N/O



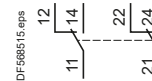
GS1AM101  
1 N/C



GS1AM111 and GS1AM1  
1 C/O



GS1AM211 and GS1AM2  
2 C/O



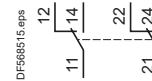
GS1AN●●  
1 N/C + 1 N/O



GS1AF●  
1 C/O



GS1AF●  
2 C/O



Switch-  
disconnect  
fuses



TeSys Power - Deca, Giga Motor circuit breakers		
Type of product	Range (400/415 V AC)	Pages
Introduction		B6/3
TeSys Deca Frame 2 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV2L, GV2LE, GV2P, GV2ME)	0.06 or 15 kW	 B6/11
TeSys Deca Frame 2 - Motor circuit breakers Thermal magnetic - delayed tripping - For high current peak motors or 3-phase transformers (Product ref. GV2RT)	0.09 or 11 kW	 B6/18
Add-on blocks, accessories (for TeSys Deca Frame 2 circuit breakers)		
TeSys Deca Frame 3 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV3L, GV3P)	5.5 to 45 kW	 B6/25
Add-on blocks, accessories (for TeSys Deca Frame 3 circuit breakers)		
TeSys Deca Frame 4 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV4L, GV4LE, GV4P, GV4PE, GV4PEM, GV4PB)	0.25 to 55 kW 1/2 to 60 HP	 B6/31
Add-on blocks, accessories (for TeSys Deca Frame 4 circuit breakers)		
TeSys Giga Frame 5, 6 - Motor circuit breakers Thermal magnetic (Product ref. GV5P, GV6P)	55 to 250 kW	 B6/49
Add-on blocks, accessories (for TeSys Giga Frame 5, 6 circuit breakers)		
PowerLogic™ Energy measurement solutions		
PowerTag Energy sensors can be used with TeSys Deca, Giga motor circuit breakers		 B6/58
PowerTag Energy Link Modbus TCP/IP concentrator for PowerTag Energy sensors		 B6/62
TeSys Power - Modular circuit breakers for auxiliary circuits		
Modular circuit breakers Thermal magnetic (Product ref. GB)	0.5 to 20 A	 B6/63

Motor  
circuit  
breakers



# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction

#### Circuit breakers for motor protection and control

Deca, Giga motor circuit breakers provide compact, reliable and efficient solutions for:

- isolation,
- protection against short circuits and overloads,
- On-Off manual control of motors from 0.06 to 250 kW.

They are conforming to, depending of the versions, IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1 and UL 60497-4-1, CSA 22.2 n° 60497-4-1.

#### Deca, Giga protection technologies

Deca, Giga circuit breakers are carried with 3 variants:

- Magnetic detection: product references GV2LE, GV2L, GV3L, GV4L, GV4LE for protection against short-circuit.
- Thermal-magnetic: product references GV2ME <sup>(1)</sup>, GV2P, GV3P, GV4P, GV4PE, GV5, GV6 for protection against short-circuits, overload, phase loss and phase unbalance.
- Advanced: product references GV4PEM combines GV4P protections and motor jam, long start, ground-fault protections.

With a magnetic circuit breaker, a thermal relay is frequently associated in order to have a short circuit protection and an overload protection.

#### TeSys Deca - Frame 2 circuit breakers: 45 mm width, for motors up to 15 kW

The most commonly used circuit breaker. with a choice of about 100 auxiliaries and accessories. TeSys Deca Frame 2 circuit breakers and TeSys K, Deca contactors can be easily assembled as a single block with one accessory.

The high Frame 2 electrical endurance (up to 100 000 operating cycles) makes it very suitable for direct manual motor control, especially ref. GV2ME <sup>(1)</sup> (thermal-magnetic c.b., Ith up to 32 A).

Enclosure mounting is well adapted to ref. GV2L and GV2P, with their possible extended rotary handle and visible trip indication.

#### TeSys Deca - Frame 3 circuit breakers: 55 mm width, for motors up to 45 kW

High performance breakers, high breaking capacity (Ics 100 kA/400 V for ratings up to 32 A, 50 kA up to 80 A).

Wide choice of auxiliaries / accessories, possible extended rotary handle. Visible tri indication.

Patented Everlink connectors provide everlasting connection (no re-tightening required).

Direct monoblock starter assembly with TeSys Deca contactors. No accessory required.

#### TeSys Deca - Frame 4 circuit breakers: 81 mm width, for motors up to 55 kW

State-of-the-art technology, TeSys Deca Frame 4 is compact and robust. Electronic core of ref. GV4P gives a great detection accuracy, with alarming and advanced protections for ref. GV4PEM, GV4PB.

Magnetic, electronic thermal-magnetic, or electronic thermal magnetic with advanced protections versions.

Ratings up to 115 A with breaking capacity Ics of 25 kA/400 V (B series), 50 kA/400 V (N series) or 100 kA/400 V (S series).

#### TeSys Giga - Frame 5: 105 mm width, for motors up to 110 kW / Frame 6: 140 mm width, for motors up to 250 kW

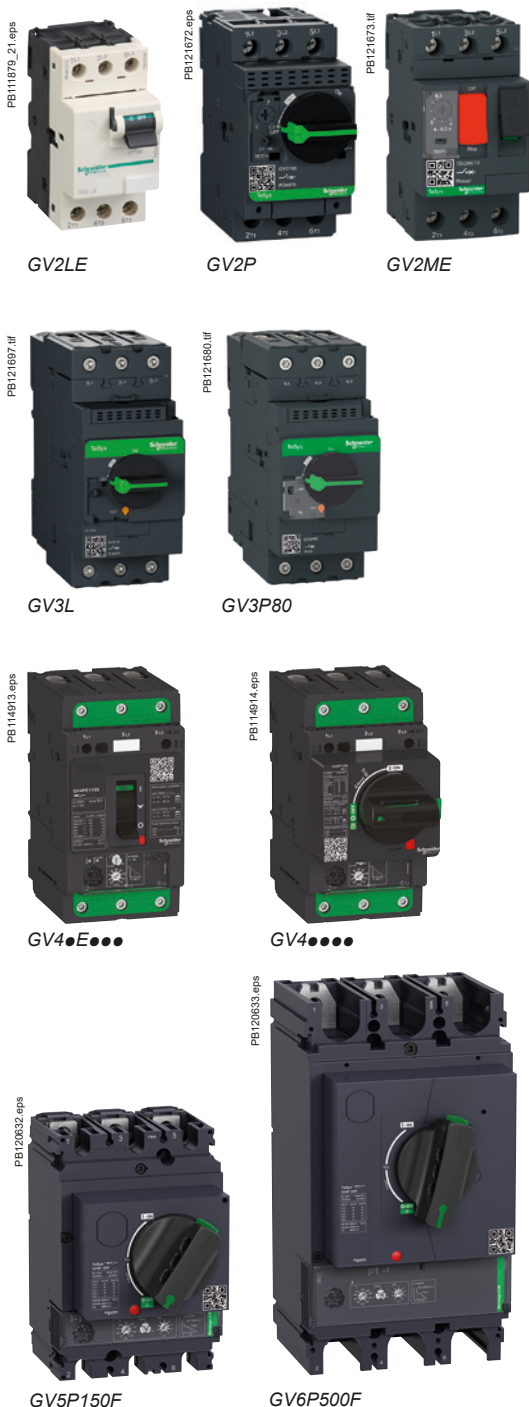
TeSys Giga - Frame 5 and 6 with advanced thermal-magnetic trip unit provide more effective protection to high power motors in the most demanding appliances.

They provide protection to motors against overloads with selection of a trip class (5, 10 or 20), short-circuits, phase unbalance or phase loss.

Adjustable over-load and short circuit current settings provide flexibility.

Wide choice of auxiliaries/accessories are available for indication, control and operation.

<sup>(1)</sup> Ref. GV2ME●●AP are specific GV2ME references for CEE zone.



Motor  
circuit  
breakers

# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction

#### TeSys Deca, Giga circuit breakers - Range overview

Molded case circuit breakers for motor protection and control

##### Deca - Frame 2

Product reference	Protection against			Range (kW / 415 V AC)	Control	Terminals	Dimensions (W x H x D)
	Short-circuits	Overload	Jam, ground-fault, long start... (Multifunction - see page B6/6)				
GV2L	●			0.09 to 15	Rotary handle	Screw clamp	44.5 x 89 x 97 (with rotary handle)
GV2LE	●			0.06 to 15	Toggle	Screw clamp	44.5 x 89 x 78.5 (with toggle)
GV2P	●	●		0.06 to 15	Rotary handle	Screw clamp	44.5 x 89 x 97 (with rotary handle)
GV2ME <sup>(1)</sup>	●	●		0.06 to 11	Push button	Screw clamp, lug or spring	44.5 x 89 x 78.2 (with push button) <sup>(2)</sup>
GV2RT	●	●		0.09 to 11	Toggle	Screw clamp	44.5 x 89 x 78.5 (with toggle)

##### Deca - Frame 3

GV3L	●			11 to 45	Rotary handle	Lug, EverLink (BTR screw)	55 x 132 x 136 (with rotary handle)
GV3P	●	●		5.5 to 45			

##### Deca - Frame 4

GV4L	●			0.25 to 55 kW	Rotary handle	Lug, EverLink (BTR screw)	81 x 156 x 116 (with toggle)
GV4LE	●				Toggle		81 x 156 x 165 (with rotary handle)
GV4P	●	●			Rotary handle		
GV4PE	●	●			Toggle		
GV4PEM	●	●	●		Toggle		
GV4PB	●	●	●	½ to 60 HP	Toggle		

##### Giga - Frame 5

GV5P150●	●	●		55 to 110	Direct rotary handle	Lug, screw clamp	105 x 161 x 155 <sup>(3)</sup> (with direct rotary handle)
GV5P220●	●	●					

##### Giga - Frame 6

GV6P320●	●	●		132 to 250	Direct rotary handle	Lug, screw clamp	140 x 255 x 179 <sup>(3)</sup> (with direct rotary handle)
GV6P500●	●	●					

<sup>(1)</sup> Ref. GV2ME●●AP are specific GV2ME references for CEE zone.

<sup>(2)</sup> 44.5 x 101 x 78.2 mm for GV2ME●●3.

<sup>(3)</sup> Depth without keylock.



GV2L



GV2LE



GV2P



GV2ME



GV2RT



GV3L



GV3P



GV4L



GV4P



GV4PEM



GV5P150F



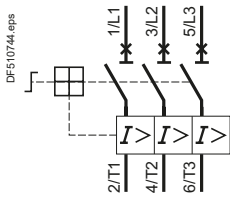
GV6P500F

Motor circuit breakers

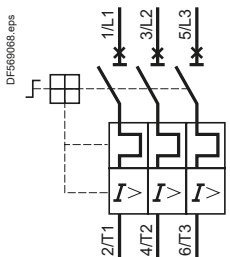
# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction



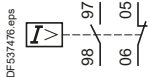
Thermal protection circuit breaker (with rotary control)



Thermal magnetic protection circuit breaker (with rotary control)



Voltage trip



Fault signalling



## Motor circuit breakers versus fuse protection ?

Circuit breakers are a common solution for Powering motor against short circuits and overloads.

As a comparison, a fuse based solution can only provide a partial protection depending on the choice of the fuse type and rating. The thermal magnetic circuit breaker is adjustable and can be fine-tuned to the practical motor load.

The fuse based solution offers a very fast protection.

### Basic functions

#### Short circuit protection (magnetic/thermal magnetic circuit breakers)

It provides a protection of the installation against short-circuit by an instantaneous trip of the circuit breaker. The tripping is obtained by means of a magnetic element incorporated in the motor circuit breaker or by an electronic detection (ref. GV4P, GV5 and GV6).

The magnetic tripping threshold is not adjustable, except on ref. GV4L, and is a fixed ratio of the maximum setting current  $I_n$ .

#### Overload protection (thermal magnetic circuit breakers)

It provides a protection of the motor against overload. When current drawn by the motor is above its rated current, this continuous overcurrent lead to increase of motor internal temperature and reduce motor life time. Use of suitable protective device shall avoid this damage to the motor. This is obtained by means of a thermal element incorporated in the motor circuit breaker, or by sensors for electronic products (ref. GV4P, GV5 and GV6).

An automatic compensation for ambient temperature variations is also provided. The rated operational current of the motor is displayed by turning a graduated knob.

#### Motor ON/OFF control

The circuit breaker provides a local manual control of the motor when used on its own (without contactor). The operation is possible by push buttons, toggle, or a single rotary handle.

#### Contacts position indication

Because they are suitable for isolation, the circuit breakers, in the open position, provide an adequate isolation distance and indicate the accurate position of the moving contacts by the position of the operators.

### Additional functions

They are provided by additional modules.

#### Under voltage protection

Trips the circuit breaker in case of under voltage. The user is therefore protected against sudden starting of the machine when normal voltage is restored. Circuit breaker reset and/or start button "I" has to be pressed to restart the motor.

#### Remote off-power

Circuit breaker can be remotely tripped with the addition of a shunt trip.

#### Off-power locking

The operators on both open-mounted and enclosed motor circuit breakers can be locked in the off position "O" by up to 3 padlocks.

# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction

PB114517 eps



### Advanced protections embedded on Deca - Frame 4 ref. GV4PEM, GV4PB (multifunction)

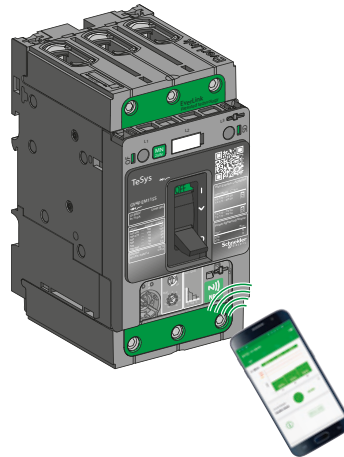
In addition to basic protections, ref. GV4PEM, GV4PB embed protections against:

- Long start (high inertia, resistive torque machines)
- Jam (overtorque, machine failure)
- Ground-fault (reduced isolation)
- Unbalanced (phase currents are not equal)
- Phase loss (1 or 2 phases missing).

Fully configurable-advanced protections:

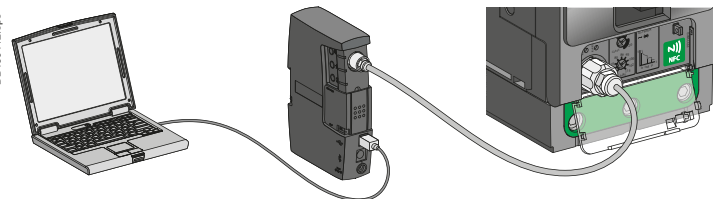
- wireless with 'EcoStruxure Power Device App' application for Android smartphone through NFC (near field communication).

DB439411 eps



- with EcoStruxure Power Commission software on a computer connected to the test socket through a configuration and maintenance module.

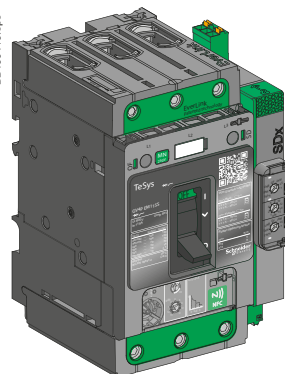
DB439412 eps



Remote indications:

Ref. GV4PEM, GV4PB circuit breaker may be equipped with an SDx alarming / fault differentiation module to prevent to trip or to identify the type of fault after a trip (see page B6/44).

DB439413 eps



Motor  
circuit  
breakers

# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction

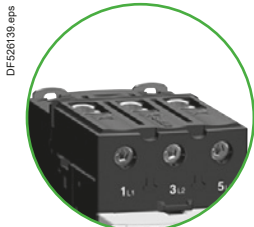
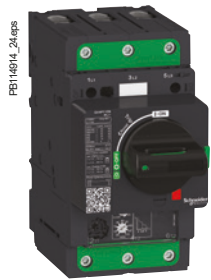
#### EverLink technology for Frame 3 and 4

Frame 3 and 4 features a cable connection method with patented creep-compensating technology built directly into the terminal — EverLink:

- With EverLink connectors, save space and time during panel assembly.
- Bare cable connections are as safe as compression lug ones.

#### No overheating connections - EverLink creep-compensated terminals for Frame 3, 4

The EverLink patented technology for terminals dramatically reduces the risk of loose bare cables due to copper creeping. Vibration withstand is improved and periodic re-tightening is no longer needed.

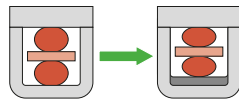


EverLink terminals, with BTR screws



The clamp connectors which don't need re-tightening.

#### Creeping phenomena

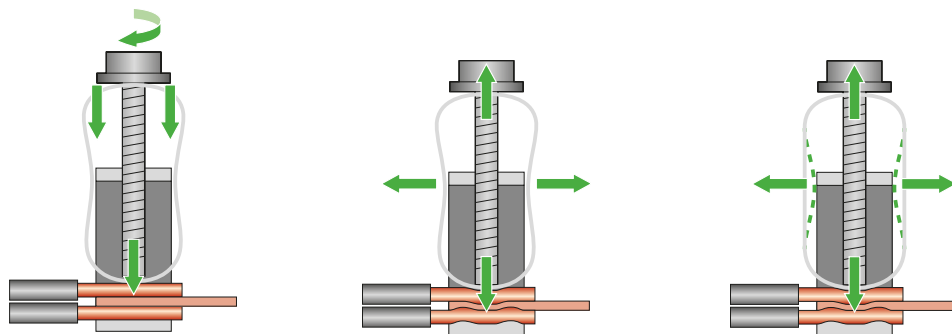


Copper conductors are subject to creep with the time, reducing the contact pressure in conventional clamps

During the tightening a force is applied on the conductors and on a spring.

Maintaining of cables assured by pressure of spring and crimping of conductor on the contact plate.

The spring compensates for cable conductor creep. Tightening force is assured.



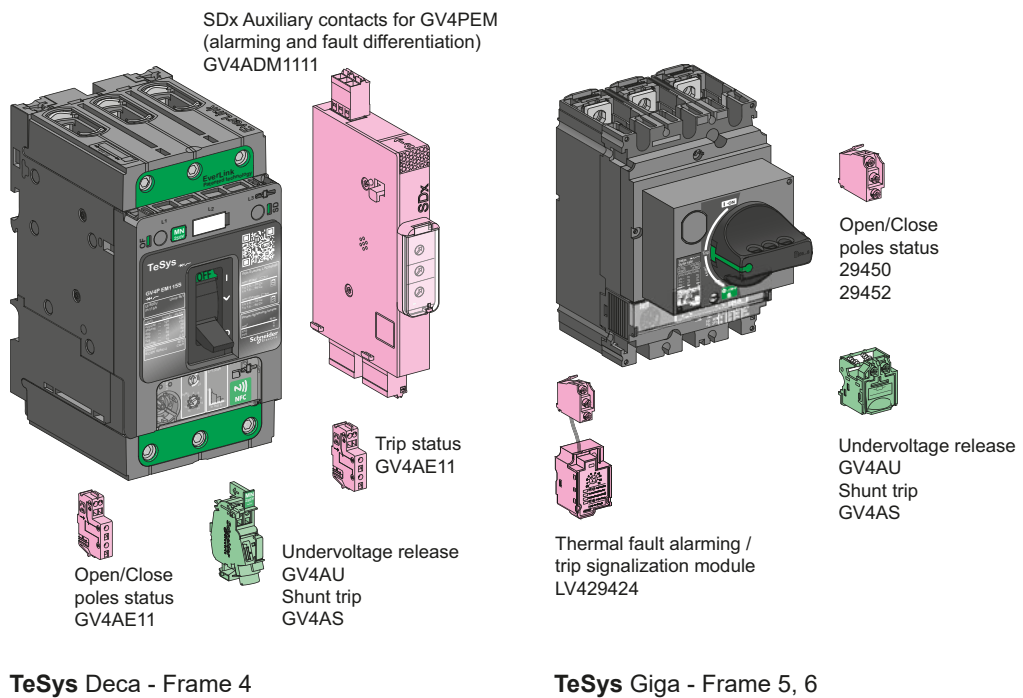
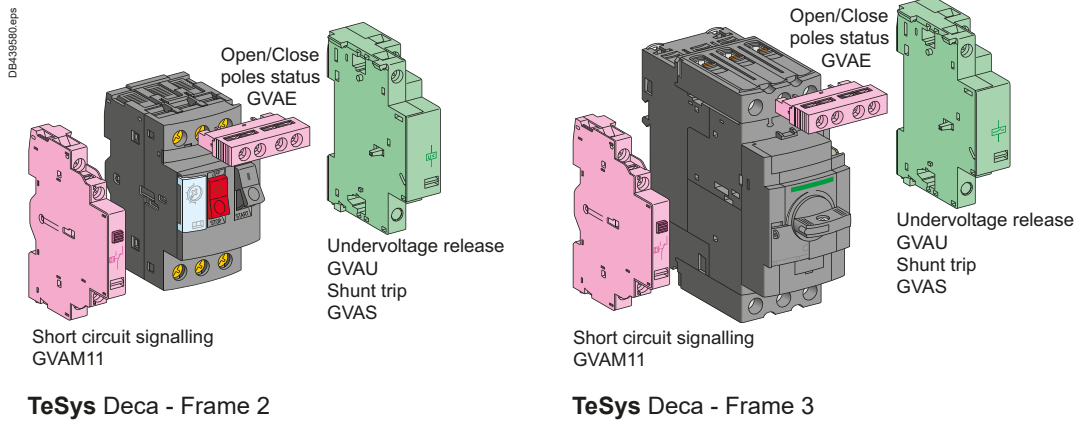
Motor circuit breakers

# TeSys Power

## Deca, Giga Motor circuit breakers

### Introduction

#### Auxiliary functions provided by add-on blocks



Motor circuit breakers

- Auxiliary contacts add-on blocks**  
For control, alarms, automatic actions:
- Instantaneous indication of the position of the circuit breaker contacts
  - Trip indication,
  - Alarming.
- Trip units**  
For remote tripping of circuit breaker:
- Shunt trip / MX, trips the circuit breaker when powered
  - Undervoltage release / MN, trips the circuit breaker when voltage is loss.



# TeSys Power

## Deca, Giga Motor circuit breakers

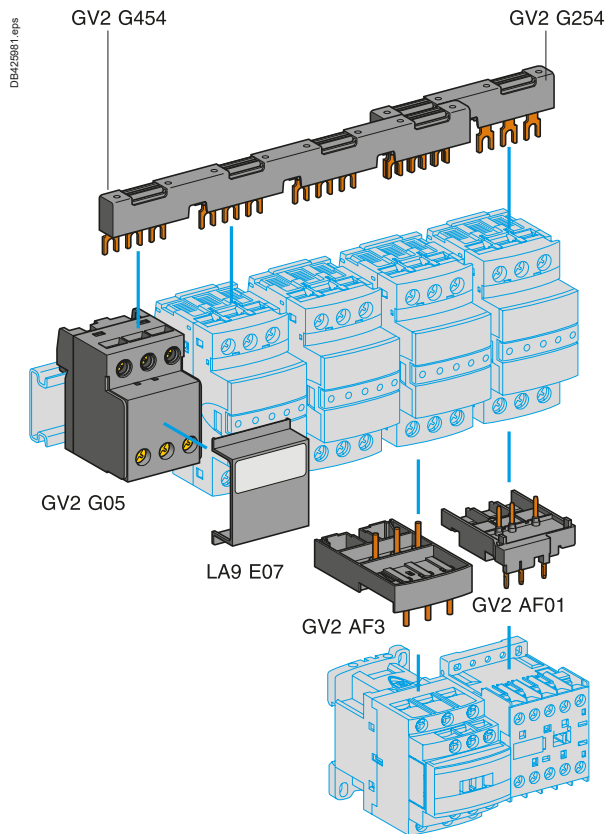
### Introduction

#### Compact power circuits wiring with TeSys Deca circuit breakers (Frame 2) and Deca contactors <sup>(1)</sup>

##### Busbars and combination blocks

Power busbars and combinations blocks provide a compact solution for assembling a group of motor starters. They save wiring time and provide a clear finish aspect.

These solutions are available for Deca - Frame 2 circuit breakers + Deca contactors.



<sup>(1)</sup> Details on these solution in chapter B2 of catalogue.

Motor  
circuit  
breakers



# TeSys Deca - Frame 2 0.06 to 15 kW



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Product references

PB121671.tif



GV2L16



Motor circuit breakers

### Motor circuit breakers from 0.09 to 15 kW

#### Deca - Frame 2 (ref. GV2L): Control by rotary knob, connection by screw clamp terminals

Standard power ratings of 3-phase motors  
50/60 Hz in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Magnetic protection rating	Tripping current Id ± 20 %	Use in association with thermal overload relay (class 10 A)	Reference
400/415 V			500 V			690 V						
P	Icu	Ics <sup>(1)</sup>	P	Icu	Ics <sup>(1)</sup>	P	Icu	Ics <sup>(1)</sup>	A	A		
0.09	*	*	-	-	-	-	-	-	0.4	5	LRD03	GV2L03
0.12	*	*	-	-	-	0.37	*	*	0.63	8	LRD04	GV2L04
0.18	*	*	-	-	-	-	-	-	0.63	8	LRD04	GV2L04
-	-	-	-	-	-	0.55	*	*	1	13	LRD05	GV2L05
0.25	*	*	-	-	-	-	-	-	1	13	LRD05	GV2L05
-	-	-	-	-	-	0.75	*	*	1	13	LRD05	GV2L05
0.37	*	*	0.37	*	*	-	-	-	1	13	LRD06	GV2L05
0.55	*	*	0.55	*	*	1.1	*	*	1.6	22.5	LRD06	GV2L06
-	-	-	0.75	*	*	-	-	-	1.6	22.5	LRD06	GV2L06
0.75	*	*	1.1	*	*	1.5	4	100	2.5	33.5	LRD07	GV2L07
1.1	-	-	-	-	-	-	-	-	-	-	LRD08	GV2L08
1.5	*	*	1.5	*	*	3	4	100	4	51	LRD08	GV2L08
-	-	-	-	-	-	-	-	-	-	-	LRD08	GV2L08
2.2	*	*	3	*	*	4	4	100	6.3	78	LRD10	GV2L10
3	*	*	4	10	100	5.5	4	100	10	138	LRD12	GV2L14
4	-	-	-	-	-	-	-	-	-	-	LRD14	GV2L14
-	-	-	-	-	-	7.5	4	100	10	138	LRD14	GV2L14
-	-	-	-	-	-	9	4	100	14	170	LRD16	GV2L16
5.5	50	50	7.5	10	75	11	4	100	14	170	LRD16	GV2L16
7.5	50	50	9	10	75	15	4	100	18	223	LRD21	GV2L20
9	50	50	11	10	75	18.5	4	100	25	327	LRD22	GV2L22
11	50	50	15	10	75	-	-	-	25	327	LRD22	GV2L22
15	50	50	18.5	10	75	22	4	100	32	416	LRD32	GV2L32

(1) As % of Icu. Associated current limiter or fuses, where required.  
\* > 100 kA.

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Product references

PB11678 eps



GV2LE

Magnetic motor circuit breakers from 0.06 to 15 kW												
Deca - Frame 2 (ref. GV2LE): control by rocker lever, connection by screw clamp terminals												
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Magnetic protection rating	Tripping current I <sub>d</sub> ± 20 %	Use in association with thermal overload relay	Reference
400/415 V			500 V			690 V						
P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>	A	A		
kW	kA		kW	kA		kW	kA		A	A		
0.06	*	*	-	-	-	-	-	-	0.4	5	LR2K0302	GV2LE03
0.09	*	*	-	-	-	-	-	-	0.4	5	LR2K0304	GV2LE03
0.12	*	*	-	-	-	0.37	*	*	0.63	8	LR2K0304	GV2LE04
0.18	*	*	-	-	-	-	-	-	0.63	8	LR2K0305	GV2LE04
-	-	-	-	-	-	0.55	*	*	1	13	LR2K0305	GV2LE05
0.25	*	*	-	-	-	-	-	-	1	13	LR2K0306	GV2LE05
-	-	-	-	-	-	0.75	*	*	1	13	LR2K0306	GV2LE05
0.37	*	*	0.37	*	*	-	-	-	1	13	LR2K0306	GV2LE05
0.55	*	*	0.55	*	*	1.1	*	*	1.6	22.5	LR2K0307	GV2LE06
-	-	-	0.75	*	*	-	-	-	1.6	22.5	LR2K0307	GV2LE06
0.75	*	*	1.1	*	*	1.5	3	75	2.5	33.5	LR2K0308	GV2LE07
1.1	*	*	-	-	-	-	-	-	2.5	33.5	LR2K0308	GV2LE07
1.5	*	*	1.5	*	*	3	3	75	4	51	LR2K0310	GV2LE08
-	-	-	2.2	*	*	-	-	-	4	51	LR2K0312	GV2LE08
2.2	*	*	3	50	100	4	3	75	6.3	78	LR2K0312	GV2LE10
3	*	*	4	10	100	5.5	3	75	10	138	LR2K0314	GV2LE14
4	*	*	5.5	10	100	-	-	-	10	138	LR2K0316	GV2LE14
-	-	-	-	-	-	7.5	3	75	10	138	LRD14	GV2LE14
-	-	-	-	-	-	9	3	75	14	170	LRD16	GV2LE16
5.5	15	50	7.5	6	75	11	3	75	14	170	LR2K0321	GV2LE16
7.5	15	50	9	6	75	15	3	75	18	223	LRD21	GV2LE20
9	15	40	11	4	75	18.5	3	75	25	327	LRD22	GV2LE22
11	15	40	15	4	75	-	-	-	25	327	LRD22	GV2LE22
15	10	50	18.5	4	75	22	3	75	32	416	LRD32	GV2LE32

<sup>(1)</sup> As % of I<sub>cu</sub>.  
\* > 100 kA.



Motor circuit breakers



GV2ME

#### Motor circuit breakers from 0.06 to 15 kW / 400 V, with screw clamp terminals

##### Deca - Frame 2 (ref. GV2ME) with pushbutton control

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Setting range of thermal trips (2)	Magnetic tripping current I <sub>d</sub> ± 20 %	Reference
400/415 V			500 V			690 V					
P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)			
kW	kA	%	kW	kA	%	kW	kA	%	A	A	
-	-	-	-	-	-	-	-	-	0.1...0.16	1.5	GV2ME01
0.06	*	*	-	-	-	-	-	-	0.16...0.25	2.4	GV2ME02
0.09	*	*	-	-	-	-	-	-	0.25...0.40	5	GV2ME03
0.12	*	*	-	-	-	0.37	*	*	0.40...0.63	8	GV2ME04
0.18	*	*	-	-	-	-	-	-			
0.25	*	*	-	-	-	0.55	*	*	0.63...1	13	GV2ME05
0.37	*	*	0.37	*	*	-	-	-	1...1.6	22.5	GV2ME06
0.55	*	*	0.55	*	*	0.75	*	*			
-	-	-	0.75	*	*	1.1	*	*			
0.75	*	*	1.1	*	*	1.5	3	75	1.6...2.5	33.5	GV2ME07
1.1	*	*	1.5	*	*	2.2	3	75	2.5...4	51	GV2ME08
1.5	*	*	2.2	*	*	3	3	75			
2.2	*	*	3	50	100	4	3	75	4...6.3	78	GV2ME10
3	*	*	4	10	100	5.5	3	75	6...10	138	GV2ME14
4	*	*	5.5	10	100	7.5	3	75			
5.5	15	50	7.5	6	75	9	3	75	9...14	170	GV2ME16
-	-	-	-	-	-	11	3	75			
7.5	15	50	9	6	75	15	3	75	13...18	223	GV2ME20
9	15	40	11	4	75	18.5	3	75	17...23	327	GV2ME21
11	15	40	15	4	75	-	-	-	20...25	327	GV2ME22 (3)
15	10	50	18.5	4	75	22	3	75	24...32	416	GV2ME32

#### Motor circuit breakers from 0.06 to 15 kW / 400 V, with lugs

To order thermal magnetic circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above.

Example: ref. **GV2ME08** becomes **GV2ME086**.

##### Thermal magnetic circuit breakers GV2ME with built-in auxiliary contact block

With instantaneous auxiliary contact block (composition, see page B6/21):

- GVAE1, add suffix **AE1TQ** to the motor circuit breaker reference selected above.  
Example: **GV2ME01AE1TQ**.
- GVAE11, add suffix **AE11TQ** to the motor circuit breaker reference selected above.  
Example: **GV2ME01AE11TQ**.
- GVAN11, add suffix **AN11TQ** to the motor circuit breaker reference selected above.  
Example: **GV2ME01AN11TQ**.

These circuit breakers with built-in contact block are sold in lots of 20 units in a single pack.

(1) As % of I<sub>cu</sub>.

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) Maximum rating which can be mounted in enclosures **GV2MC** or **MP**, please consult your Regional Sales Office.

\* > 100 kA.



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Product references - UL applications

PB1216731R



GV2ME

Motor circuit breakers from 3/4 to 20 HP / 460 V, with screw clamp terminals										
Deca - Frame 2 (ref. GV2ME) with pushbutton control										
Thermal setting (A)	Maximum Horsepower ratings								Group Motor applications Max. Fuse or Circuit breaker (A)	Reference
	Single-Phase			Three-Phase						
	115 V	200 V	230 V	115 V	200 V	230 V	460 V	575 V		
0.1...0.16	-	-	-	-	-	-	-	-	450	GV2ME01
0.16...0.25	-	-	-	-	-	-	-	-	450	GV2ME02
0.25...0.40	-	-	-	-	-	-	-	-	450	GV2ME03
0.40...0.63	-	-	-	-	-	-	-	-	450	GV2ME04
0.63...1	-	-	-	-	-	-	-	1/2	450	GV2ME05
1...1.6	-	-	1/10	-	-	-	3/4	3/4	450	GV2ME06
1.6...2.5	-	1/6	1/6	-	1/2	1/2	1	1.5	450	GV2ME07
2.5...4	1/8	1/4	1/3	-	3/4	3/4	2	3	450	GV2ME08
4...6.3	1/4	1/2	1/2	3/4	1	1.5	3	5	450	GV2ME10
6...10	1/2	1	1.5	1	2	3	5	7.5	450	GV2ME14
9...14	3/4	2	2	2	3	3	10	10	450	GV2ME16
13...18	1	2	3	2	5	5	10	15	450	GV2ME20
17...23	1.5	3	3	3	5	7.5	15	20	450	GV2ME21
20...25	2	-	-	-	7.5	7.5	15	20	450	GV2ME22
24...32	2	5	5	5	7.5	10	20	25	450	GV2ME32



Motor circuit breakers

PB 12/088 eps

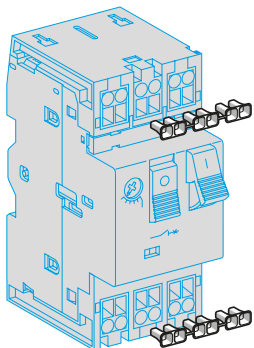


GV2ME●●3



Motor circuit breakers

DF 53/88 eps



LA9D99

### Motor circuit breakers from 0.06 to 11 kW, with spring terminal connections

#### Deca - Frame 2 (ref. GV2ME) <sup>(1)</sup> with pushbutton control

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Setting range of thermal trips <sup>(3)</sup>	Magnetic tripping current I <sub>d</sub> ± 20 %	Reference
400/415 V			500 V					
P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>			
kW	kA	%	kW	kA	%	A	A	
-	-	-	-	-	-	0.1...0.16	1.5	GV2ME013
0.06	*	*	-	-	-	0.16...0.25	2.4	GV2ME023
0.09	*	*	-	-	-	0.25...0.40	5	GV2ME033
0.12	*	*	-	-	-	0.40...0.63	8	GV2ME043
0.18	*	*	-	-	-			
0.25	*	*	0.37	*	*	0.63...1	13	GV2ME053
0.37	*	*						
0.37	*	*	0.37	*	*	1...1.6	22.5	GV2ME063
0.55	*	*	0.55	*	*			
			0.75	*	*			
0.75	*	*	1.1	*	*	1.6...2.5	33.5	GV2ME073
1.1	*	*	1.5	*	*	2.5...4	51	GV2ME083
1.5	*	*	2.2	*	*			
2.2	*	*	3	50	100	4...6.3	78	GV2ME103
3	*	*	4	10	100	6...10	138	GV2ME143
4	*	*	5.5	10	100			
5.5	15	50	7.5	6	75	9...14	170	GV2ME163
7.5	15	50	9	6	75	13...18	223	GV2ME203
9	15	40	11	4	75	17...23	327	GV2ME213
11	15	40						
11	15	40	15	4	75	20...25	327	GV2ME223

#### Contact blocks

Description	Mounting	Maximum number	Type of contacts	Sold in lots of	Unit reference
Instantaneous auxiliary contacts	Front	1	N/O + N/C	10	GVAE113
			N/O + N/O	10	GVAE203
	LH side	2	N/O + N/C	1	GVAN113
			N/O + N/O	1	GVAN203

#### Accessory

Description	Application	Sold in lots of	Unit reference
Cable end reducer	For connection of conductors from 1 to 1.5 mm <sup>2</sup>	20	LA9D99

<sup>(1)</sup> For connection of conductors from 1 to 1.5 mm<sup>2</sup>, the use of an LA9D99 cable end reducer is recommended.

<sup>(2)</sup> Maximum rating which can be mounted in enclosures GV2MC or MP, please consult your Regional Sales Office

<sup>(3)</sup> The thermal trip setting must be within the range marked on the graduated knob.

\* > 100 kA.



PG12/1672.fr



GV2P08

Motor circuit breakers from 0.06 to 30 kW / 400 V											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Setting range of thermal trips (2)	Magnetic tripping current I <sub>d</sub> ± 20 %	Reference
400/415 V			500 V			690 V					
P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)	P	I <sub>cu</sub>	I <sub>cs</sub> (1)	A	A	
Deca - Frame 2 (ref. GV2P): control by rotary knob											
Screw clamp terminals											
-	-	-	-	-	-	-	-	-	0.1...0.16	1.5	GV2P01
0.06	*	*	-	-	-	-	-	-	0.16...0.25	2.4	GV2P02
0.09	*	*	-	-	-	-	-	-	0.25...0.40	5	GV2P03
0.12	*	*	-	-	-	0.37	*	*	0.40...0.63	8	GV2P04
0.18	*	*	-	-	-	-	-	-	-	-	-
0.25	*	*	-	-	-	0.55	*	*	0.63...1	13	GV2P05
0.37	*	*	0.37	*	*	-	-	-	1...1.6	22.5	GV2P06
0.55	*	*	0.55	*	*	0.75	*	*	-	-	-
0.75	*	*	1.1	*	*	1.5	8	100	1.6...2.5	33.5	GV2P07
1.1	*	*	1.5	*	*	2.2	8	100	2.5...4	51	GV2P08
2.2	*	*	3	*	*	4	6	100	4...6.3	78	GV2P10
3	*	*	5	50	100	5.5	6	100	6...10	138	GV2P14
5.5	*	*	7.5	42	75	9	6	100	9...14	170	GV2P16
-	-	-	-	-	-	11	6	100	-	-	-
7.5	50	50	9	10	75	15	4	100	13...18	223	GV2P20
9	50	50	11	10	75	18.5	4	100	17...23	327	GV2P21
11	50	50	15	10	75	-	-	-	20...25	327	GV2P22
15	50	50	18.5	10	75	22	4	100	24...32	416	GV2P32

How to use the table : select your load operating voltage, then select its standard power value (below, in the same column). The appropriate circuit breaker is in the extreme right column, in the corresponding row.

Example: GV2P04 can protect 0.12 and 0.18 kW under 400/415 V, and 0.18 kW under 440 V, and 0,37 kW under 690 V. No 500 V standard power value can fit GV2P04.

### Motor circuit breakers up to 50 HP / 600 V, UL 60947-4-1 type E

Deca - Frame 2 (ref. GV2P) (3)

To obtain a GV2P motor circuit breaker, UL 60947-4-1 type E, use the following with the circuit breaker:

- a "Large Spacing" adapter **GV2GH7**.

### Motor circuit breakers from 3/4 to 20 HP / 460 V, with screw clamp terminals

Deca - Frame 2 (ref. GV2P) with rotary handle

Thermal setting (A)	Maximum Horsepower ratings (4)									Group Motor applications Max. Fuse or Circuit breaker (A)	Reference
	Single-Phase			Three-Phase							
	115 V	200 V	230 V	115 V	200 V	230 V	460 V	575 V			
0.1...0.16	-	-	-	-	-	-	-	-	450	GV2P01	
0.16...0.25	-	-	-	-	-	-	-	-	450	GV2P02	
0.25...0.40	-	-	-	-	-	-	-	-	450	GV2P03	
0.40...0.63	-	-	-	-	-	-	-	-	450	GV2P04	
0.63...1	-	-	-	-	-	-	-	1/2	450	GV2P05	
1...1.6	-	-	1/10	-	-	-	3/4	3/4	450	GV2P06	
1.6...2.5	-	1/6	1/6	-	1/2	1/2	1	1.5	450	GV2P07	
2.5...4	1/8	1/4	1/3	-	3/4	3/4	2	3	450	GV2P08	
4...6.3	1/4	1/2	1/2	3/4	1	1.5	3	5	450	GV2P10	
6...10	1/2	1	1.5	1	2	3	5	7.5	450	GV2P14	
9...14	3/4	2	2	2	3	3	10	10	450	GV2P16	
13...18	1	2	3	2	5	5	10	15	450	GV2P20	
17...23	1.5	3	3	3	5	7.5	15	20	450	GV2P21	
20...25	2	-	-	-	7.5	7.5	15	20	450	GV2P22	
24...32	2	5	5	5	7.5	10	20	25	450	GV2P32	

(1) As % of I<sub>cu</sub>.

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) Accessory: see page B6/23.

(4) 3P FLA corresponding values: see page A5/84.

\* > 100 kA.



PB121614eps



GV2RT



Motor circuit breakers

### For motors with high current peak on starting

#### Deca - Frame 2 (ref. GV2RT) control by rocker lever

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3					Setting range of thermal trips (1)	Magnetic tripping current Id ± 20 %	Reference
220/230 V	400/415 V	440 V	500 V	690 V			
kW	kW	kW	kW	kW	A	A	
0.06	0.09	0.09 0.12	–	–	0.25...0.40	8	GV2RT03
–	0.12 0.18	0.18	–	0.37	0.40...0.63	13	GV2RT04
0.09 0.12	0.25 0.37	0.25 0.37	0.37	0.55	0.63...1	22	GV2RT05
0.18 0.25	0.37 0.55	0.37 0.55	0.37 0.55 0.75	0.75 1.1	1...1.6	33	GV2RT06
0.37	0.75	0.75 1.1	1.1	1.5	1.6...2.5	51	GV2RT07
0.55 0.75	1.1 1.5	1.5	1.5 2.2	2.2 3	2.5...4	78	GV2RT08
1.1	2.2	2.2 3	3	4	4...6.3	138	GV2RT10
1.5 2.2	3 4	4	4 5.5	5.5 7.5	6...10	200	GV2RT14
2.2 3	5.5	5.5 7.5	7.5	9 11	9...14	280	GV2RT16
4	7.5	7.5 9	9	15	13...18	400	GV2RT20
5.5	9 11	11	11	18.5	17...23	400	GV2RT21

(1) The thermal trip setting must be within the range marked on the graduated knob.

### For primaries of 3-phase transformers

#### Deca - Frame 2 (ref. GV2RT) control by rocker lever

Standard power ratings					Setting range of thermal trips (2)	Magnetic tripping current Id ± 20 %	Reference
230/240 V	400/415 V	440 V	500 V	690 V			
kVA	kVA	kVA	kVA	kVA	A	A	
–	–	–	–	–	0.25...0.40	8	GV2RT03
–	–	–	–	–	0.40...0.63	13	GV2RT04
–	–	0.63	0.63	1	0.63...1	22	GV2RT05
0.4	0.63	1	1	–	1...1.6	33	GV2RT06
0.63	1	–	1.6	1.6 2	1.6...2.5	51	GV2RT07
1	1.6 2	1.6 2	2 2.5	2.5	2.5...4	78	GV2RT08
1.6 2	2.5	2.5 4	4	4 5 6.3	4...6.3	138	GV2RT10
2.5	4 5	5	5 6.3	–	6...10	200	GV2RT14
4	6.3	6.3	–	10 12.5	9...14	280	GV2RT16
5 6.3	10	10	10 12.5	10	13...18	400	GV2RT20

### Accessory (3)

Description	Reference
Padlockable external operator (IP 54) black handle, blue legend plate	GV2AP03

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) Other accessories such as mounting, cabling and marking accessories are identical to those used for GV2ME motor circuit breakers, see page B6/23.





#### Contact blocks

Description	Mounting	Maximum number	Type of contacts	Sold in lots of	Unit reference	
Instantaneous auxiliary contacts	Front <sup>(1)</sup>	1	N/O or N/C <sup>(2)</sup>	10	GVAE1	
			N/O + N/C	10	GVAE11	
			N/O + N/O	10	GVAE20	
	Side (LH)	2	N/O + N/C	1	GVAN11	
			N/O + N/O	1	GVAN20	
Fault signalling contact + instantaneous auxiliary contact	Side <sup>(3)</sup> (LH)	1	N/O (fault)	+ N/O	1	GVAD1010
				+ N/C	1	GVAD1001
			N/C (fault)	+ N/O	1	GVAD0110
				+ N/C	1	GVAD0101
Short-circuit signalling contact	Side (LH)	1	C/O common point	1	GVAM11	

#### Electric trips

Mounting	Voltage		Reference
<b>Undervoltage or shunt trips <sup>(4)</sup></b>			
Side (1 block on RH side of circuit breaker)	24 V	50 Hz	GVA●025
		60 Hz	GVA●026
	48 V	50 Hz	GVA●055
		60 Hz	GVA●056
	100 V	50 Hz	GVA●107
		60 Hz	GVA●107
	110...110 V	50 Hz	GVA●115
		60 Hz	GVA●116
	120...127 V	50 Hz	GVA●125
		60 Hz	GVA●115
	200 V	50 Hz	GVA●207
		60 Hz	GVA●207
	220...240 V	50 Hz	GVA●225
		60 Hz	GVA●226
	380...400 V	50 Hz	GVA●385
		60 Hz	GVA●386
	415...440 V	50 Hz	GVA●415
		60 Hz	GVA●416
	440 V	60 Hz	GVA●385
60 Hz		GVA●415	
500 V	50 Hz	GVA●505	
	60 Hz	GVA●505	

#### Undervoltage trip, INRS (can only be mounted on GV2ME)

##### Safety device for dangerous machines conforming to INRS and VDE 0113

Side (1 block on RH side of circuit breaker GV2ME)	110...115 V	50 Hz	GVAX115
		60 Hz	GVAX116
	127 V	60 Hz	GVAX115
		50 Hz	GVAX225
	220...240 V	60 Hz	GVAX226
		50 Hz	GVAX385
	380...400 V	60 Hz	GVAX386
		50 Hz	GVAX415
	415...440 V	60 Hz	GVAX385

#### Limiter blocks

Description	Mounting	Maximum number	Reference
Visible isolation block <sup>(5)</sup>	Front <sup>(1)</sup>	1	GV2AK00 <sup>(6)</sup>
Limiters	At top (GV2ME and GV2P) for circuit breakers with screw clamp connections	1	GV1L3
	Independent <sup>(7)</sup>	1	LA9LB920

- (1) Mounting of a GVAE contact block or a GV2AK00 visible isolation block on GV2P and GV2L.
- (2) Choice of N/C or N/O contact operation, depending on which way round the reversible block is mounted.
- (3) The GVAD is always mounted next to the circuit breaker.
- (4) To order an undervoltage trip: replace the dot (●) in the reference with a U, example: GVAU025.  
To order a shunt trip: replace the dot (●) in the reference with an S, example: GVAS025.
- (5) Visible isolation of the 3 poles upstream of circuit breaker GV2P and GV2L.
- (6) I<sub>e</sub> Max = 32 A.
- (7) For more information about the current limiter LA9LB920, see pages A4/31 and A4/63.



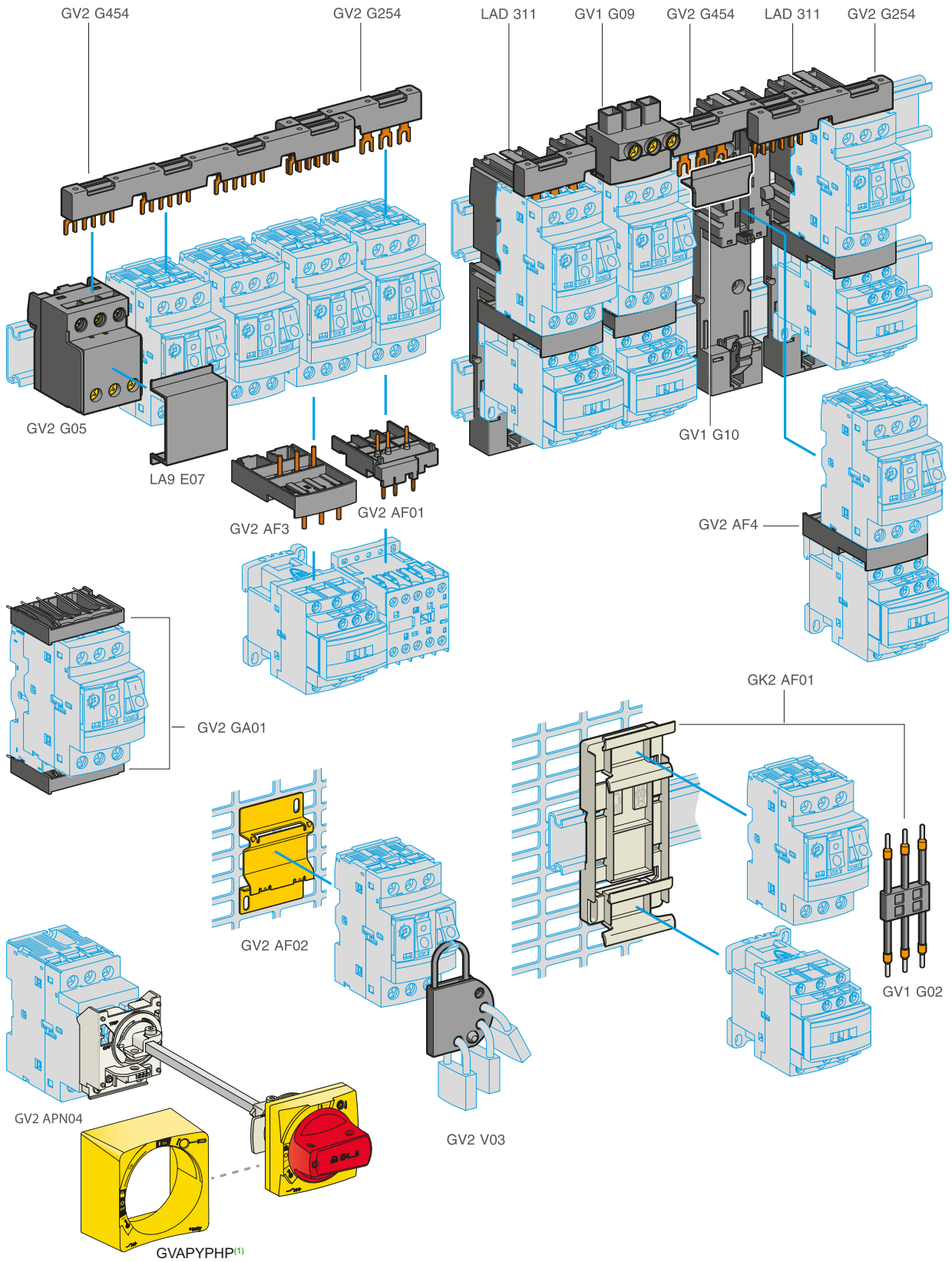
GV1L3



LA9LB920



Motor circuit breakers



(1) Standard front plate must be removed from the assembly and replaced by Protective front plate (GVAPYPHP).

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Accessories

### Product references

#### Accessories for circuit breakers with screw clamp connections

Description	Application	Sold in lots of	Unit reference
<b>Adapter plates</b>	For mounting a GV2 by screw fixing	10	<b>GV2AF02</b>
	For mounting a GV2ME and contactor LC1D09...D38 with front faces aligned	1	<b>LAD311</b>
<b>Height compensation plate</b>	7.5 mm to align GV2ME-GV2LE and GV2P-GV2L and allow the use of a common GV2G●●● busbar	10	<b>GV1F03</b>
<b>Combination blocks</b>	Between GV2 and contactor LC1K or LP1K	10	<b>GV2AF01</b>
	Between GV2 and contactor LC1D09...D38	10	<b>GV2AF3</b>
	Between GV2 mounted on LAD311 and contactor LC1D09...D38	10	<b>GV2AF4</b>
<b>Motor starter adapter plate</b>	With 3-pole connection for mounting a GV2 and a contactor LC1D09...D25	1	<b>GK2AF01</b>

Description	Application	Pitch mm	Reference
<b>Sets of 3-pole Ie = 63 A busbars</b>	2 tap-offs	45	<b>GV2G245</b>
		54	<b>GV2G254</b>
		72	<b>GV2G272</b>
	3 tap-offs	45	<b>GV2G345</b>
		54	<b>GV2G354</b>
	4 tap-offs	45	<b>GV2G445</b>
		54	<b>GV2G454</b>
		72	<b>GV2G472</b>
	5 tap-offs	54	<b>GV2G554</b>

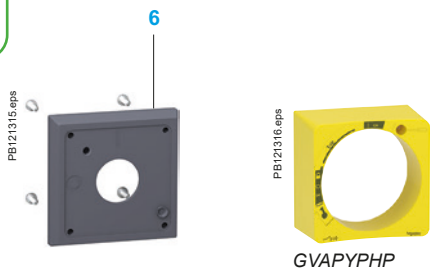
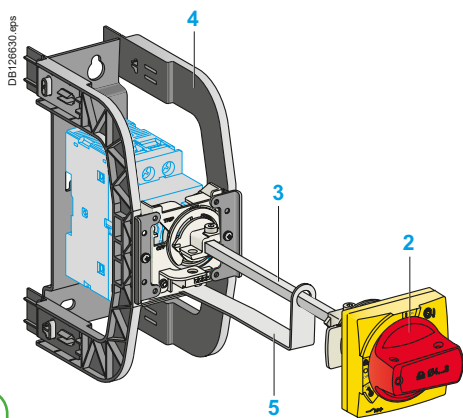
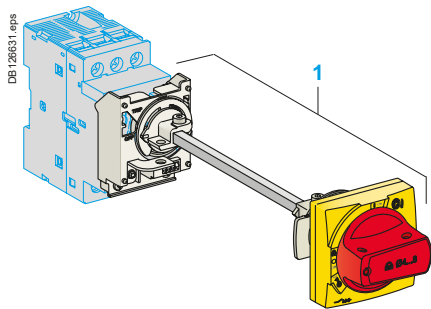
Description	Ie	Application	Sold in lots of	Unit reference
	<b>A</b>			
<b>Protective end cover</b>	-	For unused busbar outlets	5	<b>GV1G10</b>
<b>Terminal block</b> for supply to one or more GV2G busbar sets	63	Connection from the top	1	<b>GV1G09</b>
	63	Can be fitted with current limiter GV1L3 (GV2ME and GV2P)	1	<b>GV2G05</b>
<b>Cover for terminal block</b>	-	For mounting in modular panels	10	<b>LA9E07</b>
<b>Flexible 3-pole connection</b> for connecting a GV2 to a contactor LC1D09...D25	25	Centre distance between mounting rails: 100...120 mm	10	<b>GV1G02</b>
<b>"Large Spacing" adapter</b> UL 60947-4-1 type E	-	For GV2P●● (except 32 A)	1	<b>GV2GH7</b>
<b>Clip-in marker holders</b> (supplied with each circuit breaker)	-	For GV2P, GV2L, GV2LE and GV2RT (8 x 22 mm)	100	<b>LA9D92</b>

PB 119241.eps



GV1G09

Motor  
circuit  
breakers



Motor circuit breakers

### Extended Rotary Handle

Allows a circuit breaker or a starter-controller installed in back of an enclosure to be operated from the front of the enclosure.

A rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (Off) for red/yellow handle, in the O (Off) or I (On) for black handle, by means of up to 3 padlocks with a shank diameter of 4 to 8 mm. The extended shaft must be adjusted to use in different size enclosures. The IP54 rotary handle is fixed with a nut (Ø22) to make easier the assembling. The new Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle.

### Padlockable external operators for ref. GV2P and GV2L

#### Description

- 1 Kit handle + mounting system
- 2 Universal handle
- 3 Shaft
- 4 Bracket
- 5 Shaft support plate for deep enclosure
- 6 Retrofit accessory
- 7 Laser Square accessory

#### Kit handle + mounting system

Description	Item	Reference
For GV2P/L	Black handle, front plate, with trip status, IP 54	1 GV2APN01
	Red handle, front plate, with trip status, IP 54	1 GV2APN02
	Black handle, front plate, without trip status, IP 65	1 GV2APN03
	Red handle, front plate, without trip status, IP 65	1 GV2APN04
For GV2LE	Padlocking in "On" and "Off" position	- GV2AP03
	Black handle, blue front plate, IP 54	

#### Universal handle

For GV2P/L	Black handle, with trip status, IP54	2 GVAPB54
	Red handle, with trip status, IP54	2 GVAPR54
	Red handle, without trip status, IP65	2 GVAPR65

#### External handle protection frame

For GV2P/L	Yellow frame	1 GVAPYPHP
	Black frame	1 GVAPBPHP

#### Shaft

For GV2P/L	L = 315 mm	3 GVAPA1
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#### Bracket

For GV2P/L		4 GVAPH02
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#### Shaft support plate for deep enclosure

For GV2P/L	Depth ≥ 250 mm	5 GVAPK11
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#### Retrofit accessory

For GV2P/L		6 GVAPP1
------------	--	----------

#### Laser Square accessory

For GV2P/L		7 GVAPL01
------------	--	-----------

#### Sticker

	Sold in lots of		
For German	10	-	GVAPSDE
For Chinese	10	-	GVAPSCN
For Portuguese	10	-	GVAPSPT
For Italian	10	-	GVAPSIT

### Padlocking device

Description		Reference
For all GV2 device	For use with up to 4 padlocks, Ø6 mm shank max. (padlocks not included)	GV2V03



# TeSys Deca - Frame 3 11 to 45 kW



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Magnetic

### Product references

PE121697.fr



GV3L25



Motor  
circuit  
breakers

### Motor circuit breakers from 11 to 45 kW

#### Deca - Frame 3 (ref. GV3L): control by rotary knob, connection by EverLink® BTR screw connectors

Standard power ratings of 3-phase motors  
50/60 Hz in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Magnetic protection rating	Tripping current I <sub>d</sub> ± 20 %	Use in association with thermal overload relay (class 10 A)	Reference
400/415 V			500 V			690 V						
P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(1)</sup>				
<b>11</b>	100	100	<b>15</b>	12	50	<b>18.5</b>	6	50	25	350	LRD325	<b>GV3L25</b>
<b>15</b>	100	100	<b>18.5</b>	12	50	<b>22</b>	6	50	32	448	LRD332	<b>GV3L32</b>
<b>18.5</b>	50	100	<b>22</b>	12	50	<b>37</b>	6	50	40	560	LRD340	<b>GV3L40</b>
<b>22</b>	50	100	<b>30</b>	12	50	<b>45</b>	6	50	50	700	LRD350	<b>GV3L50</b>
<b>30</b>	50	100	<b>37</b>	12	50	<b>55</b>	6	50	65	910	LRD365	<b>GV3L65</b>
<b>37</b>	50	60	<b>45</b>	12	50	<b>55</b>	6	50	73	1120	LRD380	<b>GV3L73</b>
<b>45</b>	50	60	<b>45</b>	12	50	<b>55</b>	6	50	80	1120	LRD380	<b>GV3L80<sup>(2)</sup></b>

#### Connection by lugs

To order these circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above.

Example: ref. **GV3L32** becomes **GV3L326**.

<sup>(1)</sup> As % of I<sub>cu</sub>. Associated current limiter or fuses, where required.

<sup>(2)</sup> 750 A Lock Rotor Current max.

★ > 100 kA.

PB121680.tif



GV3P80

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GV3P651

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GV3P736

### Motor circuit breakers up to 45 kW / 400 V

Standard power ratings of 3-phase motors  
50/60 Hz in category AC-3

400/415 V			500 V			690 V			Setting range of thermal trips (2)	Magnetic tripping current Id ± 20 %	Reference
P	Icu	Ics (1)	P	Icu	Ics (1)	P	Icu	Ics (1)			
kW	kA	%	kW	kA	%	kW	kA	%	A	A	

#### Deca - Frame 3 (ref. GV3P): control by rotary knob

Connection by EverLink® BTR screw connectors (3)

5.5	100	100	7.5	12	50	11	6	50	9...13	182	GV3P13
7.5	100	100	9	12	50	15	6	50	12...18	252	GV3P18
11	100	100	15	12	50	18.5	6	50	17...25	350	GV3P25
15	100	100	18.5	12	50	22	6	50	23...32	448	GV3P32
18.5	50	100	22	12	50	37	6	50	30...40	560	GV3P40
22	50	100	30	12	50	45	6	50	37...50	700	GV3P50
30	50	100	45	12	50	55	6	50	48...65	910	GV3P65
37	50	60	45	12	50	55	6	50	62...73	1120	GV3P73
45	50	60	45	12	50	55	6	50	70...80	1120	GV3P80 (4)

Connection by EverLink® BTR screw connectors, for assembly with a contactor

To assemble a GV3P32 to P73 circuit breaker with an LC1D40A to D73A contactor, it is possible to use the circuit breaker supplied without downstream EverLink® power terminal block. To order this product, add the digit 1 to the end of the references selected above. Example: ref. GV3P73 becomes GV3P731. Do not use direct mounting between GV3P80 and LC1D80A because of potential overheating, use cable link.

Connection by lugs

To order thermal magnetic circuit breakers with connection by lugs, add the digit 6 to the end of reference selected above. Example: GV3P25 becomes GV3P256.

### Motor circuit breakers up to 40 HP / 460 V, UL 60947-4-1 type E

Deca - Frame 3 - ref. GV3P13 (5) to GV3P65 (5)

To obtain a motor-circuit breaker GV3P, UL 60947-4-1 type E, use the following with the circuit breaker:

- a "Large Spacing" cover GV3G66,
- a short-circuit signalling contact GVAM11.

### Motor circuit breakers from 7.5 to 50 HP / 460 V, with screw clamp terminals

Deca - Frame 3 (ref. GV3P) with rotary handle

Thermal setting (A)	Maximum Horsepower ratings (6)						Reference
	Single-Phase		Three-Phase				
	115 V	230 V	200 V	230 V	460 V	575 V	
9...13	1/2	1.5	3	3	7.5	10	GV3P13
12...18	3/4	2	3	5	7.5	10	GV3P18
17...25	1.5	3	5	7.5	15	20	GV3P25
23...32	2	3	7.5	7.5	20	25	GV3P32
30...40	3	5	10	10	25	30	GV3P40
37...50	3	7.5	10	10	30	40	GV3P50
48...65	3	10	15	15	40	50	GV3P65
62...73	5	15	20	25	50	60	GV3P73

Deca - Frame 3 - ref. GV3P13 to GV3P65 - with connection by lugs (5)

To obtain a motor-circuit breaker ref. GV3P, UL 60947-4-1 type E, with connection by lugs, add the digit 6 to the end of reference selected above and use the following with the circuit breaker:

- two IP 20 covers LAD96570,
- a short-circuit signalling contact GVAM11.

(1) As % of Icu.

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) BTR screws: hexagon socket head. Require use of an insulated Allen key, in compliance with local wiring regulations.

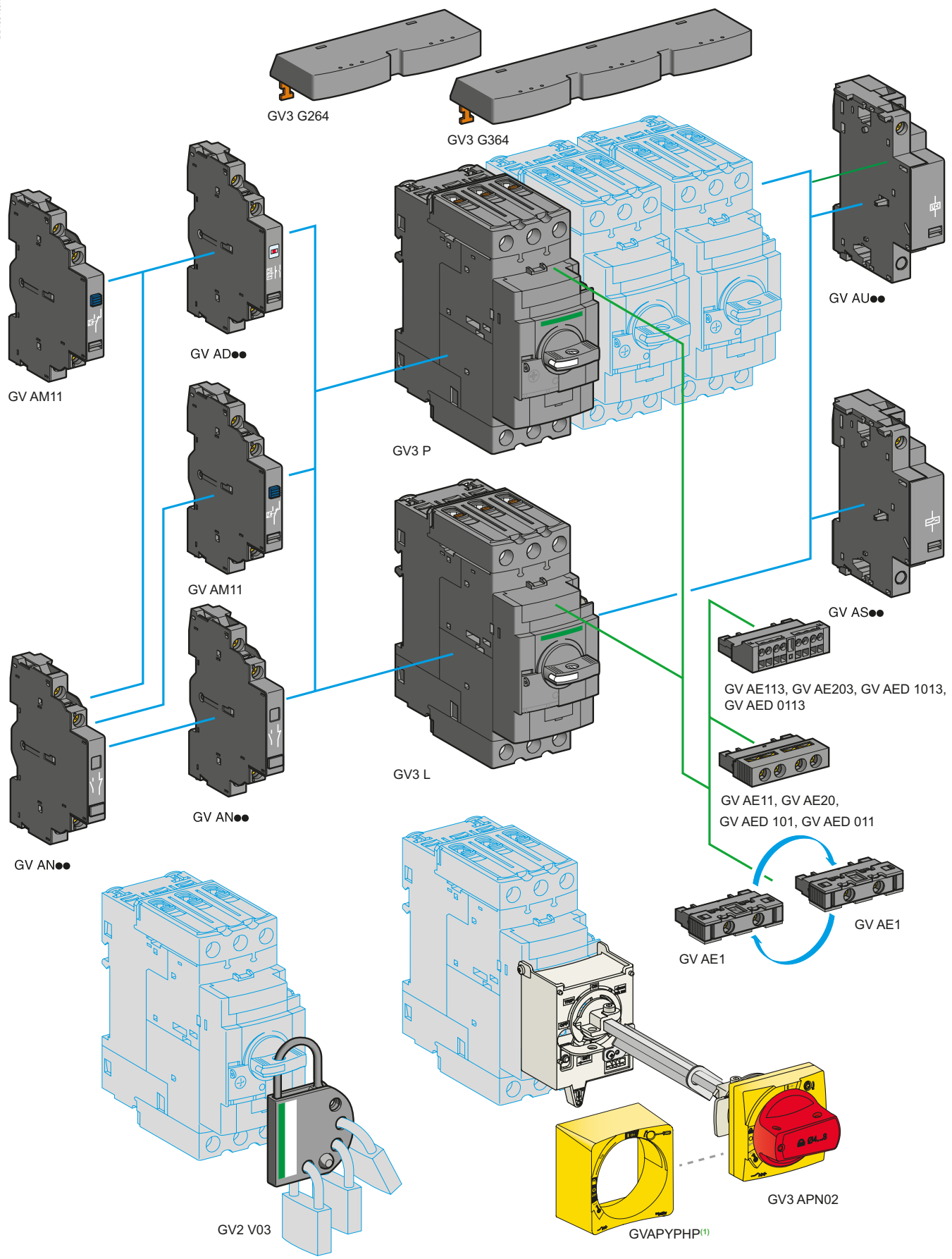
(4) For applications with stable full load current with maximum 80 A and Lock Rotor Current maximum 750 A.

(5) Accessories: see page B6/30.

(6) 3P FLA corresponding values: see page A5/84.



Motor circuit breakers



(1) Standard front plate must be removed from the assembly and replaced by Protective front plate (GVAPYPHP).

Contact blocks						
Description	Mounting	Maximum number	Type of contacts	Sold in lots of	Unit reference	
Instantaneous auxiliary contacts	Front	1	N/O or N/C <sup>(1)</sup>	10	GVAE1	
			N/O + N/C	10	GVAE11 <sup>(2)</sup>	
			N/O + N/O	10	GVAE20 <sup>(2)</sup>	
	Side (LH)	2	N/O + N/C	1	GVAN11 <sup>(2)</sup>	
			N/O + N/O	1	GVAN20 <sup>(2)</sup>	
Fault signalling contact + instantaneous auxiliary contact	Front	1	N/O (fault) + N/O	1	GVAED101 <sup>(2)</sup>	
			N/O (fault) + N/C	1	GVAED011 <sup>(2)</sup>	
	Side <sup>(3)</sup> (LH)	1	N/O (fault)	+ N/O	1	GVAD1010
				+ N/C	1	GVAD1001
				N/C (fault) + N/O	1	GVAD0110
			+ N/C	1	GVAD0101	
Short-circuit signalling contact	Side (LH)	1	C/O common point	1	GVAM11	

Electric trips - undervoltage or shunt <sup>(4)</sup>			
Mounting	Voltage		Reference
Side (1 block on RH side of circuit breaker)	24 V	50 Hz	GVA●025
		60 Hz	GVA●026
	48 V	50 Hz	GVA●055
		60 Hz	GVA●056
	100	50 Hz	GVA●107
	100...110 V	60 Hz	GVA●107
	110...115 V	50 Hz	GVA●115
		60 Hz	GVA●116
	120...127 V	50 Hz	GVA●125
	127 V	60 Hz	GVA●115
	200 V	50 Hz	GVA●207
		60 Hz	GVA●207
	220...240 V	50 Hz	GVA●225
		60 Hz	GVA●226
	380...400 V	50 Hz	GVA●385
		60 Hz	GVA●386
	415...440 V	50 Hz	GVA●415
		60 Hz	GVA●416
	440 V	60 Hz	GVA●385
	480 V	60 Hz	GVA●415
500 V	50 Hz	GVA●505	
600 V	60 Hz	GVA●505	

Accessories			
Description			Reference
Set of 3-pole busbars I <sub>e</sub> = 115 A Pitch: 64 mm	2 tap-off	GV3P●● and GV3L●●	GV3G264
	3 tap-off	GV3P●● and GV3L●●	GV3G364
Cover "Large Spacing" UL 60947-4-1 type E (Only one cover required on supply side)		GV3P●●	GV3G66

- (1) Choice of N/C or N/O contact operation, depending on which way round the reversible block is mounted.  
 (2) Contact blocks available in version with spring terminal connections. Add a figure 3 at the end of the references selected above.  
 Example: **GVAED101** becomes **GVAED1013**.  
 (3) The **GVAD●●** is always mounted next to the circuit breaker.  
 (4) To order an undervoltage trip: replace the dot (●) in the reference with a **U**, example: **GVAU025**.  
 To order a shunt trip: replace the dot (●) in the reference with an **S**, example: **GVAS025**.

Torque limiting breakaway bits			
Description		Sold in lots of	Reference
5 N.m Yellow		6	LV426992
9 N.m Green		6	LV426990

PB108366.eps



GV3G66

PB121324.eps



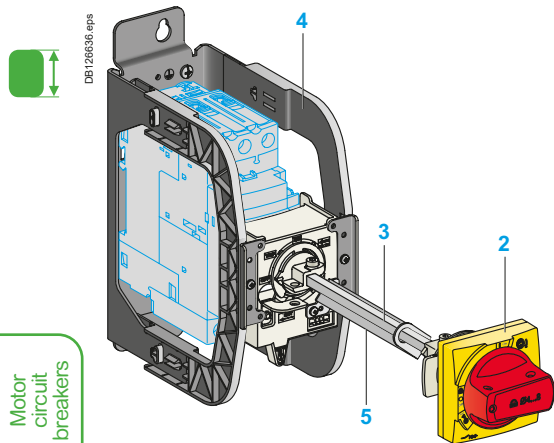
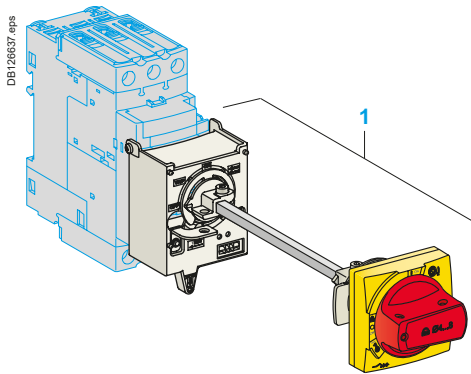
LV426992



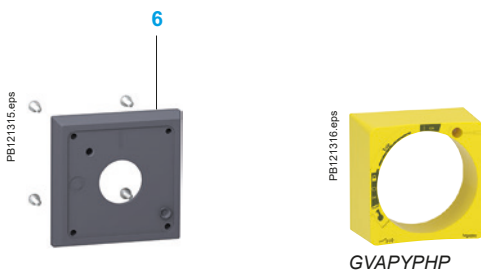
LV426990

Limited torque throwaway bits





Motor circuit breakers



### Extended Rotary Handle

Allows a circuit breaker or a starter-controller installed in back of an enclosure to be operated from the front of the enclosure.

A rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (Off) or I (On) position (depending of the type of rotary handle) by means of up to 3 padlocks with a shank diameter of 4 to 8 mm. The extended shaft must be adjusted to use in different size enclosures. The IP54 rotary handle is fixed with a nut ( $\varnothing 22$ ) to make easier the assembling. The new Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle.

### Padlockable external operators for Deca - Frame 3

#### Description

- 1 Kit handle + mounting system
- 2 Universal handle
- 3 Shaft
- 4 Bracket
- 5 Shaft support plate for deep enclosure
- 6 Retrofit accessory
- 7 Laser Square accessory

#### Kit handle + mounting system

Description	Item Reference
For GV3P/L Black handle, front plate, with trip status, IP 54	1 GV3APN01
Red handle, front plate, with trip status, IP 54	1 GV3APN02
Black handle, front plate, without trip status, IP65	1 GV3APN03
Red handle, front plate, without trip status, IP 65	1 GV3APN04

#### Universal handle

For GV3P/L Black handle, with trip status, IP54	2 GVAPB54
Red handle, with trip status, IP54	2 GVAPR54
Red handle, without trip status IP65	2 GVAPR65

#### External handle protection frame

For GV2P/L Yellow frame	1 GVAPYPHP
Black frame	1 GVAPBPHP

#### Shaft

For GV3P/L L = 315 mm	3 GVAPA1
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#### Shaft support plate for deep enclosure

For GV3P/L Depth $\geq 300$ mm	5 GVAPK12
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#### Retrofit accessory

For GV3P/L	6 GVAPP1
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#### Laser Square accessory

For GV3P/L	7 GVAPL01
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#### Warning label

Warning label	Sold in lots of	
For German	10	- GVAPSDE
For Chinese	10	- GVAPSCN
For Portuguese	10	- GVAPSPT
For Italian	10	- GVAPSIT

# TeSys Deca - Frame 4

0.25 to 55 kW - 1/2 to 60 HP



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 4 Motor circuit breakers

### Introduction

#### Protection

TeSys Deca - Frame 4 motor circuit breakers covers motor protection from 0.25 to 55 kW at 415 V AC (from 0.8 to 115 A) in one frame and are available in 3 breaking capacities: 25, 50 and 100 kA at 415 V AC IEC (15, 35, 65 kA at 480 V UL).

TeSys Deca - Frame 4 motor circuit breakers are available with 3 types of protection:

- Magnetic ref. GV4L: to be used with an overload relay or a drive
- Thermal magnetic ref. GV4P: electronic protection with wide range setting, dual class (10 & 20)
- Multifunction motor protection ref. GV4PEM: ref. GV4P with adjustable advanced protections and possibility to have a side module SDx for alarming and motor functional fault differentiation.

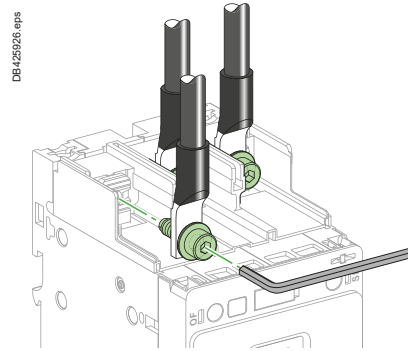
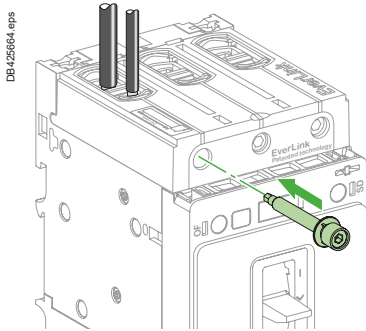
#### Power connection

TeSys Deca - Frame 4 motor circuit breaker come in standard with 2-holes EverLink™ power connectors with creep <sup>(1)</sup> compensation for bare copper cables. This Schneider Electric patented technique makes it possible to achieve accurate and durable tightening torque in order to avoid cable creep.

Products may be delivered with connectors for bars or cables with compression lugs (except ref. GV4PB).

Whatever, the connectors are field interchangeable and can be removed for the installation of one of both.

And to tight at the right torque power connections particularly in the field, torque limiting breakaway bits may be used.



#### Mounting

TeSys Deca - Frame 4 motor circuit breaker can be mounted on a backplate or on a DIN rail (35 or 75 mm).

#### Handle

TeSys Deca - Frame 4 motor circuit breaker can be ordered with a toggle or a direct rotary handle (except for ref. GV4P Multifunction).

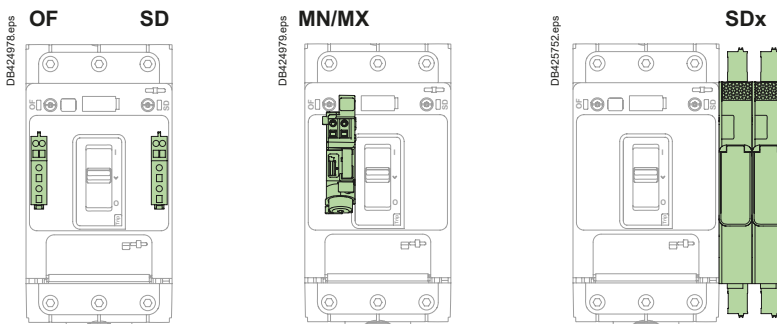
It is also possible to equip a toggle one with a direct rotary handle, or a front extended one, or a side one.

#### Auxiliaries

TeSys Deca - Frame 4 circuit breakers can be equipped with an open/close (OF) contact and a trip indication (SD) contact. These contacts are common point changeover type, with a normally open (NO) and a normally closed (NC) contact. TeSys Deca - Frame 4 motor circuit breaker may be equipped too with an MN (undervoltage release) or MX (shunt trip) coil.

Ref. GV4P Multifunction circuit breakers can be equipped with 1 or 2 SDx module(s) in order to have alarming and motor functional fault differentiation (SDx - See page B6/44)

Auxiliaries have spring connections for cables up to 1.5 mm<sup>2</sup>.



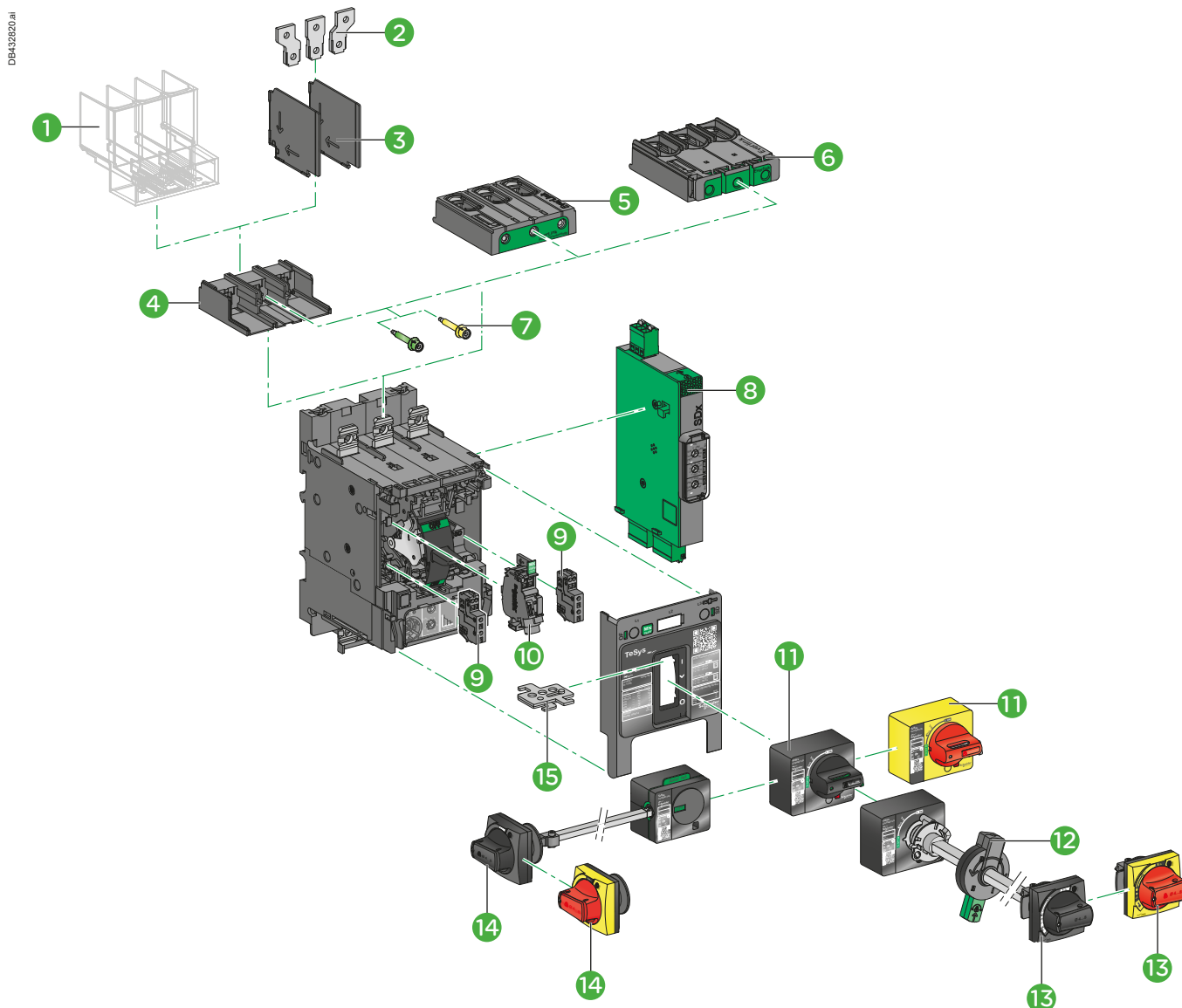
<sup>(1)</sup> Creep: normal crushing phenomenon of conductors, that is accentuated over time.



# TeSys Power

## Deca - Frame 4 Motor circuit breakers

### Introduction

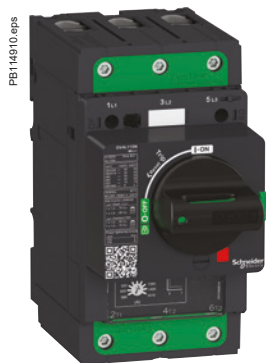


- 1 Long terminal shield **LAD96590**
- 2 Terminal spreaders **LV426940**
- 3 Interphases barriers **LV426920**
- 4 Crimp lug connector **GV4LUG**
- 5 EverLink® connector **LAD96595**
- 6 Everlink® terminals and large spacing cover **GV4G66 + LAD96595**
- 7 Torque limiting breakaway bits **LV42699●**
- 8 SDx alarming/fault differentiation module **GV4ADM1111** (only with GV4PEM)
- 9 Auxiliary contact block for OF or SD function **GV4AE11**
- 10 - MN undervoltage release **GV4AU●●**  
- MX shunt trip **GV4AS●●**
- 11 Direct mounting black or red on yellow bezel rotary handle **GV4ADN01/ GV4ADN02**
- 12 Open door shaft operator (for front extended rotary handle) **LV426937**
- 13 Front extended rotary handle kit with red handle on yellow bezel or black handle **GV4APN01/ GV4APN02 /GV4APN04**
- 14 Side rotary handle kit with red handle on yellow bezel or black handle **LV426935/LV426936**.
- 15 Toggle locking device **29370**

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic

### Introduction



PB114910.eps

GV4L

#### Standard version

##### Protection

Setting is made using dial.

##### Trip class (class)

Ref. GV4L can be used with class 5, 10 or 20 relay.

##### Short circuit protection (Ii)

Protection with an adjustable pick-up  $I_i = 6$  to  $14 I_n$ . Settings are made in amperes.

##### Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, CCC, EAC.



PB114909.eps

GV4LE

Ref.



Motor  
circuit  
breakers

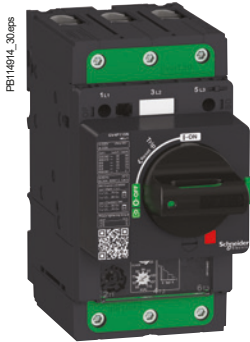
Magnetic motor circuit breakers from 0.25 to 55 kW													
Standard power ratings of 3-phase motors - 50 / 60 Hz									In	Magnetic setting range (li)	Use in association with overload relay Class 10 or 20	Reference with EverLink terminals	
400/415 V			500 V			690 V						with toggle	with rotary handle
P kW	Icu kA	Ics <sup>(1)</sup> %	P kW	Icu kA	Ics <sup>(1)</sup> %	P kW	Icu kA	Ics <sup>(1)</sup> %	A	A			
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	2	12... 28	LRD05 (0.63... 1A) LRD06 (1... 1.6A) LRD07 (1.6... 2.5A)	-	-
	50	100		25	100		8	25				GV4LE02N	GV4L02N
	100	100		30	100		10	25				GV4LE02S	-
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	3,5	21... 49	LRD07 (1.6... 2.5A) LRD08 (2.5... 4A)	-	-
	50	100		25	100		8	25				GV4LE03N	GV4L03N
	100	100		30	100		10	25				GV4LE03S	-
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	7	42... 98	LRD08 (2.5... 4A) LRD10 (4... 6A)	-	-
	50	100		25	100		8	25				GV4LE07N	GV4L07N
	100	100		30	100		10	25				GV4LE07S	-
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	12,5	75... 175	LRD12 (5.5... 8A) LRD14 (7... 10A) LRD313 (9... 13A)	-	-
	50	100		25	100		8	25				GV4LE12N	GV4L12N
	100	100		30	100		10	25				GV4LE12S	-
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	25	150... 350	LRD318 (12... 18A) LRD325 (17... 25A)	GV4LE25B	GV4L25B
	50	100		25	100		8	25				GV4LE25N	GV4L25N
	100	100		30	100		10	25				GV4LE25S	-
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	50	300... 700	LRD332 (23... 32A) LRD340 (30... 40A) LRD350 (37... 50A)	GV4LE50B	GV4L50B
	50	100		25	100		8	25				GV4LE50N	GV4L50N
	100	100		30	100		10	25				GV4LE50S	-
18.5... 37	25	100	22... 55	10	100	30... 55	-	-	80	480... 1120	LRD365 (48... 65A) LRD363 (63... 80A)	GV4LE80B	GV4L80B
	50	100		25	100		8	25				GV4LE80N	GV4L80N
	100	100		30	100		10	25				GV4LE80S	GV4L80S
30... 55	25	100	30... 75	10	100	45... 90	-	-	115	690... 1610	LR9D5567 (60... 100A) LR9F5367 (60... 100A) LR9D5369 (90... 150A) LR9F5369 (90... 150A)	GV4LE115B	GV4L115B
	50	100		25	100		8	25				GV4LE115N	GV4L115N
	100	100		30	100		10	25				GV4LE115S	GV4L115S



Motor circuit breakers

**Connection by lugs**  
To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: ref. **GV4LE02N** becomes **GV4LE02N6**.

<sup>(1)</sup> As % of Icu.



GV4P



GV4PE

Ref.



Motor circuit breakers

### Standard version

#### Protection

Settings are made using dials.

#### Overload or thermal protection (Ir)

Inverse-time thermal protection against overloads with adjustable pick-up  $I_r$ . Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay  $t_r$  before tripping, is defined by the selected trip class.

#### Trip class (class)

The class is selected as a function of the normal motor starting time.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to carry the  $7.2 I_r$  starting current without excessive temperature rise during the time corresponding to the class.

#### Short time delay protection (Isd)

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly usefull for wide range settings circuit breakers).

Fixed pick-up  $I_{sd} = 13 I_r$ .

#### Short-circuit protection (Ii)

Instantaneous protection with non-adjustable pick-up  $I_i = 17 I_n$ .

#### Phase unbalance or phase loss (Iunbal, tunbal)

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 30 % of  $I_{rms}$  (fixed pick-up): **Iunbal**

■ following the non-adjustable time delay (**tunbal**) equal to:

□ 0.7 s during starting

□ 4 s during normal operation.

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

#### Ground-fault protection (I<sub>g</sub>, t<sub>g</sub>)

Residual type ground-fault protection:

■ fixed pick-up  $I_g = I_n$

■ fixed time delay  $t_g = 0.1$  s.

### Indications

#### Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

### Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

Thermal magnetic motor circuit breakers from 0.25 to 55 kW										Thermal setting range (I <sub>r</sub> ) A	Reference with EverLink terminals	
Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3									with toggle		with rotary handle	
400/415 V			500 V			690 V				P kW		I <sub>cu</sub> kA
P kW	I <sub>cu</sub> kA	I <sub>cs</sub> (%)	P kW	I <sub>cu</sub> kA	I <sub>cs</sub> (%)	P kW	I <sub>cu</sub> kA	I <sub>cs</sub> (%)				
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	0.8... 2	-	-	
	50	100		25	100		8	25		GV4PE02N	GV4P02N	
	100	100		30	100		10	25		GV4PE02S	-	
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	1.4... 3.5	-	-	
	50	100		25	100		8	25		GV4PE03N	GV4P03N	
	100	100		30	100		10	25		GV4PE03S	-	
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	2.9... 7	-	-	
	50	100		25	100		8	25		GV4PE07N	GV4P07N	
	100	100		30	100		10	25		GV4PE07S	-	
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	5... 12.5	-	-	
	50	100		25	100		8	25		GV4PE12N	GV4P12N	
	100	100		30	100		10	25		GV4PE12S	-	
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	10... 25	GV4PE25B	GV4P25B	
	50	100		25	100		8	25		GV4PE25N	GV4P25N	
	100	100		30	100		10	25		GV4PE25S	-	
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	20... 50	GV4PE50B	GV4P50B	
	50	100		25	100		8	25		GV4PE50N	GV4P50N	
	100	100		30	100		10	25		GV4PE50S	-	
22... 37	25	100	30... 55	10	100	37... 55	-	-	40... 80	GV4PE80B	GV4P80B	
	50	100		25	100		8	25		GV4PE80N	GV4P80N	
	100	100		30	100		10	25		GV4PE80S	GV4P80S	
37... 55	25	100	45... 75	10	100	75... 90	-	-	65... 115	GV4PE115B	GV4P115B	
	50	100		25	100		8	25		GV4PE115N	GV4P115N	
	100	100		30	100		10	25		GV4PE115S	GV4P115S	

Thermal magnetic motor circuit breakers from 3/4 to 75 HP / 480 V												Rating A	Reference with EverLink terminals	
Single-Phase 120 V				3-Phase									with toggle	with rotary handle
Power HP	FLA A	Power Hp	FLA A	Power Hp	FLA A	Power Hp	FLA A	Power Hp	FLA A	Power Hp	FLA A			
-	-	1/10	1.5	-	-	-	-	3/4	1.6	1	1.7	2	-	-
													GV4PE02N	GV4P02N
													GV4PE02S	-
1/10	3	1/4	2.9	1/2	2.4	3/4	3.2	2	3.4	2	2.7	3.5	-	-
													GV4PE03N	GV4P03N
													GV4PE03S	-
1/4	5.8	3/4	6.9	1-1/2	6.6	2	6.8	3	4.8	5	6.1	7	-	-
													GV4PE07N	GV4P07N
													GV4PE07S	-
1/2	9.8	1-1/2	10	3	10.6	3	9.6	7-1/2	11	10	11	12.5	-	-
													GV4PE12N	GV4P12N
													GV4PE12S	-
1-1/2	20	3	17	5	16.7	7-1/2	22	15	21	20	22	25	GV4PE25B	GV4P25B
													GV4PE25N	GV4P25N
													GV4PE25S	-
3	34	7-1/2	40	10	30.8	15	42	30	40	40	41	50	GV4PE50B	GV4P50B
													GV4PE50N	GV4P50N
													GV4PE50S	-
7-1/2	80	15	68	25	74.8	30	80	60	77	75	77	80	GV4PE80B	GV4P80B
													GV4PE80N	GV4P80N
													GV4PE80S	GV4P80S
10	100	20	88	30	88	40	104	75	96	100	99	115	GV4PE115B	GV4P115B
													GV4PE115N	GV4P115N
													GV4PE115S	GV4P115S

**Connection by lugs**  
 To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: GV4PE02N becomes **GV4PE02N6**.

(1) As % of I<sub>cu</sub>.

Characteristics:  
pages B6/120 to B6/123

Curves:  
pages B6/129 to B6/131

Dimensions, schemes:  
pages B6/134, B6/135, B6/137



Motor circuit breakers



GV4PEM

PB114917.eps

Motor  
circuit  
breakers

### Advanced version

#### Basic protection

Settings are made using dials.

#### Overloads or thermal protection ( $I_r$ )

Inverse-time thermal protection against overloads with adjustable pick-up  $I_r$ .

Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay  $t_r$  before tripping, is defined by the selected trip class.

#### Trip class (class)

The class is selected as a function of the normal motor starting time.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to carry the  $7.2 I_r$  starting current without excessive temperature rise during the time corresponding to the class.

#### Short-circuit protection ( $I_i$ )

Instantaneous protection with non-adjustable pick-up  $I_i = 17 I_n$ .

### Advanced protection

Settings are made with an Android smartphone with dedicated application and using wireless NFC (Near Field Communication), or a computer with EcoStruxure Power Commission software and the configuration/maintenance tool kit ("Maintenance case" TRV00910).

The LV434206 pocket battery allows the GV4PEM controller to be powered for adjustments and tests when no internal source is available.

#### Short time delay protection ( $I_{sd}$ )

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly usefull for wide range settings circuit breakers).

Adjustable pick-up  $I_{sd} = 5...13 I_r$  (13 by default).

#### Phase unbalance or phase loss ( $I_{unbal}$ , $t_{unbal}$ )

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 10...40 % of  $I_{rms}$  (30% by default):  $I_{unbal}$

■ following a time delay ( $t_{unbal}$ ) equal to:

□ 0.7 s during starting (non adjustable)

□ 1...10 s during normal operation (4 s by default).

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

#### Ground-fault protection ( $I_g$ , $t_g$ )

Residual type ground-fault protection, with OFF position:

■ adjustable pick-up  $I_g$ :

□ 0.7...1  $I_n$  for products with nominal current from 2 to 50 A

□ 0.4...1  $I_n$  for products with nominal current from 80 to 115 A

■ adjustable time delay  $t_g$  0.1...0.4 s.

#### Jam ( $I_{jam}$ , $t_{jam}$ )

This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.

During normal operation, it causes tripping:

■ above the  $I_{jam}$  pick-up that can be fine-adjusted from 1.5 to 8  $I_r$

■ in conjunction with the  $t_{jam}$  time delay that can be adjusted from 1 to 30 s.

#### Long start ( $I_{long}$ , $t_{long}$ )

This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default).

It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.

It causes tripping:

■ in relation with a  $I_{long}$  pick-up that can be fine-adjusted from 1.5 to 8  $I_r$

■ in conjunction with the  $t_{long}$  time delay that can be adjusted from 1 to 200 s.

### Indications

#### Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

#### Remote indications via SDx module

See description on page B6/44.

#### Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

Advanced thermal magnetic motor circuit breakers from 0.25 to 55 kW										
Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3									Thermal setting range (I <sub>r</sub> )	"Reference with EverLink terminals" with toggle
400/415 V			500 V			690 V				
P kW	I <sub>cu</sub> kA	I <sub>cs</sub> <sup>(1)</sup> %	P kW	I <sub>cu</sub> kA	I <sub>cs</sub> <sup>(1)</sup> %	P kW	I <sub>cu</sub> kA	I <sub>cs</sub> <sup>(1)</sup> %	A	
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	0.8... 2	-
	50	100		25	100		8	25		GV4PEM02N
	100	100		30	100		10	25		GV4PEM02S
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	1.4... 3.5	-
	50	100		25	100		8	25		GV4PEM03N
	100	100		30	100		10	25		GV4PEM03S
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	2.9... 7	-
	50	100		25	100		8	25		GV4PEM07N
	100	100		30	100		10	25		GV4PEM07S
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	5... 12.5	-
	50	100		25	100		8	25		GV4PEM12N
	100	100		30	100		10	25		GV4PEM12S
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	10... 25	-
	50	100		25	100		8	25		GV4PEM25B
	100	100		30	100		10	25		GV4PEM25N GV4PEM25S
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	20... 50	-
	50	100		25	100		8	25		GV4PEM50B
	100	100		30	100		10	25		GV4PEM50N GV4PEM50S
22... 37	25	100	30... 55	10	100	37... 55	-	-	40... 80	-
	50	100		25	100		8	25		GV4PEM80B
	100	100		30	100		10	25		GV4PEM80N GV4PEM80S
37... 55	25	100	45... 75	10	100	75... 90	-	-	65... 115	-
	50	100		25	100		8	25		GV4PEM115B
	100	100		30	100		10	25		GV4PEM115N GV4PEM115S



Motor circuit breakers

**Connection by lugs**  
 To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: **GV4PE02N** becomes **GV4PE02N6**.

(1) As % of I<sub>cu</sub>.



GV4PB

#### Advanced version

Ref. GV4PB is based on GV4PEM with specific tripping curve to follow UL489 SH supplement. It is designed with a large space connector in order to increase creepage and clearance distance.

#### Basic protection

Settings are made using dials.

##### Overloads or thermal protection (Ir)

Inverse-time thermal protection against overloads with adjustable pick-up Ir. Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay tr before tripping, is defined by the selected trip class.

##### Trip class (class)

The class is selected as a function of the normal motor starting time. It corresponds to the value of the tripping time delay for a current of 600 % of the rated tripping current according to UL489, SH supplement.

The rated tripping current is selected as 125 % of the dial value.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to withstand the 7.5 Ir starting current without excessive temperature rise during the time corresponding to the class.

##### Short-circuit protection (Ii)

Instantaneous protection with non-adjustable pick-up Ii=17 In.

#### Advanced protection (same as ref. GV4PEM)

Settings are made with:

■ Android smartphone using wireless NFC (Near Field Communication), or EcoStruxure Power Device App. computer + EcoStruxure Power Commission software and configuration/maintenance tool kit TRV00910

■ LV434206 pocket battery, allows the GV4PB controller to be powered for adjustment and test. LV434206 pocket battery needs to be connected to the GV4PB controller to set the advanced protection.

##### Short time delay protection (I<sub>sd</sub>)

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly usefull for wide range settings circuit breakers).

Adjustable pick-up I<sub>sd</sub> = 5...13 Ir (13 by default).

##### Phase unbalance or phase loss (I<sub>unbal</sub>, I<sub>tunbal</sub>)

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 10...40 % of Irms (30 % by default): I<sub>unbal</sub>

■ following a time delay (I<sub>tunbal</sub>) equal to:

□ 0.7 s during starting (non adjustable)

□ 1...10 s during normal operation (4 s by default).

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

##### Ground-fault protection (I<sub>g</sub>, t<sub>g</sub>)

Residual type ground-fault protection, with OFF position:

■ adjustable pick-up I<sub>g</sub>:

□ 0.7...1 In for products with nominal current from 2 to 50 A

□ 0.4...1 In for products with nominal current from 80 to 115 A

■ adjustable time delay t<sub>g</sub> 0.1...0.4 s.

##### Jam (I<sub>jam</sub>, t<sub>jam</sub>)

This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.

During normal operation, it causes tripping:

■ above the I<sub>jam</sub> pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the t<sub>jam</sub> time delay that can be adjusted from 1 to 30 s.

##### Long start (I<sub>long</sub>, t<sub>long</sub>)

This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default). It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.

It causes tripping:

■ in relation with a I<sub>long</sub> pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the t<sub>long</sub> time delay that can be adjusted from 1 to 200 s.

#### Indications

##### Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise

##### Remote indications via SDx module

See description on page B6/44.

##### Conforming to standards:

IEC/EN 60947-2, IEC/EN 60947-4-1

##### Product certifications:

UL 489, CSA C22.2 n°5.



# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

### Product references - UL applications

GV4PB - selection according to Short Circuit Current Rating (SCCR)			
240 V AC SCCR kA	480Y/277 V AC SCCR kA	600Y/347 V AC SCCR kA	Reference
35	18	14	GV4PB●●●B <sup>(1)</sup>
65	35	18	GV4PB●●●N
100	65	25	GV4PB●●●S

(1) Example: GV4PB07S, GV4PB115S.

GV4PB thermal magnetic motor circuit breakers - selection according to FLA							
3P 200 V FLA A	3P 230 V FLA A	3P 460 V FLA A	Rated %	Dial range A	Reference		
-	-	1.6	100	0.8 to 2		GV4PB02N	GV4PB02S
2.5	2.2	3	100	1.4 to 3.5		GV4PB03N	GV4PB03S
4.8	4.2	4.8	100	2.9 to 7		GV4PB07N	GV4PB07S
7.8	9.6	7.6	100	5 to 12.5		GV4PB12N	GV4PB12S
17.5	22	21	100	10 to 25	GV4PB25B	GV4PB25N	GV4PB25S
48	42	40	100	20 to 50	GV4PB50B	GV4PB50N	GV4PB50S
62	54	52	80	40 to 80	GV4PB80B	GV4PB80N	GV4PB80S
92	80	77	80	65 to 115	GV4PB115B	GV4PB115N	GV4PB115S



Motor  
circuit  
breakers

#### Connection by lugs

Please order GV4LUG accessory and LV426920 interphase barriers or LAD96590 terminal shield.

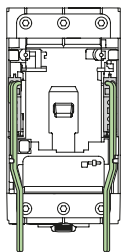
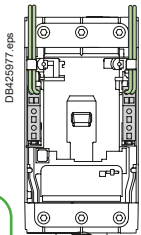
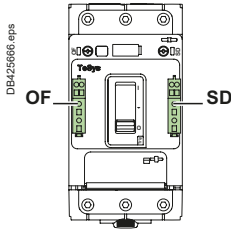
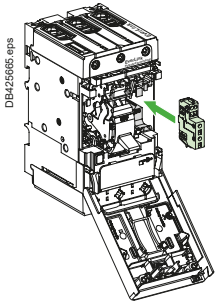
# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Auxiliary contact block

### Product references

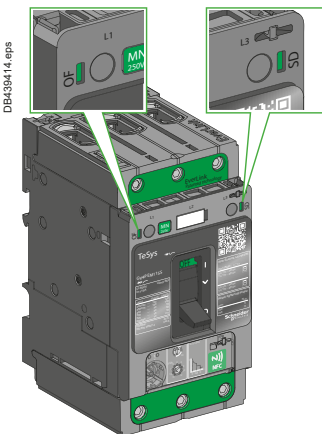


GV4AE11 auxiliary contact block



Motor circuit breakers

Pluggable auxiliary contact - OF or SD is dependent on cavity. Multiple internal wiring possibilities, even with long terminal shields



Visible presence of auxiliary contact block in OF or SD cavity

### Auxiliary contact blocks

Auxiliary contacts give an indication of the circuit breaker status. They can be used for remote visual signaling, alarming, electrical locking, relay activation, etc...

An auxiliary contact block provides one changeover contact with common point for OF or SD function, depending on the breaker cavity where it is inserted.

#### Auxiliary contact - Open/Close OF function

Indicates Open/Closed position of the circuit breaker contacts.

#### Auxiliary contact - Trip alarm SD function

■ Indicates that the circuit breaker has tripped due to:

- Electrical fault (overload, short circuit, ...)
- shunt trip
- undervoltage release
- "push-to-trip" button.

■ Resets when circuit breaker is reset.

### Electrical characteristic

#### Characteristics

Rated thermal current (A)	5				
Minimum load	2 mA at 17 V DC				
<b>Utilization cat. (IEC 60947-5-1)</b>	<b>AC12</b>	<b>AC15</b>	<b>DC12</b>	<b>DC13</b>	<b>DC14</b>
Operational current (A)	24 V AC/DC	5	5	5	2.5
	48 V AC/DC	5	5	2.5	1.2
	110...127 V AC / 110 V DC	5	4	0.6	0.35
	220/240 V AC	5	3	-	-
	250 V DC	-	-	0.3	0.05
	380/440 V AC	5	2.5	-	-
	660/690 V AC	5	0.11	-	-

Pilot duty B600 according UL508 and CSA 22.2 n°14.

### Installation and connection

■ Auxiliary contact blocks snap into left (for OF function) and right (for SD function) cavities behind the front accessory cover of the circuit breaker and their presence is visible on the front face through green flags.

■ One model serves for all indication functions depending on where it is fitted in the circuit breaker.

■ Each NO and NC spring terminal may be connected by one 0.5...1.5 mm<sup>2</sup> flexible copper wire and by two for the common point.

■ Wires can be exited out of any of the four corners of the breaker under the accessory cover.

Description	Maximum number	Mounting	Type of contacts	Sold in lots of	Reference
Auxiliary contact block for OF or SD indication	2 (1 OF + 1 SD)	Internal plug-in	NO + NC	1	GV4AE11

# TeSys Power

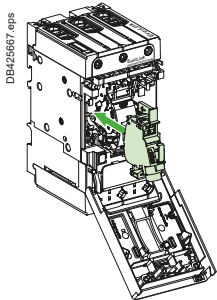
## Deca - Frame 4 Motor circuit breakers - MX and MN trips

### Product references

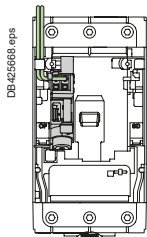


PB114683.eps

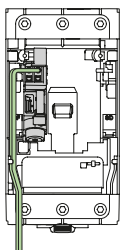
GV4AS137 shunt trip



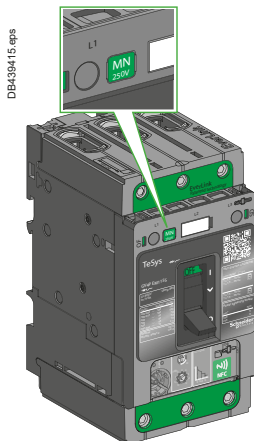
DB422687.eps



DB422688.eps



MN or MX plugged into cavity. Multiple internal wiring possibilities, even with long terminal shields



DB433415.eps

Visible presence of MN undervoltage release in circuit breaker cavity, visible rated voltage through the window.

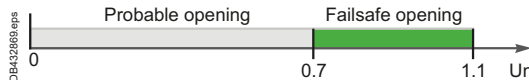
### MX shunt trip, MN undervoltage release

MX and MN trip the circuit breaker on a control signal. They are mainly used for remote and emergency-off commands.

It is advised to test the system every six months.

#### MX shunt trip

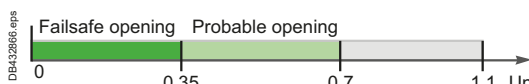
- Trips the circuit breaker when the control voltage rises above 70 % of its rated voltage ( $U_n$ ).
- Impulse type  $\geq 20$  ms or maintained control signals.
- Shunt trip 110...130 V AC is suitable for ground-fault protection when combined with a Class I ground-fault sensing element.
- Continuous duty rated coil <sup>(1)</sup>.



Opening conditions of the MX release.

#### MN undervoltage release

- Trips the circuit breaker when the control voltage drops below 35 % of its rated voltage.
- Between 35 % and 70 % of the rated voltage opening is only probable.
- Above 70 % of the rated voltage, opening does not take place.
- Continuous duty rated coil.
- Circuit breaker closing is possible only if the voltage exceeds 85 % of the rated voltage. If an undervoltage condition exists, operation of the closing mechanism of the circuit breaker will not permit the main contacts to touch, even momentarily. This is commonly called "Kiss Free".



Opening conditions of the MN release.



Closing conditions of the MN release.

#### Installation, connection

Accessories snap into cavities under the circuit breaker front accessory cover. Spring-type terminals in order to insure a fast and reliable connection to 0.5...1.5 mm<sup>2</sup> flexible copper wire (one per terminal).

#### Operation

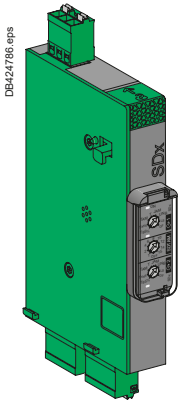
Circuit breaker must be locally reset after trip by shunt trip (MX) or undervoltage release (MN). Tripping by MX or MN has priority over manual closing; in the presence of a standing trip order such an action does not result in main contacts closing, even temporarily.

Description	Maximum number	Mounting	Voltage	Reference
MX Shunt trip	1	Internal, plug-in	24 V~ 50/60 Hz, 24 V---	GV4AS027
			48 V~ 50/60 Hz, 48 V---	GV4AS057
			110-130 V~ 50/60 Hz 125 V---	GV4AS137
			220-240 V~ 50 Hz, 208-240 V~ 60 Hz, 277 V 60 Hz	GV4AS287
			380-415 V~ 50 Hz, 440-480 V~ 60 Hz	GV4AS487
MN undervoltage release	1	Internal, plug-in	24 V~ 50/60 Hz, 24 V---	GV4AU027
			48 V~ 50/60 Hz, 48 V---	GV4AU057
			110-130 V~ 50/60 Hz 125 V---	GV4AU137
			220-240 V~ 50 Hz, 208-240 V~ 60 Hz	GV4AU247
			277 V~ 60 hZ	GV4AU286
			380-415 V~ 50 Hz 440-480 V~ 60 Hz	GV4AU415 GV4AU486

<sup>(1)</sup> Except for MX 24 V AC/DC (in case of continuous activation, may generate some minor perturbation in sensitive environment).



Motor circuit breakers



GV4ADM1111 SDx contact module



### SDx contact module for GV4PEM, GV4PB (Multifunction)

The SDx provides alarming and functional fault differentiation for GV4PEM, GV4PB (Multifunction) circuit breaker. This module has 2 NO/NC outputs dry contacts which can be assigned with one of the 8 following SD status:

- **SDT95%** overload alarm: thermal image of the motor is greater than 95 % of the permissible temperature rise.
- **SDTxxs** overload alarm: circuit breaker will trip in xx seconds with the same load. xx is adjustable between 10 to 40 seconds (default 20 seconds) on the circuit breaker itself through NFC or a computer with EcoStruxure Power Commission software and an interface module (TRV00911).
- **SDTAM** overload alarm just before tripping: in the event of a phase unbalance, overload, or on a jam fault, this output is activated to open the contactor and avoid circuit breaker tripping. In that case, contact can be manually or automatically reseted after an adjustable cooling time from 1 to 15 minutes. If after a 400 ms delay the motor is not stopped, the circuit breaker will trip.
- **SDT** overload trip indication: circuit breaker has tripped due to an overload fault
- **SDJAM** jam trip indication: circuit breaker has tripped due to a jam fault
- **SDUNB** phase unbalance trip indication: circuit breaker has tripped due to an unbalance fault
- **SDLS** long start trip indication: circuit breaker has tripped due to a long start fault
- **SDGF** ground-fault trip indication: circuit breaker has tripped due to a ground-fault.

Outputs are automatically reseted either when alarm disappears or when the circuit breaker is restarted.

#### Output characteristics

- 2 NO/NC dry contacts
- 24...250 V AC/DC
- Minimum load: 2 mA under 24 V DC
- Max load: 5 A
- AC15 (230 V max - 400 VA)
- DC13 (24 V - 50 W)

#### Power characteristics

- 24...240 V AC/DC

#### Contact rating (per UL/CSA B300 & R300)

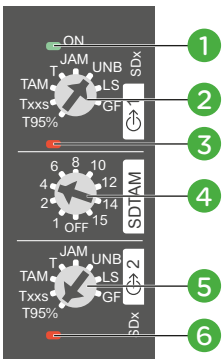
Standard	Rated Voltage $U_e$	Operational Current $I_e$	Make	Break	$I_{th}$
			VA	VA	
B300	120 V AC	3	3600	360	5
	240 V AC	1.5			
R300	125 V DC	0.22	28	28	1
	250 V DC	0.1			

The rated operational current  $I_e$  (A), the rated operational voltage  $U_e$  (V) and the break apparent power  $B$  (V.A) are correlated by the formula  $B = U_e \cdot I_e$ ; with  $I_e \leq I_{th}$ .

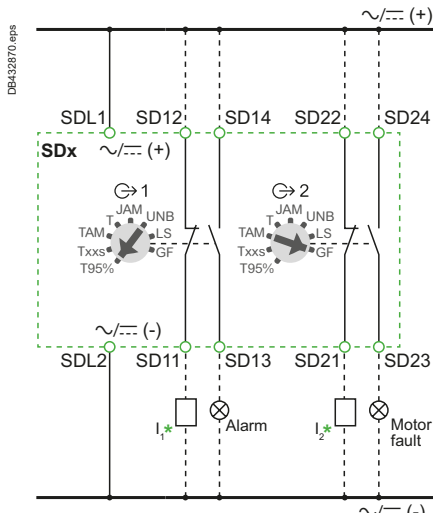
#### Installation, connection, settings and indication

The SDx module is clipped on the right side of the circuit breaker. Each removable spring terminal can be connected by one 0.5... 1.5 mm<sup>2</sup> copper wire. Settings and indications are available on the front face.

Motor circuit breakers

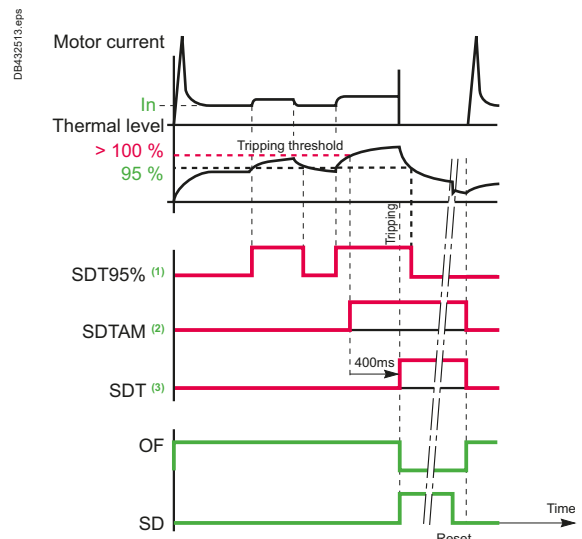


- 1 Green led lighted when the module is powered.
- 2 Output 1: SD status assignment.
- 3 Red led lighted when output 1 is activated.
- 4 Cooling time setting before automatic restart (OFF – 1...15 min).
- 5 Output 2: SD status assignment.
- 6 Red led lighted when output 2 is activated.



\* I1, I2: PLC digital inputs - used as alarm inputs, as an example.

SDx wiring diagram



— GV4PEM curves  
 — SDx modules curves  
 — Aux. contacts curves

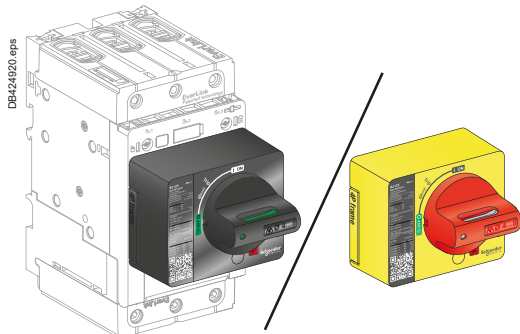
- (1) SDT95% (= 95% overload)
- (2) SDTAM (overload tripping pre alarm) here not connected to any contactor coil
- (3) SDT (= tripping on thermal fault)

Description	Mounting	Maximum number	Type of contacts	Unit reference
SDx: alarming / fault differentiation module	Side	2	N/O / N/C	GV4ADM1111

# TeSys Power

## Ref. GV4PE, GV4PEM, GV4PB Motor circuit breakers - Handles

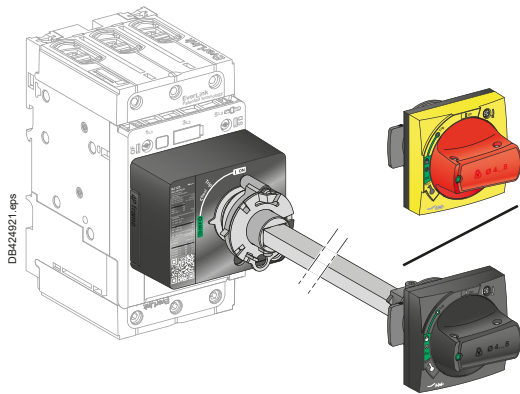
### Product references



Direct mounting rotary handle



GV4ADN02 direct mounting rotary handle



Front extended rotary handle (door-mounting)



GV4APN01 front extended rotary handle kit



GVAPL01 laser tool

### Direct mounting rotary handles

#### Installation

The direct mounting rotary handle has to be mounted by 3 screws on the front accessory cover.

#### Operation

The direct mounting rotary handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip)
- access to the "push-to-trip" button
- visibility and access to the trip unit.

#### Device padlocking

The circuit breaker may be locked in the OFF position by using one to three padlocks (not supplied) or in ON position after customer modification of the rotary handle before installation, padlock shackle Ø4-8 mm. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

#### Variations: door locking

Door locking built-in functionality can be activated by the customer to prevent opening the door when the circuit breaker is ON or in trip position. For exceptional situations, door locking can be temporarily disabled with a tool by qualified personnel to open the door when the circuit breaker is closed.

Description	Type	Degree of protection	Reference
Direct mounting rotary handle	Black handle	IP40	GV4ADN01
	Red handle on yellow bezel (VDE standard, for machine control)	IP40	GV4ADN02

### Front extended rotary handles

#### Installation

The door-mounted (extended) rotary handle is made up of:

- a unit that has to be screwed on the front accessory cover of the circuit breaker
- an assembly (handle mechanism and front plate) on the door that is always secured in the same position, whether the circuit breaker is installed vertically or horizontally
- an adjustable extension shaft.

The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier. The Laser Square tool (GVAPL01) can be used to accurately align the hole on the door with the circuit breaker.

#### Operation when door is closed

The door mounted handle makes it possible to operate a circuit breaker installed in an enclosure from the front. The door mounted operating handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip)
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the door: IP54 or IP65 as per IEC 60529.

#### Mechanical door locking when device closed

A standard feature of the extended rotary handle is a locking function, built into the shaft, that disables door opening when the circuit breaker is in the ON or tripped positions.

Door locking can be temporarily disabled with a tool by qualified personnel to open the door without opening the circuit breaker. This operation is not possible if the handle is locked by a padlock.

#### Device and door padlocking

Padlocking locks the circuit breaker handle and disables door opening:

- standard situation, in the OFF position, using 1 to 3 padlocks, shackle Ø4-8 mm, padlocks are not supplied
- for the black handle, with a voluntary modification of the door handle (to be done by the customer during installation), in the ON and OFF positions. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

#### Shaft length

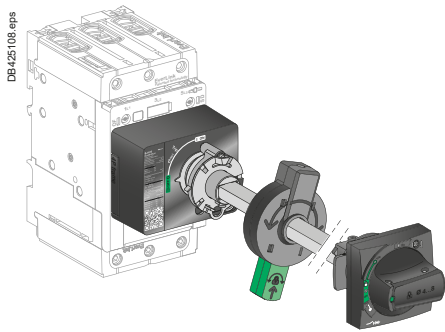
The shaft length is the distance between the back of the circuit breaker and the door:

- minimum shaft length is 214 mm
- maximum shaft length is 627 mm
- shaft length must be adjusted.

Dimensions:  
pages B6/134 to B6/136



Motor circuit breakers



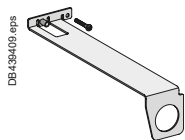
Open door shaft operator mounted on front extended rotary handle assembly



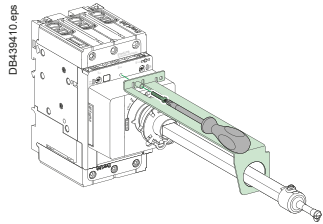
GV4APN01  
Front extended rotary handle kit



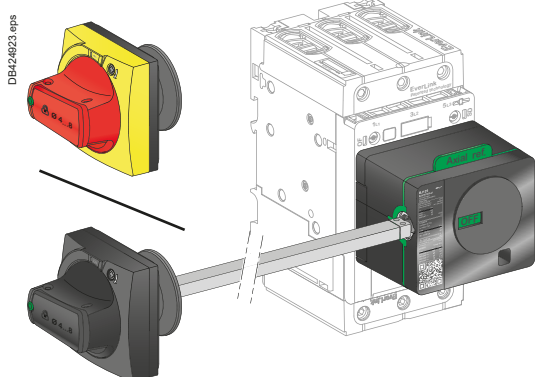
LV426937  
Open door shaft operator



LV426938  
Support arm for extended rotary handle



GVAPL01 - Laser tool



Side extended rotary handle (cover mounting)



LV426936 - Side rotary handle kit



LV426998, LV426997 - Universal handles

### Front extended rotary handles (cont.)

#### Operation when door is opened

An open door shaft operator can be used to operate the circuit breaker when door is opened. This accessory complies with UL508 A. The indication of the three positions OFF (O), ON (I) and tripped (Trip) is visible on the circuit breaker. The circuit breaker itself may be locked in OFF position when the door is opened by 1 padlock / lockout hasp, shackle Ø4-8 mm.

Description	Type	Degree of protection	Reference
Front extended rotary handle kit	Black handle	IP54	GV4APN01
	Red handle on yellow bezel	IP54	GV4APN02
		IP65	GV4APN04
Open door shaft operator			LV426937
Support arm for extended rotary handle			LV426938
Laser tool			GVAPL01
Spare part: GV4 universal handle (for replacement of front, ext. or side rotary handle)	Black handle	IP54	LV426997
	Red handle on yellow bezel	IP54	LV426998
		IP65	LV426999

### Side rotary handles (left or right)

#### Installation

The side-mounted rotary handle is made up of:

- a unit that has to be screwed on the front accessory cover of the circuit breaker
  - an assembly (handle and front plate) on the side (left or right) of the enclosure
  - an adjustable extension shaft
- The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier.

#### Operation

The side mounted rotary handle makes it possible to operate circuit breakers installed in enclosure from the side. The side mounted rotary handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip). Moreover, the position is visible on the circuit breaker itself
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the side: IP54 or IP65 as per IEC 529.

#### Device padlocking

The circuit breaker may be locked in the OFF position, or, for the black rotary handle only, in ON position after voluntary modification of the side handle (to be done by the customer during installation), by using one to three padlocks, padlock shackle Ø4-8 mm ; padlocks are not supplied.

Locking in the ON position does not prevent free circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker tripping. Unlocking is required to go to the tripped then the OFF position.

#### Shaft length

The shaft length is the distance between the side of the circuit breaker and the side of the enclosure:

- minimum shaft length is 45 mm
- maximum shaft length is 480 mm
- shaft length must be adjusted.

Description	Type	Degree of protection	Reference
Side rotary handle kit	Black handle	IP54	LV426935
	Red handle on yellow bezel (VDE standard, for machine control)	IP54 <sup>(1)</sup>	LV426936
Spare part: GV4 universal handle (for replacement of front, ext. or side rotary handle)	Black handle	IP54	LV426997
	Red handle on yellow bezel	IP54	LV426998
		IP65	LV426999

<sup>(1)</sup> IP65 possible with LV426935 kit (Black handle not used) + LV426999 Red handle on yellow bezel universal handle.

#### Handle padlocking devices

Padlocking systems can receive up to three padlocks with diameters of 5-8 mm (4-8 mm for rotary handles); padlocks not supplied. Locking in the OFF position guarantees isolation as per IEC 60947-2.

##### Direct rotary handle padlocking

By padlock – No accessory required.

- Lock in OFF position.
- Lock in ON position with simple mechanism modification.

##### Front Extended /Side rotary handle padlocking

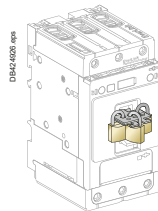
By padlock – No accessory required.

- Lock in OFF position.
- Lock in ON position with simple mechanism modification (black handle only).  
Door opening prevented.

##### Toggle handle padlocking

By padlock – removable toggle locking device required **29370**.

- Lock in OFF position.



3 padlocks mounted on 29370 toggle locking device

PB121331.eps



29370 removable toggle locking device

Description	Reference
Removable toggle locking device for 1 to 3 padlocks	<b>29370</b>

#### Sealing devices

Control type	<ul style="list-style-type: none"> <li>■ Front removal.</li> <li>■ Access to auxiliaries.</li> </ul>	<ul style="list-style-type: none"> <li>■ Access to settings and test connector.</li> </ul>
Toggle	<p style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">DB424927.eps</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">DB424928.eps</p>
Rotary handle	<p style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">DB424929.eps</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">DB424930.eps</p>

Description	Reference
Bag of 6 leads + 6 sealing accessories	<b>LV429375</b>

PB121332.eps



LV429375 leads + sealing accessories

Motor circuit breakers

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Accessories

### Product references



#### EverLink power connection

Description	Reference
EverLink connector	<b>LAD96595</b>

#### Crimp lug/busbar connection

Description	Sold in lots of	Reference
Crimped lug connector + screws	1	<b>GV4LUG</b>
Transparent terminal shield for crimped lug connector	1	<b>LAD96590</b>
Interphase barriers	6	<b>LV426920</b>
Spreader 3-pole	To increase the pitch to 35 mm 1	<b>LV426940</b>

#### Limited torque throwaway bits

Description	Sold in lots of	Reference
Green - 9 N.m	6	<b>LV426990</b>
Yellow - 5 N.m	6	<b>LV426992</b>

**Note:** torque limiting breakaway bits may be used, particularly in the field, to tighten at the right torque EverLink™ or compression lug power connections.

#### Test tool, software, demo for GV4PEM

##### Test tool

Pocket battery	<b>LV434206</b>
Allows the ref. GV4PEM or GV4PB controller to be powered for adjustments and tests when no internal source is available.	

Maintenance case	<b>TRV00910</b>
Comprising:	

- USB maintenance interface
- Power supply
- GV4PEM cord
- USB cord
- RJ45/RJ45 male cord

Spare USB maintenance interface	<b>TRV00911</b>
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USB interface spare power supply, 110-240 V AC, with 4 different socket adapters	<b>TRV00915</b>
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Spare cord for connecting GV4PEM to USB maintenance interface	<b>TRV00917</b>
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##### Software

Configuration and setting software EcoStruxure Power Commission	<b>Free download</b>
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# TeSys Giga - Frame 5, 6 55 to 250 kW



Motor  
circuit  
breakers



PB 120638 eps



GV5P220F

### Thermal-magnetic circuit breakers Frame 5 with screw clamp terminals up to 110 kW <sup>(1)</sup>

Control by direct rotary handle

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Thermal setting range (lr)	Reference	Weight
400/415 V			500 V			660/690 V					
P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	A		kg
kW	kA	%	kW	kA	%	kW	kA	%			
55...75	36	100	75...90	30	100	90...110	8	100	70...150	GV5P150F	2.4
	70	100		50	100		10	100			
90...110	36	100	110	30	100	110...132	8	100	100...220	GV5P220F	2.6
	70	100		50	100		10	100			

<sup>(1)</sup> Breakers have to be used with suitable rating of contactors, as defined in section A6.

<sup>(2)</sup> As % of I<sub>cu</sub>.

PB 120633 eps



GV6P320F

### Thermal-magnetic circuit breakers Frame 6 with screw clamp terminals up to 250 kW <sup>(1)</sup>

Control by direct rotary handle

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Thermal setting range (lr)	Reference	Weight
400/415 V			500 V			660/690 V					
P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	P	I <sub>cu</sub>	I <sub>cs</sub> <sup>(2)</sup>	A		kg
kW	kA	%	kW	kA	%	kW	kA	%			
132...160	36	100	160...200	25	100	200...250	10	100	160...320	GV6P320F	6.5
	70	100		50	100		10	100			
200...250	36	100	250...315	25	100	315...400	10	100	250...500	GV6P500F	6.7
	70	100		50	100		10	100			

<sup>(1)</sup> Breakers have to be used with suitable rating of contactors, as defined in section A6.

<sup>(2)</sup> As % of I<sub>cu</sub>.

### Thermal-magnetic circuit breakers Frame 5/6 with screw clamp terminals <sup>(1)</sup>

Control by direct rotary handle

Thermal setting	3-Phase			Standard breaking capacity	High breaking capacity
	230 V	460 V	575 V		
A	HP	HP	HP	Reference	Reference
90...150	50	100	150	GV5P150F	GV5P150H
133...220	75	150	200	GV5P220F	GV5P220H
160...320	125	250	300	GV6P320F	GV6P320H
250...500	150	350	500	GV6P500F	GV6P500H

<sup>(1)</sup> Breakers have to be used with suitable rating of contactors, as defined in section A6.

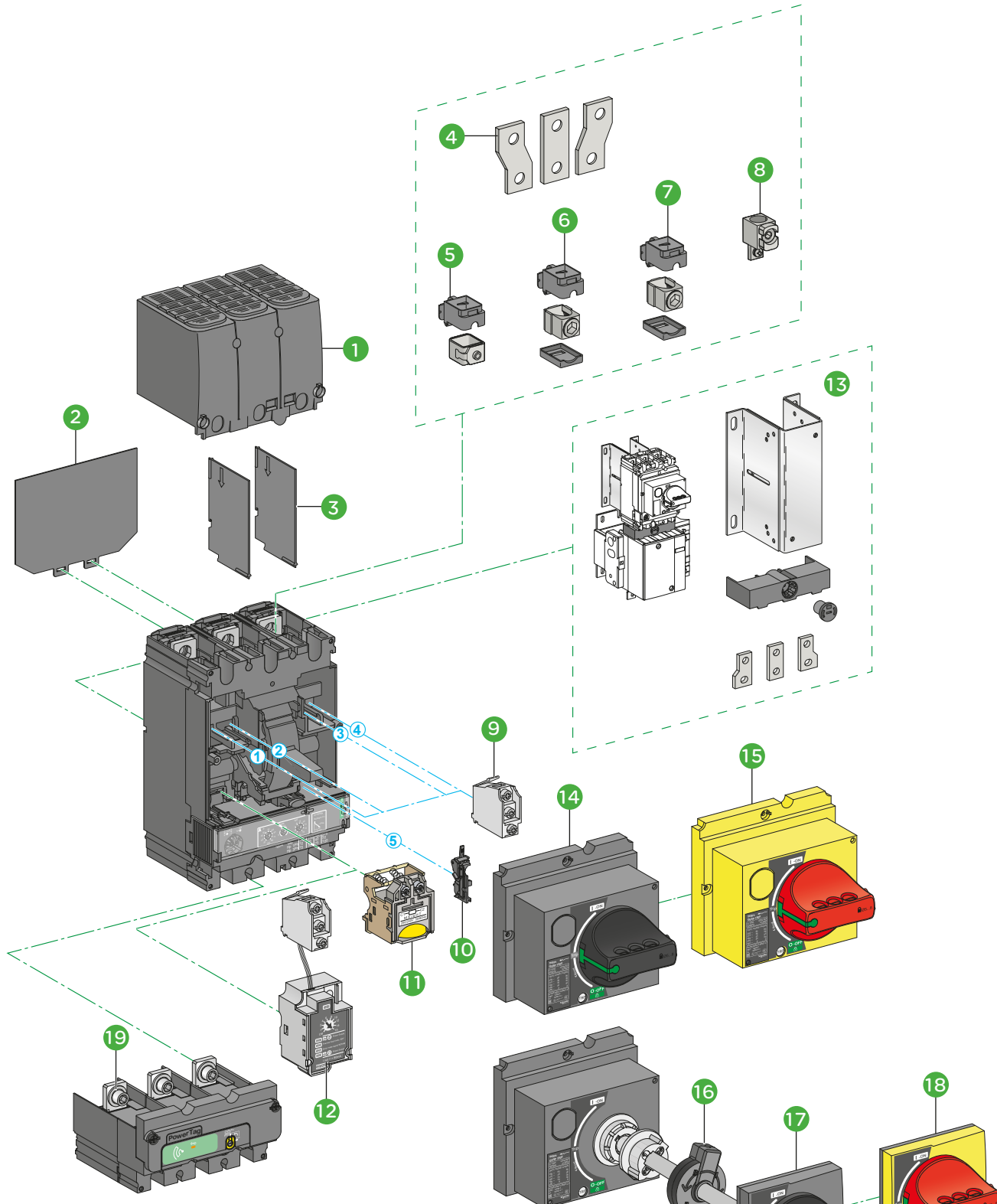


Motor circuit breakers

# Frame 5 Motor circuit breaker - Add-on blocks and accessories

DE432613.ai

Motor circuit breakers

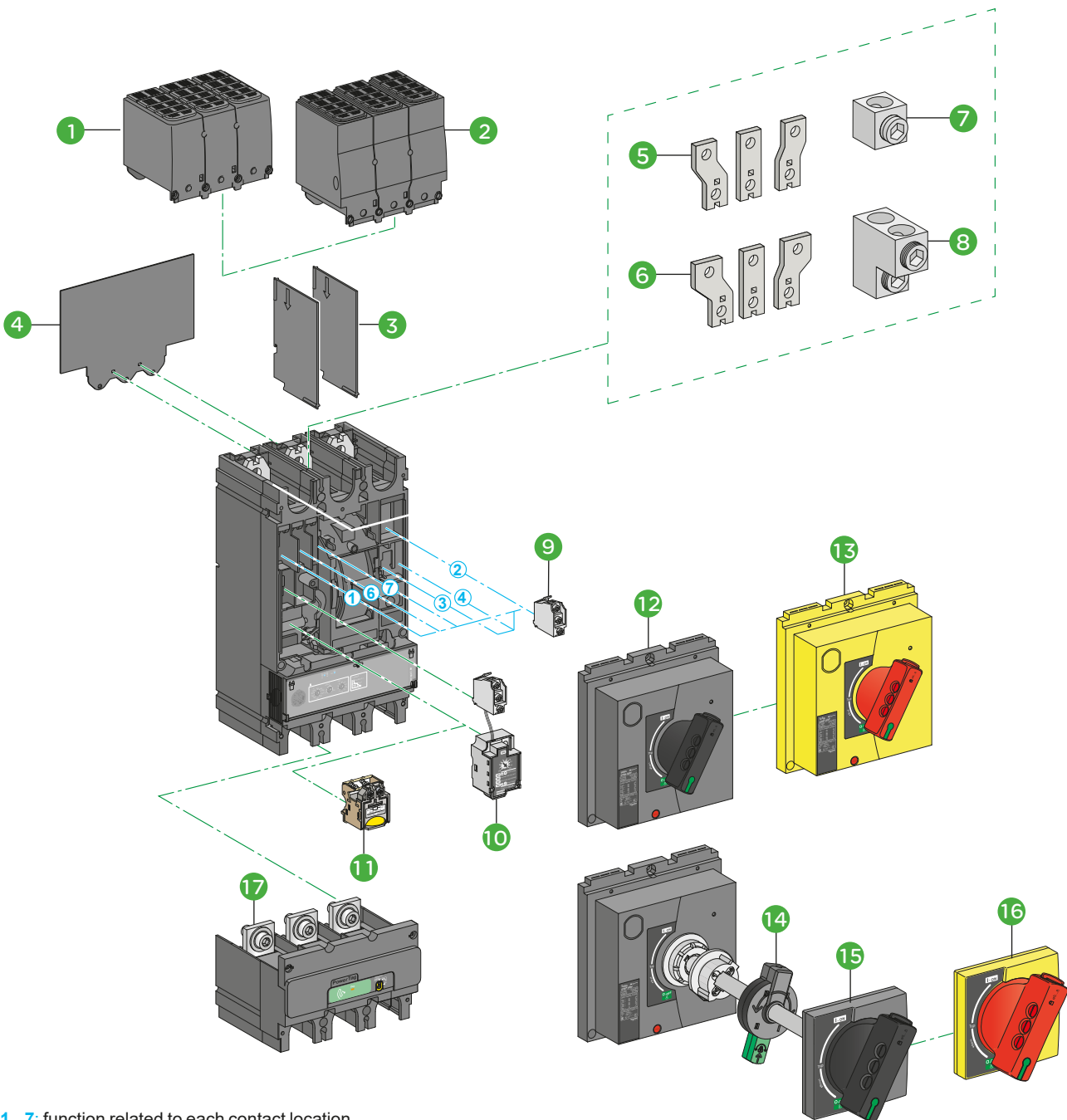


1...5: function related to each contact location, please refer to B6/54.

- ① Terminal shield **GV7AC01**
- ② Insulating screen **GV7AC05**
- ③ Interphase barriers **GV7AC04**
- ④ Spreaders 45 mm **GV7AC03**
- ⑤ Steel connector **GV7AC021** (1.5-95 mm<sup>2</sup>)
- ⑥ Aluminum connector **LV429227** (25-95 mm<sup>2</sup>)
- ⑦ Aluminum connector **GV7AC022** (120-185 mm<sup>2</sup>)
- ⑧ Aluminum connector **LV429244** (120-240 mm<sup>2</sup>)
- ⑨ OF, SD, or SDE indication contacts **29450** (standard) / **29452** (for low level)
- ⑩ SDE adapter **LV429451**
- ⑪ UVR or SHT voltage release **LV42940●/LV42938●**
- ⑫ SDTAM thermal fault module **LV429424**
- ⑬ Combination kit for contactor **GV7AC06/GV7AC08**

- ⑭ Direct rotary handle black **GV5AP03** (shipped with the device)
- ⑮ Direct rotary handle red on yellow bezel **GV7AP04**
- ⑯ Open door shaft operator **LV426937**
- ⑰ Extended rotary handle black **GV7AP01**
- ⑱ Extended rotary handle red on yellow bezel **GV7AP02**
- ⑲ PowerTag M250 wireless energy sensor **LV434020**

DE-42814.ai



1...7: function related to each contact location, please refer to B6/54.

- 1 Terminal shield 45 mm **LV432593**
- 2 Terminal shield 52.5 mm **LV432595**
- 3 Interphase barriers **LV432570**
- 4 Insulating screen **LV432578**
- 5 Spreader 52.5 mm **LV432490**
- 6 Spreader 70 mm **LV432492**
- 7 Aluminum connector **LV432479** (1 x 35-300 mm<sup>2</sup>)
- 8 Aluminum connector **LV432481** (2 x 35-300 mm<sup>2</sup>)
- 9 OF, SD, or SDE indication contacts **29450** (standard) / **29452** (for low level)
- 10 SDTAM thermal fault module **LV429424**
- 11 UVR or SHT voltage releases **LV42940●** / **LV42938●**
- 12 Direct rotary handle black **GV6AP03** (shipped with the device)
- 13 Direct rotary handle red on yellow bezel **LV432599**
- 14 Open door shaft operator **LV426937**
- 15 Extended rotary handle black **LV432598**
- 16 Extended rotary handle red on yellow bezel **LV432600**
- 17 PowerTag M630 wireless energy sensor **LV434022**

#### Add-on auxiliary contacts - OF contacts

These allow remote indication of the circuit breaker contact states. They can be used for signalling, electrical locking, relaying, etc. They are available in two versions: standard and low level. They include a terminal block and the auxiliary circuits leave the circuit breaker through a hole provided for this purpose.

They perform the following functions, depending on where they are located in the circuit breaker:

Location	Function	Application
1 and/or 4 (GV5) 1 and/or 4, 6, 7 (GV6)	C/O contact	Indicates the position of the circuit breaker poles.
2	Trip indication	Indicates that the circuit breaker has tripped due to an overload, a short-circuit, a differential fault or the operation of a voltage trip (undervoltage or shunt trip), or of the "push to trip" test button. It resets when the circuit breaker is reset.
3	Electrical fault indication	Indicates that the circuit breaker has tripped due to an overload, a short-circuit or a differential fault. It resets when the circuit breaker is reset.
5	Adapter for electrical fault indication	This accessory is mandatory for GV5 to provide electrical fault indication.

Type	Reference
Standard	29450
Low level	29452
Adapter for electrical fault indication	LV429451

#### Thermal fault module - SDTAM

GV5/ GV6 can be equipped with thermal fault module. This module have:

- a contact to indicate overload fault in the circuit-breaker
- a contact to open the contactor. In the event of overload or phase unbalance, this output is activated 400 ms before circuit-breaker tripping to open the contactor and avoid circuit breaker tripping.

Voltage	Reference
24...415 V AC/DC	LV429424 <sup>(1)</sup>

#### Electric trips

These allow the circuit breaker to be tripped via an electrical control signal.

- Undervoltage release (UVR) - LV42940●
- Trips the circuit breaker when the control voltage drops below 35 % of its rated voltage.
- Between 35 % and 70 % of the rated voltage opening is possible but not guaranteed.
- Above 70 % of the rated voltage, opening does not take place.
- Continuous duty rated coil.
- Circuit breaker closing is possible only if the voltage exceeds 85 % of the rated voltage.
- Shunt trip (SHT) - LV42938●
- Trips the circuit breaker when the control voltage rises above 0.7 times the rated voltage.
- Impulse type  $\geq 20$  ms or maintained control signals.
- Operation (LV42940● or LV42938●)
- When the circuit breaker has been tripped by an UVR or by a SHT, it must be reset either locally.
- Tripping has priority over manual closing: if a tripping order is present, manual action does not result in closing, even temporarily, of the contacts.
- Durability: 50 % of the mechanical durability of the circuit breaker.

Type	Voltage	Reference
Undervoltage trip	220...240 V, 50/60 Hz	LV429407
Shunt trip	110...130 V, 50/60 Hz	LV429386
	220...240 V, 50/60 Hz	LV429387

(1) LV429429 takes the place of the UVR/SHT electric trip coil and an auxiliary contact (C/O contact 1).



# TeSys Power

## Giga - Frame 5, 6 Motor circuit breakers - Accessories

### Product references



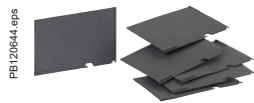
PB 120641 eps  
LV432479



PB 120642 eps  
LV432490



PB 120643 eps  
LV432593



PB 120644 eps  
GV7AC04



PB 120640 eps  
GV6AP03



PB 120645 eps  
LV432599



PB 120646 eps  
GV7AP02

### Cabling accessories

**Cable connectors:** The connectors for Frame 5 snap directly on to the device terminals or are secured by clips to right-angle and straight terminal extensions as well as spreaders. Frame 6 connectors are screwed directly to the device terminals.

**Spreaders:** Spreaders may be used to increase the pitch from 35 mm to 45 mm for Frame 5. The 45 mm pitch can be increased to 52.5 or 70 mm for Frame 6.

**Long terminal shields:** They are used for front connection with cables or insulated bars. They comprise two parts assembled with captive screws, forming an IP40 cover. The top part is equipped with sliding grids with break marks for precise adaptation to cables or insulated bars. The rear part completely blocks off the connection zone. Partially cut squares can be removed to adapt to all types of connection for cables with lugs or copper bars. Long terminal shields may be mounted upstream and downstream of the breaker.

**Phase barriers:** These interphase barriers are used for maximum insulation at the power-connection points.

**Insulating screens:** These are fitted at the rear of the device which provides insulation. Their use is mandatory for devices with spreaders, installed on backplates, when terminal shields are not used.

**Frame 5 Combination kits:** These kits allow link between the circuit breaker and the contactor. The cover provides protection against direct finger contact. The kit comprises links, a protective shield and a depth adjustable metal bracket for the breaker.

Description	Application	Sold in lots of	Unit reference GV5	Unit reference GV6
<b>Steel connectors (set of 3)</b>	1.5...95 mm <sup>2</sup> ≤ 150 A	1	GV7AC021	–
<b>Aluminium connectors (set of 3)</b>	25...95 mm <sup>2</sup> ≤ 220 A	1	LV429227	
	120...185 mm <sup>2</sup> ≤ 220 A	1	GV7AC022	
	120...240 mm <sup>2</sup> ≤ 220 A	1	LV429244	
	35...300 mm <sup>2</sup>	1		LV432479
<b>Spreader 3-pole <sup>(1)</sup></b>	2 x 35...300 mm <sup>2</sup>	1		LV432481
	35...45 mm pole pitch	1	GV7AC03	
	52.5 mm pole pitch	1		LV432490
<b>Long terminal shield (IP40) <sup>(1)</sup></b>	70 mm pole pitch	1		LV432492
	35 mm pole pitch	1	GV7AC01	
	45 mm pole pitch	1		LV432593
<b>Phase barriers (set of 6)</b>	52.5 mm pole pitch	1		LV432595
		1	GV7AC04	LV432570
<b>Insulating screens (set of 2)</b>	45 mm	1	GV7AC05	
	70 mm			LV432578
<b>Combination Kits <sup>(2)</sup></b>				
<b>For contactor LC1F115...F185</b>	Connection kits between breaker and contactor	1	GV7AC06	
<b>For contactor LC1D115 and D150</b>		1	GV7AC08	

### Direct rotary handle

The circuit breaker is always supplied direct rotary handle (black handle, black plate) as standard and it provides IP40 protection. The other type handles can be used by replacing this direct rotary handle. It includes a device for locking the circuit breaker in the O (Off) position by means of up to 3 padlocks with a shackle diameter of 5 to 8 mm (padlocks not included). A MCC conversion accessory allows the direct rotary handle to be mounted on the enclosure door. In this case, the door cannot be opened if the circuit breaker is in the "ON" position. Circuit breaker closing is inhibited if the enclosure door is open and prevents the device from being closed if the door is open.

Description	Type	Sold in lots of	Unit reference GV5	Unit reference GV6
<b>Direct rotary handle</b>	Black handle, black legend plate	1	GV5AP03	GV6AP03
	Red handle, yellow legend plate	1	GV7AP04	LV432599
<b>MCC conversion accessory</b>	Four mounting direct rotary handle on enclosure door	1	GV7AP05	LV432606

### Extended rotary handle

Allows to operate a circuit breaker from the front of the switch board, which's installed in the back of an enclosure, which provides IP55 protection. It comprises:

- a unit which is screwed onto the front accessory cover of the circuit breaker,
- an assembly (handle mechanism and front plate) to be fitted on the enclosure door,
- an extension shaft which must be adjusted.
- The distance minimum and maximum distances between the mounting surface and the door are
  - 185...600 mm for Frame 5
  - 209...600 mm for Frame 6

It includes a device for locking the circuit breaker in the O (Off) position by means of up to 3 padlocks with a shackle diameter of 5 to 8 mm (padlocks not included) and disables opening enclosure door.

Description	Type	Sold in lots of	Unit reference GV5	Unit reference GV6
<b>Extended rotary handle</b>	Black handle, black legend plate	1	GV7AP01	LV432598
	Red handle, yellow legend plate	1	GV7AP02	LV432600

(1) Terminal shields cannot be used together with spreaders.

(2) The kit comprises links, a protective shield and a depth adjustable metal bracket for the breaker.



#### Front extended rotary handles (cont.)

##### Operation when door is opened

An open door shaft operator can be used to operate the circuit breaker when door is opened. This accessory complies with UL508 A.

The indication of the three positions OFF (O), ON (I) and tripped (Trip) is visible on the circuit breaker.

The circuit breaker itself may be locked in OFF position when the door is opened by 1 padlock / lockout hasp, shackle Ø4-8 mm.



LV426937  
Open door shaft operator

Description	Reference
Open door shaft operator	LV426937
Laser tool	GVAPL01



GVAPL01 Laser tool

#### Other accessories

Bag of 6 tamper seals + 6 cover caps (1 large, 5 small) for screw heads

LV429375



LVA429375  
Sealing accessories

#### PowerTag Measurement module

##### Wireless-communication module

PowerTag is directly mounted on the bottom side of the circuit breaker.

It provides capability to measure energy, monitor voltage loss, and trigger alarms.

It then delivers useful data to a concentrator for monitoring and diagnosis of the associated circuit breaker.

In addition to monitoring and alarming, PowerTag solution provides a complete knowledge of real time electrical values with a rich and accurate data transfer every 5 seconds.

PowerTag energy sensors can be quickly and easily installed in new or existing panels at any time. Compared to traditional metering solutions, installation time and commissioning are much shorter with no wiring, hence an error proof high density solution and a built-in class 1 accuracy.

##### Functions

PowerTag energy sensor measures the following values in accordance with the IEC 61557-12 standard:

- Energy (4 quadrants):
  - Active energy (Wh): total and partial, delivered and received
  - Active energy per phase (Wh): total
  - Reactive energy (VARh): partial, delivered and received
- Power:
  - Active power (W): total and per phase
  - Reactive power (VAR): total
  - Apparent power (VA): total
- Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
- Currents (A): per phase (I1, I2, I3)
- Frequency
- Power factor
- Voltage loss alarm:
  - PowerTag energy sensor sends a "voltage loss" alarm and the current-per-phase value before being de-energized
  - At "voltage loss", PowerTag adds an overload alarm if the current is higher than the rated current of the associated protective device.

*Note: functions listed above depend on concentrators/gateways.*

Description	Reference
PowerTag M250 3P: suitable for Frame 5 up to 220 A	LV434020
PowerTag M630 3P: suitable for Frame 6 up to 500 A	LV434022



# PowerLogic™ Energy measurement solutions



Motor  
circuit  
breakers

# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy sensors

### Presentation

#### PowerTag Energy

It is a wireless-communication energy sensor dedicated to:

- Energy Management
- Load Monitoring
- Power Availability applications.

It provides a class 1 solution to monitor energy at any level of a distribution panel, from load to main incomer.

Thanks to the wireless communication between PowerTag Energy Sensors and PowerTag Energy Link gateway, the solution can be quickly and easily installed in new or existing panels.

#### Main features

Real time measurement (saved in the sensors):

- U, V, I (up to 2000 A)
- P, PF and energy values
- Diagnostics, alarming.

#### PowerTag Energy - Main components

##### Measurement - PowerTag Energy sensors

Voltages and currents are measured and processed by a sensor:

- 1 PowerTag Energy Monoconnect: directly mounted on the device terminals, upstream (Acti9, Multi9 only) or downstream (Acti9, Multi9, TeSys Deca - Frame 5, 6 circuit breakers)
- 2 PowerTag Energy Phase Neutral: sensor is crossed by the conductors, voltage pickup connector mounted on device terminals
- 3 PowerTag Energy Flex: sensor is crossed by the conductors
- 4 PowerTag Energy Rope: fixed on bar conductors.

##### Processing and communication – PowerTag Energy Link

The system works with a concentrator or a gateway:

- to collect data from the sensors
- to process data
- to provide additional alarms
- and make them available via Ethernet.



Motor circuit breakers



#### Connection (voltage and current)

##### Upstream

##### Downstream

Preferred installation to take full benefit of voltage loss alarming in diagnosing the load

#### Features

- Energy management: consumption in kWh
- Load monitoring: real-time measurements
- Energy management: consumption in kWh
- Load monitoring: real-time measurements
- Power availability: voltage loss alarming

#### Note:

In combination with a contactor, Variable Speed Drive or motor starter: PowerTag Energy can ONLY be installed UPSTREAM of these devices. Select the PowerTag Energy devices, check the possible mounting positions in the PowerLogic – PowerTag Energy - Selection guide.



Scan or Click to download:

> PowerLogic - PowerTag Energy - Selection guide



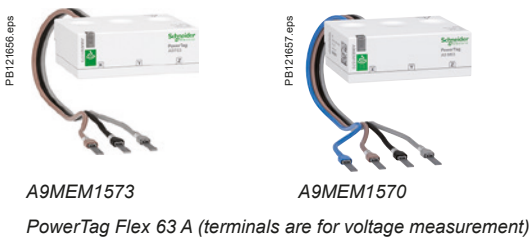
# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Flex 63 A

Use with TeSys Deca - Frame 2, 3 Motor circuit breakers



Communication between PowerTag Energy Flex 63 A and PowerTag Link ref. A9XMWD20



A9MEM1573  
A9MEM1570  
PowerTag Flex 63 A (terminals are for voltage measurement)

### Energy measurement – PowerLogic

#### PowerTag Energy Flex 63 A (F63)

As per IEC 61557-12 PMD-II/DD/K55/1 standard:  
with its flex design this PowerTag Energy can be used below a **Deca Motor circuit breakers Frame 2, 3-type (ref. GV2●●●, GV3●●●)** up to 63 A on 3P or 3P + N networks. The voltage picking is done by mean of 3 (3P) or 4 (3P + N) terminals. The shapes for brackets allow to mount and maintain it where needed in a panel.

#### Main characteristics

PowerTag Energy measures the following values in accordance with the IEC 61557-12 standard PMD-I/DD/K55/1.

Energy:

- Active energy (kWh): total and partial, delivered and received.

Real-time measurement values:

- Voltages (V): phase-to-phase and phase-to-neutral
- Currents (A): per phase.
- Power:
  - Active power (W): total and per phase
  - Apparent power (VA): total
- Power factor.

Voltage loss alarms:

- PowerTag Energy sends a 'voltage loss' alarm and the current-per-phase value before being de-energized
- At 'voltage loss', PowerTag Energy adds an overload alarm if the current is higher than the rated current of the associated protective device.

*Note: functions listed above depends on Concentrator/Gateway.*

Description	Reference
PowerTag Energy Flex 63 A 3P	<b>A9MEM1573</b>
PowerTag Energy Flex 63 A 3P+N	<b>A9MEM1570</b>

#### Installation

Neutral picking shall be connected to have phase-to-neutral voltages, energy per phase and power per phase provided.

The existing PowerTag cable ends have been designed for screw terminals for 16 mm<sup>2</sup>.

To adapt PowerTag F63 to the different types of product terminals, it is possible to replace the PowerTag Energy voltage measurement terminals by other cable ends for WG22/0.33 mm<sup>2</sup> wire.



Motor  
circuit  
breakers



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# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Flex 160 A

Use with TeSys Deca - Frame 4 Motor circuit breakers



Communication between PowerTag Energy Flex 160 A and PowerTag Link ref. A9XMWD20

Motor circuit breakers

### Energy measurement – PowerLogic

#### PowerTag Energy Flex 160 A (F160)

As per IEC 61557-12 PMD-II/DD/K70/1 standard: with its flex design this PowerTag Energy Flex can be used below a **Deca motor circuit breaker Frame 4 - type (ref GV4●●●●)** up to 160 A on 3P or 3P + N networks. Its removable spring connector for voltage picking facilitates its installation, and shapes for brackets allows to mount and maintain it where needed in a panel.

#### Main characteristics

PowerTag Energy Flex 160 A measures the following values in accordance with the IEC 61557-12 standard PMD-II/DD/K70/1.

- Energy (4 quadrants):
  - Active energy (kWh): total and partial, delivered and received
  - Active energy per phase (kWh): total and partial, delivered and received
  - Reactive energy (kVARh): total and partial, delivered and received
  - Reactive energy per phase (kVARh): total and partial, delivered and received
  - Apparent energy (kVAh): total and partial
  - Apparent energy per phase (kVAh): total and partial.
- Real-time measurement values:
  - Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
  - Currents (A): per phase (I1, I2, I3), calculated neutral current when connected (IN)
  - Power:
    - Active power (W): total and per phase
    - Reactive power (VAR): total and per phase
    - Apparent power (VA): total and per phase
  - Frequency (Hz).
  - Power factor: total and per phase.
- Voltage loss alarms:
  - PowerTag Energy Flex sensor sends a 'voltage loss' alarm and the current-per phase value before being de-energized.
  - At 'voltage loss', PowerTag Energy Flex adds an overload alarm if the current is higher than the rated current of the associated protective device.

*Note: functions listed above depends on Concentrator/Gateway.*

Description	Reference
PowerTag Energy Flex 160 A 3P / 3P+N	<b>A9MEM1580</b>

#### Installation

PowerTag Energy Flex 160 A can be installed in a panel directly on cables or busbars, associated to a product or not. Voltage pickings removable spring terminal has to be wired by 1 copper wire per phase with following characteristics:

#### Wire range

Solid	Stranded	Stranded with terminals ends
0.2...1.5 mm <sup>2</sup>	0.2...2.5 mm <sup>2</sup>	0.25...1.5 mm <sup>2</sup>
24...16 AWG	24...14 AWG	24...16 AWG


If phase-to-neutral voltages, energy per phase and power per phase are needed, then a Neutral picking cable must be connected between the spring-type connector of the PowerTag Energy Flex and a Neutral in the control panel.

PowerTag Energy Flex 160 A is mainly advised for ComPact NSXm, ComPact INS160, Acti9 NG125, Acti9 C120, PowerPact B, TeSys Deca - Frame 4 - type circuit breaker, and all other devices with a rating between 63 A and 160 A.

PB121658-eps



PowerTag Energy Flex 160 A  
Ref. A9MEM1580



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# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Monoconnect

Use with TeSys Deca - Frame 5, 6 Motor circuit breakers



Communication between PowerTag Monoconnect M630 and PowerTag Link ref. A9XMWD20

### Energy measurement – PowerLogic

#### PowerTag Energy Monoconnect 250 A (M250) PowerTag Energy Monoconnect 630 A (M630)

As per IEC 61557-12 PMD-II/DD/K70/1 standard:

PowerTag Energy Monoconnect is directly mounted on the bottom side of a **TeSys Deca - Frame 4 or 5 circuit breaker**, for 3P and 3P+N electrical networks.

Thanks to its integrated design, it does not require any specific wiring, and is compatible with the same connection accessories than the device it is mounted on. In addition to monitoring and alarming, PowerTag solution provides a complete knowledge of real time electrical values with a rich and accurate data transfer every 5 seconds.

PowerTag Energy sensors can be quickly and easily installed in new or existing panels at any time. Compared to traditional metering solutions, installation time and commissioning are much shorter with no wiring, hence an error proof high density solution and a built-in class 1 accuracy.

#### Functions

PowerTag Energy sensor measures the following values in accordance with the IEC 61557-12 standard.

- Energy (4 quadrants):
  - Active energy (kWh): total and partial, delivered and received
  - Active energy per phase (kWh): total
  - Reactive energy (kVARh): partial, delivered and received.
- Real-time measurement values:
  - Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
  - Currents (A): per phase (I1, I2, I3).
- Power:
  - Active power (W): total and per phase
  - Reactive power (VAR): total
  - Apparent power (VA): total.
- Frequency (Hz)
- Power factor
- Voltage loss alarm:
  - PowerTag Energy sends a "voltage loss" alarm and the current-per-phase value before being de-energized
  - At 'voltage loss', PowerTag adds an overload alarm if the current is higher than the rated current of the associated protective device.

**Note:** functions listed above depends on Concentrators/Gateways.

Description	Reference
PowerTag Monoconnect M250 3P: suitable for GV5 up to 220 A	<b>LV434020</b>
PowerTag Monoconnect M630 3P: suitable for GV6 up to 500 A	<b>LV434022</b>

#### Installation

The module is self-powered and is installed for fixed devices directly on the bottom side of the circuit breaker or Vigi add-on terminals. For plug-in devices, it has to be installed on the base itself, top or bottom.

PowerTag Energy M250/M630 3P has to be used with 3P devices, and an external neutral voltage tap is provided in case of the installation has a neutral to provide phase-to-neutral voltages, active energy per phase and power per phase.

PowerTag Energy M250/M630 3P + N has to be used with 4P devices and with ComPact INS/INV switches.

In case of retrofit, following points have to be checked:

- Clearance to be able to add PowerTag Energy module and to respect bending radius of cables.
- Condition of power connectors: to be replaced if damaged.
- Tightening torques depending on the connector used.



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Motor  
circuit  
breakers



LV434020



LV434022

# PowerLogic™ Energy measurement solutions

## PowerTag™ Link

### Ethernet Connection Concentrator for PowerTag Energy sensors

#### Energy measurement – PowerLogic

##### PowerTag Link

Ethernet connection concentrator (Modbus TCP/IP) for wireless devices with data display web pages.

The associated PowerTag Energy sensors allow alarms to be managed via email for terminal loads, and energy, power, current and voltage to be measured accurately in real time.

The associated PowerTag Control modules are designed to monitor and control a circuit and notify wirelessly to the concentrator the information status of a contact (OF, SD, CT or TL position indication...).

The associated PowerTag Link Display allows user to visualize data from energy sensors connected to the gateway.

The entire system can easily be installed in existing LV equipments using Multi9/Acti9/Compact NSX type circuit breakers, TeSys and competitor's devices.

Data transmitted:

- Total and partial energy
- Active, apparent and reactive power, phase-to-phase and phase-to-neutral voltage
- Currents I1, I2, I3
- Power factor (cos φ)
- Voltage loss and overload information
- Control order to a circuit
- Information status of a contact.

##### Functions

PowerTag Link permits:

- Concentration of PowerTag Energy wireless sensor data
- Ethernet connection via the RJ45 port
- Load monitoring:
  - alarm sent by the energy sensor in the event of a voltage loss,
  - pre-alarms on predefined thresholds (50 %, 80 %) or customized thresholds (thresholds on currents, power, voltages and cumulative energies),
  - load running time counter,
  - power synthesis (kW),
  - Alarm management on current/voltage/load level thresholds by e-mail,
  - Send control orders to PowerTag Control output to operate a load remotely and get load status thanks to feedback loop on associated input,
  - Collect status of contact from PowerTag Control input,
  - Display of alarms and pre-alarms on PowerTag Link embedded web pages,
  - Easy integration into system with Com'X 200, Com'X 510 and other Schneider Electric software and third-party Building Management Systems (BMS) thanks to EcoStruxure Power Commission report in pdf format. This report provides dynamically all the Modbus registers and associated meanings for an easy integration into the system,
  - Remote metering capability using the PowerTag Link monitoring page,
  - Send measured data and alarms to the PowerTag Link Display that can be installed locally.

Description	Reference
PowerTag Link	A9XMWD2

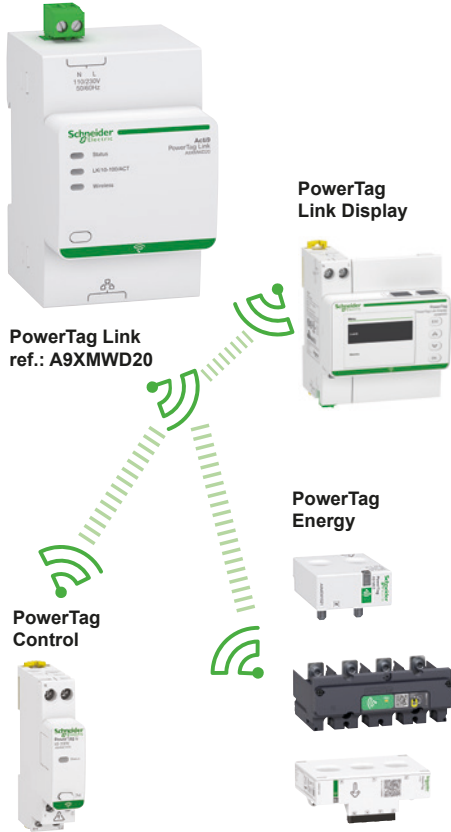
##### Installation

- On DIN rail (width 54 mm).
- 230 V AC power supply.

##### Testing and start-up

Pairing of wireless devices must be performed via the EcoStruxure Power Commission software, freely available by downloading.

- The software makes it possible, in particular, to attribute to each circuit a name, a use and the current rating (useful for alarms).



Motor circuit breakers

#### Commissioning software: EcoStruxure Power Commission <sup>(1)</sup>

- Configuration and communication test of wireless devices
- Editing of a complete test report (pdf) with the Modbus communication registers for easy integration into a supervision system
- Windows XP, Windows 7, Windows 8 and Windows 10 compatible
- Downloadable from: [https://www.schneider-electric.com/ww/en/download/document/Ecoeach\\_Installer](https://www.schneider-electric.com/ww/en/download/document/Ecoeach_Installer)

(1) new name of Ecoeach software.



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> PowerLogic - PowerTag Energy - Selection guide

# TeSys Modular circuit breakers

0.5 to 20 A

(for equipment and control circuits)



Motor  
circuit  
breakers

# TeSys Power

## Modular circuit breakers for auxiliary circuits - Thermal-magnetic

### Introduction



GB2CB



GB2CD



GB2DB



GB2CS

Motor  
circuit  
breakers

### Introduction

Modular thermal-magnetic circuit breakers protect and isolate the control circuits of industrial equipment with contactor coils, transformers....

They protect and isolate single-phase auxiliary circuits such as solenoid valves, electro-brakes, battery chargers, supplied from the control circuit voltage.

#### Ref. GB2CB, GB2CD, GB2DB

12 ratings are available, from 0.5 to 20 A, in single-pole (GB2CB), single-pole + neutral (GB2CD) and 2-pole (GB2DB) versions.

They have a magnetic tripping threshold set at between 12 and 16 In to withstand the current peaks generated by many industrial components.

#### Ref. GB2CS

2 ratings are available, 0.5 and 1 A, in single-pole version.

The magnetic tripping threshold is set between 5 and 7 In.

### Functions, installation

Clip-on fixing onto all types of 35 mm  $\perp$  rails, on  $\perp$  rails and on Telequick mounting plates.

Upstream and downstream marking by means of AB1 clip-in markers.

Clear indication of "I" and "O" positions on the operator.

Tamper-proof device which requires no special maintenance (fixed magnetic and thermal tripping thresholds).

### Selection for the protection of circuits supplied by transformers

Single-phase transformers.

Magnetising peak: 20 In.

Operation of magnetic trips: 13 In.

Power VA	Primary <sup>(1)</sup>		Secondary			
	220/240 V	380/415 V	24 V	48 V	110 V	220 V
40	GB2DB05	GB2DB05	GB2CD07	GB2CD06	GB2CD05	GB2CD05
63	GB2DB05	GB2DB05	GB2CD08	GB2CD07	GB2CD06	GB2CD05
100	GB2DB06	GB2DB05	GB2CD10	GB2CD07	GB2CD06	GB2CD05
160	GB2DB07	GB2DB06	GB2CD14	GB2CD09	GB2CD07	GB2CD06
250	GB2DB07	GB2DB06	GB2CD16	GB2CD12	GB2CD08	GB2CD07
400	GB2DB08		GB2CD22	GB2CD14	GB2CD09	GB2CD07
630	GB2DB10	GB2DB08	–	GB2CD21	GB2CD12	GB2CD08
1000	GB2DB14	GB2DB09	–	–	GB2CD16	GB2CD10
1600	GB2DB20	GB2DB14	–	–	–	GB2CD14
2000	GB2DB21	GB2DB14	–	–	GB2CD22	GB2CD16
2500	GB2DB22	GB2DB20	–	–	–	GB2CD20
3000	GB2DB22	GB2DB20	–	–	–	GB2CD21
4000	–	GB2DB21	–	–	–	GB2CD22
5000	–	GB2DB22	–	–	–	–

<sup>(1)</sup> If the breaking capacity of the GB2 is insufficient, use a GV2RT with 2 poles connected in series.



PB110899\_20.eps



GB2CB●●

PB110901\_20.eps



GB2CD●●

PB110902\_20.eps



GB2DB●●

### Circuit breakers with magnetic tripping threshold: 12 to 16 In

#### Single-pole

Conventional rated thermal current I <sub>th</sub> <sup>(1)</sup>	Magnetic tripping current I <sub>d</sub> ± 20 %	Sold in lots of	Unit reference
<b>A</b>	<b>A</b>		
0.5	6.6	6	GB2CB05
1	14	6	GB2CB06
2	26	6	GB2CB07
3	40	6	GB2CB08
4	52	6	GB2CB09
5	66	6	GB2CB10
6	83	6	GB2CB12
8	108	6	GB2CB14
10	138	6	GB2CB16
12	165	6	GB2CB20
16	220	6	GB2CB21
20	270	6	GB2CB22

#### Single-pole + neutral

Conventional rated thermal current I <sub>th</sub> <sup>(1)</sup>	Magnetic tripping current I <sub>d</sub> ± 20 %	Sold in lots of	Unit reference
<b>A</b>	<b>A</b>		
0.5	6.6	6	GB2CD05
1	14	6	GB2CD06
2	26	6	GB2CD07
3	40	6	GB2CD08
4	52	6	GB2CD09
5	66	6	GB2CD10
6	83	6	GB2CD12
8	108	6	GB2CD14
10	138	6	GB2CD16
12	165	6	GB2CD20
16	220	6	GB2CD21
20	270	6	GB2CD22

#### 2-pole

Conventional rated thermal current I <sub>th</sub> <sup>(1)</sup>	Magnetic tripping current I <sub>d</sub> ± 20 %	Sold in lots of	Unit reference
<b>A</b>	<b>A</b>		
0.5	6.6	3	GB2DB05
1	14	3	GB2DB06
2	26	3	GB2DB07
3	40	3	GB2DB08
4	50	3	GB2DB09
5	66	3	GB2DB10
6	83	3	GB2DB12
8	108	3	GB2DB14
10	138	3	GB2DB16
12	165	3	GB2DB20
16	220	3	GB2DB21
20	270	3	GB2DB22

(1) Conforming to IEC 60947-1.



Motor circuit breakers

# TeSys Power

## Modular circuit breakers for auxiliary circuits - Thermal-magnetic

### Product references

#### Circuit breakers with magnetic tripping threshold: 5 to 7 In



GB2CS●●

Single-pole			
Conventional rated thermal current Ith <sup>(1)</sup>	Magnetic tripping current Id ± 20 %	Sold in lots of	Unit reference
A	A		
0.5	3.3	6	GB2CS05
1	6	6	GB2CS06

<sup>(1)</sup> Conforming to IEC 60947-1.

#### Accessories for circuit breakers ref. GB2-CB, DB and CS



GB2G210

Description	Sold in lots of	Unit reference
Busbar set for supply to 10 GB2 DB or 20 GB2CB or GB2CS with 2 connectors	1	GB2G210

Motor  
circuit  
breakers

29450	GV2L16	GV2ME323S	GV3P736
29452	GV2L20	GV2ME326	GV3P80
GB2CB05	GV2L22	GV2ME32AP	GV3PC01
GB2CB06	GV2L32	GV2P01	GV3PC02
GB2CB07	GV2LE03	GV2P02	GV4ADM1111
GB2CB08	GV2LE04	GV2P03	GV4ADN01
GB2CB09	GV2LE05	GV2P04	GV4ADN02
GB2CB10	GV2LE06	GV2P05	GV4AE11
GB2CB12	GV2LE07	GV2P06	GV4APN01
GB2CB14	GV2LE08	GV2P07	GV4APN02
GB2CB16	GV2LE10	GV2P08	GV4APN04
GB2CB20	GV2LE14	GV2P10	GV4AS027
GB2CB21	GV2LE16	GV2P14	GV4AS057
GB2CB22	GV2LE20	GV2P16	GV4AS137
GB2CD05	GV2LE22	GV2P20	GV4AS287
GB2CD06	GV2LE32	GV2P21	GV4AS487
GB2CD07	GV2ME01	GV2P22	GV4AU027
GB2CD08	GV2ME013	GV2P32	GV4AU057
GB2CD09	GV2ME016	GV2PC01	GV4AU137
GB2CD10	GV2ME01AP	GV2PC02	GV4AU247
GB2CD12	GV2ME02	GV2RT03	GV4AU286
GB2CD14	GV2ME023	GV2RT04	GV4AU415
GB2CD16	GV2ME02AP	GV2RT05	GV4AU486
GB2CD20	GV2ME03	GV2RT053	GV4G66
GB2CD21	GV2ME033	GV2RT06	GV4L02N
GB2CD22	GV2ME036	GV2RT07	GV4L02N6
GB2CS05	GV2ME03AP	GV2RT073	GV4L03N
GB2CS06	GV2ME04	GV2RT08	GV4L03N6
GB2DB05	GV2ME043	GV2RT10	GV4L07N
GB2DB06	GV2ME046	GV2RT14	GV4L07N6
GB2DB07	GV2ME04AP	GV2RT16	GV4L115B
GB2DB08	GV2ME05	GV2RT20	GV4L115B6
GB2DB09	GV2ME053	GV2RT21	GV4L115N
GB2DB10	GV2ME056	GV2SN14	GV4L115N6
GB2DB12	GV2ME05AP	GV2SN15	GV4L115S
GB2DB14	GV2ME06	GV2SN17	GV4L12N
GB2DB16	GV2ME063	GV2SN35	GV4L12N6
GB2DB20	GV2ME066	GV2SN37	GV4L25B
GB2DB21	GV2ME06AP	GV2V03	GV4L25B6
GB2DB22	GV2ME07	GV3A02	GV4L25N
GB2G210	GV2ME073	GV3A03	GV4L25N6
GK2AF01	GV2ME076	GV3A08	GV4L50B
GK2AX50	GV2ME07AP	GV3A09	GV4L50B6
GV1F03	GV2ME08	GV3APK01	GV4L50N
GV1G02	GV2ME083	GV3APN01	GV4L50N6
GV1L3	GV2ME086	GV3D22	GV4L80B
GV1V02	GV2ME08AP	GV3G66	GV4L80B6
GV2AF01	GV2ME10	GV3L25	GV4L80N
GV2AF02	GV2ME103	GV3L32	GV4L80N6
GV2AF3	GV2ME106	GV3L326	GV4L80S
GV2AF4	GV2ME10AP	GV3L40	GV4LE02N
GV2AF5	GV2ME14	GV3L50	GV4LE02N6
GV2AK00	GV2ME143	GV3L65	GV4LE02S
GV2AP01	GV2ME146	GV3L73	GV4LE02S6
GV2AP02	GV2ME14AP	GV3L80	GV4LE03N
GV2AP03	GV2ME16	GV3P13	GV4LE03N6
GV2AP04	GV2ME163	GV3P18	GV4LE03S
GV2APK01	GV2ME166	GV3P25	GV4LE03S6
GV2APN01	GV2ME16AP	GV3P256	GV4LE07N
GV2APN02	GV2ME20	GV3P32	GV4LE07N6
GV2APN03	GV2ME203	GV3P321	GV4LE07S
GV2APN04	GV2ME206	GV3P40	GV4LE07S6
GV2CP21	GV2ME20AP	GV3P401	GV4LE115B
GV2GH7	GV2ME21	GV3P406	GV4LE115B6
GV2L03	GV2ME213	GV3P50	GV4LE115N
GV2L04	GV2ME216	GV3P501	GV4LE115N6
GV2L05	GV2ME21AP	GV3P506	GV4LE115S
GV2L06	GV2ME22	GV3P65	GV4LE115S6
GV2L07	GV2ME223	GV3P651	GV4LE12N
GV2L08	GV2ME226	GV3P656	GV4LE12N6
GV2L10	GV2ME22AP	GV3P73	GV4LE12S
GV2L14	GV2ME32	GV3P731	GV4LE12S6

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.


# TeSys Power

## Deca, Giga and Modular Motor circuit breakers

### Product references

GV4LE25B	GV4PB25S	GV4PEM07S6	GVAE20
GV4LE25B6	GV4PB50B	GV4PEM115B	GVAE203
GV4LE25N	GV4PB50N	GV4PEM115B6	GVAED011
GV4LE25N6	GV4PB50S	GV4PEM115N	GVAED013
GV4LE25S	GV4PB80B	GV4PEM115N6	GVAED101
GV4LE25S6	GV4PB80N	GV4PEM115S	GVAED1013
GV4LE50B	GV4PB80S	GV4PEM115S6	GVAM11
GV4LE50B6	GV4PE02N	GV4PEM12N	GVAN11
GV4LE50N	GV4PE02N6	GV4PEM12N6	GVAN113
GV4LE50N6	GV4PE02S	GV4PEM12S	GVAN20
GV4LE50S	GV4PE02S6	GV4PEM12S6	GVAN203
GV4LE50S6	GV4PE03N	GV4PEM25B	GVAPA2
GV4LE80B	GV4PE03N6	GV4PEM25B6	GVAPBPHP
GV4LE80B6	GV4PE03S	GV4PEM25N	GVAPH02
GV4LE80N	GV4PE03S6	GV4PEM25N6	GVAPK11
GV4LE80N6	GV4PE07N	GV4PEM25S	GVAPYPHP
GV4LE80S	GV4PE07N6	GV4PEM25S6	GVAS025
GV4LE80S6	GV4PE07S	GV4PEM50B	GVAS026
GV4LUG	GV4PE07S6	GV4PEM50B6	GVAS055
GV4P02N	GV4PE115B	GV4PEM50N	GVAS115
GV4P02N6	GV4PE115B6	GV4PEM50N6	GVAS116
GV4P03N	GV4PE115N	GV4PEM50S	GVAS207
GV4P03N6	GV4PE115N6	GV4PEM50S6	GVAS225
GV4P07N	GV4PE115S	GV4PEM80B	GVAS226
GV4P07N6	GV4PE115S6	GV4PEM80B6	GVAS385
GV4P115B	GV4PE12N	GV4PEM80N	GVAS415
GV4P115B6	GV4PE12N6	GV4PEM80N6	GVAU025
GV4P115N	GV4PE12S	GV4PEM80S	GVAU055
GV4P115N6	GV4PE12S6	GV4PEM80S6	GVAU115
GV4P115S	GV4PE25B	GV5AP03	GVAU116
GV4P12N	GV4PE25B6	GV5P150F	GVAU125
GV4P12N6	GV4PE25N	GV5P150H	GVAU207
GV4P25B	GV4PE25N6	GV5P220F	GVAU225
GV4P25B6	GV4PE25S	GV5P220H	GVAU226
GV4P25N	GV4PE25S6	GV6AP03	GVAU385
GV4P25N6	GV4PE50B	GV6P320F	GVAU386
GV4P50B	GV4PE50B6	GV6P320H	GVAU415
GV4P50B6	GV4PE50N	GV6P500F	GVAU416
GV4P50N	GV4PE50N6	GV6P500H	GVAU505
GV4P50N6	GV4PE50S	GV7AC01	GVAX115
GV4P80B	GV4PE50S6	GV7AC021	GVAX116
GV4P80B6	GV4PE80B	GV7AC022	GVAX225
GV4P80N	GV4PE80B6	GV7AC03	GVAX226
GV4P80N6	GV4PE80N	GV7AC04	GVAX385
GV4P80S	GV4PE80N6	GV7AC05	GVAX386
GV4PB02N	GV4PE80S	GV7AC06	GVAX415
GV4PB02S	GV4PE80S6	GV7AC08	LA9E07
GV4PB03N	GV4PEM02N	GV7AP01	LAD311
GV4PB03S	GV4PEM02N6	GV7AP02	LAD96590
GV4PB07N	GV4PEM02S	GV7AP04	LAD96595
GV4PB07S	GV4PEM02S6	GV7AP05	LV429385
GV4PB115B	GV4PEM03N	GVAD0101	LV429386
GV4PB115N	GV4PEM03N6	GVAD0110	LV429387
GV4PB115S	GV4PEM03S	GVAD1001	LV429388
GV4PB12N	GV4PEM03S6	GVAD1010	LV429405
GV4PB12S	GV4PEM07N	GVAE1	LV429406
GV4PB25B	GV4PEM07N6	GVAE11	LV429407
GV4PB25N	GV4PEM07S	GVAE113	LV429408

Motor  
circuit  
breakers

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Deca - Frame 2:

- > characteristics .....B6/72 to B6/76
- > curves .....B6/77 to B6/86
- > characteristics - accessories .....B6/87 to B6/89
- > dimensions, schemes .....B6/90 to B6/99

## Deca - Frame 3:

- > characteristics .....B6/102 to B6/105
- > curves .....B6/106 to B6/111
- > characteristics - accessories .....B6/112 to B6/114
- > dimensions, schemes .....B6/115 to B6/117

## Deca - Frame 4:

- > characteristics .....B6/120 to B6/123
- > curves .....B6/124 to B6/131
- > characteristics - accessories .....B6/132 to B6/133
- > dimensions, schemes .....B6/134 to B6/137

## Giga - Frame 5 - Frame 6:

- > characteristics ..... B6/140
- > curves .....B6/141 to B6/143
- > characteristics - accessories .....B6/144 to B6/145
- > dimensions, schemes .....B6/146 to B6/152

## PowerTag Energy sensors:

- > PowerTag Energy Flex 63 A ..... B6/154
- > PowerTag Energy Flex 160 A ..... B6/155
- > PowerTag Energy Monoconnect 250 A ..... B6/156
- > PowerTag Energy Link ..... B6/157

## Modular:

- > characteristics .....B6/160 to B6/162
- > dimensions, schemes ..... B6/163



# TeSys Deca - Frame 2 0.06 to 15 kW



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 2 Motor circuit breakers

### Characteristics

Environment			GV2L	GV2LE	GV2ME	GV2P	GV2RT
Circuit breaker type			GV2L				
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-2				
Product certifications			CSA C22.2 n°60947-4-1 <sup>(1)</sup> , UL 60947-4-1				
Climatic withstand			According to IACS E10				
Degree of protection (front face)	Conforming to IEC 60529	Open mounted In enclosure	Against direct finger contact: IP20				
Shock resistance	Conforming to IEC 60068-2-27		30 gn - 11 ms				
Vibration resistance	Conforming to IEC 60068-2-6		5 gn (5 to 150 Hz)				
Ambient air temperature	Storage		°C -40...+80				
	Operation	Open mounted	°C -20...+60				
		In enclosure	°C -20...+40				
Temperature compensation	Open mounted		°C -20...+60				
	In enclosure		°C -20...+40				
Flame resistance	Conforming to IEC 60695-2-11		°C 960				
Maximum operating altitude			m 2000				
Suitable for isolation	Conforming to IEC 60947-1 § 7-1-6		Yes				
Resistance to mechanical impact			J 0.5 IK04				
Sensitivity to phase failure			Yes, conforming to IEC 60947-4-1 § 8-2-1-5-2 for GV2ME & GV2P				

Technical characteristics			GV2L	GV2LE	GV2ME	GV2P	GV2RT
Circuit breaker type			GV2L				
Utilisation category	Conforming to IEC 60947-2		A				
	Conforming to IEC 60947-4-1		AC-3				
Rated operational voltage (Ue)	Conforming to IEC 60947-2		V 690				
Rated insulation voltage (Ui)	Conforming to IEC 60947-2		V 690				
Rated voltage	Conforming to UL 60947-4-1		V -				
	CSA C 22.2 n° 60947-4-1		480 480 600 600 600				
Rated operational frequency	Conforming to IEC 60947-4-1 UL, CSA		Hz 50/60				
Rated impulse withstand voltage (U imp)	Conforming to IEC 60947-2		kV 6				
Total power dissipated per pole			W 1.8 2.5				
Mechanical durability (C.O.: Closing, Opening)			C.O. 100 000				
Electrical durability for AC-3/415V duty (C.O.: Closing, Opening)	415 V In		C.O. 100 000				
Duty class (maximum operating rate)			C.O./h 40 25				
Maximum conventional rated thermal current (Ith)	Conforming to IEC 60947-4-1		A 0.4...32 0.4...32 0.16...32 0.16...32 0.40...23				
Rated duty	Conforming to IEC 60947-4-1		Continuous duty				

(1) GV2L03 to GV2L22, GV2LE03 to GV2LE22.

(2) UL 60947-4-1 type E for GV2P●● (except 32A).



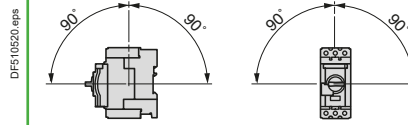
# TeSys Power

## Deca - Frame 2 Motor circuit breakers

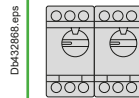
### Characteristics

#### Mounting characteristics

Operating position  
Without derating, in relation to normal vertical mounting plane <sup>(1)</sup>



#### Products side by side



When several products **GV2ME●●**, **GV2P●●**, **GV2RT●●** are mounted side by side, the thermal trip setting  $I_r$  maybe need to be adjusted up to  $1.1 \times I_n$ .

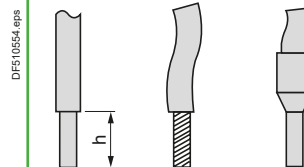
Do not exceed the maximum thermal setting  $I_r$ .

E.g: **GV2ME14**, thermal setting range: 6...10, do not adjust  $I_r$  above 10 A.

#### Connection characteristics

##### Connection to screw clamp terminals or spring terminals

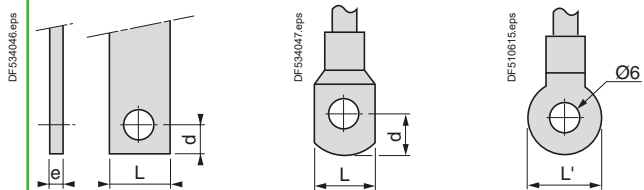
Bare cables



Circuit breaker type			GV2L		GV2LE		GV2ME		GV2P		GV2RT	
Connection to screw clamp terminals (Max. number of conductors x c.s.a.)		mm <sup>2</sup>	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Solid cable	Solid cable	mm <sup>2</sup>	2 x 1	2 x 6	2 x 1	2 x 6	2 x 1	2 x 6	2 x 1	2 x 6	2 x 1	2 x 6
	Flexible cable without cable end	mm <sup>2</sup>	2 x 1.5	2 x 6	2 x 1.5	2 x 6	2 x 1.5	2 x 6	2 x 1.5	2 x 6	2 x 1.5	2 x 6
	Flexible cable with cable end	mm <sup>2</sup>	2 x 1	2 x 4	2 x 1	2 x 4	2 x 1	2 x 4	2 x 1	2 x 4	2 x 1	2 x 4
Tightening torque		N.m	1.7									
Connection to spring terminals		mm <sup>2</sup>	-	-	-	-	2 x 1 <sup>(2)</sup>	2 x 6	-	-	-	-
Number of conductors x c.s.a.		mm <sup>2</sup>	-	-	-	-	2 x 1.5 <sup>(2)</sup>	2 x 4	-	-	-	-

##### Connection by bars or lugs

Bars or lugs



Circuit breaker type			GV2ME●●6	
Pitch	Without spreaders	mm	13.5	
	With spreaders	mm	-	
Bars or cables with lugs	e	mm	≤ 6	
	L	mm	≤ 9.5	
	L'	mm	≤ 9.5	
	d	mm	≤ 10	
Screws			M4	
	Tightening torque	N.m	1.7	
Bare cables (copper or aluminium) with connectors	Height (h)	mm	-	
	C.s.a.	mm <sup>2</sup>	-	
	Tightening torque	N.m	-	

<sup>(1)</sup> When mounting on a vertical rail, fit a stop to prevent any slippage.

<sup>(2)</sup> For cross-sections 1 to 1.5 mm<sup>2</sup>, the use of an **LA9D99** cable end reducer is recommended.

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Characteristics

Breaking capacity of GV2L and GV2LE																							
Circuit breaker type				GV2LE										GV2L									
				03 to 06	07	08	10	14	16	20	22	32	03 to 05	06 & 07	08	10	14	16	20	22	32		
Rating			A	0.4 to 1.6	2.5	4	6.3	10	14	18	25	32	0.4 to 1	1.6 to 2.5	4	6.3	10	14	18	25	32		
Breaking capacity conforming to IEC 60947-2	230/240 V	Icu	kA	*	*	*	*	*	*	*	50	50	*	*	*	*	*	*	*	50	50		
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	*	*	100	100	*	*	*	*	*	*	*	100	100	
	400/415 V	Icu	kA	*	*	*	*	*	15	15	15	10	*	*	*	*	*	*	50	50	50	50	
		Ics % <sup>(1)</sup>		*	*	*	*	*	50	50	40	50	*	*	*	*	*	*	50	50	50	50	
	440 V	Icu	kA	*	*	*	50	15	8	8	6	6	*	*	*	*	*	20	20	20	20	20	
		Ics % <sup>(1)</sup>		*	*	*	100	100	50	50	50	50	*	*	*	*	*	75	75	75	75	75	
	500 V	Icu	kA	*	*	*	50	10	6	6	4	4	*	*	*	*	*	10	10	10	10	10	
		Ics % <sup>(1)</sup>		*	*	*	100	100	75	75	75	75	*	*	*	*	*	100	75	75	75	75	
	690 V	Icu	kA	*	3	3	3	3	3	3	3	3	*	4	4	4	4	4	4	4	4	4	
		Ics % <sup>(1)</sup>		*	75	75	75	75	75	75	75	75	*	100	100	100	100	100	100	100	100	100	
Associated fuses (if required) if Ics > breaking capacity Icu conforming to IEC 60947-2 amendment 1	230/240 V	aM	A	*	*	*	*	*	*	*	80	80	*	*	*	*	*	*	*	100	100		
		gG	A	*	*	*	*	*	*	*	100	100	*	*	*	*	*	*	*	125	125		
	400/415 V	aM	A	*	*	*	*	*	63	63	80	80	*	*	*	*	*	*	80	100	100	100	
		gG	A	*	*	*	*	*	80	80	100	100	*	*	*	*	*	*	100	125	125	125	
	440 V	aM	A	*	*	*	50	50	50	50	63	63	*	*	*	*	*	50	63	80	80	80	
		gG	A	*	*	*	63	63	63	63	80	80	*	*	*	*	*	63	80	100	100	100	
	500 V	aM	A	*	*	*	50	50	50	50	50	50	*	*	*	*	*	50	50	50	50	50	
		gG	A	*	*	*	63	63	63	63	63	63	*	*	*	*	*	63	63	63	63	63	
	690 V	aM	A	*	16	25	32	32	40	40	40	40	*	20	25	40	40	50	50	50	50	50	
		gG	A	*	20	32	40	40	50	50	50	50	*	25	32	50	50	63	63	63	63	63	
Cable protection against thermal stress in the event of short-circuit (PVC insulated copper cables) Minimum c.s.a. protected at 40 °C and at Isc max.	1 mm <sup>2</sup>	kA		●	●	●	≤10	≤6	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	●	●	●	●	≤10	≤6	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	
	1.5 mm <sup>2</sup>	kA		●	●	●	≤20	≤10	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	●	●	●	●	≤20	≤10	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	
	2.5 mm <sup>2</sup>			●	●	●	●	●	●	●	●	<sup>(2)</sup>	●	●	●	●	●	●	●	●	●	<sup>(2)</sup>	
	4...6 mm <sup>2</sup>			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

\* > 100 kA.  
 ● Cable c.s.a. protected.  
<sup>(1)</sup> As % of Icu.  
<sup>(2)</sup> Cable c.s.a. not protected.

Ref.



Motor circuit breakers

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Characteristics

Breaking capacity of GV2ME, GV2RT and GV2P																							
Circuit breaker type				GV2ME and GV2RT										GV2P									
				01 to 06	07	08	10	14	16	20	21 & 22	32	01 to 06	07	08	10	14	16	20	21 & 22	32		
Rating		A	kA	0.1 to 1.6	2.5	4	6.3	10	14	16	18	23 & 25	32	0.1 to 1.6	2.5	4	6.3	10	14	16	18	23 & 25	32
Breaking capacity conforming to IEC 60947-2	230/240 V	lcu	kA	*	*	*	*	*	*	*	*	50	50	*	*	*	*	*	*	*	*	*	*
		lcs % <sup>(1)</sup>		*	*	*	*	*	*	*	*	100	100	*	*	*	*	*	*	*	*	*	*
400/415 V	lcu	kA	*	*	*	*	*	15	15	15	10	*	*	*	*	*	*	*	*	50	50	50	
	lcs % <sup>(1)</sup>		*	*	*	*	*	50	50	40	50	*	*	*	*	*	*	*	*	50	50	50	
440 V	lcu	kA	*	*	*	50	15	8	8	6	6	*	*	*	*	*	*	*	50	20	20	20	
	lcs % <sup>(1)</sup>		*	*	*	100	100	50	50	50	50	*	*	*	*	*	*	*	75	75	75	75	
500 V	lcu	kA	*	*	*	50	10	6	6	4	4	*	*	*	*	*	*	50	42	10	10	10	
	lcs % <sup>(1)</sup>		*	*	*	100	100	75	75	75	75	*	*	*	*	*	*	100	75	75	75	75	
690 V	lcu	kA	*	3	3	3	3	3	3	3	3	*	8	8	6	6	6	6	4	4	4	4	
	lcs % <sup>(1)</sup>		*	75	75	75	75	75	75	75	75	*	100	100	100	100	100	100	100	100	100	100	
Associated fuses (if required) if lsc > breaking capacity lcu conforming to IEC 60947-2	230/240 V	aM	A	*	*	*	*	*	*	*	80	80	*	*	*	*	*	*	*	*	*	*	
		gG	A	*	*	*	*	*	*	*	100	100	*	*	*	*	*	*	*	*	*	*	
400/415 V	aM	A	*	*	*	*	*	63	63	80	80	*	*	*	*	*	*	*	100	100	100		
	gG	A	*	*	*	*	*	80	80	100	100	*	*	*	*	*	*	*	125	125	125		
440 V	aM	A	*	*	*	50	50	50	50	63	63	*	*	*	*	*	*	50	63	80	80		
	gG	A	*	*	*	63	63	63	63	80	80	*	*	*	*	*	*	63	80	100	100		
500 V	aM	A	*	*	*	50	50	50	50	50	50	*	*	*	*	*	50	50	50	50	50		
	gG	A	*	*	*	63	63	63	63	63	63	*	*	*	*	*	63	63	63	63	63		
690 V	aM	A	*	16	25	32	32	40	40	40	40	*	20	25	40	40	50	50	50	50	50		
	gG	A	*	20	32	40	40	50	50	50	50	*	25	32	50	50	63	63	63	63	63		

\* > 100 kA.  
 (1) As % of lcu.



Motor circuit breakers

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Characteristics

Breaking capacity of GV2ME, GV2RT and GV2P (used in association with current limiter GV1L3)														
Circuit breaker type			GV2ME and GV2RT											
Rating			A	01 to 06 0.1 to 1.6	07 2.5	08 4	10 6.3	14 10	16 14	20 18	21 23	22 25	32 32	
Breaking capacity conforming to IEC 60947-2	230/240 V	Icu	kA	*	*	*	*	*	*	*	*	*	*	
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	*	*	*	*	
	400/415 V	Icu	kA	*	*	*	*	*	*	100	100	100	100	100
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	50	50	40	40	40
	440 V	Icu	kA	*	*	*	*	*	*	50	20	20	20	20
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	75	75	75	75	75
500 V	Icu	kA	*	*	*	*	*	50	42	10	10	10	10	
	Ics % <sup>(1)</sup>		*	*	*	*	*	100	100	75	75	75	75	
Circuit breaker type			GV2P											
Rating			A	01 to 06 0.1 to 1.6	07 2.5	08 4	10 6.3	14 10	16 14	20 18	21 23	22 25	32 32	
Breaking capacity conforming to IEC 60947-2	230/240 V	Icu	kA	*	*	*	*	*	*	*	*	*	*	
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	*	*	*	*	
	400/415 V	Icu	kA	*	*	*	*	*	*	*	*	*	*	
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	*	*	*	*	
	440 V	Icu	kA	*	*	*	*	*	*	100	100	100	100	100
		Ics % <sup>(1)</sup>		*	*	*	*	*	*	50	50	50	50	50
500 V	Icu	kA	*	*	*	*	*	100	100	100	100	100	100	
	Ics % <sup>(1)</sup>		*	*	*	*	*	50	50	50	50	50	50	
690 V <sup>(3)</sup>	Icu = Ics	kA	*	50	50	50	50	50	50	50	50	50	50	
Circuit breaker type			GV2ME											
Rating			A	01 to 06 0.1 to 1.6	07 2.5	08 4	10 6.3	14 10	16 14	20 18	21 23	22 25	32 32	
Cable protection against thermal stress in the event of short-circuit (PVC insulated copper cables)	Minimum c.s.a. protected at 40 °C at Isc max.	1 mm <sup>2</sup>		●	●	●	≤ 10 kA	≤ 6 kA	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	
		1.5 mm <sup>2</sup>		●	●	●	≤ 20 kA	≤ 10 kA	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	<sup>(2)</sup>	
		2.5 mm <sup>2</sup>		●	●	●	●	●	●	●	●	●	●	<sup>(2)</sup>
		4...6 mm <sup>2</sup>		●	●	●	●	●	●	●	●	●	●	●

\* > 100 kA.  
 ● Cable c.s.a. protected.  
 (1) As % of Icu.  
 (2) Cable c.s.a. not protected.  
 (3) With limiter LA9LB920.

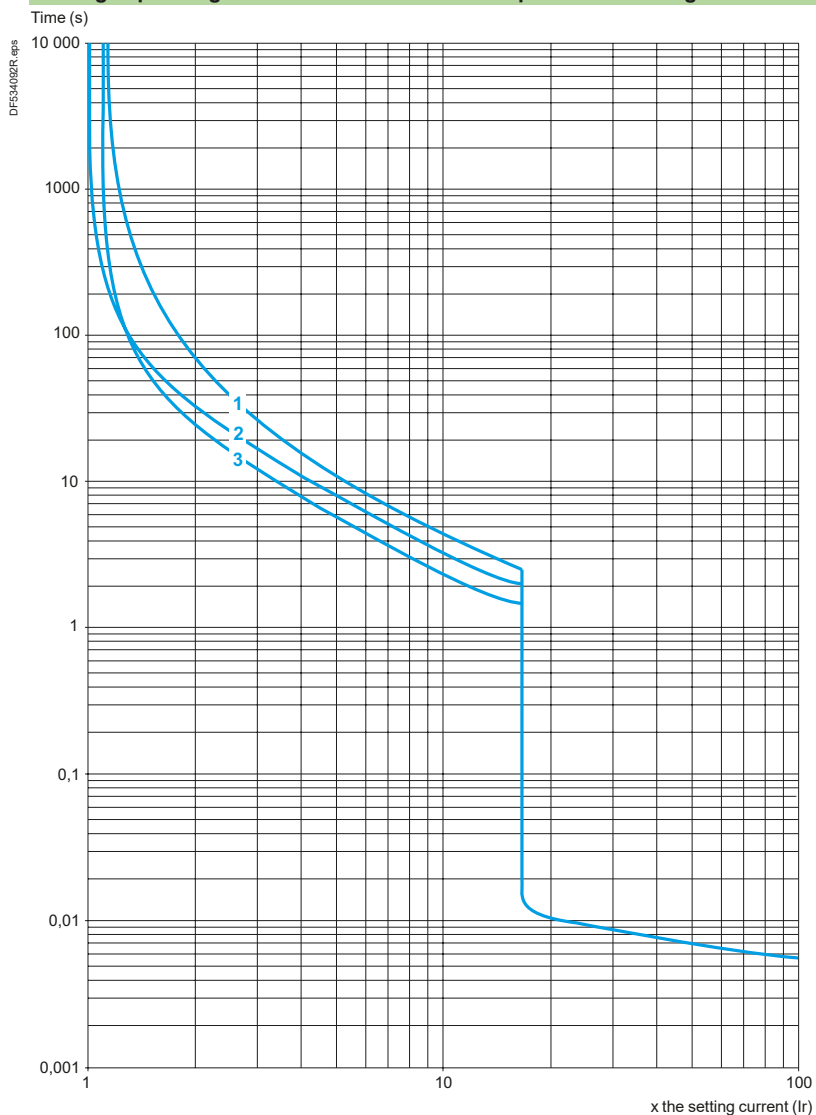
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Curves

#### Tripping curves for GV2L or LE combined with thermal overload relay LRD or LR2K

Average operating times at 20 °C related to multiples of the setting current



- 1 3 poles from cold state
- 2 2 poles from cold state
- 3 3 poles from hot state



Motor circuit breakers

# TeSys Power

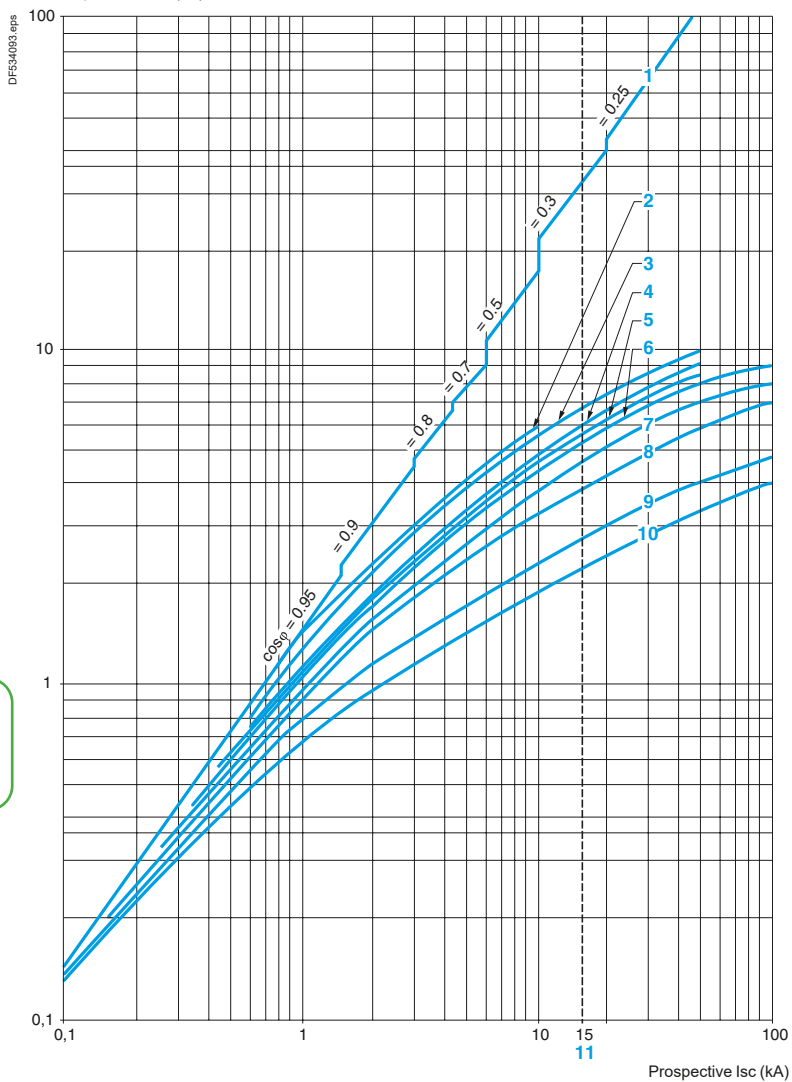
## Deca - Frame 2 Motor circuit breakers - Magnetic Curves

### Current limitation on short-circuit for GV2L and GV2LE only (3-phase 400/415 V)

#### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$

Limited peak current (kA)



1 Maximum peak current

2 32 A

3 25 A

4 18 A

5 14 A

6 10 A

7 6.3 A

8 4 A

9 2.5 A

10 1.6 A

11 Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

# TeSys Power

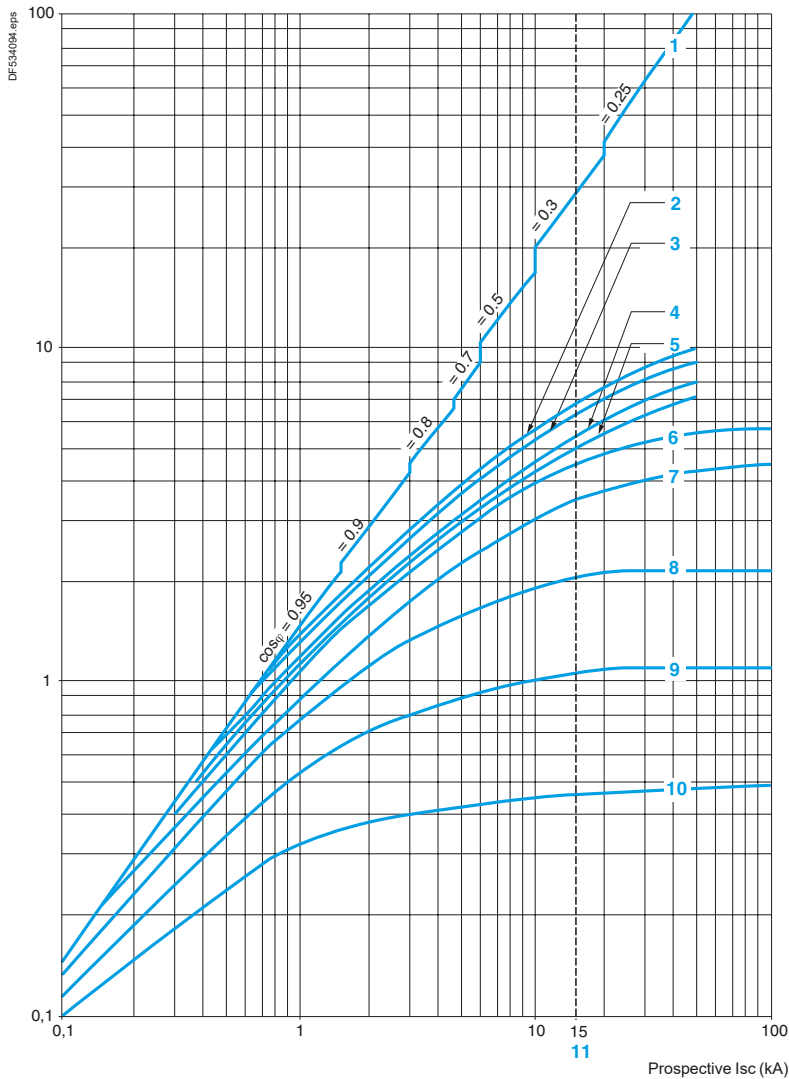
## Deca - Frame 2 Motor circuit breakers - Magnetic Curves

### Current limitation on short-circuit for GV2L and GV2LE + thermal overload relay LRD or LR2K (3-phase 400/415 V)

#### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$

Limited peak current (kA)



1 Maximum peak current

2 32 A

3 25 A

4 18 A

5 14 A

6 10 A

7 6.3 A

8 4 A

9 2.5 A

10 1.6 A

11 Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

# TeSys Power

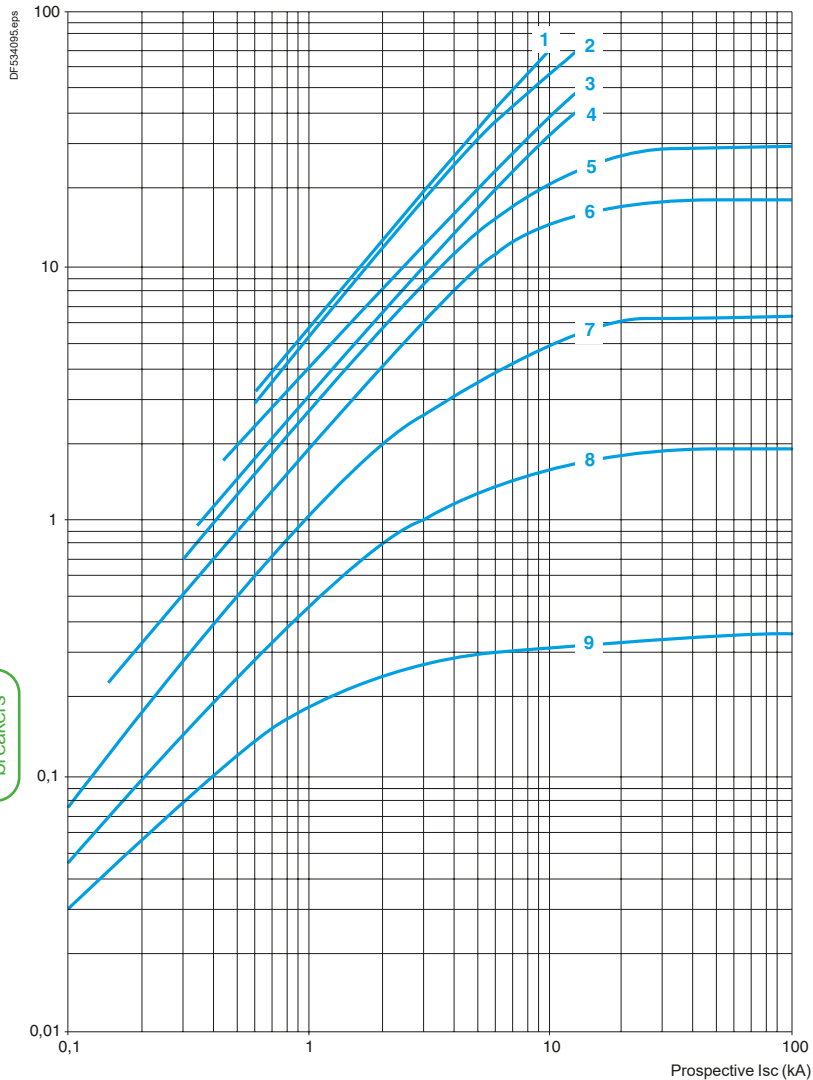
## Deca - Frame 2 Motor circuit breakers - Magnetic Curves

### Thermal limit on short-circuit for GV2LE only

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of I<sup>2</sup>dt = f (prospective I<sub>sc</sub>) at 1.05 U<sub>e</sub> = 435 V

Sum of I<sup>2</sup>dt (kA<sup>2</sup>s)



- 1 32 A
- 2 25 A
- 3 18 A
- 4 14 A
- 5 10 A
- 6 6.3 A
- 7 4 A
- 8 2.5 A
- 9 1.6 A



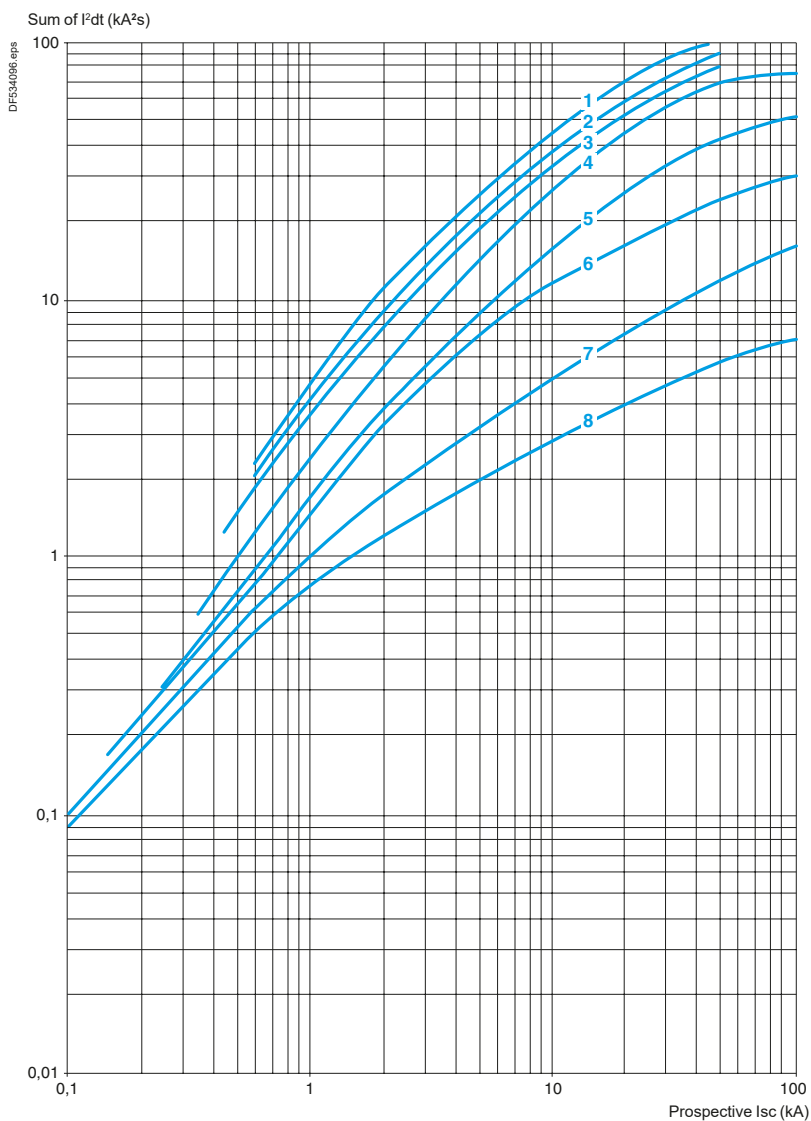
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic Curves

### Thermal limit on short-circuit for GV2L only

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of  $I^2dt = f$  (prospective  $I_{sc}$ ) at 1.05  $U_e = 435$  V



- 1 25 A and 32 A
- 2 18 A
- 3 14 A
- 4 10 A
- 5 6.3 A
- 6 4 A
- 7 2.5 A
- 8 1.6 A

Ref.



Motor  
circuit  
breakers

# TeSys Power

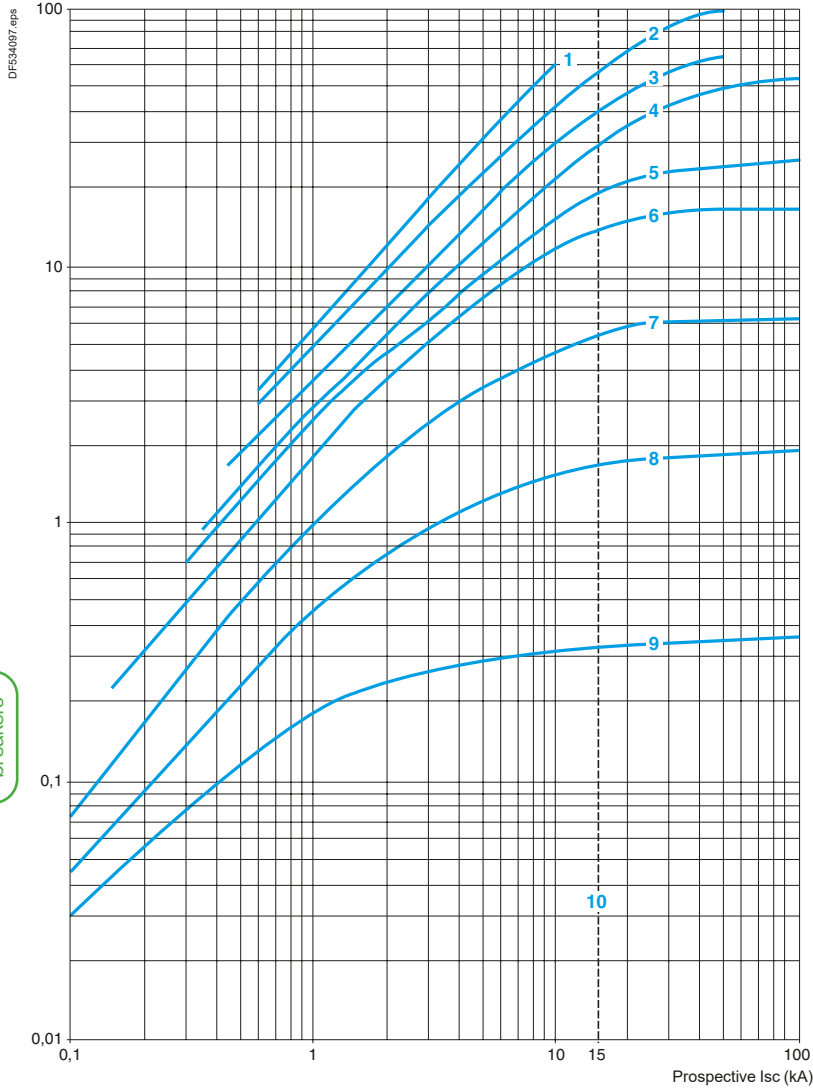
## Deca - Frame 2 Motor circuit breakers - Magnetic Curves

### Thermal limit on short-circuit for GV2L and GV2LE + thermal overload relay LRD or LR2K

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of  $I^2dt = f$  (prospective  $I_{sc}$ ) at 1.05  $U_e = 435$  V

Sum of  $I^2dt$  (kA<sup>2</sup>s)



- 1 32 A (GV2LE32)
- 2 25 A and 32 A (GV2L32)
- 3 18 A
- 4 14 A
- 5 10 A
- 6 6.3 A
- 7 4 A
- 8 2.5 A
- 9 1.6 A
- 10 Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

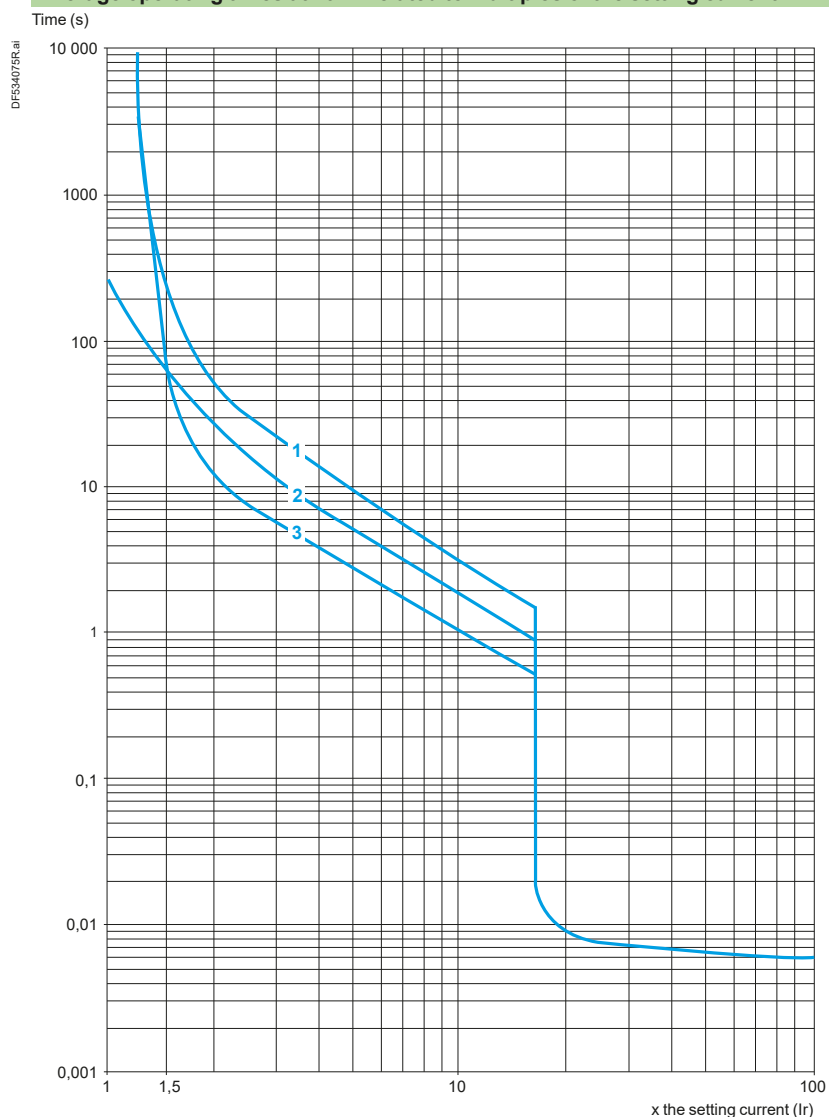
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Curves

#### Thermal-magnetic tripping curves for GV2ME, GV2RT and GV2P

Average operating times at 20 °C related to multiples of the setting current



- 1 3 poles from cold state
- 2 2 poles from cold state
- 3 3 poles from hot state

Ref.



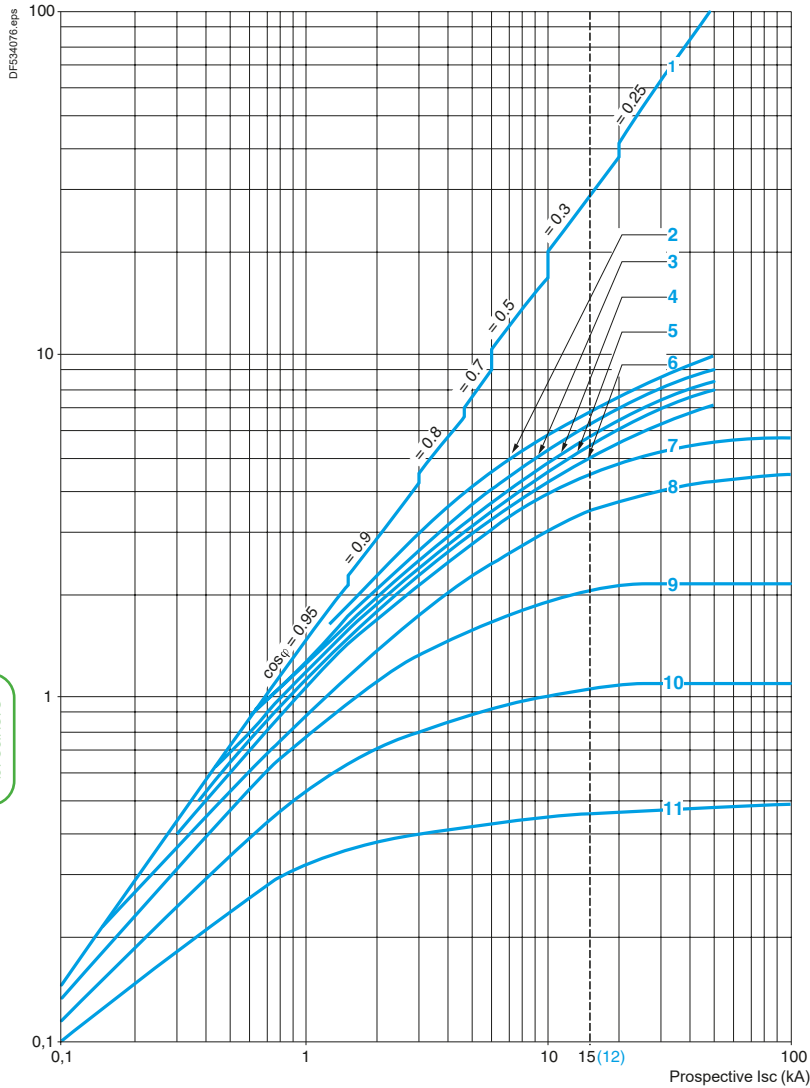
Motor  
circuit  
breakers

#### Current limitation on short-circuit for GV2ME, GV2RT and GV2P (3-phase 400/415 V)

##### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$

Limited peak current (kA)



1 Maximum peak current

2 24 - 32 A

3 20 - 25 A

4 17 - 23 A

5 13 - 18 A

6 9 - 14 A

7 6 - 10 A

8 4 - 6.3 A

9 2.5 - 4 A

10 1.6 - 2.5 A

11 1 - 1.6 A

12 Limit of rated ultimate breaking capacity on short-circuit of GV2ME (14, 18, 23 and 25 A ratings)

# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

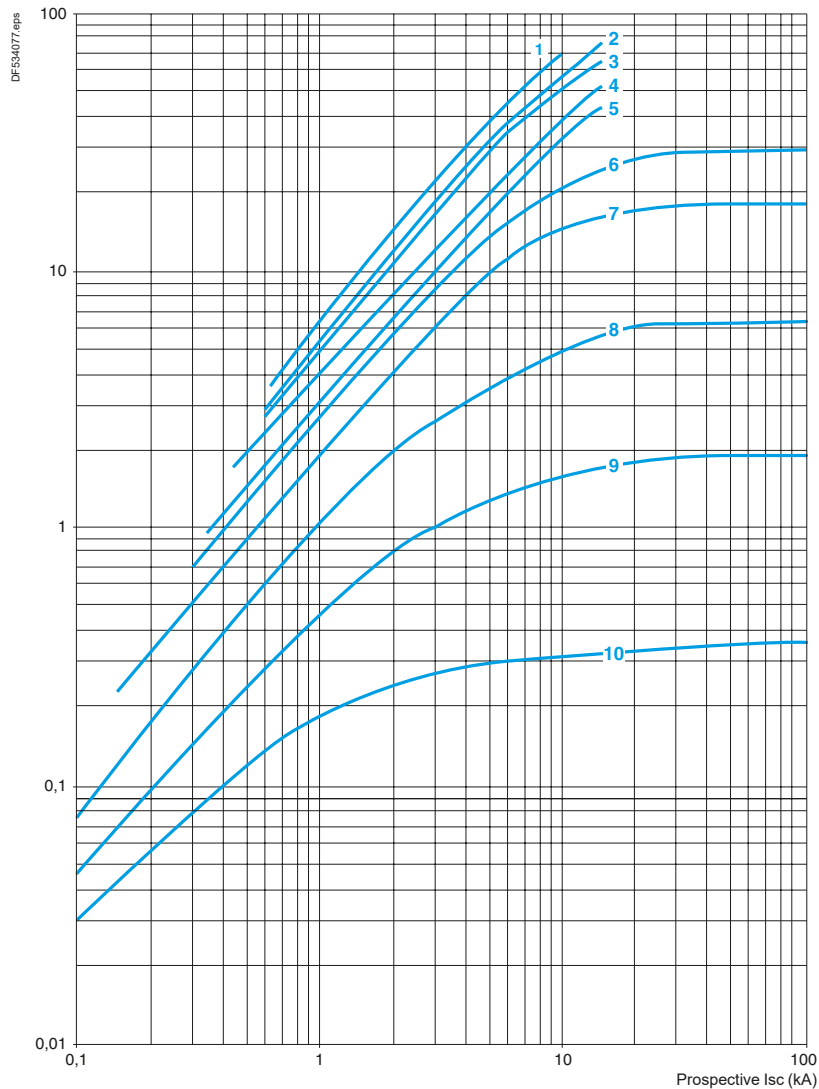
### Curves

#### Thermal limit on short-circuit for GV2ME and GV2RT

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of I<sup>2</sup>dt = f (prospective I<sub>sc</sub>) at 1.05 U<sub>e</sub> = 435 V

Sum of I<sup>2</sup>dt (kA<sup>2</sup>s)



- 1 24 - 32 A
- 2 20 - 25 A
- 3 17 - 23 A
- 4 13 - 18 A
- 5 9 - 14 A
- 6 6 - 10 A
- 7 4 - 6.3 A
- 8 2.5 - 4 A
- 9 1.6 - 2.5 A
- 10 1 - 1.6 A

# TeSys Power

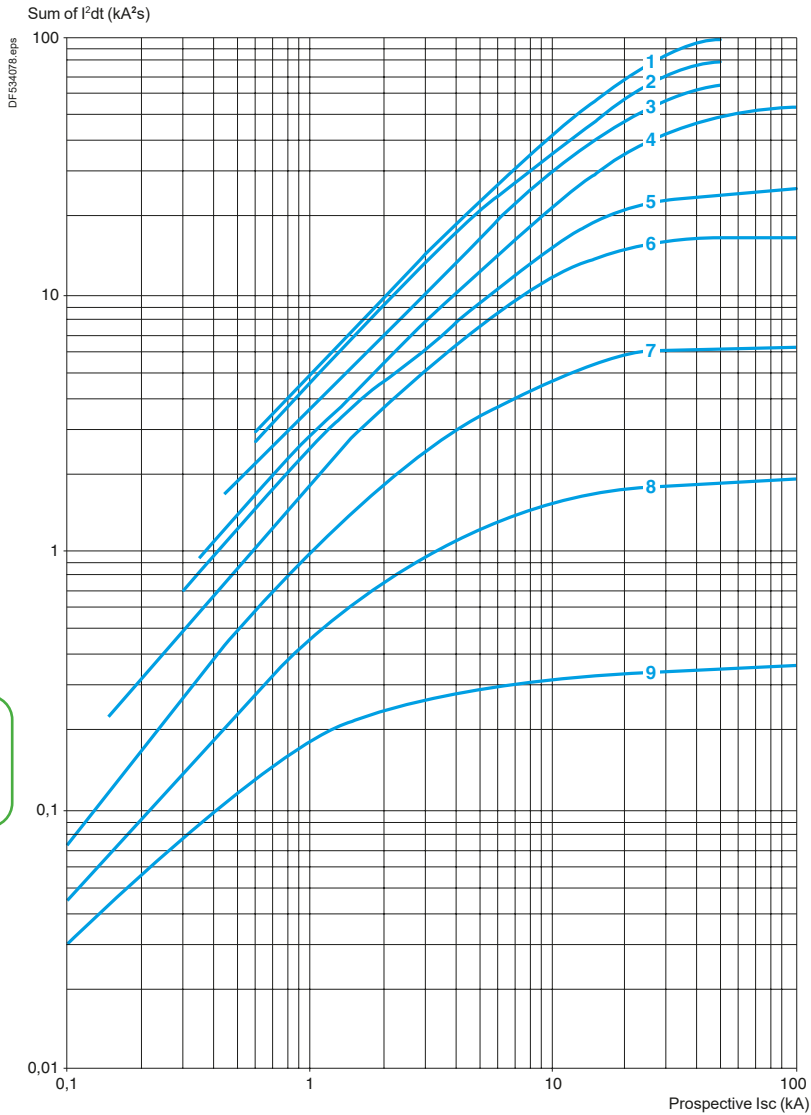
## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Curves

#### Thermal limit on short-circuit for GV2P

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of I<sup>2</sup>dt = f (prospective I<sub>sc</sub>) at 1.05 U<sub>e</sub> = 435 V



- 1 20 - 25 A, 24 - 32 A
- 2 17 - 23 A
- 3 13 - 18 A
- 4 9 - 14 A
- 5 6 - 10 A
- 6 4 - 6.3 A
- 7 2.5 - 4 A
- 8 1.6 - 2.5 A
- 9 1 - 1.6 A

# TeSys Power

## Electric trips for Deca - Frame 2 Motor circuit breakers

### Characteristics

Characteristics of GV2 electric trips					
Type of trip			GVAU●●● MN undervoltage trip	GVAX●●● MN undervoltage trip for GV2ME - safety device for dangerous machines	GVAS●●● MX shunt trip
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690	500	690
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	V	600	-	600
Operational voltage (Ue)	Conforming to IEC 60947-1	V	0.85...1.1 Uc	0.85...1.1 Uc	0.7...1.1 Uc
Drop-out voltage		V	0.7...0.35 Uc	0.7...0.35 Uc	0.75...0.2 Uc
Inrush consumption	~ ≡≡≡	VA	12	12	14
Sealed consumption	~ ≡≡≡	VA	3.5	3.5	5
Operating time	Conforming to IEC 60947-1	ms	From the moment the voltage reaches its operational value until opening of the circuit breaker. 10...15		
On-load factor			100 %		
Cabling (screw clamp connection)	Number of conductors		2 or 4		
	Solid cable	mm <sup>2</sup>	1...2.5		
	Flexible cable without cable end	mm <sup>2</sup> AWG	0.75...2.5		
	Flexible cable with cable end	mm <sup>2</sup>	0.75...2.5		
Tightening torque		N.m	1.4 max		
Mechanical durability (C.O.: Close - Open)		C.O.	30000 (GV2ME and GV2P)		

Ref.



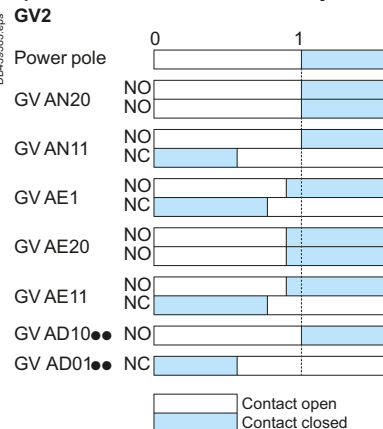
Motor  
circuit  
breakers

Type of contacts			Instantaneous auxiliary GVAN, GVAD							Fault signalling GVAD, GVAM11 <sup>(1)</sup>				Instantaneous auxiliary GVAE			
Rated insulation voltage (Ui) (associated insulation coordination)	Conforming to IEC 60947-1	V	690							690				250 (690 in relation to main circuit)			
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	V	600							300				300			
Conventional thermal current (Ith)	Conforming to IEC 60947-5-1	A	6							2.5				2.5			
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1	A	5							1				1			
Mechanical durability (C.O.: Close - Open)		C.O.	100 000							1000				100 000			
Operational power and current conforming to IEC 60947-5-1. a.c. operation			AC-15/100 000 C.O.							AC-14/1000 C.O.				AC-15/100 000 C.O.			
	<b>Rated operational voltage (Ue)</b>	V	48	110	230	380	440	500	690	24	48	110	230	24	48	110	230
Operation	Operational power, normal conditions	VA	300	500	720	850	650	500	414	36	48	72	72	48	60	120	120
	Occasional breaking and making capacities, abnormal conditions	kVA	3	7	13	15	13	12	9	0.22	0.3	0.45	0.45	0.48	0.6	1.27	2.4
	Rated operational current (Ie)	A	6	4.5	3.3	2.2	1.5	1	0.6	1.5	1	0.5	0.3	2	1.25	1	0.5
Operational power and current conforming to IEC 60947-5-1. d.c.			DC-13/100 000 C.O.							DC-13/1000 C.O.				DC-13/100 000 C.O.			
	<b>Rated operational voltage (Ue)</b>	V	24	48	60	110	240	-	-	24	48	60	-	24	48	60	-
Operation	Operational power, normal conditions	W	140	240	180	140	120	-	-	24	15	9	-	24	15	9	-
	Occasional breaking and making capacities, abnormal conditions	W	240	360	240	210	180	-	-	100	50	50	-	100	50	50	-
	Rated operational current (Ie)	A	6	5	3	1.3	0.5	-	-	1	0.3	0.15	-	1	0.3	0.15	-
Low power switching reliability of contact			GVAE: Number of failures for "n" million operating cycles (17 V-5 mA): = 10 <sup>-6</sup>														
Minimum operational conditions		V	17														
		mA	5														
Short-circuit protection			By <b>GB2CB●●</b> circuit breaker (rating according to operational current for Ue ≤ 415 V) or by gG fuse 10 A max										<b>GB2CB06</b> or gG fuse 10 A max				
Cabling, screw clamp terminals	Number of conductors		1							2							
	Solid cable		mm <sup>2</sup> 1...2.5							1...2.5							
	Flexible cable without cable end		mm <sup>2</sup> 0.75...2.5							0.75...2.5							
	Flexible cable with cable end		mm <sup>2</sup> 0.75...1.5							0.75...1.5							
	Tightening torque		N.m 1.4 max							1.4 max							
Cabling, spring terminal connections			GVAN only														
		Flexible cable without cable end	mm <sup>2</sup> 0.75...2.5							0.75...1.5							

Ref.

Motor circuit breakers

#### Operation of instantaneous auxiliary contacts



(1) For application example of fault signalling contact and short-circuit signalling GVACT.  
 (2) Add an RC circuit type **LA4D** to the load terminals.

#### Operation of fault signalling contacts

**GVAM11**  
 Change of state following tripping on short-circuit.

**GVAD10●● and GVAD01●●**  
 Change of state following tripping on short-circuit, overload or undervoltage.



# TeSys Power

## Accessories for Deca - Frame 2 Motor circuit breakers

### Characteristics

Characteristics of 3-pole busbars GV2G●●●						
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	<b>V</b>	<b>GV2G●●●</b> 690			
Conventional thermal current (Ith)	Conforming to IEC 60439-1	<b>A</b>	63			
Rated operational current (Ie)		<b>A</b>	63			
Permissible peak current (I peak)		<b>kA</b>	11			
Permissible thermal limit (I²t)		<b>kA²s</b>	104			
Degree of protection	Conforming to IEC 60529		IP 20			
Terminal block			Yes			
Characteristics of terminal blocks GV2G05 and GV1G09 (for GV2ME and GV2P)						
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	<b>V</b>	690			
Conventional thermal current (Ith)	Conforming to IEC 60439-1	<b>A</b>	63			
Rated operational current (Ie)		<b>A</b>	63 115			
Degree of protection	Conforming to IEC 60529		IP 20			
Connection	Solid cable	<b>mm²</b>	1 x 1.5 to 25 or 2 x 1.5 to 6			
	Flexible cable without cable end	<b>mm²</b>	1 x 1.5 to 16 or 2 x 1.5 to 4			
	Flexible cable with cable end	<b>mm²</b>	1 x 1.5 to 16 or 2 x 1.5 to 4			
	Flexible or solid cable AWG		1 AWG 4			
Tightening torque	Connector	<b>N.m</b>	2.2			
	Screw clamp terminals	<b>N.m</b>	1.7			
Characteristics of current limiters (GV2ME and GV2P)						
<b>Type</b>			<b>GV1L3</b>	<b>LA9LB920</b>		
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	<b>V</b>	690	690		
Conventional thermal current (Ith)	Conforming to IEC 60947-1	<b>A</b>	63	63		
Rated operational current (Ie)		<b>A</b>	32	32		
Operating threshold	rms current	<b>A</b>	1500 (non adjustable threshold)	1000 (non adjustable threshold)		
Connection			<b>1 conductor</b>	<b>2 conductors</b>	<b>1 conductor</b>	<b>2 conductors</b>
	Solid cable	<b>mm²</b>	1.5...25	1.5...10	1.5...25	1.5...10
	Flexible cable without cable end	<b>mm²</b>	1.5...25	2.5...10	1.5...25	1.5...10
	Flexible cable with cable end	<b>mm²</b>	1.5...16	1.5... 4	1.5...16	1.5... 4
Tightening torque		<b>N.m</b>	2.2			

Ref.



Motor circuit breakers

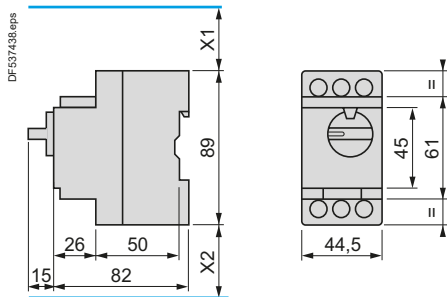
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Dimensions and mounting

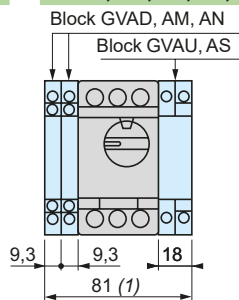
#### GV2L

##### Dimensions



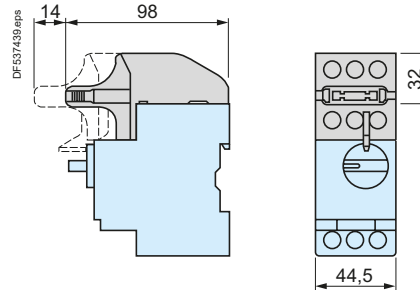
X1 Electrical clearance = 40 mm for  $U_e \leq 415$  V, or 80 mm for  $U_e = 440$  V, or 120 mm for  $U_e = 500$  and 690 V.  
X2 = 40 mm.

#### GVAD, AM, AN, AU, AS



(1) Maximum.

#### GV2AK00



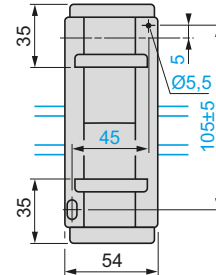
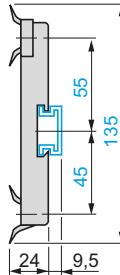
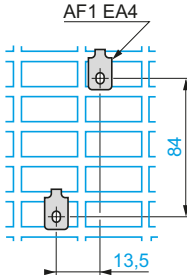
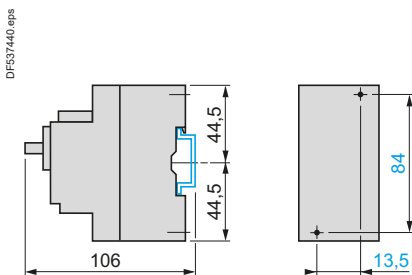
##### Mounting

On rail AM1DE200, AM1ED200 (35 x 15)

Panel mounted

On pre-slotted mounting plate AM1PA

##### Adapter plate GK2AF01

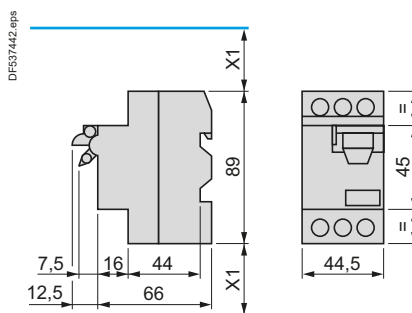


##### 7.5 mm height compensation plate GV1F03



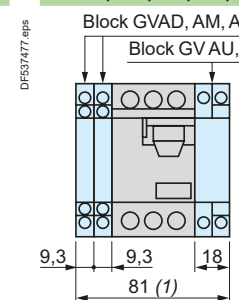
#### GV2LE

##### Dimensions



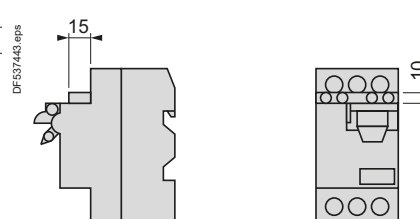
X1 Electrical clearance = 40 mm for  $U_e \leq 690$  V.

#### GVAD, AM, AN, AU, AS



(1) Maximum.

#### GVAE



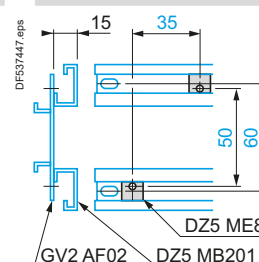
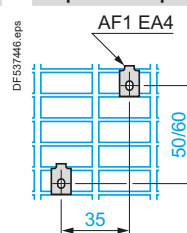
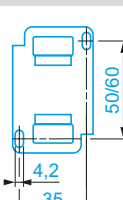
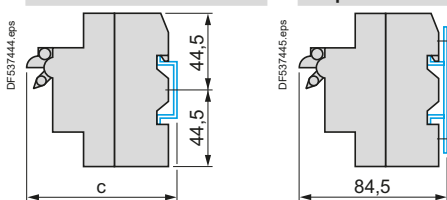
##### Mounting

On 35 mm rail

On panel with adapter plate GV2AF02

On pre-slotted plate AM1PA

On rails DZ5MB201



c = 80 on AM1DP200 (35 x 7.5) and 88 on AM1DE200, ED200 (35 x 15)

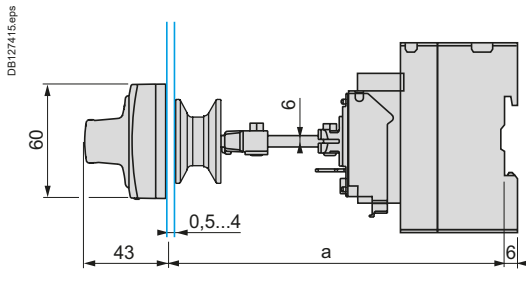
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

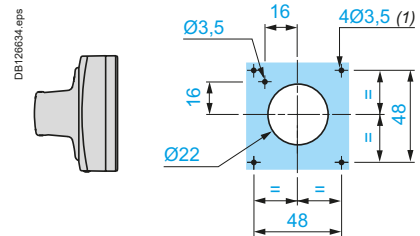
### Dimensions and mounting

#### Mounting

##### Mounting of external operator GV2APN01, GV2APN02 or GV2APN04 for motor circuit breakers GV2L

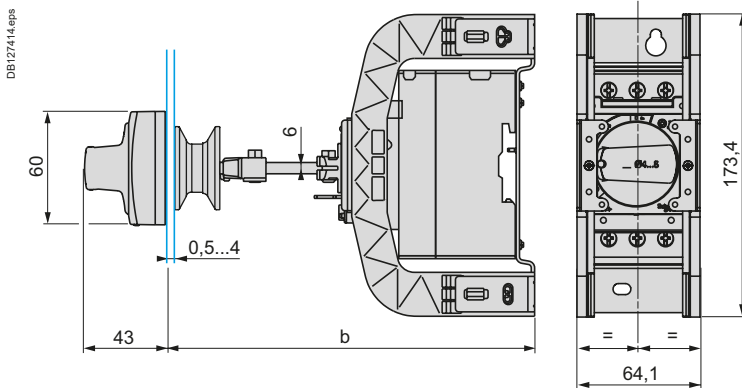


##### Door cut-out

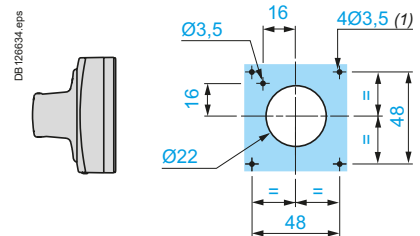


(1) For IP65 only.

##### Mounting of external operator GVAPH02 for motor circuit breakers GV2L



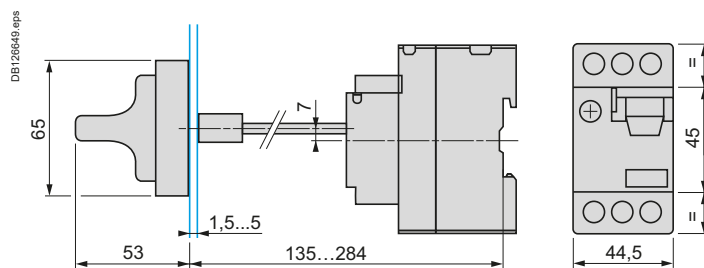
##### Door cut-out



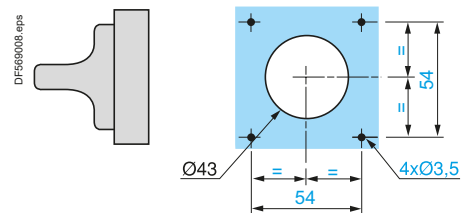
(1) For IP65 only.

	a		b	
	Mini	Maxi	Mini	Maxi
GV2APN●●	140	250		
GV2APN●● + GVAPH02			151	250
GV2APN●● + GVAPK11	250	434	-	-
GV2APN●● + GVAPH02 + GVAPK11	-	-	250	445

##### Mounting of external operator GV2AP03 for GV2LE



##### Door cut-out



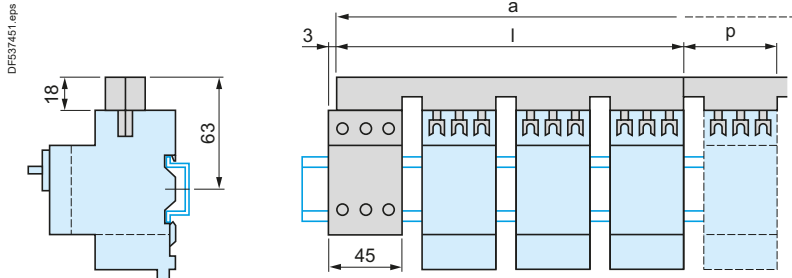
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Magnetic

### Dimensions and mounting

#### GV2LE

Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05



	l	p
GV2G445 (4 x 45 mm)	179	45
GV2G454 (4 x 54 mm)	206	54
GV2G472 (4 x 72 mm)	260	72

Ref.



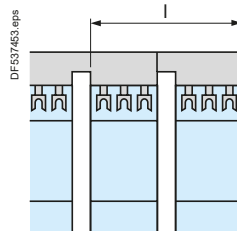
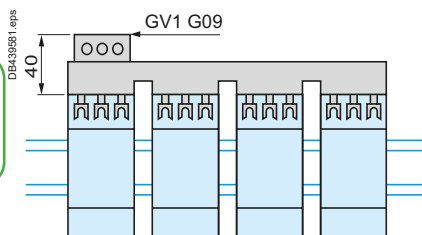
	a			
Number of tap-offs	5	6	7	8
GV2G445	224	269	314	359
GV2G454	260	314	368	422
GV2G472	332	404	476	548

#### Sets of busbars GV2LE

Sets of busbars GV2G●●● with term. block GV1G09

Sets of busbars GV2G245, GV2G254, GV2GR272

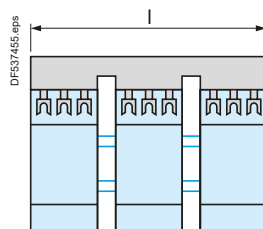
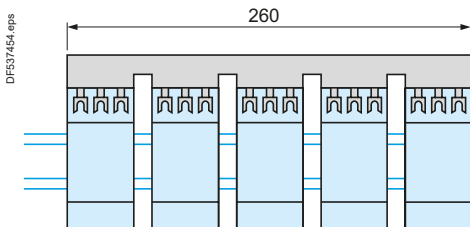
Motor circuit breakers



	l
GV2G245 (2 x 45 mm)	89
GV2G254 (2 x 54 mm)	98
GV2G272 (2 x 72 mm)	116

#### Set of busbars GV2G554

Sets of busbars GV2G345 and GV2G354



	l
GV2G345 (3 x 45 mm)	134
GV2G354 (3 x 54 mm)	152

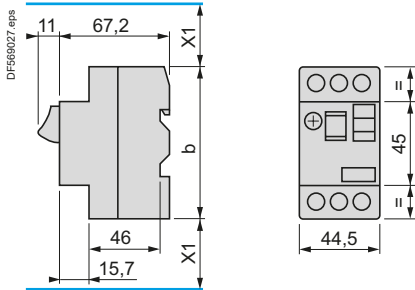
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

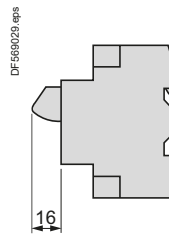
### Dimensions and mounting

#### Dimensions

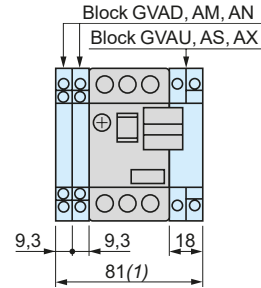
##### GV2ME



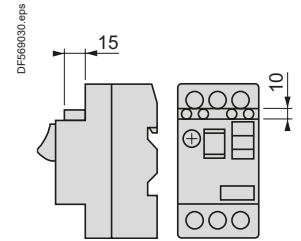
##### GVAX



##### GVAD, AM, AN, AU, AS, AX



##### GVAE



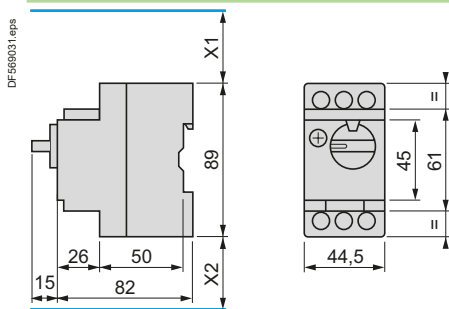
**b**

GV2ME●●	89
GV2ME●●3	101

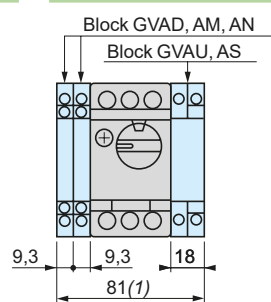
(1) Maximum.

X1 Electrical clearance = 40 mm for  $U_e \leq 690$  V

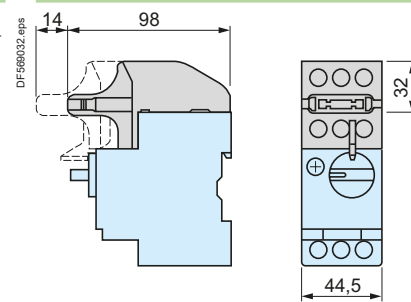
##### GV2P



##### GVAD, AM, AN, AU, AS



##### GV2AK00

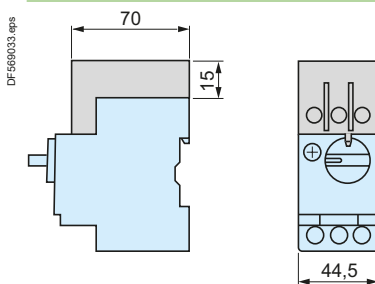


(1) Maximum.

X1 Electrical clearance = 40 mm for  $U_e \leq 415$  V, or 80 mm for  $U_e = 440$  V, or 120 mm for  $U_e = 500$  and 690 V

X2 = 40 mm

##### GV2GH7



# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Dimensions and mounting

#### Mounting

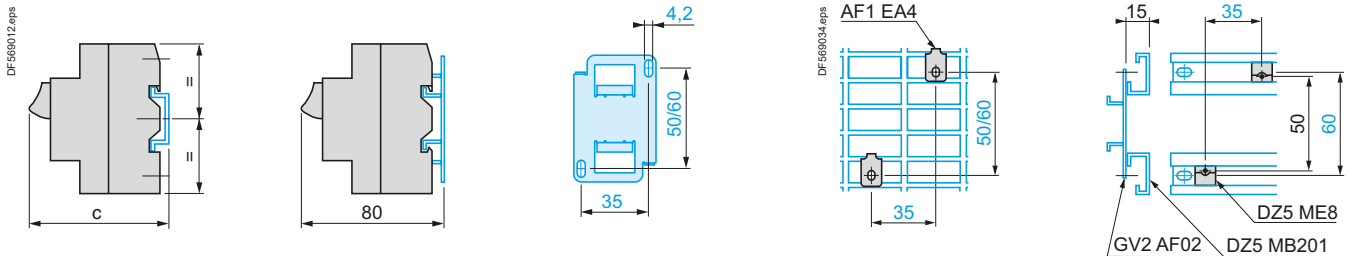
##### GV2ME

On 35 mm rail

On panel with adapter plate GV2AF02

On pre-slotted plate AM1PA

On rails DZ5MB201



$c = 78.5$  on AM1 DP200 (35 x 7.5)  
 $c = 86$  on AM1 DE200, ED200 (35 x 15)

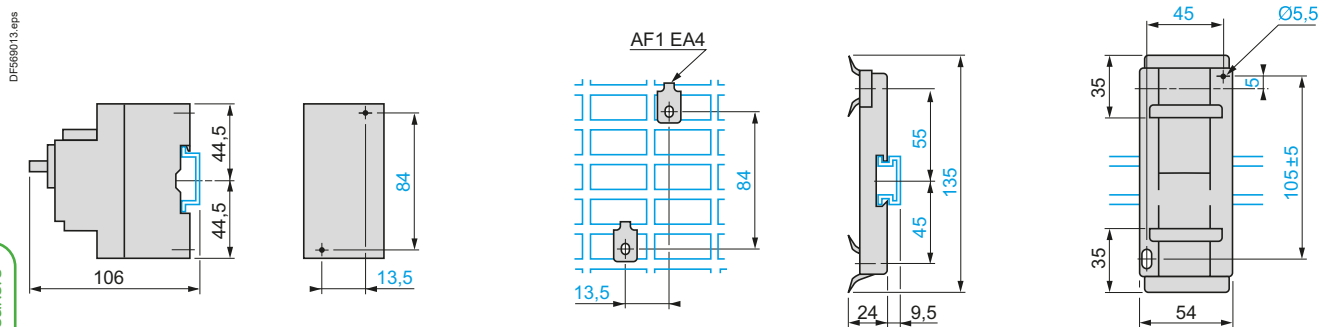
##### GV2P

On rail AM1DE200, ED200 (35 x 15)

Panel mounted

On pre-slotted plate AM1PA

Adapter plate GK2AF01



Ref.



Motor circuit breakers

#### Dimensions

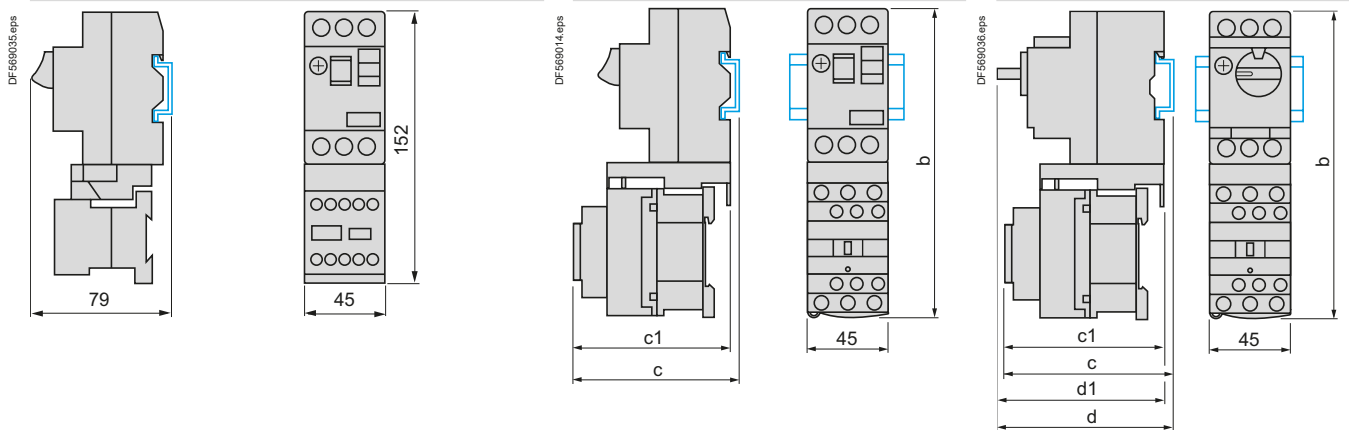
##### GV2AF01

Combination GV2ME + k contactor

##### GV2AF3

Combination GV2ME + d contactor

Combination GV2P + d contactor



GV2ME +	LC1D09 ...D18	LC1D25 and D32
b	176.4	186.8
c1	94.1	100.4
c	99.6	105.9

GV2P +	LC1D09 ...D18	LC1D25 and D32
b	176.4	186.8
c1	100.1	106.4
c	105.6	111.9
d1	95	95
d	100.5	100.5

# TeSys Power

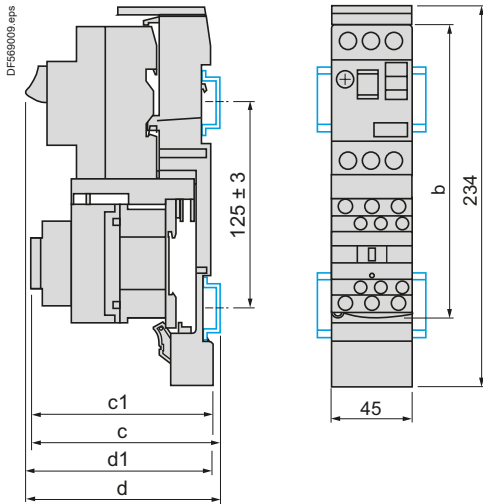
## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Dimensions and mounting

#### Dimensions

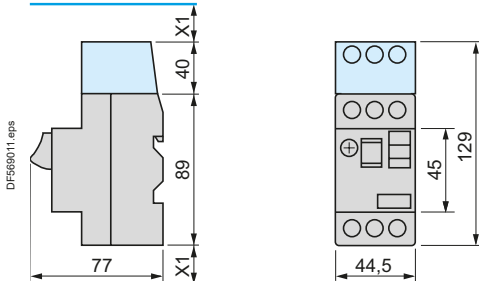
##### GV2AF4 + LAD311

##### Combination GV2ME + d contactor



GV2ME +	LC1D09...D18	LC1D25 and D32
<b>b</b>	176.4	186.8
<b>c1</b>	130.1	136.4
<b>c</b>	135.6	141.9
<b>d1</b>	107	107
<b>d</b>	112.5	112.5

##### GV2ME + GV1L3 (current limiter)



X1 = 10 mm for Ue = 230 V  
or 30 mm for 230 V < Ue ≤ 690 V

##### 7.5 mm height compensation plate GV1F03



Ref.



Motor  
circuit  
breakers

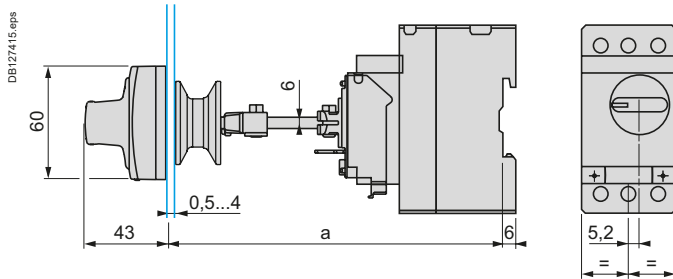
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

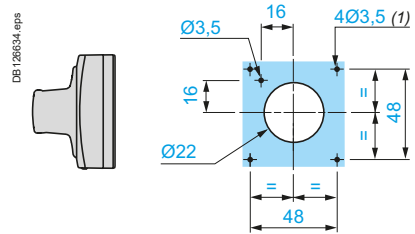
### Dimensions and mounting

#### Mounting

##### Mounting of external operator GV2APN01, GV2APN02 or GV2APN04 for motor circuit breakers GV2P

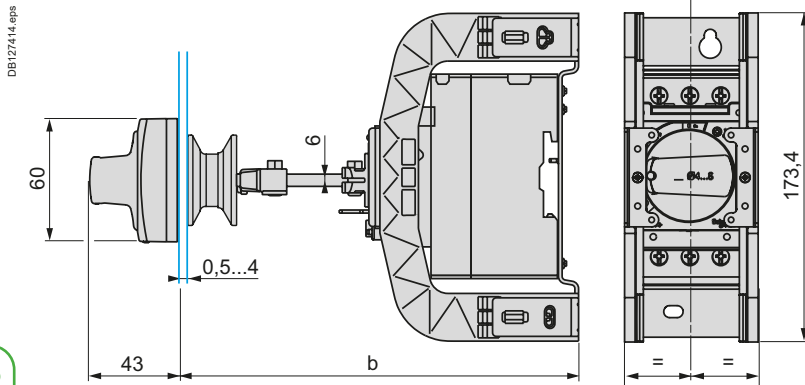


##### Door cut-out

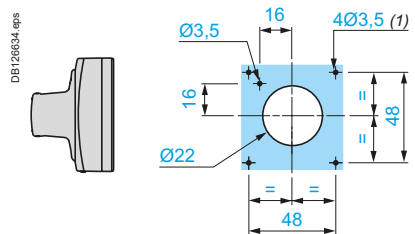


(1) For IP65 only.

##### Mounting of external operator GVAPH02 for motor circuit breakers GV2P



##### Door cut-out



(1) For IP65 only.

Ref.

Motor circuit breakers

	a		b	
	Mini	Maxi	Mini	Maxi
GV2APN●●	140	250		
GV2APN●● + GVAPH02			151	250
GV2APN●● + GVAPK11	250	434	-	-
GV2APN●● + GVAPH02 + GVAPK11	-	-	250	445



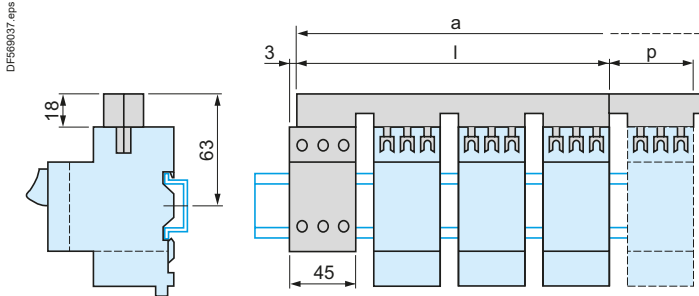
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Dimensions and mounting

#### GV2ME, GV2P

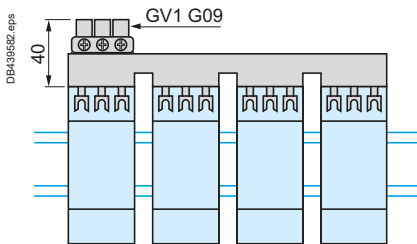
Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05



	l	p
GV2G445 (4 x 45 mm)	179	45
GV2G454 (4 x 54 mm)	206	54
GV2G472 (4 x 72 mm)	260	72

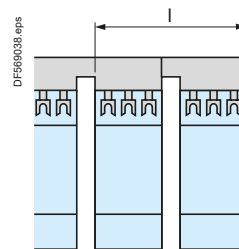
Number of tap-offs	a			
	5	6	7	8
GV2G445	224	269	314	359
GV2G454	260	314	368	422
GV2G472	332	404	476	548

#### Sets of busbars GV2G●●● with terminal block GV1G09

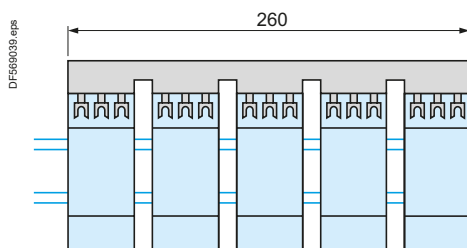


	l
GV2G245 (2 x 45 mm)	89
GV2G254 (2 x 54 mm)	98
GV2G272 (2 x 72 mm)	116

#### Sets of busbars GV2G245, GV2G254, GV2G272

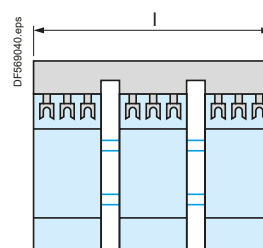


#### Sets of busbars GV2G554



	l
GV2G345 (3 x 45 mm)	134
GV2G354 (3 x 54 mm)	152

#### Sets of busbars GV2G345 and GV2G354



Ref.

Motor circuit breakers

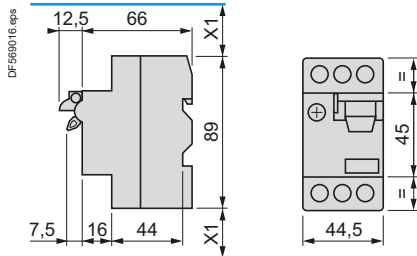
# TeSys Power

## Deca - Frame 2 Motor circuit breakers - Thermal-magnetic

### Dimensions and mounting

#### GV2RT

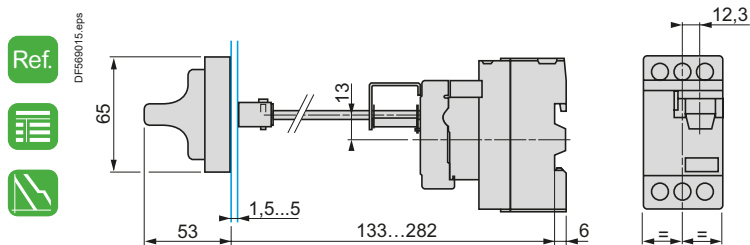
##### Dimensions



X1: Electrical clearance = 40 mm for  $U_e < 690$  V

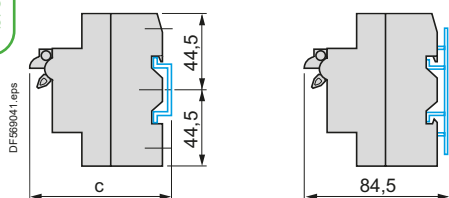
##### Mounting

##### Mounting of external operator GV2AP03

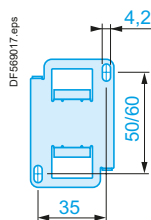


Motor circuit breakers

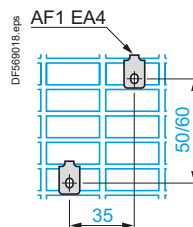
##### On 35 mm rail



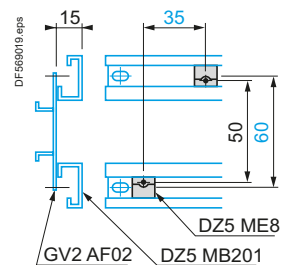
##### On panel with adapter plate GV2AF02



##### On pre-slotted plate AM1PA



##### On rails DZ5MB



$c = 80$  on AM1DP200 (35 x 7.5)  
 $c = 88$  on AM1DE200, ED200 (35 x 15)

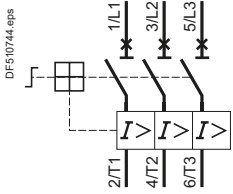
# TeSys Power

## Deca - Frame 2 Motor circuit breakers

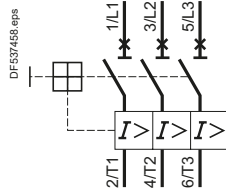
### Schemes

#### Schemes

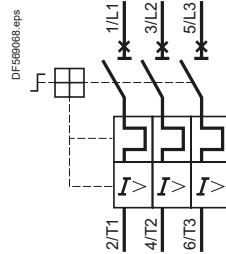
##### GV2L●●



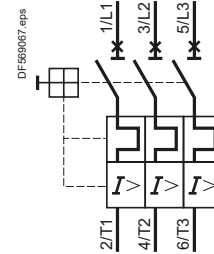
##### GV2LE●●



##### GV2P●●



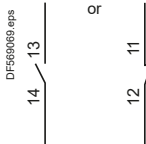
##### GV2ME●● and GV2RT



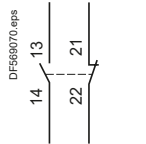
#### Front mounting add-on contact blocks

##### Instantaneous auxiliary contacts

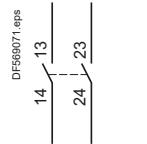
##### GVAE1



##### GVAE11



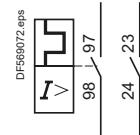
##### GVAE20



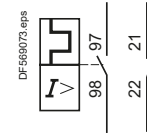
#### Front mounting add-on contact blocks

##### Instantaneous auxiliary contacts and fault signalling contacts

##### GVAED101



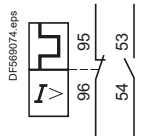
##### GVAED011



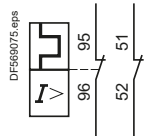
#### Side mounting add-on contact blocks

##### Instantaneous auxiliary contacts and fault signalling contacts

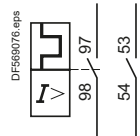
##### GVAD0110



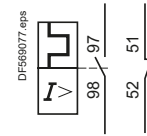
##### GVAD0101



##### GVAD1010

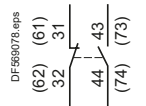


##### GVAD1001

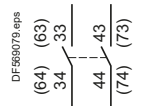


#### Instantaneous auxiliary contacts

##### GVAN11

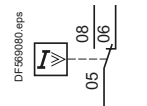


##### GVAN20



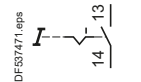
#### Short-circuit signalling contacts

##### GVAM11

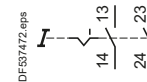


#### Start-Stop signalling contact blocks

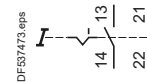
##### GK2AX10



##### GK2AX20

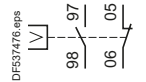


##### GK2AX50



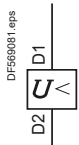
#### Fault signalling contact blocks

##### GK2AX52

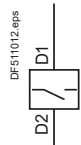


#### Voltage trips

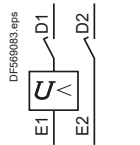
##### GVAU●●●



##### GVAS●●●

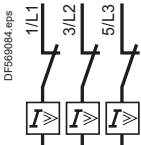


##### GVAX●●●

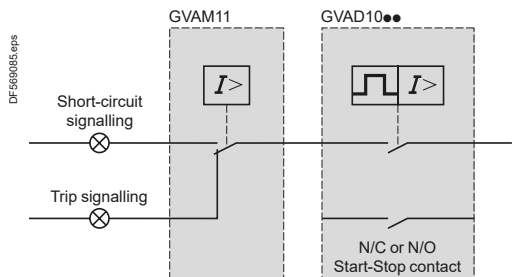


#### Current limiter

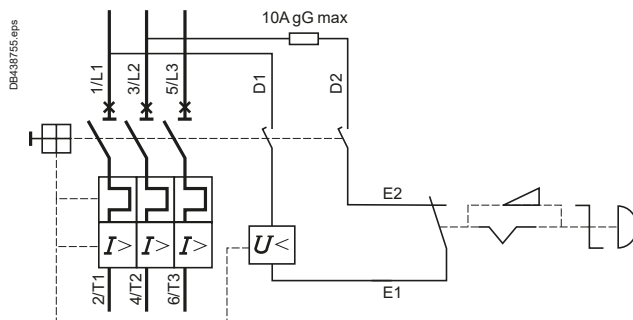
##### GV1L3



#### Use of fault signalling contact and short-circuit signalling contact



#### Connection of undervoltage trip for dangerous machines (conforming to INRS) on GV2ME only





# TeSys Deca - Frame 3 5 to 45 kW



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 3 Motor circuit breakers

### Characteristics

Environment				
Circuit breaker type			GV3L	GV3P
Conforming to standards			IEC/EN 60947-4-1 IEC/EN 60947-2 UL 60947-4-1 CSA C22.2 n° 60947-4-1	IEC/EN 60947-4-1 IEC/EN 60947-2 UL 60947-4-1 CSA C22.2 n° 60947-4-1
Product certifications			CCC, EAC, BV, LROS, DNV-GL, ABS, UL <sup>(1)</sup> , CSA <sup>(2)</sup> , UKCA	CCC, UL, CSA, EAC, ATEX, BV, LROS, DNV-GL, ABS, UKCA
Climatic withstand			According to IACS E10	
Degree of protection (front face)	Conforming to IEC 60529	Open mounted	Against direct finger contact: IP20	
		In enclosure	-	<b>GV3PC01</b> and <b>GV3PC02</b> : IP55
Shock resistance	Conforming to IEC 60068-2-27		On: 15 gn -11 ms (On: 5 gn -11 ms for GV3L73, GV3L80, GV3P73, GV3P80) Off: 30 gn -11 ms	
Vibration resistance <sup>(3)</sup>	Conforming to IEC 60068-2-6		4 gn (5...300 Hz)	
Ambient air temperature	Storage		°C	-40...+80
	Operation	Open mounted	°C	-20...+60 <sup>(3)</sup>
Temperature compensation		In enclosure	Open mounted	°C
	In enclosure		°C	-
Flame resistance	Conforming to IEC 60695-2-11		°C	960
	Maximum operating altitude		m	3000
Suitable for isolation	Conforming to IEC 60947-1 § 7-1-6			Yes
Resistance to mechanical impact			J	-
				10 IK09 (in enclosure)
Sensitivity to phase failure			Yes, conforming to IEC 60947-4-1 § 8-2-1-5-2 for GV3P	
Technical characteristics				
Circuit breaker type			GV3L	GV3P
Utilisation category	Conforming to IEC 60947-2		A	-
	Conforming to IEC 60947-4-1		-	AC-3
Rated operational voltage (U <sub>e</sub> )	Conforming to IEC 60947-2		V	690
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947-2		V	690
Rated voltage	Conforming to UL 60947-4-1, CSA C 22.2 n° 60947-4-1		V	600
Rated operational frequency	Conforming to IEC 60947-4-1 UL, CSA		Hz	50/60
Rated impulse withstand voltage (U <sub>imp</sub> )	Conforming to IEC 60947-2		kV	6
Total power dissipated per pole			W	8
Mechanical durability (C.O.: Close, Open)			C.O.	50 000
Electrical durability for AC-3 duty	415 V I <sub>n</sub>		C.O.	50 000 (20 000 for GV3L73, GV3P73, GV3L80, GV3P80)
Duty class (maximum operating rate)			C.O./h	25
Maximum conventional rated thermal current (I <sub>th</sub> )			A	-
Rated duty	Conforming to IEC 60947-4-1			13 to 80 Continuous duty
Operating threshold of magnetic trips				14 I max

<sup>(1)</sup> For GV3L25 to 73, may be followed by 6 or 1.

<sup>(2)</sup> For GV3L, GV3L25 to GV3L73 may be followed by 6 or 1 for use in conjunction with certified overload relay.

<sup>(3)</sup> Leave a space of 9 mm between 2 circuit breakers: either an empty space, or side mounting add-on contact blocks. Side by side mounting is possible up to 40 °C.



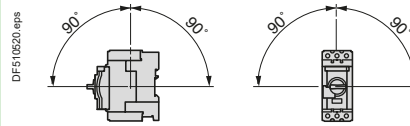
# TeSys Power

## Deca - Frame 3 Motor circuit breakers

### Characteristics

#### Mounting characteristics

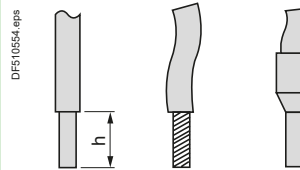
Operating position  
Without derating, in relation to normal vertical mounting plane <sup>(1)</sup>



#### Connection characteristics

##### Connection to screw clamp terminals or spring terminals

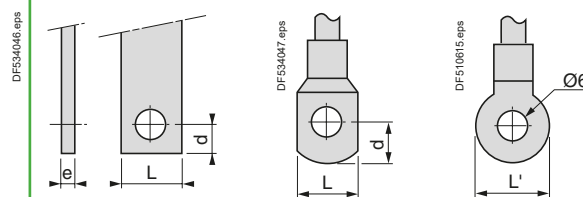
Bare cables



Circuit breaker type			GV3L		GV3P	
Connection to screw clamp terminals <sup>(2)</sup> (Max. number of conductors x c.s.a.)		mm <sup>2</sup>	Min.	Max.	Min.	Max.
	Solid cable	mm <sup>2</sup>	2 x 1	1 x 25 and 1 x 35	2 x 1	1 x 25 and 1 x 35
	Flexible cable without cable end	mm <sup>2</sup>	2 x 1	1 x 25 and 1 x 35	2 x 1	1 x 25 and 1 x 35
	Flexible cable with cable end	mm <sup>2</sup>	2 x 1	1 x 25 and 1 x 35	2 x 1	1 x 25 and 1 x 35
	Tightening torque	N.m	5	5: 25 mm <sup>2</sup> 8: 35 mm <sup>2</sup>	5	5: 25 mm <sup>2</sup> 8: 35 mm <sup>2</sup>

##### Connection by bars or lugs

Bars or lugs



Circuit breaker type			GV3L●●6		GV3P●●6	
Pitch	Without spreaders	mm	17.5			
	With spreaders	mm	-			
Bars or cables with lugs	e	mm	≤ 6			
	L	mm	≤ 13.5			
	L'	mm	≤ 16.5			
	d	mm	≤ 10			
Screws			M6			
	Tightening torque	N.m	6			
Bare cables (copper or aluminium) with connectors	Height (h)	mm	-			
	C.s.a.	mm <sup>2</sup>	-			
	Tightening torque	N.m	-			

- (1) When mounting on a vertical rail, fit a stop to prevent any slippage.
- (2) For motor circuit breakers **GV3P**: BTR hexagon socket head screws, **EverLink**® system. Require use of an insulated Allen key, in compliance with local electrical wiring regulations.
- (3) For cross-sections 1 to 1.5 mm<sup>2</sup>, the use of an **LA9D99** cable end reducer is recommended.

# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Magnetic

### Characteristics

#### Breaking capacity of GV3L

Type			GV3L25	GV3L32	GV3L40	GV3L50	GV3L65	GV3L73	GV3L80	
Breaking capacity of the circuit-breaker only or of the circuit-breaker combined with a thermal overload relay	230/240 V	Icu	kA	100	100	100	100	100	65	65
		Ics % <sup>(1)</sup>		100	100	100	100	100	100	100
400/415 V	Icu	kA	100	100	50	50	50	50	50	50
		Ics % <sup>(1)</sup>		100	100	100	100	100	60	60
440 V	Icu	kA	50	50	50	50	50	50	50	50
		Ics % <sup>(1)</sup>		100	100	100	100	100	60	60
500 V	Icu	kA	12	12	12	12	12	12	12	12
		Ics % <sup>(1)</sup>		50	50	50	50	50	50	50
690 V	Icu	kA	6	6	6	6	6	6	6	6
		Ics % <sup>(1)</sup>		50	50	50	50	50	50	50
Associated fuses (if required) for use with circuit breaker only or circuit breaker combined with a thermal overload relay if Isc > breaking capacity	230/240 V	aM	A	*	*	*	*	*	*	*
		gG	A	*	*	*	*	*	*	*
415 V	aM	A	*	*	*	*	125	125	125	
		gG	A	*	*	*	*	160	160	160
440 V	aM	A	63	80	125	125	125	125	125	
		gG	A	80	100	160	160	160	160	160
500 V	aM	A	63	63	63	63	80	80	80	
		gG	A	80	80	80	80	100	100	100
690 V	aM	A	50	50	50	50	63	63	63	
		gG	A	63	63	63	63	80	80	80
Use of circuit breakers without fuses				Minimum cable length (in metres) limiting the maximum short-circuit current to 35 kA maximum.						
Cable c.s.a.		mm <sup>2</sup>	≤ 25	35	50	70	95	- <sup>(2)</sup>	- <sup>(2)</sup>	
Isc (rms) 3-phase, incoming (Ue = 415 V)	50 kA	m	5	6	8	10	13	- <sup>(2)</sup>	- <sup>(2)</sup>	
	45 kA	m	5	5	7	8	10	- <sup>(2)</sup>	- <sup>(2)</sup>	
	40 kA	m	5	5	5	5	8	- <sup>(2)</sup>	- <sup>(2)</sup>	
	37 kA	m	5	5	5	5	5	- <sup>(2)</sup>	- <sup>(2)</sup>	

\* Fuse not required: breaking capacity  $I_{cn} > I_{sc}$ .

<sup>(1)</sup> As % of Icu.

<sup>(2)</sup> Please consult your Regional Sales Office.





# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Thermal-magnetic

### Characteristics

Breaking capacity of GV3P											
Motor circuit breaker type			GV3P								
		A	13	18	25	32	40	50	65	73	80
Rating		A	13	18	25	32	40	50	65	73	80
Breaking capacity conforming to IEC 60947-2	230/240 V Icu	kA	100	100	100	100	100	100	100	100	100
	Ics % <sup>(1)</sup>		100	100	100	100	100	100	100	100	100
400/415 V Icu	kA	100	100	100	100	50	50	50	50	50	50
	Ics % <sup>(1)</sup>		100	100	100	100	100	100	100	60	60
440 V Icu	kA	50	50	50	50	50	50	50	50	50	50
	Ics % <sup>(1)</sup>		100	100	100	100	100	100	100	60	60
500 V Icu	kA	12	12	12	12	12	12	12	12	12	12
	Ics % <sup>(1)</sup>		50	50	50	50	50	50	50	50	50
690 V Icu	kA	6	6	6	6	6	6	6	6	6	6
	Ics % <sup>(1)</sup>		50	50	50	50	50	50	50	50	50
Associated fuses, if required if Isc > breaking capacity Icu	230/240 V aM	A	*	*	*	*	*	*	*	*	*
	gG	A	*	*	*	*	*	*	*	*	*
415 V aM	A	*	*	*	*	125	125	125	125	125	125
	gG	A	*	*	*	160	160	160	160	160	160
440 V aM	A	63	80	125	125	125	125	125	125	125	125
	gG	A	80	100	160	160	160	160	160	160	160
500 V aM	A	63	63	63	63	80	80	80	80	80	80
	gG	A	80	80	80	80	100	100	100	100	100
690 V aM	A	50	50	50	50	63	63	63	63	63	63
	gG	A	63	63	63	63	80	80	80	80	80

\* Fuse not required: breaking capacity Icn > Isc.  
 (1) As % of Icu.



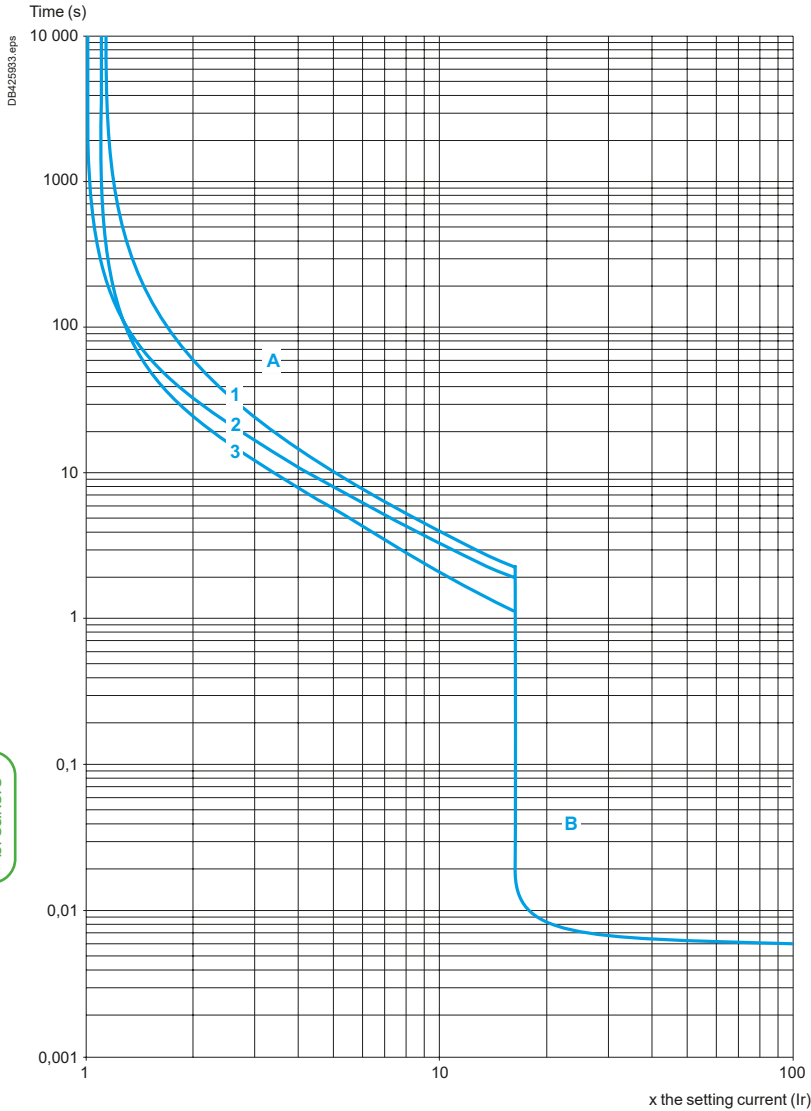
Motor circuit breakers

# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Magnetic Curves

### Tripping curves for GV3L combined with thermal overload relay LRD33

Average operating time at 20 °C without prior current flow



- 1 3 poles from cold state
- 2 2 poles from cold state
- 3 3 poles from hot state

- A Thermal overload relay protection zone
- B GV3L protection zone

# TeSys Power

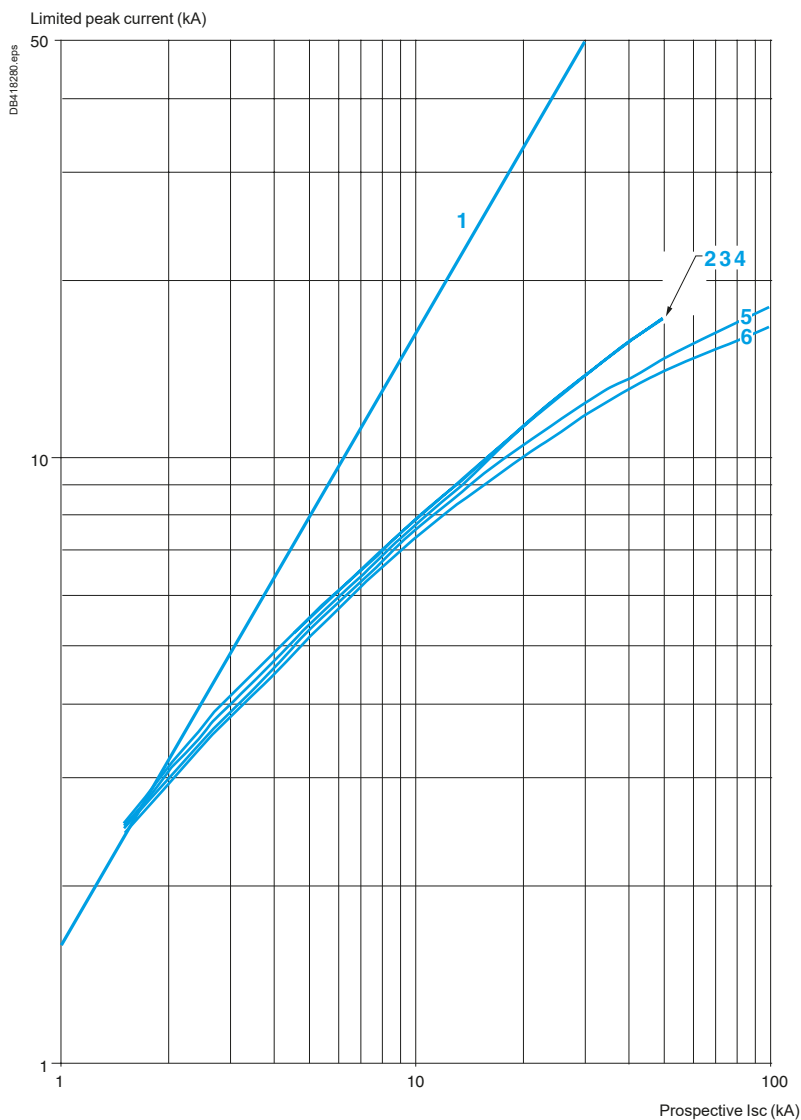
## Deca - Frame 3 Motor circuit breakers - Magnetic

### Curves

#### Current limitation on short-circuit for GV3L (3-phase 400/415 V)

##### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$



- 1 Maximum peak current
- 2 GV3L80 - GV3L73 - GV3L65
- 3 GV3L50
- 4 GV3L40
- 5 GV3L32
- 6 GV3L25

Ref.



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Magnetic

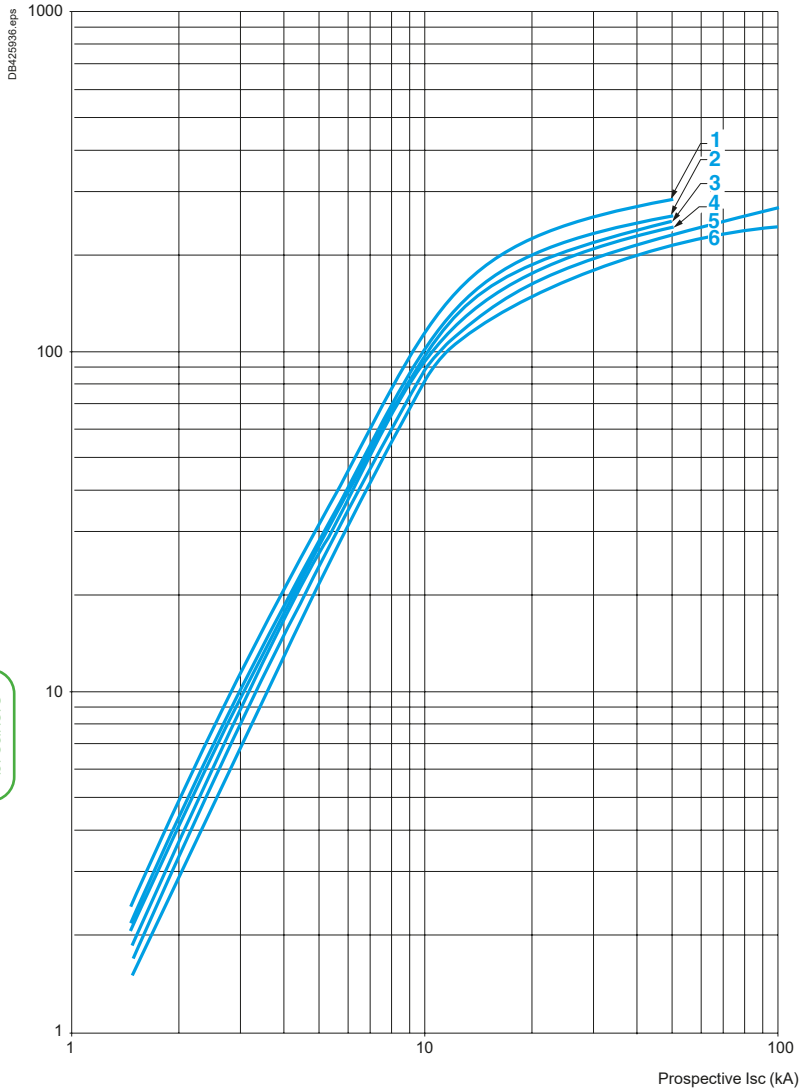
### Curves

#### Thermal limit on short-circuit for GV3L

Thermal limit in  $\text{kA}^2\text{S}$

Sum of  $I^2dt = f$  (prospective  $I_{sc}$ ) at  $1.05 U_e = 435 \text{ V}$

Sum of  $I^2dt$  ( $\text{kA}^2\text{S}$ )



- 1 GV3L73 - GV3L80
- 2 GV3L65
- 3 GV3L50
- 4 GV3L40
- 5 GV3L32
- 6 GV3L25

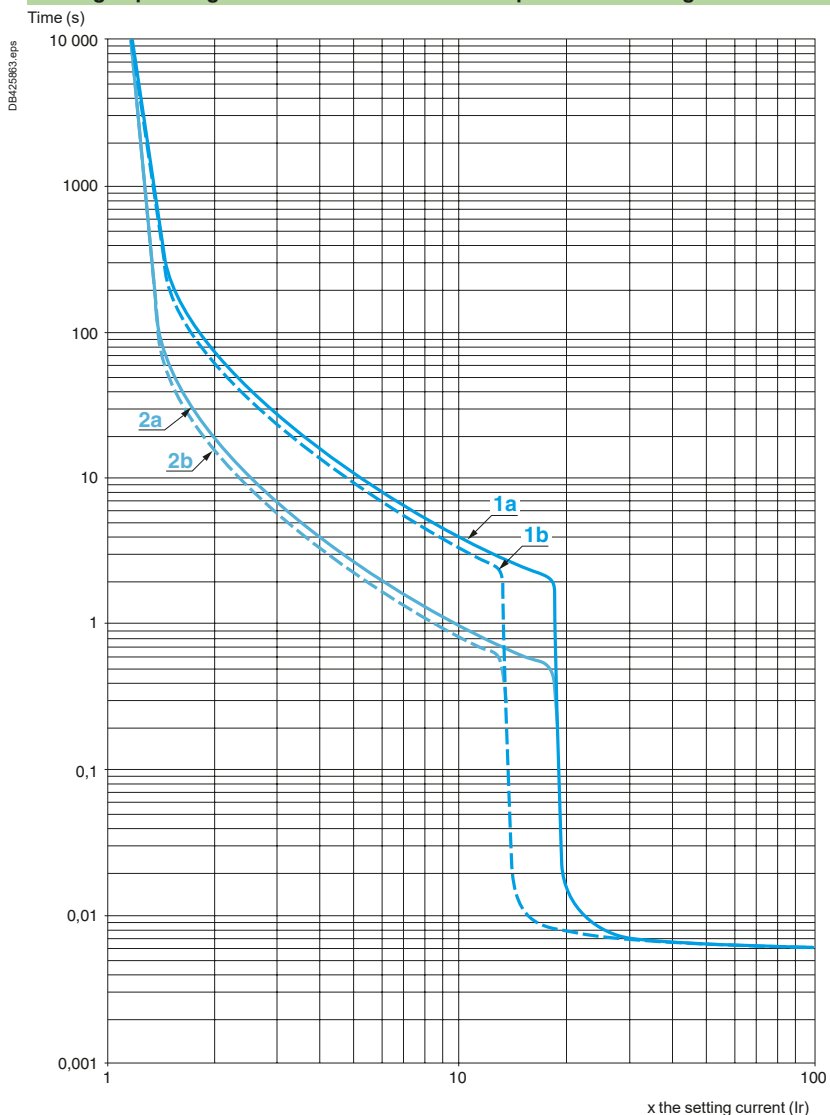
# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Thermal-magnetic

### Curves

#### Thermal-magnetic tripping curves for GV3P

Average operating times at 20 °C related to multiples of the setting current



- 1a 3 poles from cold state (Ir mini.): GV3P
- 1b 3 poles from cold state (Ir maxi.): GV3P
- 2a 3 poles from hot state (Ir mini.): GV3P
- 2b 3 poles from hot state (Ir maxi.): GV3P

Ref.



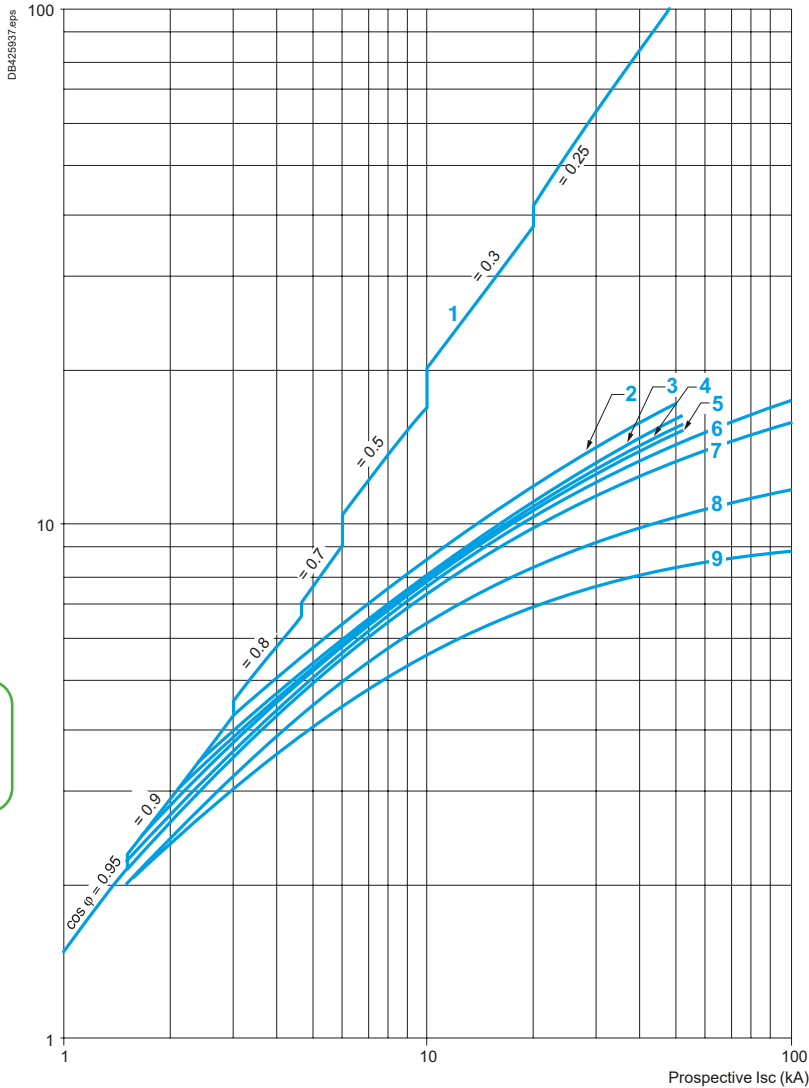
Motor  
circuit  
breakers

#### Current limitation on short-circuit for GV3P (3-phase 400/415 V)

##### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$

Limited peak current (kA)



- 1 Maximum peak current
- 2 70-80 A (GV3P80); 62-73 A (GV3P73)
- 3 48-65 A (GV3P65)
- 4 37-50 A (GV3P50)
- 5 30-40 A (GV3P40)
- 6 23-32 A (GV3P32)
- 7 17-25 A (GV3P25)
- 8 12-18 A (GV3P18)
- 9 9-13 A (GV3P13)

# TeSys Power

## Deca - Frame 3 Motor circuit breakers - Thermal-magnetic

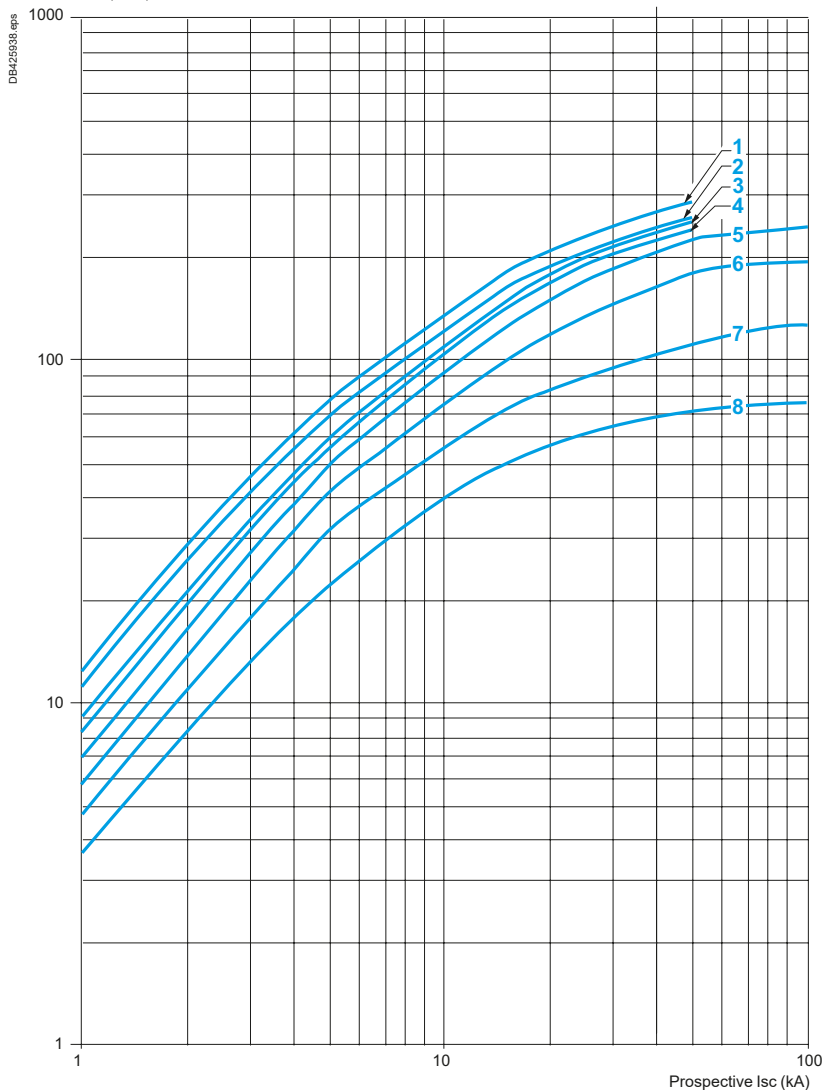
### Curves

#### Maximum thermal limit on short-circuit for GV3P

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of I<sup>2</sup>dt = f (prospective I<sub>sc</sub>) at 1.05 U<sub>e</sub> = 435 V

Sum of I<sup>2</sup>dt (kA<sup>2</sup>s)



- 1 70-80 (GV3P80) - 62-73 (GV3P73)
- 2 48-65 A (GV3P65)
- 3 37-50 A (GV3P50)
- 4 30-40 A (GV3P40)
- 5 23-32 A (GV3P32)
- 6 17-25 A (GV3P25)
- 7 12-18 A (GV3P18)
- 8 9-13 A (GV3P13)



Motor circuit breakers

Characteristics of GV3 electric trips				
Type of trip			GVAU●●● MN undervoltage trip	GVAS●●● MX shunt trip
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690	690
	Conforming to CSA C22-2 n°14, UL 508	V	600	600
Operational voltage (Ue)	Conforming to IEC 60947-1	V	0.85...1.1 Uc	0.7...1.1 Uc
Drop-out voltage		V	0.7...0.35 Uc	0.75...0.2 Uc
Inrush consumption	~ ≡	VA	12	14
Sealed consumption	~ ≡	VA	3.5	5
Operating time	Conforming to IEC 60947-1	ms	From the moment the voltage reaches its operational value until opening of the circuit breaker. 10...15	
On-load factor			100 %	
Cabling (spring connection)	Number of conductors		2 or 4	
	Solid cable	mm <sup>2</sup>	1...2.5	
	Flexible cable without cable end	mm <sup>2</sup> AWG	0.75...2.5	
	Flexible cable with cable end	mm <sup>2</sup>	0.75...2.5	
Tightening torque		N.m	1.4 max	
Mechanical durability (C.O.: Close - Open)		C.O.	10000 (GV3P and GV3L)	

Ref.



Motor  
circuit  
breakers



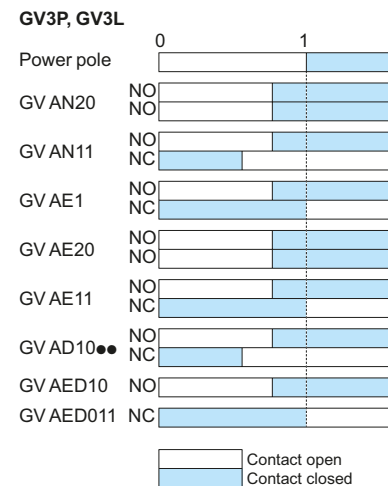
# TeSys Power

## Auxiliary contacts for Deca - Frame 3 Motor circuit breakers

### Characteristics

Type of contacts			Instantaneous auxiliary GVAN, GVAD							Fault signalling GVAD, GVAM11 <sup>(1)</sup>				Instantaneous auxiliary GVAE			
Rated insulation voltage (Ui) (associated insulation coordination)	Conforming to IEC 60947-1	V	690							690				250 (690 in relation to main circuit)			
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	V	600							300				300			
Conventional thermal current (Ith)	Conforming to IEC 60947-5-1	A	6							2.5				2.5			
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1	A	5							1				1			
Mechanical durability (C.O.: Close - Open)		C.O.	100 000							1000				100 000			
Operational power and current conforming to IEC 60947-5-1. a.c. operation			AC-15/100 000 C.O.							AC-14/1000 C.O.				AC-15/100 000 C.O.			
	<b>Rated operational voltage (Ue)</b>	V	48	110	230	380	440	500	690	24	48	110	230	24	48	110	230
Operation	Operational power, normal conditions	VA	300	500	720	850	650	500	400	36	48	72	72	48	60	120	120
	Occasional breaking and making capacities, abnormal conditions	kVA	3	7	13	15	13	12	9	0.22	0.3	0.45	0.45	0.48	0.6	1.27	2.4
	Rated operational current (Ie)	A	6	4.5	3.3	2.2	1.5	1	0.6	1.5	1	0.5	0.3	2	1.25	1	0.5
Operational power and current conforming to IEC 60947-5-1. d.c.			DC-13/100 000 C.O.							DC-13/1000 C.O.				DC-13/100 000 C.O.			
	<b>Rated operational voltage (Ue)</b>	V	24	48	60	110	240	—	—	24	48	60	—	24	48	60	—
Operation	Operational power, normal conditions	W	140	240	180	140	120	—	—	24	15	9	—	24	15	9	—
	Occasional breaking and making capacities, abnormal conditions	W	240	360	240	210	180	—	—	100	50	50	—	100	50	50	—
	Rated operational current (Ie)	A	6	5	3	1.3	0.5	—	—	1	0.3	0.15	—	1	0.3	0.15	—
Low power switching reliability of contact			GVAE: Number of failures for "n" million operating cycles (17 V-5 mA): = 10 <sup>-6</sup>														
Minimum operational conditions d.c. operation		V	17														
		mA	5														
Short-circuit protection			By GB2CB●● circuit breaker (rating according to operational current for Ue ≤ 415 V) or by gG fuse 10 A max										GB2CB06 or gG fuse 10 A max				
Cabling, screw clamp terminals	Number of conductors		1			2											
	Solid cable	mm <sup>2</sup>	1...2.5			1...2.5											
	Flexible cable without cable end	mm <sup>2</sup>	0.75...2.5			0.75...2.5											
	Flexible cable with cable end	mm <sup>2</sup>	0.75...1.5			0.75...1.5											
	Tightening torque	N.m	1.4 max			1.4 max											
Cabling, spring terminal connections			GVAN only														
	Flexible cable without cable end	mm <sup>2</sup>	0.75...2.5			0.75...2.5				—				0.75...1.5			

#### Operation of instantaneous auxiliary contacts



#### Operation of fault signalling contacts

##### GVAM11

Change of state following tripping on short-circuit.

##### GVAD10●● and GVAD01●●

Change of state following tripping on short-circuit, overload or undervoltage.

(1) For application example of fault signalling contact and short-circuit signalling contact.

(2) Add an RC circuit type LA4D to the load terminals.



Motor circuit breakers

# TeSys Power

## 3-pole busbar for Deca - Frame 3 Motor circuit breakers

### Characteristics

Characteristics of 3-pole busbars GV3G●●●			
			GV3G●64
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690
Conventional thermal current (Ith)	Conforming to IEC 60439-1	A	115
Rated operational current (Ie)		A	115
Permissible peak current (I peak)		kA	20
Permissible thermal limit (I <sup>2</sup> t)		kA <sup>2</sup> s	300
Degree of protection	Conforming to IEC 60529		IP 20
Terminal block			—

Ref.



Motor  
circuit  
breakers

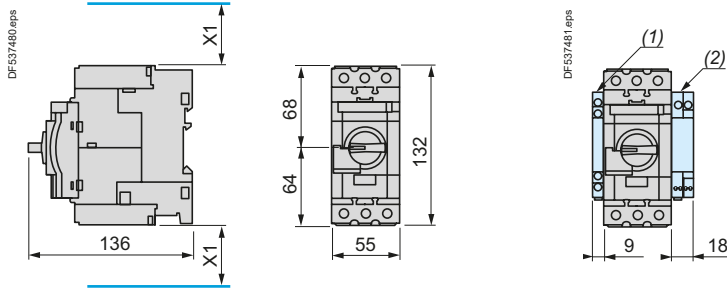
# TeSys Power

## Deca - Frame 3 Motor circuit breakers

### Dimensions and mounting

#### GV3L, GV3P

##### Dimensions



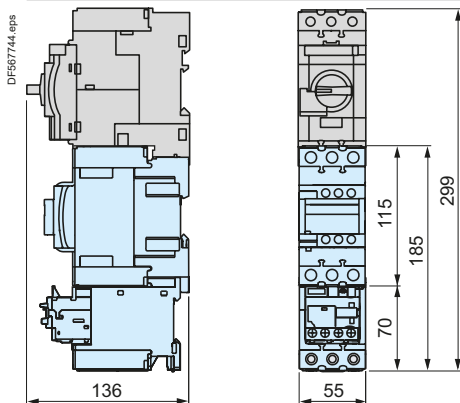
X1 = Electrical clearance (ISC max)  
40 mm for  $U_e \leq 500$  V, 50 mm for  $U_e \leq 690$  V

(1) Blocks **GVAN●●**, **GVAD●●** and **GVAM11**.  
(2) Blocks **GV3AU●●** and **GV3AS●●**.

**Note:** Leave a space of 9 mm between 2 circuit breakers: either an empty space or side-mounting add-on contact blocks.  
Side by side mounting is possible up to 40 °C.

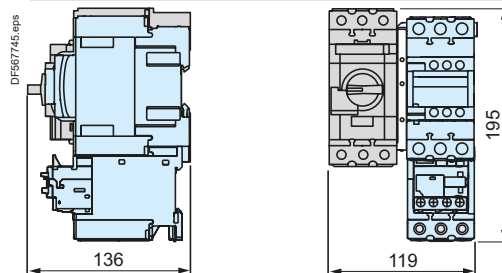
##### Mounting

###### Mounting with contactor LC1D40A...D80A and relay LR3D313...380 <sup>(1) (2) (3)</sup>

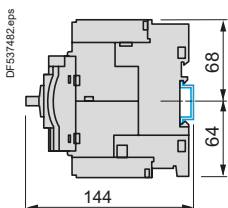


- (1) Mountings with c.b. up to **GV3L73**, **GV3P73**.
- (2) For **GV3L80**, **GV3P80** use cable between components for dissipating heat. Consult online datasheets for values
- (3) S-shape busbar system suitable up to 73 A.

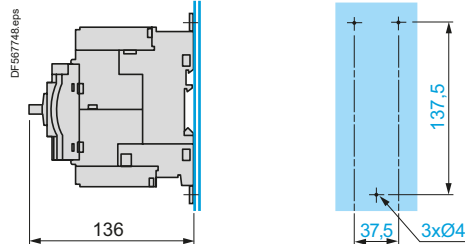
###### Side by side mounting with contactor LC1D40A...D73A (S-shape busbar system GV3S <sup>(1)</sup>)



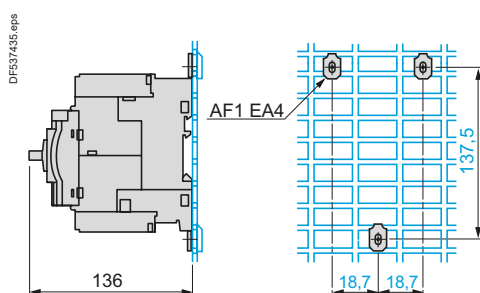
###### Mounting on rail AM1DE200 or AM1ED201



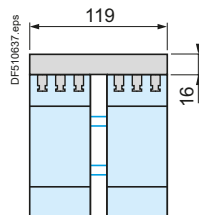
###### Panel mounting, using M4 screws



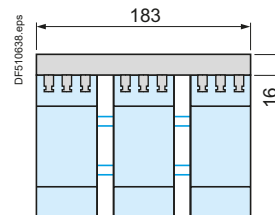
###### Mounting on pre-slotted plate AM1PA



###### Set of busbars GV3G264



###### Set of busbars GV3G364



References:  
pages B6/26 and B6/27

Characteristics:  
pages B6/102 to B6/105

Curves:  
pages B6/106 to B6/111

Schemes:  
page B6/117

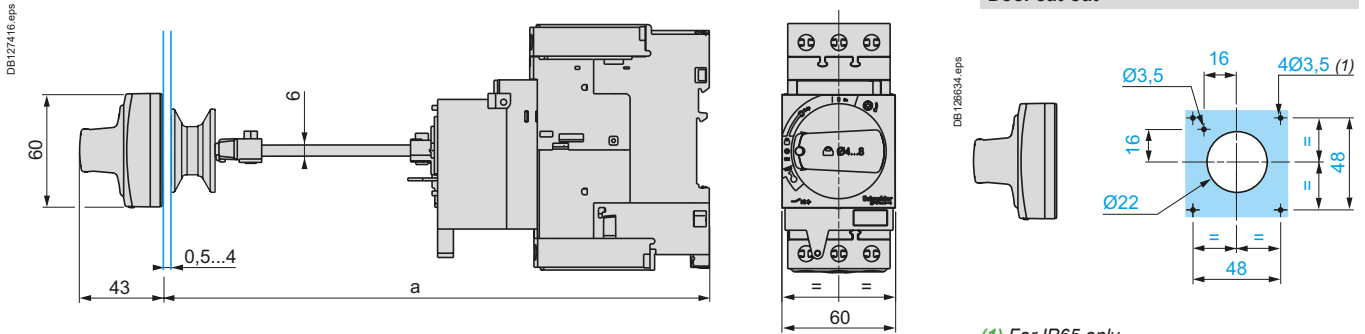
# TeSys Power

## Deca - Frame 3 Motor circuit breakers

### Dimensions and mounting

#### Mounting

Mounting of external operator GV3APN01, GV3APN02 or GV3APN04 for motor circuit breakers GV3L



	a		b	
	Mini	Maxi	Mini	Maxi
GV3APN●●	189	300	-	-
GV3APN●● + GVAPK12	300	481		

Ref.

Motor  
circuit  
breakers

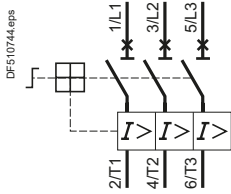
# TeSys Power

## Deca - Frame 3 Motor circuit breakers

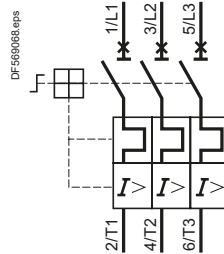
### Schemes

#### Schemes

##### GV3L●●



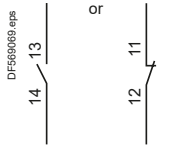
##### GV3P●●



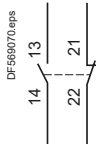
#### Front mounting add-on contact blocks

##### Instantaneous auxiliary contacts

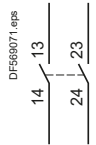
##### GVAE1



##### GVAE11



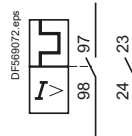
##### GVAE20



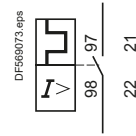
#### Front mounting add-on contact blocks

##### Instantaneous auxiliary contacts and fault signalling contacts

##### GVAED101



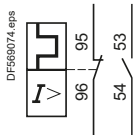
##### GVAED011



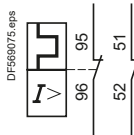
#### Side mounting add-on contact blocks

##### Instantaneous auxiliary contacts and fault signalling contacts

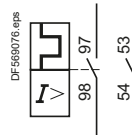
##### GVAD0110



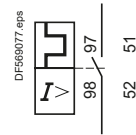
##### GVAD0101



##### GVAD1010

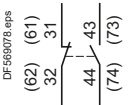


##### GVAD1001

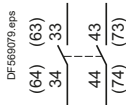


#### Instantaneous auxiliary contacts

##### GVAN11

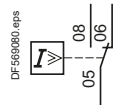


##### GVAN20



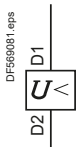
#### Short-circuit signalling contacts

##### GVAM11

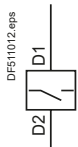


#### Voltage trips

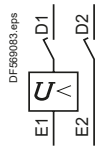
##### GVAU●●●



##### GVAS●●●

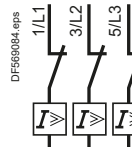


##### GVAX●●●

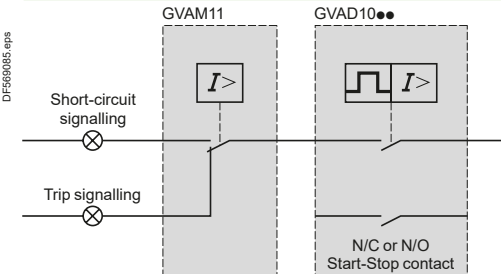


#### Current limiter

##### GV1L3

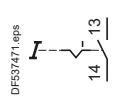


#### Use of fault signalling contact and short-circuit signalling contact

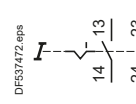


#### Start-Stop signalling contact blocks

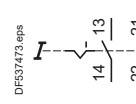
##### GK2AX10



##### GK2AX20

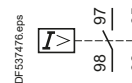


##### GK2AX50



#### Fault signalling contact blocks

##### GK2AX52





# TeSys Deca - Frame 4

0.25 to 55 kW - 1/2 to 60 HP



Motor  
circuit  
breakers

# TeSys Power

## Deca - Frame 4 Motor circuit breakers

### Characteristics

Environment							
Circuit breaker type		GV4L	GV4LE	GV4P	GV4PE	GV4PEM	GV4PB
Conforming to standards		IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1		IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1			IEC/EN 60947-2, IEC/EN 60947-4-1
Product certifications		CCC, EAC, BV, EU-RO MR <sup>(1)</sup> , UKCA		CCC, EAC, CSA (cCSAus), ATEX, BV, EU-RO MR <sup>(1)</sup> , UKCA			UL 489, CSA C22.2 n°5, UKCA
Climatic withstand		According to IACS E10					
Degree of protection (front face)	Conforming to IEC 60529	Open mounted	IP 40 front face except on connection area. Connection area: - IP20 with EverLink connector - IP40 with crimp lug connector and terminal shield.				
		In enclosure <sup>(2)</sup>	DRH = IP40 ERH = IP54 or IP65				
Shock resistance	Conforming to IEC 60068-2-27		15g - 11 ms		15g - 11 ms		
Vibration resistance	Conforming to IEC 60068-2-6		2.0 to 13.2 Hz and amplitude ±1 mm 13.2 to 100 Hz acceleration 0.7 g				
Ambient air temperature	Storage		°C	-50...+85			
	Operation		°C	-25...+70			
Temperature compensation			°C	Non applicable			-25...+60 <sup>(3)</sup>
Flame resistance	Conforming to IEC 60695-2-11		°C	960			
Maximum operating altitude			m	2000 without derating. Up to 5000 with derating			
Suitable for isolation	Conforming to IEC 60947-1 § 7-1-6			Yes			
Resistance to mechanical impact			J	IK07 (2J)			
Sensitivity to phase failure				No			Yes
Technical characteristics							
Utilisation category	Conforming to IEC 60947-2			A			A
	Conforming to IEC 60947-4-1			AC-3 <sup>(4)</sup>			
Rated operational voltage (U <sub>e</sub> )	Conforming to IEC 60947-2		V	690			
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947-2		V	800			
Rated voltage	Conforming to CSA C22-2 n°1, UL 60947-4-1		V	Non applicable		600	
Rated operational frequency	Conforming to IEC 60947-4-1, UL, CSA		Hz	50/60			
Rated impulse withstand voltage (U <sub>imp</sub> )	Conforming to IEC 60947-2		kV	8			
Total power dissipated per pole			W	6.1		4.6	
Mechanical durability (C.O.: Closing, Opening)			C.O.	40000			
Electrical durability for AC-3/415V duty (C.O.: Closing, Opening)	415 V In		C.O.	5 000			
Duty class (maximum operating rate)			C.O./h	25			
Maximum conventional rated thermal current (I <sub>th</sub> )	Conforming to IEC 60947-4-1		A	115			
Rated duty	Conforming to IEC 60947-4-1			Continuous duty			

<sup>(1)</sup> Refer to chapter on page A5/86 for details on Marine Classification Societies.

<sup>(2)</sup> DRH = with Direct Rotary Handle  
ERH = with Extended Rotary Handle.

<sup>(3)</sup> For operation up to 70 °C, please consult your regional sales office.

<sup>(4)</sup> Up to 100 A.



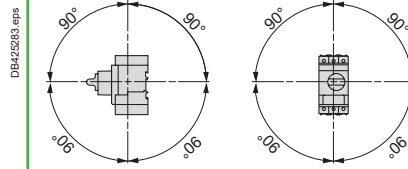
# TeSys Power

## Deca - Frame 4 Motor circuit breakers

### Characteristics

#### Mounting characteristics

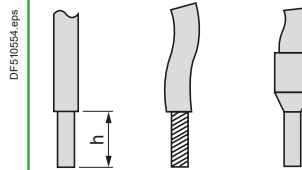
Operating position  
Without derating, in relation to normal vertical mounting plane <sup>(1)</sup>



#### Power connection characteristics

##### Power connection by bare cables (EverLink connector)

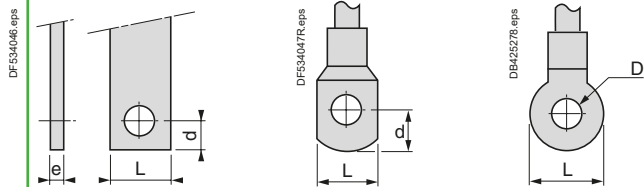
Bare cables



		Min.	Max.
Connection to screw clamp terminals (Max. number of conductors x c.s.a.)	Solid cable	mm <sup>2</sup> AWG Cu 1 x 1.5 + 1 x 2.5 Cu 2 x 14	Cu 1 x 70 + 1 x 95 Cu 1 x 2/0 + 1 x 3/0
	Flexible cable without cable end	mm <sup>2</sup> AWG Cu 1 x 1.5 + 1 x 2.5 Cu 2 x 6	Cu 1 x 50 + 1 x 70 Cu 1 x 1/0 + 1 x 2/0
	Flexible cable with cable end	mm <sup>2</sup> AWG Cu 1 x 1.5 + 1 x 2.5 Cu 2 x 6	Cu 1 x 50 + 1 x 70 Cu 1 x 1/0 + 1 x 2/0
Tightening torque		N.m 5 ≤ 10 mm <sup>2</sup> / 8 AWG 9 ≥ 16 mm <sup>2</sup> / 6 AWG	
Stripping length (h)	Solid cable	mm	20

##### Power connection by bars or lugs

Bars or lugs



Pitch	Without spreaders	mm	27
	With spreaders	mm	35
Bars or cables with lugs	e	mm	≤ 8
	L	mm	≤ 20
	d	mm	≤ 7
	D	mm	6.4
M6 Screws	Tightening torque	N.m	5 ≤ 10 mm <sup>2</sup> / 8 AWG 9 ≥ 16 mm <sup>2</sup> / 6 AWG

(1) When mounting on a vertical rail, fit a stop to prevent any slippage.

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic Characteristics

### Breaking capacity of GV4L and GV4LE

Circuit breaker type			GV4L●●●B GV4LE●●●B				GV4L●●●N GV4LE●●●N								GV4LE●●●S															
Rating	A		25	50	80	115	2	3.5	7	12.5	25	50	80	115	2	3.5	7	12.5	25	50	80	115								
Breaking capacity conforming to IEC 60947-2	230/240 V	l <sub>cu</sub>	kA				50								100								120							
		l <sub>cs</sub> % <sup>(1)</sup>					100								100								100							
	400/415 V	l <sub>cu</sub>	kA				25								50								100							
		l <sub>cs</sub> % <sup>(1)</sup>					100								100								100							
	440 V	l <sub>cu</sub>	kA				20								50								70							
		l <sub>cs</sub> % <sup>(1)</sup>					100								100								100							
	500 V	l <sub>cu</sub>	kA				10								25								30							
		l <sub>cs</sub> % <sup>(1)</sup>					100								100								100							
	525 V	l <sub>cu</sub>	kA				-								15								18							
		l <sub>cs</sub> % <sup>(1)</sup>					-								100								100							
	690 V	l <sub>cu</sub>	kA				-								8								10							
		l <sub>cs</sub> % <sup>(1)</sup>					-								25								25							

(1) As % of l<sub>cu</sub>.

Ref.



Motor circuit breakers

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

### Characteristics

Breaking capacity of GV4P, GV4PE, GV4PB●●●B																						
Circuit breaker type			GV4P●●●B GV4PE●●●B GV4PEM●●●B GV4PB●●●B				GV4P●●●N GV4PE●●●N GV4PEM●●●N GV4PB●●●N				GV4P●●●S GV4PE●●●S GV4PEM●●●S GV4PB●●●S											
Rating		A	25	50	80	115	2	3.5	7	12.5	25	50	80	115	2	3.5	7	12.5	25	50	80	115
Breaking capacity conforming to IEC 60947-2	230/240 V	Icu	kA	50				100				120										
		Ics % <sup>(1)</sup>		100				100				100										
	400/415 V	Icu	kA	25				50				100										
		Ics % <sup>(1)</sup>		100				100				100										
	440 V	Icu	kA	20				50				70										
		Ics % <sup>(1)</sup>		100				100				100										
	500 V	Icu	kA	10				25				30										
		Ics % <sup>(1)</sup>		100				100				100										
	525 V	Icu	kA	-				15				18										
		Ics % <sup>(1)</sup>		-				100				100										
	690 V	Icu	kA	-				8				10										
		Ics % <sup>(1)</sup>		-				25				25										
Breaking capacity conforming to UL 60947-4-1 and CSA 22.2 n° 60947-4-1	120 V		kA	35				65				100										
	208 V		kA	35				65				100										
	240 V		kA	35				65				100										
	480Y / 277 V		kA	18				35				65										
	480 V <sup>(2)</sup>		kA	18				35				65										
	600Y / 347 V		kA	14				18				25										
	600 V <sup>(2)</sup>		kA	14				18				25										

(1) As % of Icu.

(2) Except for MCC suitable for TAP conductor protection, in motor group installation and GV4PB.

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic

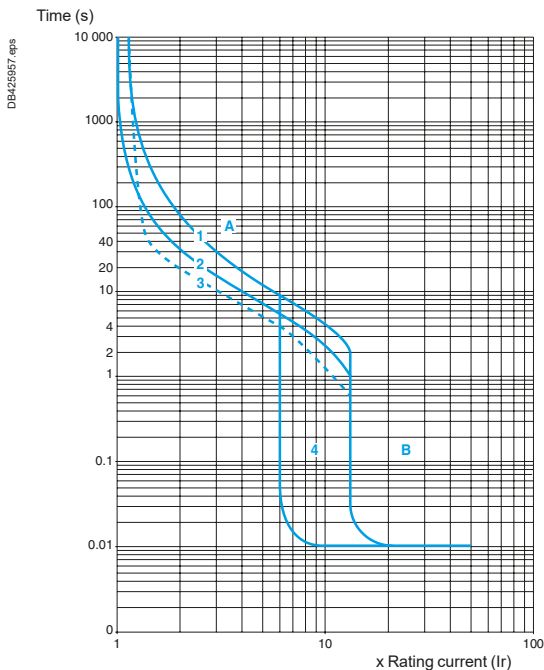
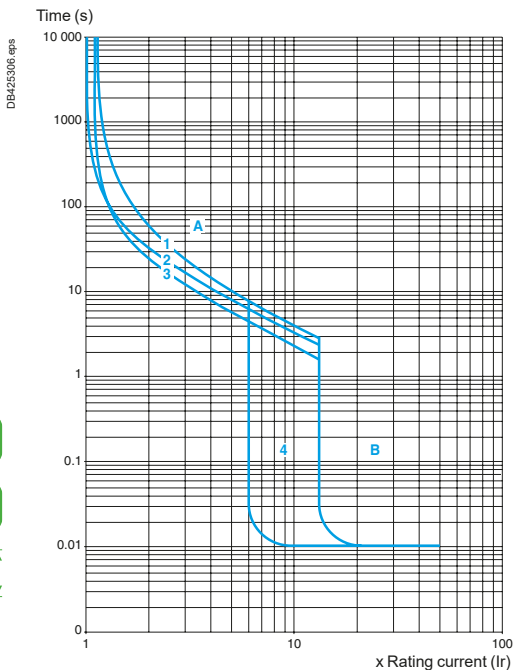
### Curves

#### Tripping curves for GV4L and GV4LE combined with thermal overload relay LRD or LR9

Average operating times at 20 ° C related to multiples of the setting current

GV4L02 and GV4LE02 to 12 with LRD05 to LRD14,  
GV4L80 and GV4LE80 with LRD3363

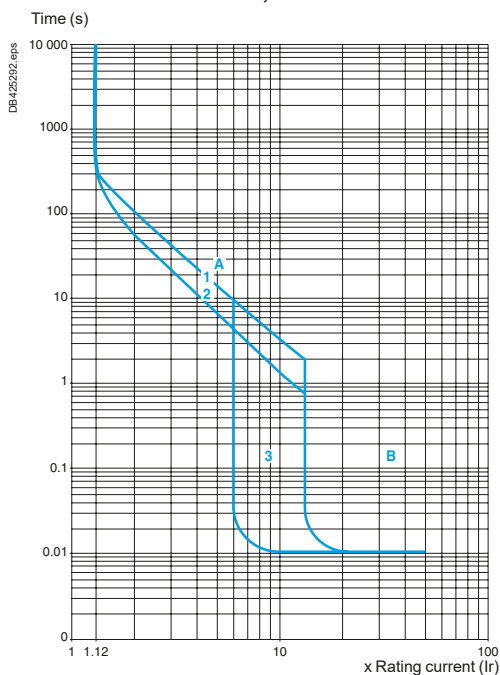
GV4L25 AND GV4LE25 with LRD318, LRD325  
GV4L50 AND GV4LE50 with LRD332, LRD340, LRD350



- 1 3 poles from cold state      A Thermal overload relay protection zone
- 2 2 poles from cold state
- 3 3 poles from hot state      B GV4L protection zone
- 4 6 ...14 Ir

- 1 3 poles from cold state      A Thermal overload relay protection zone
- 2 2 poles from cold state
- 3 3 poles from hot state      B GV4L protection zone
- 4 6 ...14 Ir

GV4L115 and GV4LE115 with class 10 LR9F5367, LR9D5369  
and class 20 LR9D5567, LR9F5569



- 1 Cold state curve
- 2 Hot state curve
- 3 6 ...14 Ir



Motor circuit breakers

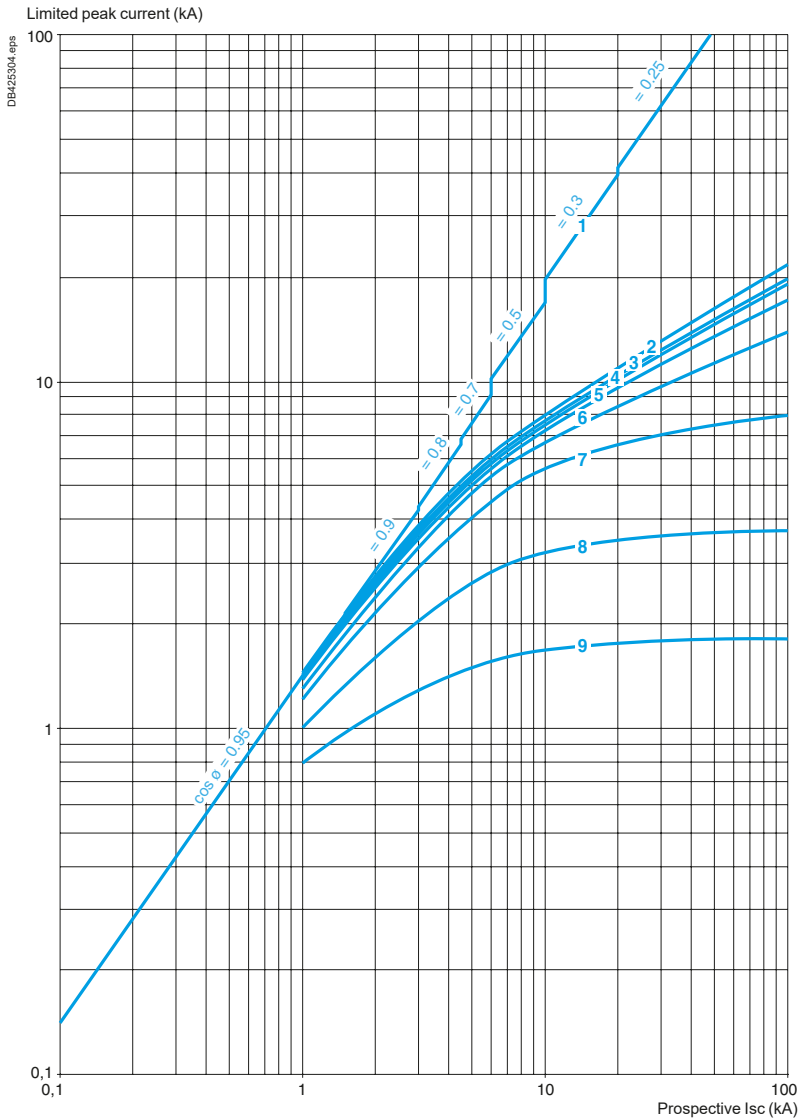
# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic Curves

### Current limitation on short-circuit for GV4L, GV4LE (3-phase 400/415 V)

#### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$



- 1 Maximum peak current
- 2 GV4L115
- 3 GV4L80
- 4 GV4L50
- 5 GV4L25
- 6 GV4L12
- 7 GV4L07
- 8 GV4L03
- 9 GV4L02

# TeSys Power

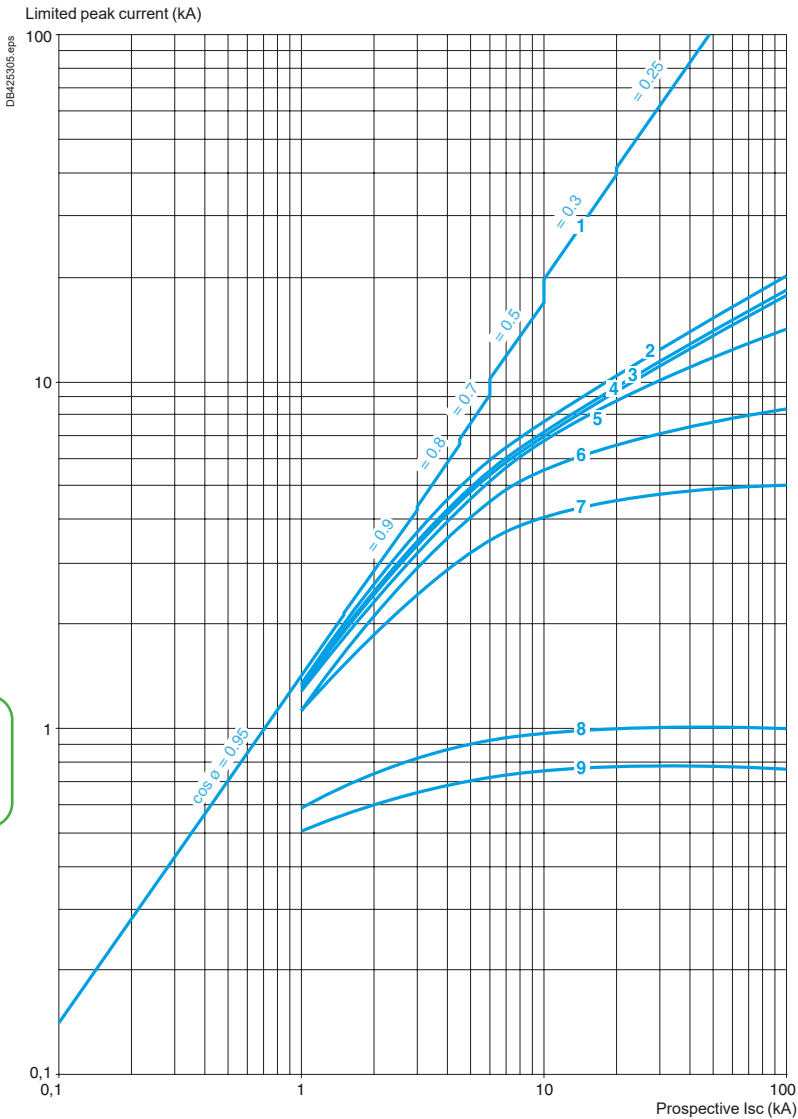
## Deca - Frame 4 Motor circuit breakers - Magnetic

### Curves

#### Current limitation on short-circuit for GV4L, GV4LE + thermal overload relay LRD or LR9 (3-phase 400/415 V)

##### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc})$  at  $1.05 U_e = 435 V$



- 1 Maximum peak current
- 2 GV4L115 + LR9D5367 or LR9F5367
- 3 GV4L80 + LRD3361
- 4 GV4L50 + LRD340
- 5 GV4L25 + LRD325
- 6 GV4L12 + LRD313
- 7 GV4L07 + LRD12
- 8 GV4L03 + LRD07
- 9 GV4L02 + LRD07

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic

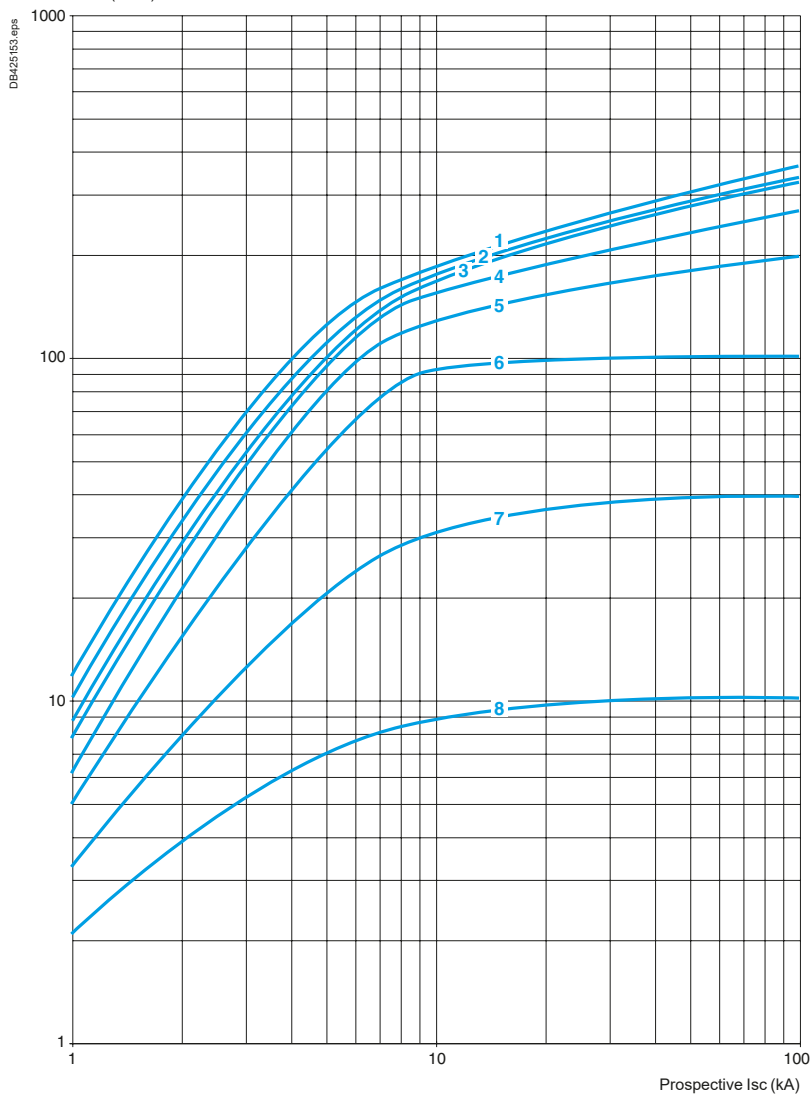
### Curves

#### Thermal limit on short-circuit for GV4L, GV4LE

Thermal limit in  $kA^2S$

Sum of  $kA^2S = f(\text{prospective } I_{sc})$  at  $1.05 U_e = 435 V$

Sum of  $I^2dt$  ( $kA^2S$ )



- 1 GV4L115
- 2 GV4L80
- 3 GV4L50
- 4 GV4L25
- 5 GV4L12
- 6 GV4L07
- 7 GV4L03
- 8 GV4L02

# TeSys Power

## Deca - Frame 4 Motor circuit breakers - Magnetic

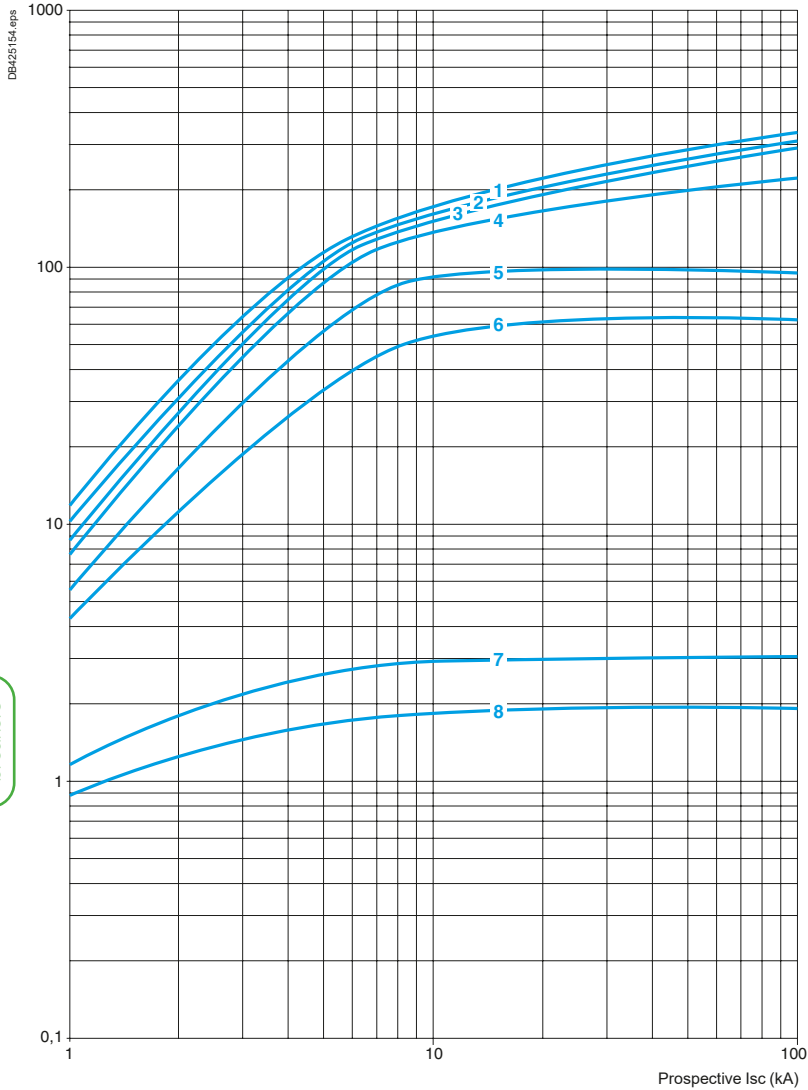
### Curves

#### Thermal limit on short-circuit for GV4L, GV4LE + thermal overload relay LRD or LR9

#### Thermal limit in $kA^2S$ in the magnetic operating zone

Sum of  $kA^2S = f(\text{prospective } I_{sc})$  at  $1.05 U_e = 435 V$

Sum of  $I^2dt$  ( $kA^2S$ )



- 1 GV4L115 + LR9D5367 or LR9F5367
- 2 GV4L80 + LRD3361
- 3 GV4L50 + LRD340
- 4 GV4L25 + LRD325
- 5 GV4L12 + LRD313
- 6 GV4L07+ LRD12
- 7 GV4L03+ LRD07
- 8 GV4L02 + LRD07



# TeSys Power

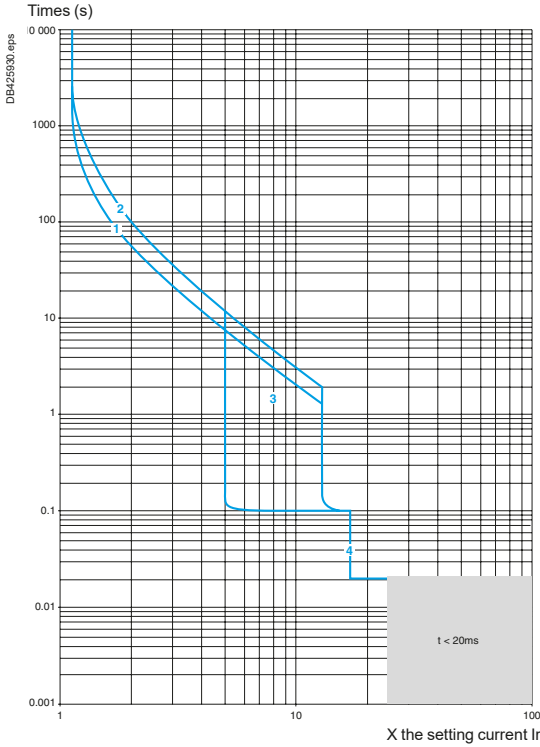
## Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

### Curves

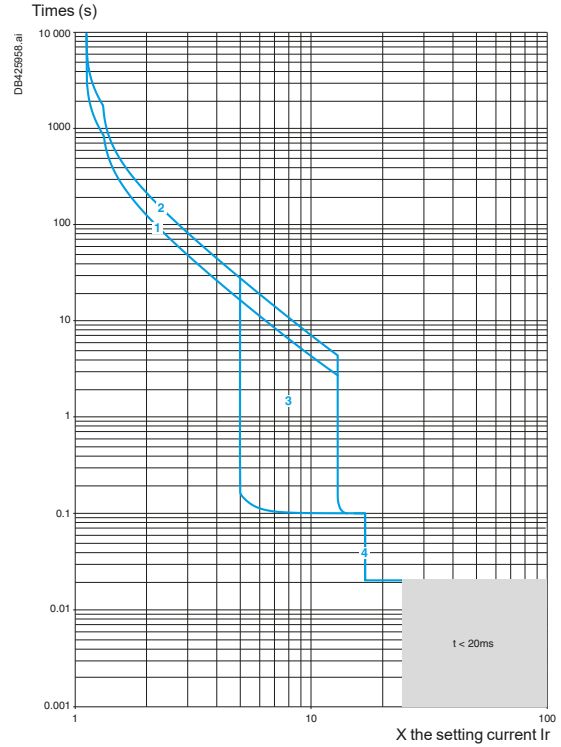
#### Thermal-magnetic tripping curves for GV4P, GV4PE, GV4PEM, GV4PB

Average operating times at 20 °C related to multiples of the setting current

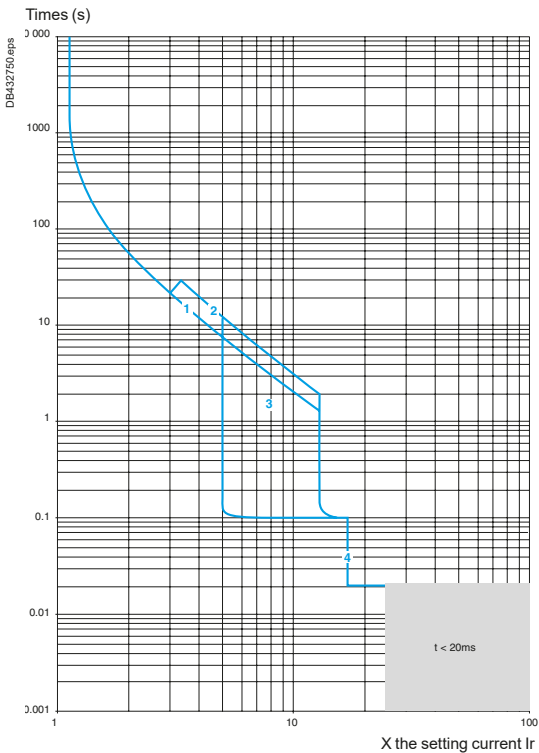
##### GV4P, GV4PE, GV4PEM



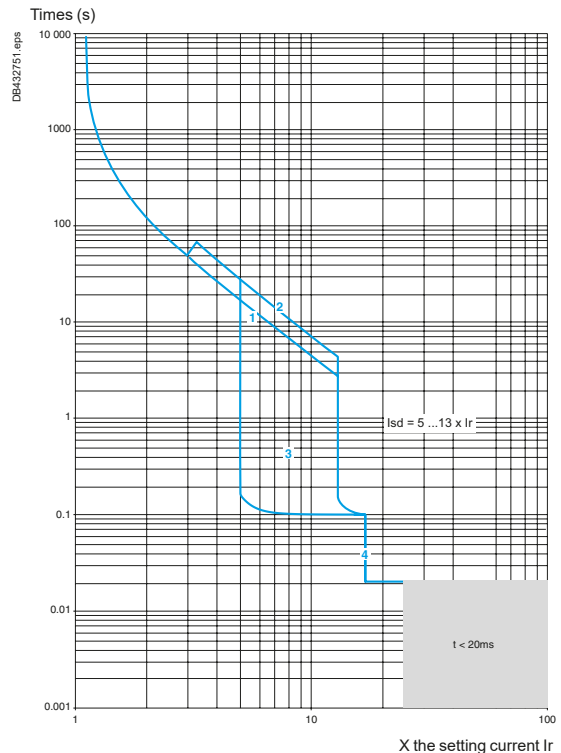
##### GV4P, GV4PE, GV4PEM



##### GV4PB



##### GV4PB



#### Hot state

- 1 Class 10
- 2 Class 20
- 3 Isd = 13 x Ir (GV4P - GV4PE); Isd = 5...13 x Ir (GV4PEM - GV4PB)
- 4 Ii = 17 In

#### Cold state

- 1 Class 10
- 2 Class 20
- 3 Isd = 13 x Ir (GV4P - GV4PE); Isd = 5...13 x Ir (GV4PEM - GV4PB)
- 4 Ii = 17 In

References:  
pages B6/37 to B6/41

Characteristics:  
pages B6/120 to B6/123

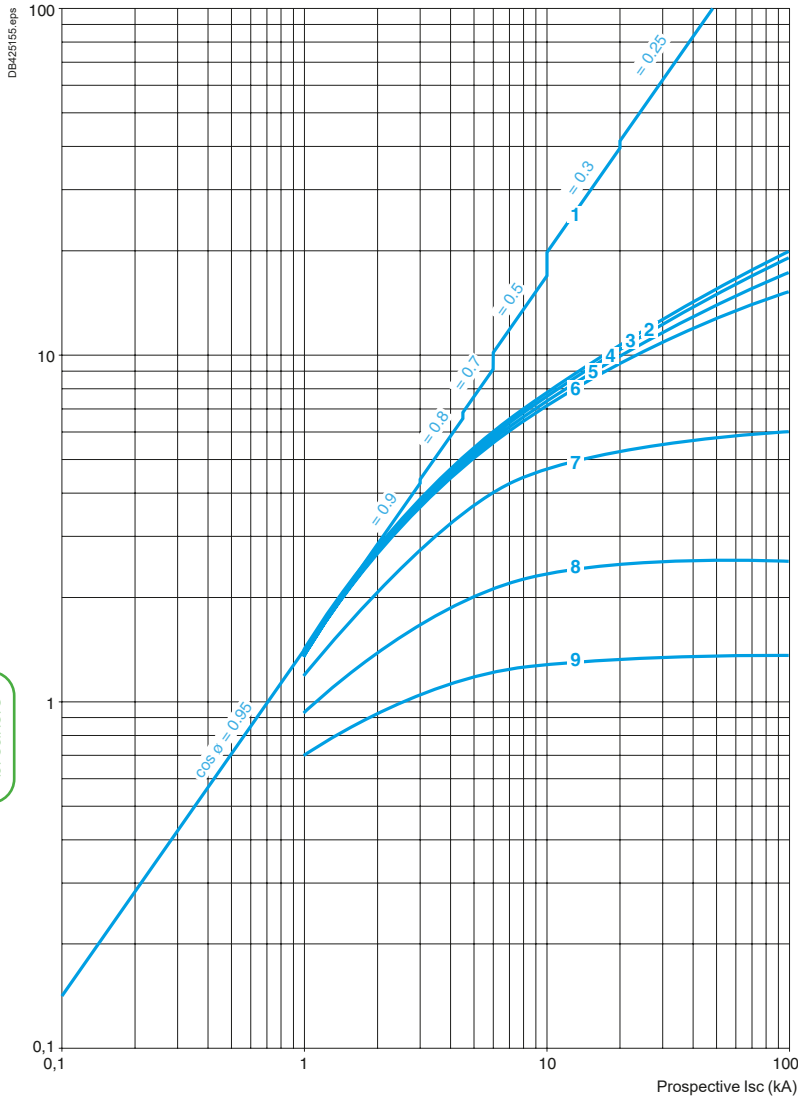
Dimensions, schemes:  
pages B6/134 to B6/137

#### Current limitation on short-circuit for GV4P, GV4PE, GV4PEM, GV4PB (3-phase 400/415 V)

##### Dynamic stress

$I_{peak} = f(\text{prospective } I_{sc}) \text{ at } 1.05 U_e = 435 \text{ V}$

Limited peak current (kA)



- 1 Maximum peak current
- 2 GV4P115
- 3 GV4P80
- 4 GV4P50
- 5 GV4P25
- 6 GV4P12
- 7 GV4P07
- 8 GV4P03
- 9 GV4P02

# TeSys Power

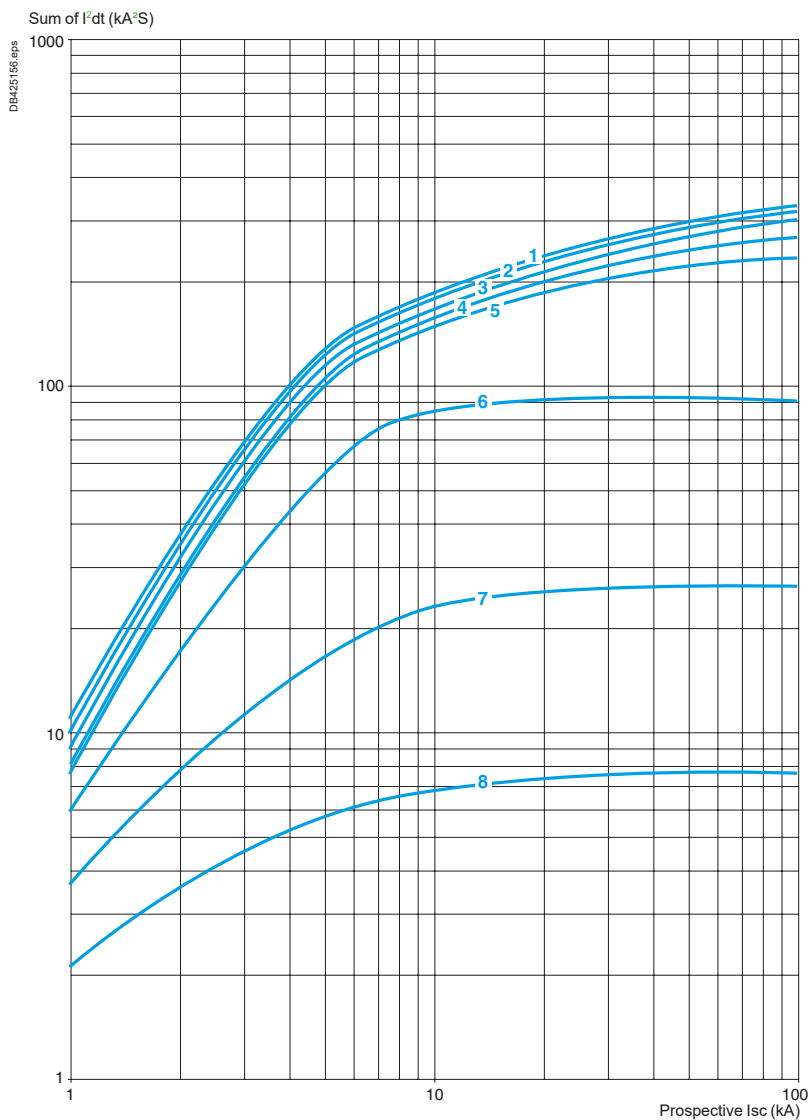
## Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

### Curves

#### Thermal limit on short-circuit for GV4P, GV4PE, GV4PEM, GV4PB

#### Thermal limit in kA<sup>2</sup>s in the magnetic operating zone

Sum of  $I^2dt = f$  (prospective  $I_{sc}$ ) at  $1.05 U_e = 435 V$



- 1 GV4P115
- 2 GV4P80
- 3 GV4P50
- 4 GV4P25
- 5 GV4P12
- 6 GV4P07
- 7 GV4P03
- 8 GV4P02

Ref.



Motor  
circuit  
breakers

Characteristics of electric trips								
Type of trip		GV4AU●●● MN (undervoltage release)						
Rated insulation voltage (Ui) Conforming to IEC 60947-1	V	= Ue						
Operational voltage (Ue) Conforming to IEC 60947-1	V	24 V AC/DC	48 V AC/DC	110-130 V AC 125 V DC	208-240 V 60 Hz 220-240 V 50 Hz	277 V 60 Hz	380-415 V 60 Hz	440-480 V 60 Hz
Inrush consumption	VA	< 7 VA < 2 W	< 7 VA < 2 W	< 7 VA < 2 W	< 7 VA	< 7 VA	< 7 VA	< 7 VA
Sealed consumption	VA	< 7 VA < 2 W	< 7 VA < 2 W	< 7 VA < 2 W	< 7 VA	< 7 VA	< 7 VA	< 7 VA
Operating time Conforming to IEC 60947-1	ms	< 50						
On-load factor		100 %						
Cabling (spring connection)	Number of conductors	1 per terminal						
	Solid cable	mm <sup>2</sup>	No solid cable allowed					
	Flexible cable without cable end	mm <sup>2</sup> AWG	Cu 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup> Cu 20AWG to 16AWG					
	Flexible cable with cable end	mm <sup>2</sup>	No cable with cable end allowed					
Tightening torque	N.m	NA						
Mechanical durability (C.O.: Close - Open)	C.O.	20000						

Ref.

Characteristics of electric trips						
Type of trip		GV4AS●●● MX (Shunt trip)				
Rated insulation voltage (Ui) Conforming to IEC 60947-1	V	= Ue				
Operational voltage (Ue) Conforming to IEC 60947-1	V	24 V AC/DC	48 V AC/DC	110-130 V AC 125 V DC	208-240 V 60 Hz 220-240 V 50 Hz	380-415 V 50 Hz 440-480 V 60 Hz
Inrush consumption	VA	< 6 VA < 10 W	< 6 VA < 10 W	< 6 VA < 10 W	< 6 VA	< 6 VA
Sealed consumption	VA	< 4 VA < 1 W	< 4 VA < 1 W	< 4 VA < 1 W	< 4 VA	< 4 VA
Operating time Conforming to IEC 60947-1	ms	< 50				
On-load factor		100 %				
Cabling (spring connection)	Number of conductors	1 per terminal				
	Solid cable	mm <sup>2</sup>	No solid cable allowed			
	Flexible cable without cable end	mm <sup>2</sup> AWG	Cu 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup> Cu 20AWG to 16AWG			
	Flexible cable with cable end	mm <sup>2</sup>	No cable with cable end allowed			
Tightening torque	N.m	NA				
Mechanical durability (C.O.: Close - Open)	C.O.	20000				

Motor circuit breakers

Auxiliary contact characteristics														
Type of contacts			Auxiliary contact block GV4AE11						SDx contact module for GV4PEM , GV4PB, GV4ADM1111					
Rated insulation voltage(Ui)	Conforming to IEC 60947-1	V	690						250					
	Conforming to CSA C22-2 n°14 UL 508	V	-						-					
Conventional thermal current (Ith)	Conforming to IEC 60947-5-1	A	5						5					
	Conforming to CSA C22-2 n°14 UL 508	A	5						5					
Mechanical durability (C.O.: Close - Open)		C.O.	40 000						100 000					
Operational power and current conforming to IEC 60947-5-1 a.c. operation	<b>Rated operational voltage (Ue)</b>	V	24	48	110/127	230/240	380/440	660/690	48	110	230/240	380/415	440	690
	Operational power (AC12)	VA	120	240	635	1200	2200	3450			400			
	Occasional breaking and making capacities	kVA	1.2	2.4	6.35	12	22	34.5						
	Operational current (Ie)	AC-12	A	5	5	5	5	5	5					
		AC-15	A	5	5	4	3	2.5	0.1		3	1.5		
Operational power and current conforming to IEC 60947-5-1 d.c. operation	<b>Rated operational voltage (Ue)</b>	V	24	48	110	250			24	48	60	110	250	
	Operational power (DC12)	W	120	120	66	75			50					
	Occasional breaking and making capacities	W	1200	1200	660	750								
	Rated operational current (Ie)	DC-12	A	5	2.5	0.6	0.3							
		DC-13	A	2.5	1.2	0.35	0.05			2			0.22	0.11
DC-14		A	1	0.2	0.05	0.03								
Low power switching reliability of contact			10 <sup>-6</sup> at 17 V / 2 mA											
Minimum operational conditions d.c. operation		V	17											
		mA	2											
Short-circuit protection			5 A fuse gG conforming to IEC 60947-5-1											
Spring terminals cabling	Number of conductors		1 per hole											
	Solid cable	mm <sup>2</sup>	-						0.2 to 1.5					
	Flexible cable without cable end	mm <sup>2</sup>	0.5 to 1.5						0.2 to 2.5					
	Flexible cable with cable end	mm <sup>2</sup>	-						0.25 to 1.5					

Ref.

Motor circuit breakers

# TeSys Power

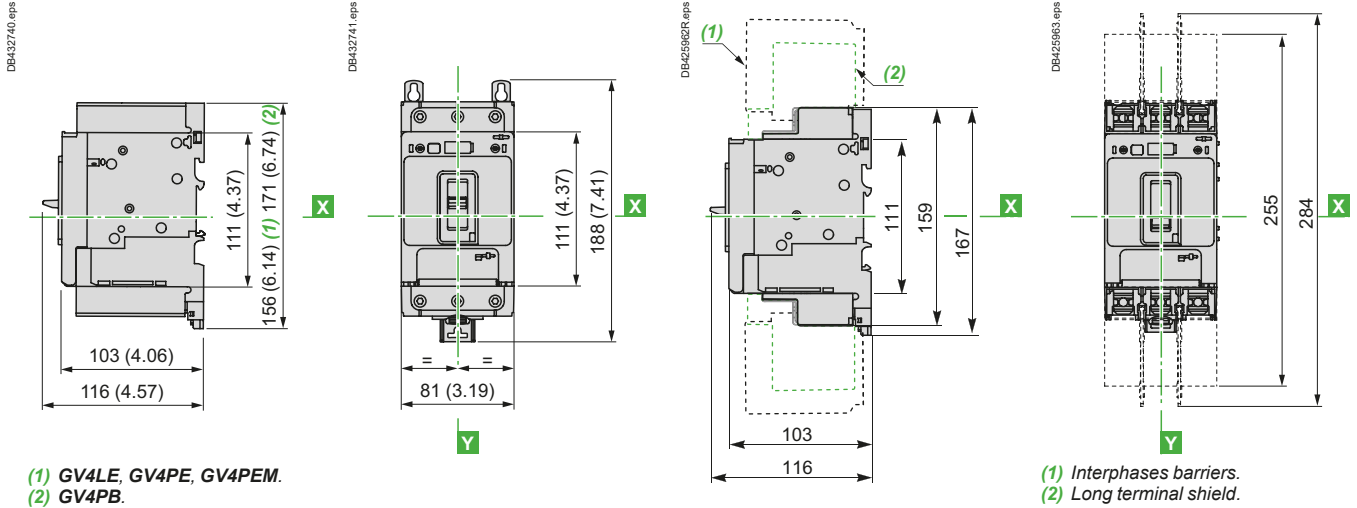
## Deca - Frame 4 Motor circuit breakers

### Dimensions and mounting

#### GV4 with toggle: GV4LE, GV4PE, GV4PEM, GV4PB

With EverLink® connector

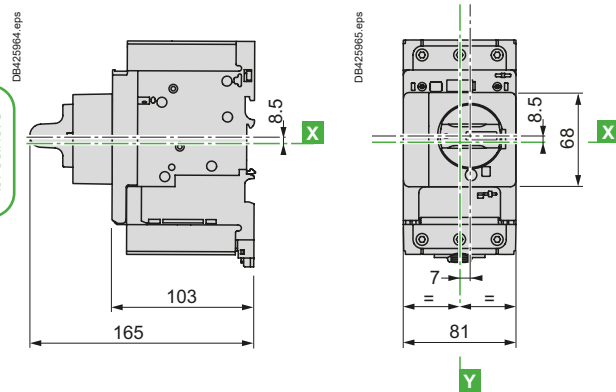
With crimp lug connector



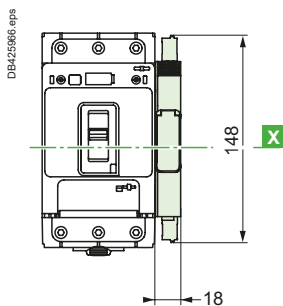
#### GV4 with rotary handle: GV4L, GV4P, or GV4LE, GV4PE, GV4PEM, GV4PB with GV4ADN01, GV4ADN02 direct mounting rotary handle

Dimensions

Motor circuit breakers



#### SDx module



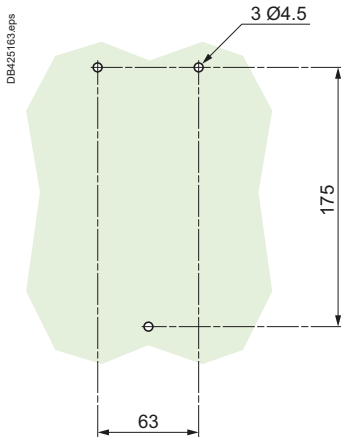
# TeSys Power

## Deca - Frame 4 Motor circuit breakers

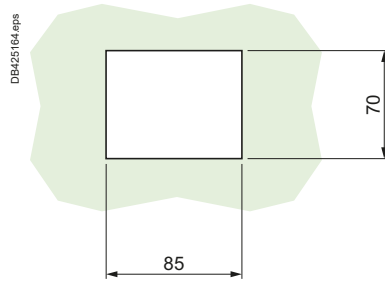
### Dimensions and mounting

#### GV4L, GV4P, GV4LE, GV4PE, GV4PEM, GV4PB

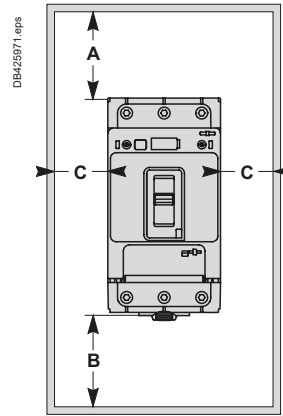
##### Panel mounting with M4 screws



##### Door cut-out for rotary handle



##### Minimum safety clearance



Toggle-type, rotary handle-type:  
identical clearance values.

##### Safety clearance (mm)

	Painted sheet metal			Bare sheet metal		
	A	B	C	A	B	C
No accessory	30	0	0	40	0	5
Interphase barriers	0	0	0	0	0	5
Long terminal shield	0	0	0	0	0	5



Motor  
circuit  
breakers

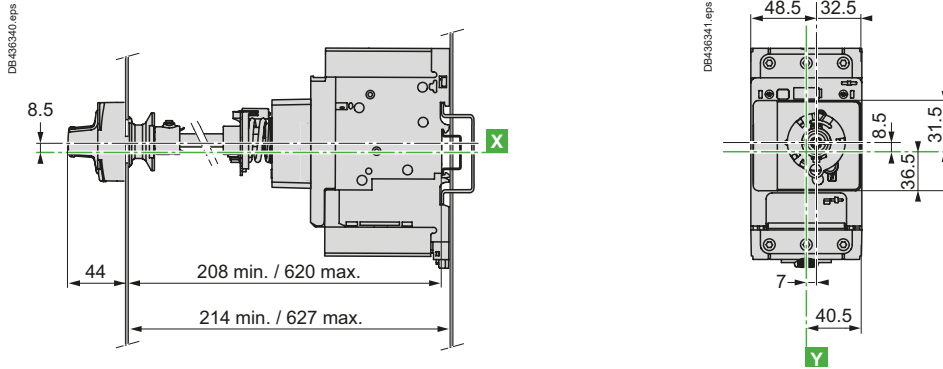
# TeSys Power

## Deca - Frame 4 Motor circuit breakers

### Dimensions and mounting

#### GV4 with extended rotary handle

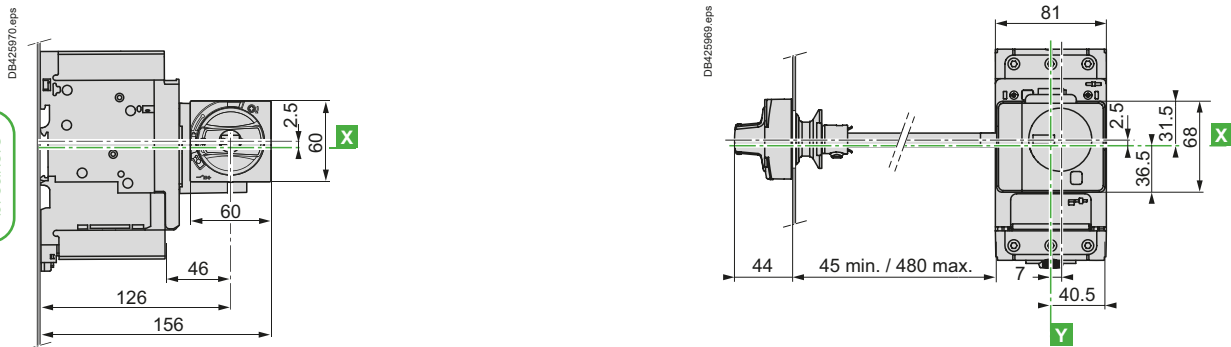
Front extended rotary handle GV4APN01, GV4APN02, GV4APN04



Ref.

#### Side (left or right) extended rotary handle LV426935, LV426936

Motor circuit breakers

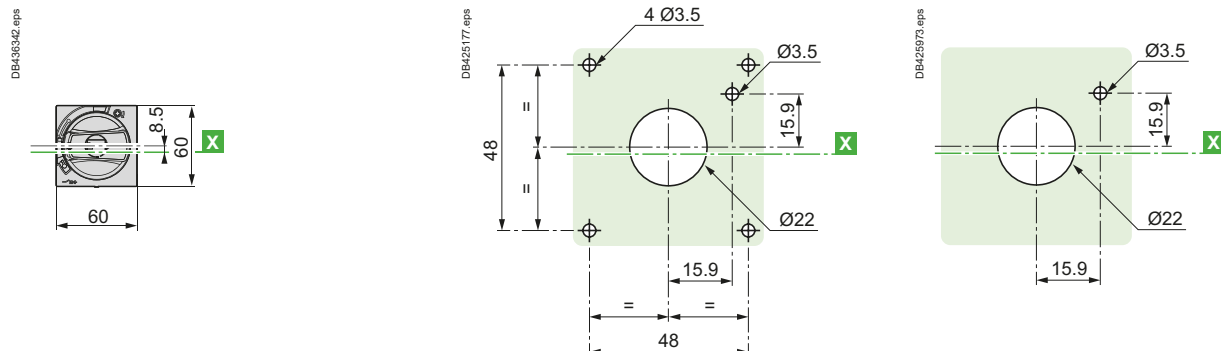


#### Front and side extended rotary handle, door/side panel cut-out

Front and side extended rotary handle

IP65, door panel cut-out

IP54, door/side panel cut-out



References:  
pages B6/45 to B6/47



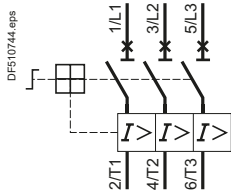
# TeSys Power

## Deca - Frame 4 Motor circuit breakers

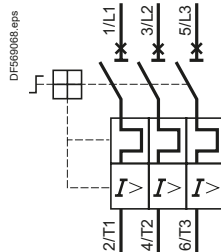
### Schemes

#### Magnetic motor circuit breakers

##### GV4L, GV4LE



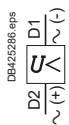
##### GV4P, GV4PE, GV4PEM, GV4PB



#### Accessories

##### Electrical trips

###### MN GV4AU●●●



###### MX GV4AS●●●



##### GV4AE11 auxiliary contacts

###### Used as OF contact

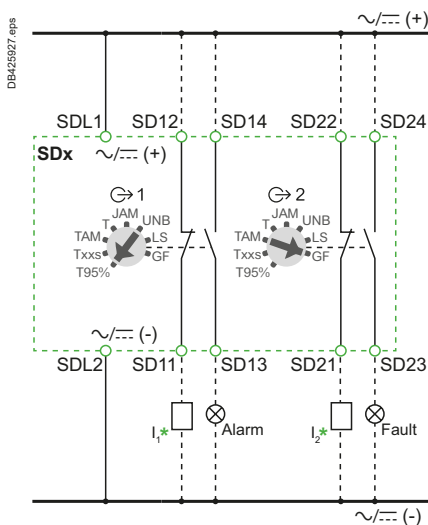


###### Used as SD contact



#### Side mounting add-on contact blocks

##### Instantaneous auxiliary contacts and fault signalling contacts



\* I1, I2: PLC digital inputs - used as alarm inputs, as an example.

Ref.



Motor circuit breakers



# TeSys Giga - Frame 5, 6 55 to 250 kW



Motor  
circuit  
breakers

#### Environment

Circuit breaker type			GV5P/ GV6P
Conforming to standards			IEC/EN 60947-4-1 IEC/EN 60947-2 UL 60947-4-1 CSA C22.2 n° 60947-4-1
Product certifications			CB, UKCA, UL, CSA, EAC, DNV-GL <sup>(1)</sup>
Climatic withstand			According to IACS E10
Degree of protection (front face)	Conforming to IEC 60529	Bare circuit breaker with terminal shields Installed in switchboard	IP40 with direct rotary handle
Shock resistance	Conforming to IEC 60068-2-27		15 gn -11 ms
Vibration resistance	Conforming to IEC 60068-2-6		2.5 gn (25 Hz)
Ambient air temperature	Storage in packing		°C -50...+85
	Operation	Open mounted	°C -25... +70
		In enclosure	°C -25...+70
Flame resistance	Conforming to IEC 60695-2-11		°C 960
Maximum operating altitude			m 2000
Suitable for isolation	Conforming to IEC 60947-1 § 7-1-6		Yes
Resistance to mechanical impact			J 0.5
Sensitivity to phase failure			Yes

#### Technical characteristics

Circuit breaker type		GV5P150	GV5P220	GV6P320	GV6P500
Utilisation category	Conforming to IEC 60947-2	A			
	Conforming to IEC 60947-4-1	AC-3			
Rated operational voltage (Ue)	Conforming to IEC 60947-2	V 690			
Rated insulation voltage (Ui)	Conforming to IEC 60947-2	V 800			
Rated voltage	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	V 600			
Rated operational frequency	Conforming to IEC 60947-4-1 UL, CSA	Hz 50/60			
Rated impulse withstand voltage (U imp)	Conforming to IEC 60947-2	kV 8			
Total power dissipated per pole		W 9.2	17.6	19.2	39.7
Mechanical durability (C.O.: Close, Open)		C.O. 40 000	20 000	15 000	15 000
	Electrical durability for AC-3 duty 400/415 V (In)	C.O. 20 000	10 000	6 000	4 000
Duty class (maximum operating rate)		C.O./h 25			
Maximum conventional rated thermal current (Ith)	Conforming to IEC 60947-4-1	A 70...150	100...220	160...320	250...500
Rated duty	Conforming to IEC 60947-4-1	Continuous duty			

(1) EAC & DNV-GL certifications are in progress. Please check with your nearest sales office for more details.

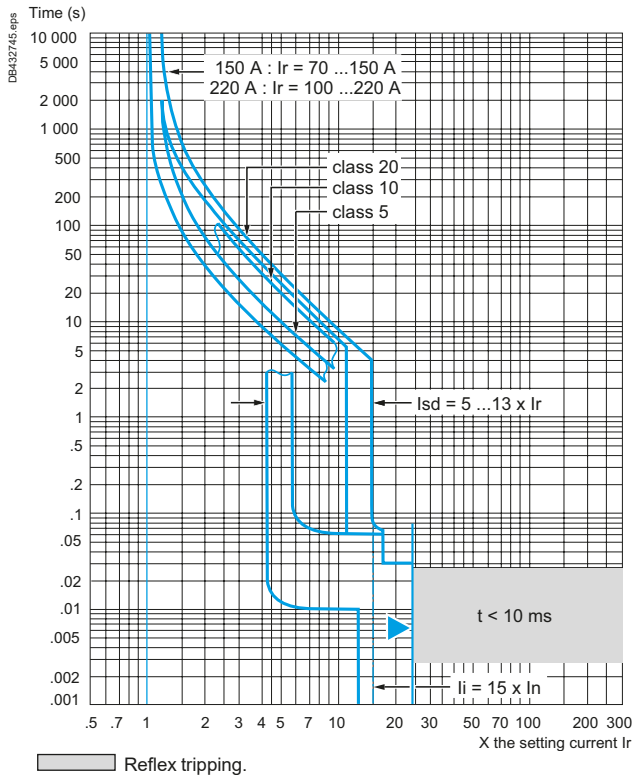
Ref.



Motor circuit breakers

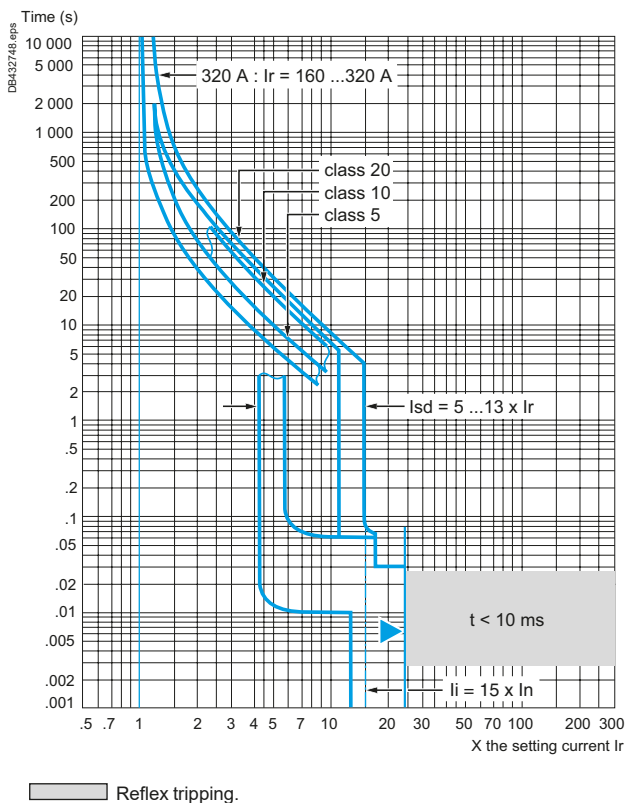
#### Thermal-magnetic tripping curves for GV5P

##### MicroLogic 2.2 M - 150/220 A

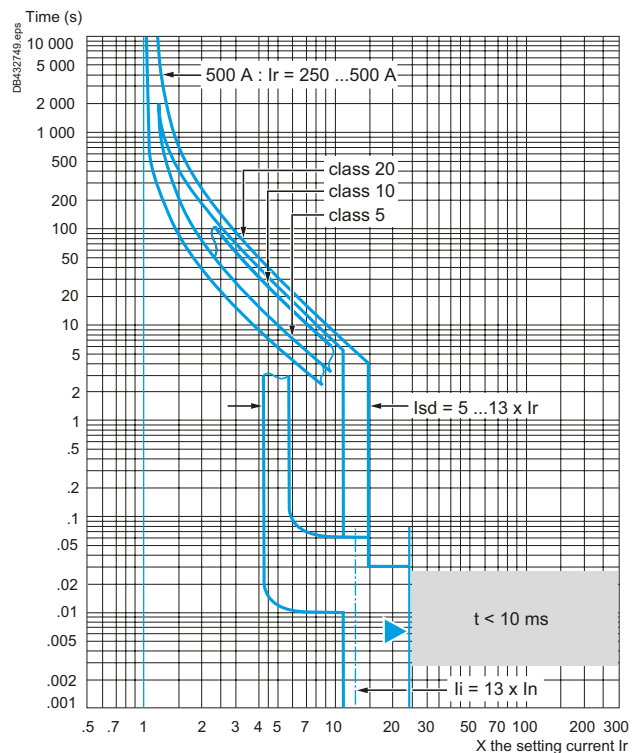


#### Thermal-magnetic tripping curves for GV6P

##### MicroLogic 2.3 M - 320 A



##### MicroLogic 2.3 M - 500 A

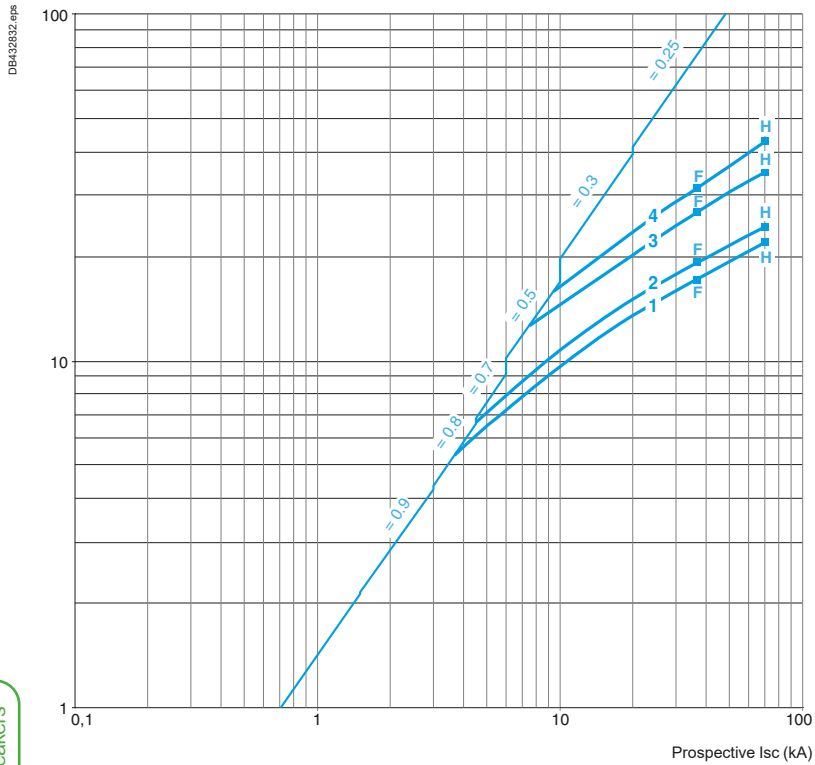


#### Current limitation on short-circuit (3-phase 400 - 415 V)

#### Dynamic stress

For GV5P/6P●●●F/H type

Limited peak current (kA)



- 1 GV5P150F/H
- 2 GV5P220F/H
- 3 GV6P320F/H
- 4 GV6P500F/H



Motor circuit breakers

# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers - Thermal-magnetic

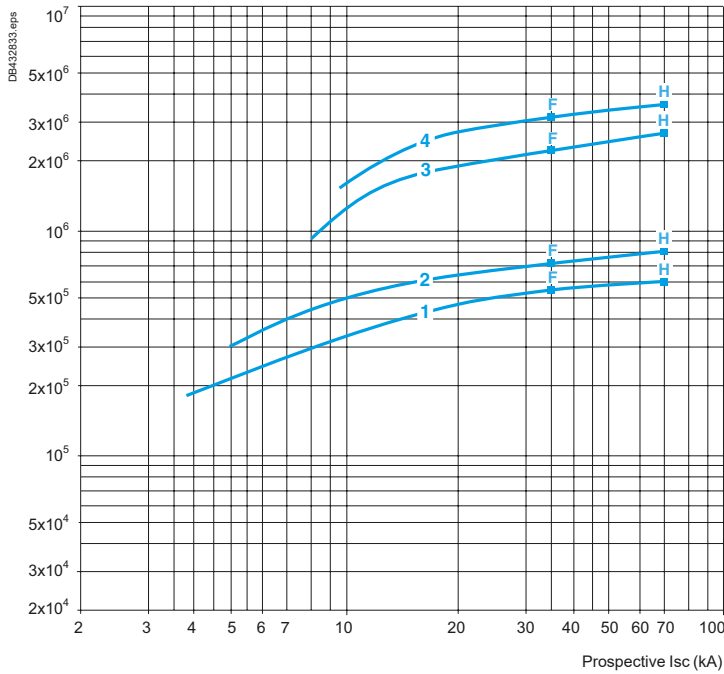
### Curves

#### Maximum thermal limit on short-circuit

#### Thermal limit in $kA^2s$ in the magnetic operating zone

Sum of  $I^2dt = f$  (prospective  $I_{sc}$ ) at  $1.05 U_e = 435 V$

Sum of  $I^2dt$  ( $A^2s$ )



- 1 GV5P150F/H
- 2 GV5P220F/H
- 3 GV6P320F/H
- 4 GV6P500F/H



Motor circuit breakers

#### Characteristics of GV5P/GV6P electric trips

Type of trip			LV42940● undervoltage trip	LV42938● shunt trip
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690	690
	Conforming to CSA C22-2 n°14, UL 508	V	600	600
Operational voltage (Ue)	Conforming to IEC 60947-1	V	0.85...1.1 Uc	0.7...1.1 Uc
Drop-out voltage		V	0.7...0.35 Uc	0.7...0.35 Uc
Inrush consumption	~	VA	< 10	
Sealed consumption	~	VA	< 5	
Operating time	Conforming to IEC 60947-1	ms	From the moment the voltage reaches its operational value until opening of the circuit breaker. < 50	
On-load factor			100 %	
Cabling	Number of conductors		1	
	Solid cable	mm <sup>2</sup>	1.5	
	Flexible cable without cable end	mm <sup>2</sup>	1.5	
	Flexible cable with cable end	mm <sup>2</sup>	1	
Tightening torque		N.m	1.2	
Mechanical durability (C.O.: Close - Open)		C.O.	50 % of the mechanical durability of the circuit breaker.	

#### Characteristics of GV5P/GV6P thermal fault module

Type of trip			LV429424 <sup>(1)</sup>
Operational voltage (Ue)	Conforming to IEC 60947-1	V	24 to 415 V AC/ DC
Conventional thermal current (Ith)	Conforming to IEC 60947-5-1	A	80 mA max.

(1) LV429424 takes the place of the AU/AS electric trip coil and an auxiliary contact.

Ref.



Motor  
circuit  
breakers



Auxiliary contact characteristics													
Type of contacts			29450					29452					
Rated insulation voltage(Ui) (associated insulation coordination)	Conforming to IEC 60947-1	V	690					690					
Conventional thermal current (Ith)	Conforming to IEC 60947-5-1	A	6					5					
Mechanical durability (C.O.: Close - Open)		C.O.	50 000					50 000					
Operational current conforming to IEC 60947-5-1 a.c. operation	Rated operational voltage (Ue)	V	AC-12 or AC-15. 50 000 C.O.					AC-12 or AC-15. 50 000 C.O.					
		A	24	48	110	220/ 240	380/ 440	690	24	48	110	230/ 240	380/ 415
		A	6	6	6	6	6	6	5	5	5	5	5
Rated operational current (Ie)	AC-12	A	6	6	6	6	6	6	5	5	5	5	5
	AC-15	A	6	6	5	4	2	0.1	3	3	2.5	2	1.5
Operational current conforming to IEC 60947-5-1 d.c. operation	Rated operational voltage (Ue)	V	DC-12 or DC-14. 50 000 C.O.				DC-12 or DC-14. 50 000 C.O.						
		A	24	48	110	250	24	48	110	250			
		A	6	2.5	0.6	0.3	5	2.5	0.6	0.3			
Rated operational current (Ie)	DC-12	A	6	2.5	0.6	0.3	5	2.5	0.6	0.3			
	DC-14	A	1	0.2	0.05	0.03	1	0.2	0.05	0.03			
Minimum operational conditions d.c. operation	V		24				4						
	mA		100				1						
Short-circuit protection			By <b>GB2CB●●</b> circuit breaker (rating according to operational current for Ue ≤ 415 V) or gG fuse, 10 A max.										
Cabling	Solid cable	mm <sup>2</sup>	1 x 1.5 conductor					1 x 1.5 conductor					
	Flexible cable without cable end	mm <sup>2</sup>	1 x 1.5 conductor					1 x 1.5 conductor					
	Flexible cable with cable end	mm <sup>2</sup>	1 x 1.5 conductor					1 x 1.5 conductor					

Ref.



Motor  
circuit  
breakers

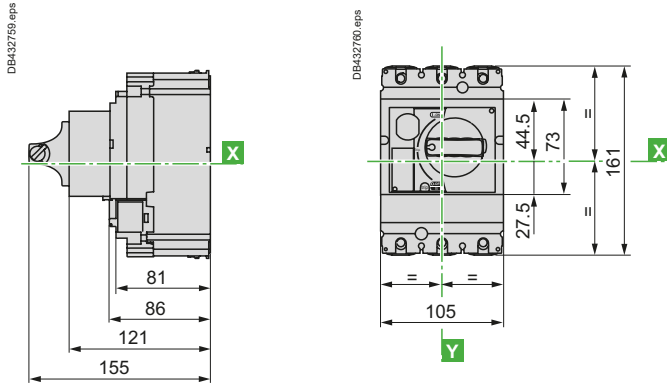
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

### Dimensions and mounting

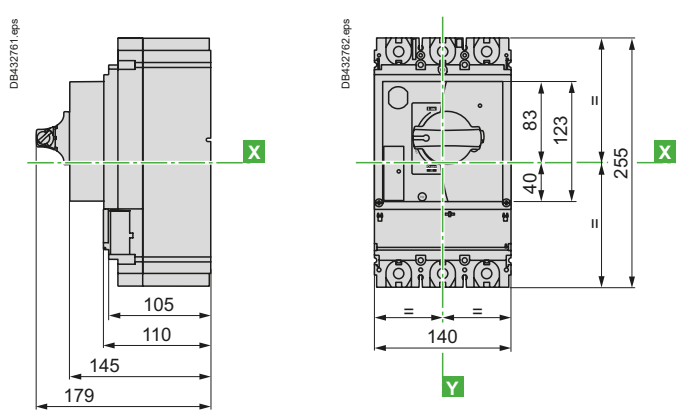
#### GV5P

#### Dimensions



#### GV6P

#### Dimensions



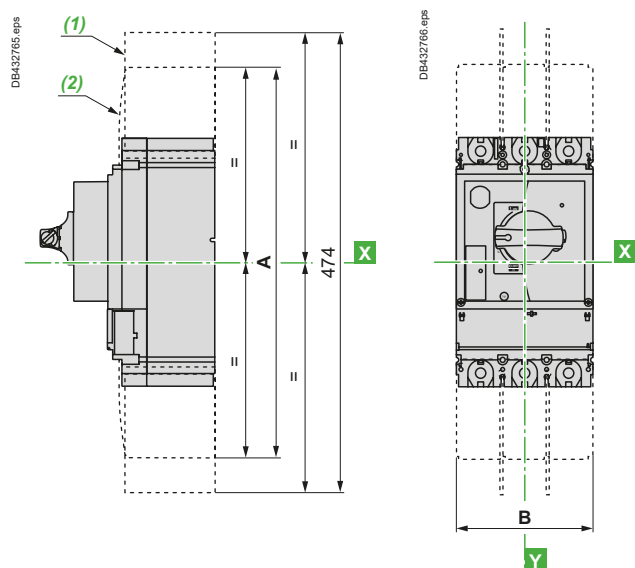
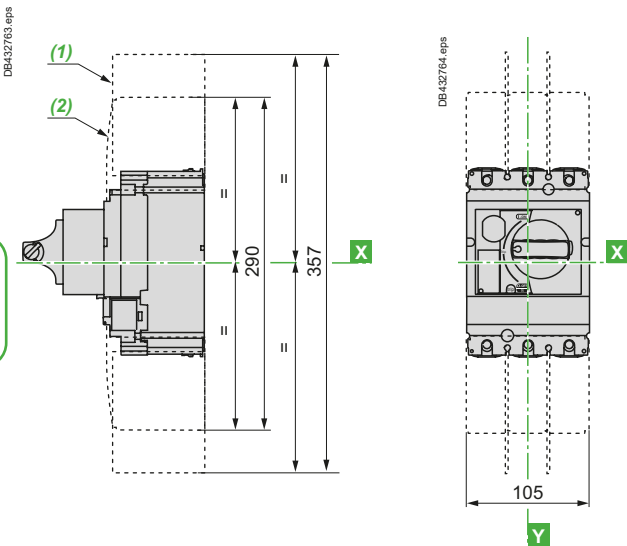
#### With long terminal shields or interphases barriers GV5P + GV7AC04/GV7AC01

#### GV6P + LV432593 / LV432595 / LV432570

Ref.



Motor circuit breakers

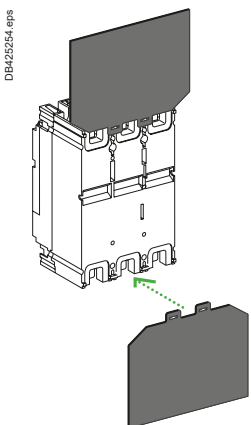


(1) Interphases barriers: **GV7AC04**.  
(2) Terminal shield: **GV7AC01**.

(1) Interphases barriers: **LV432570**.  
(2) Terminal shield: **LV432593 (45mm)** / **LV432595 (52.5mm)**.

	A	B
LV432593	400	140
LV432595	480	157.5

#### Insulating screen



Motor circuit breaker	GV5P + GV7AC05	GV6P + LV432578
3P W x H x thickness (mm)	140 x 105 x 1	203 x 175 x 1.5

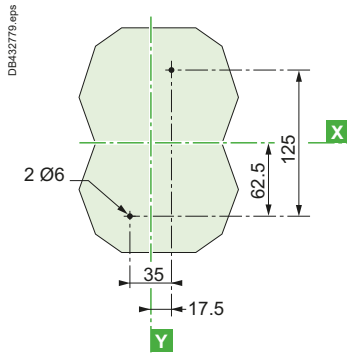
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

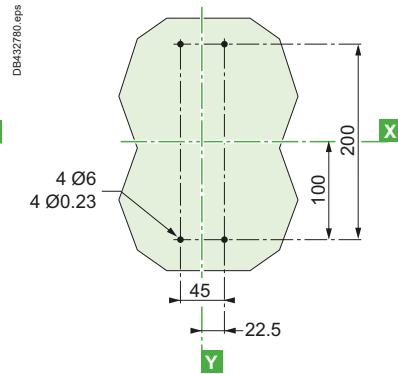
### Dimensions and mounting

#### GV5P/GV6P

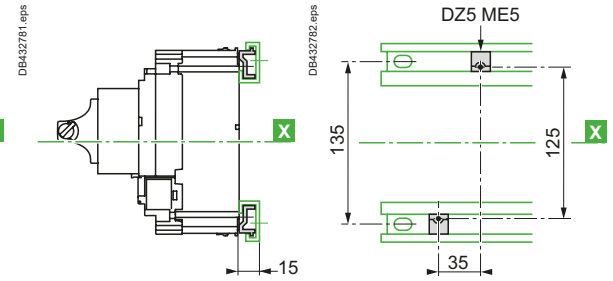
##### Panel mounting - GV5P



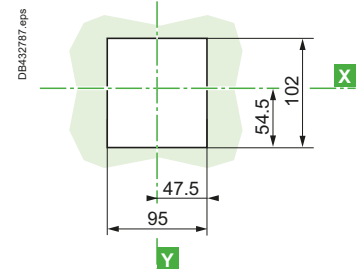
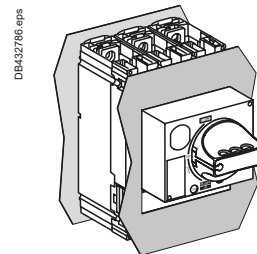
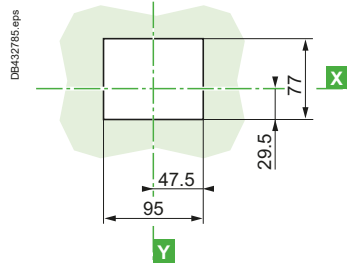
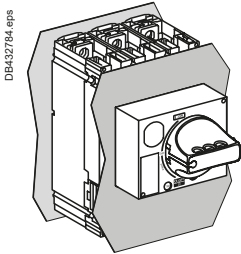
##### Panel mounting - GV6P



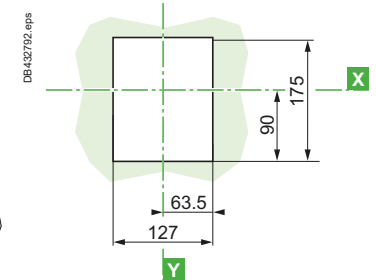
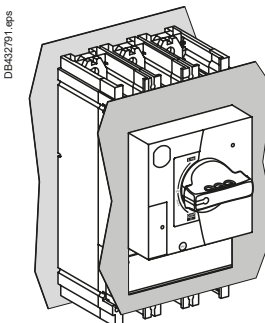
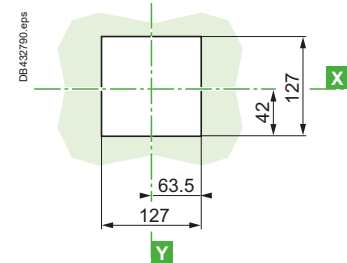
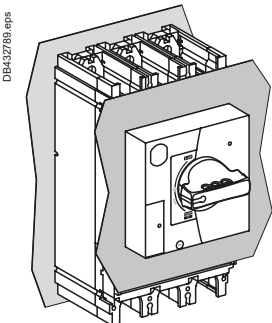
##### Mounting on 2 mounting rails for GV5P only



##### Door cut-out mounting GV5P



##### Door cut-out mounting GV6P



Ref.



Motor circuit breakers

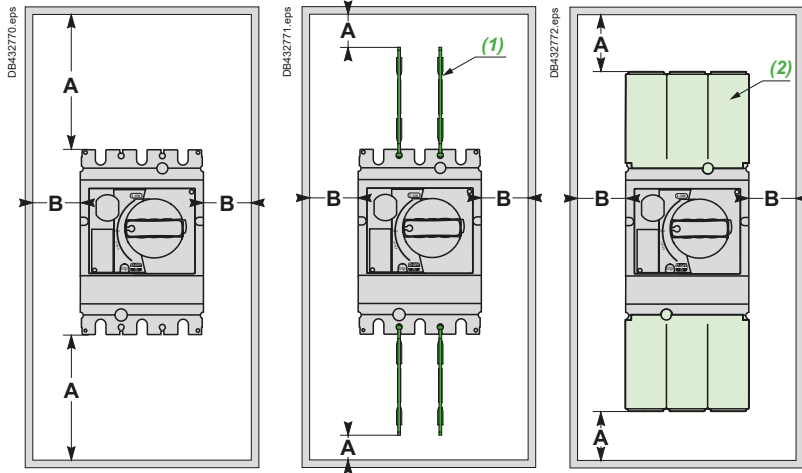
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

### Dimensions and mounting

#### GV5P

##### Minimum electrical clearance

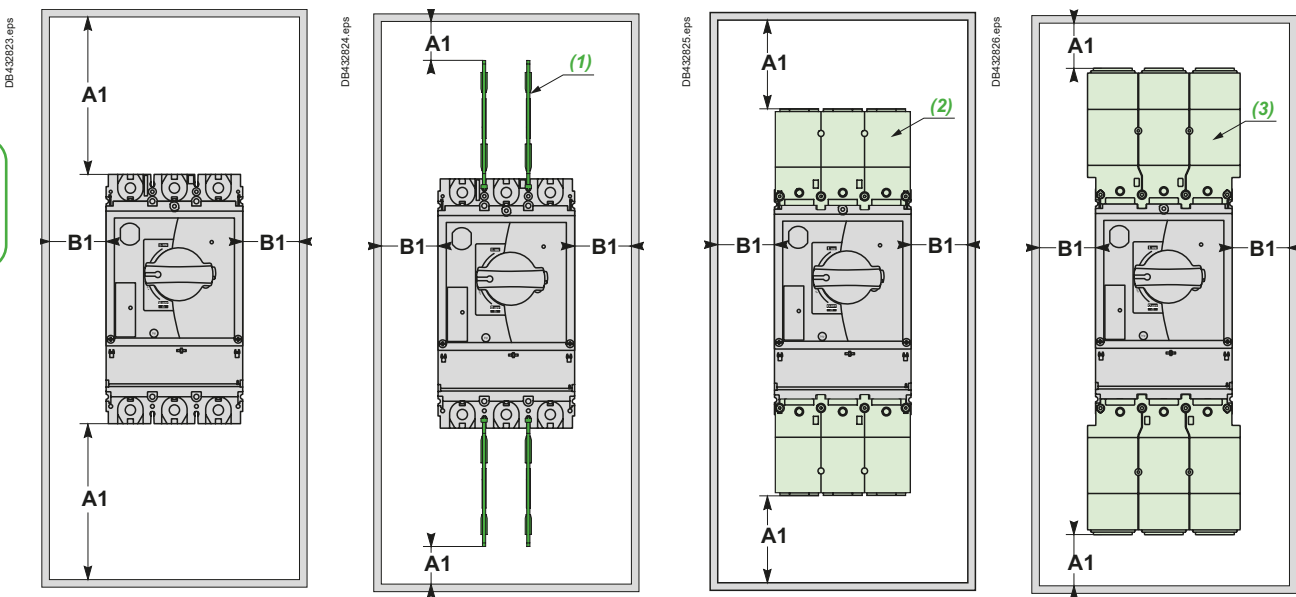


##### Clearance in mm

		Painted sheet metal		Bare metal plate	
		A	B	A	B
No accessories	$V \leq 500 V\sim$	30	0	40	20
	$V > 500 V\sim$	-	-	-	-
Interphases barriers <sup>(1)</sup>	$V \leq 500 V\sim$	0	0	10	20
	$V > 500 V\sim$	-	-	-	-
Terminal shield <sup>(2)</sup>	$V \leq 500 V\sim$	0	0	10	10
	$V > 500 V\sim$	30	10	40	20

#### GV6P

##### Minimum electrical clearance



##### Clearance in mm

		Painted sheet metal		Bare sheet metal	
		A1	B1	A1	B1
No accessories	$V \leq 500 V\sim$	30	0	40	20
	$V > 500 V\sim$	-	-	-	-
Interphase barriers <sup>(1)</sup>	$V \leq 500 V\sim$	0	0	10	20
	$V > 500 V\sim$	-	-	-	-
Long terminal shield (LV432593) <sup>(2)</sup>	$V \leq 500 V\sim$	30	0	40	10
	$V > 500 V\sim$	50	0	50	20
Long terminal shield (LV432595) <sup>(3)</sup>	$V \leq 500 V\sim$	0	0	10	10
	$V > 500 V\sim$	30	0	30	20

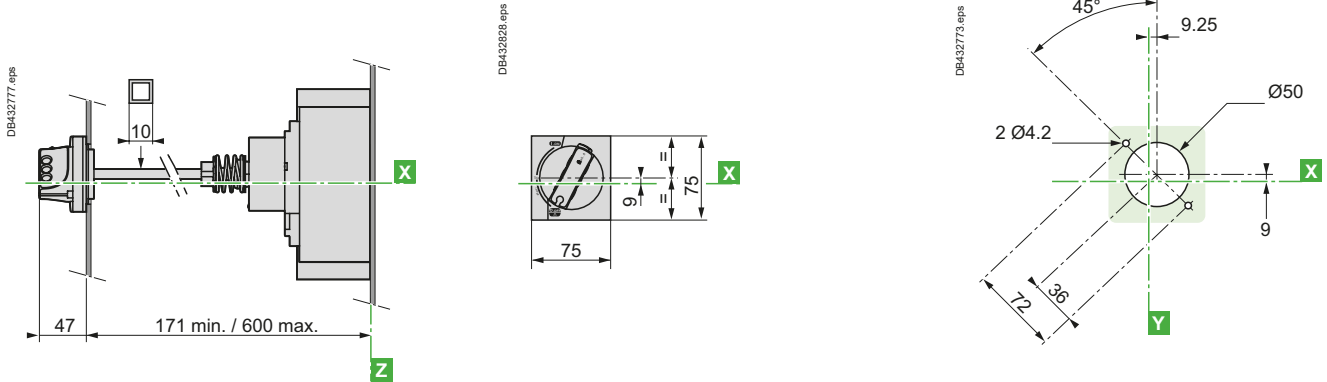
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

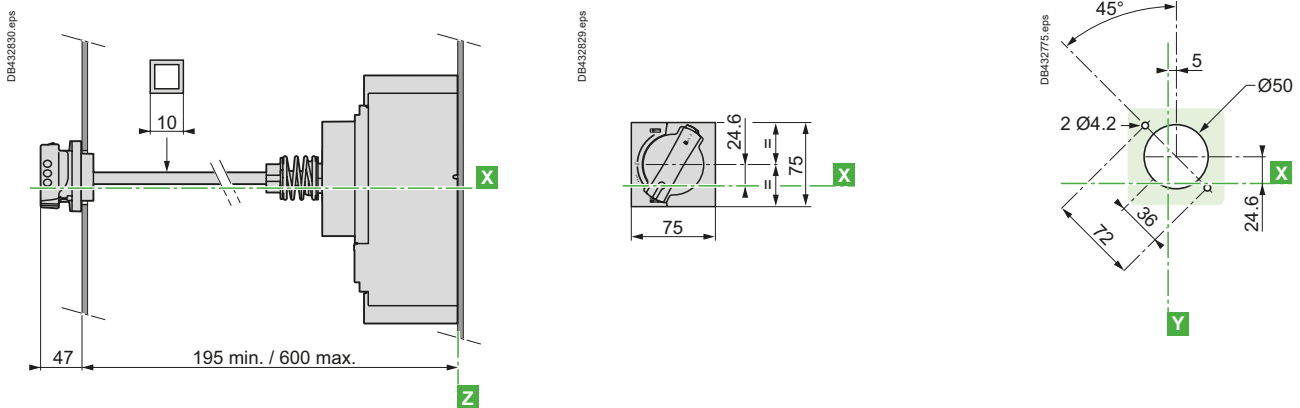
### Dimensions and mounting

#### GV5P/GV6P

##### GV5 with extended rotary handle GV7AP01/ GV7AP02

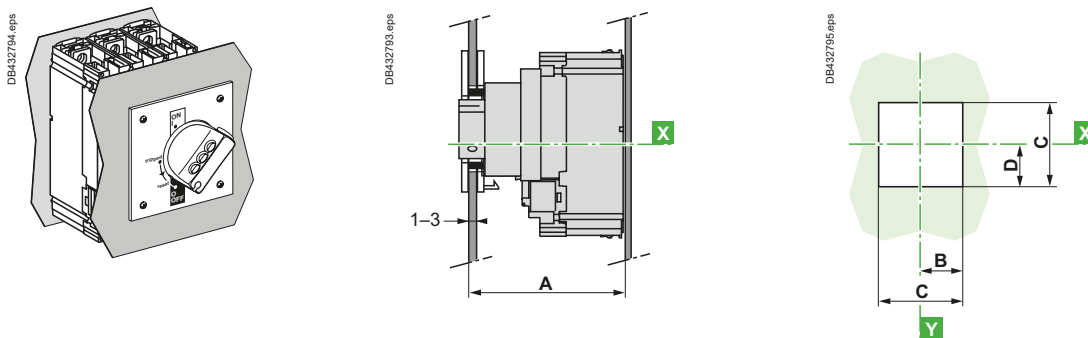


##### GV6 with extended rotary handle LV432598/ LV432600



#### GV5P/GV6P

##### MCC type direct rotary handle



	A	B	C	D
150/220 A	125 ±2	50	100	41
320/500 A	149 ±2	72.5	145	51

Ref.

Motor circuit breakers

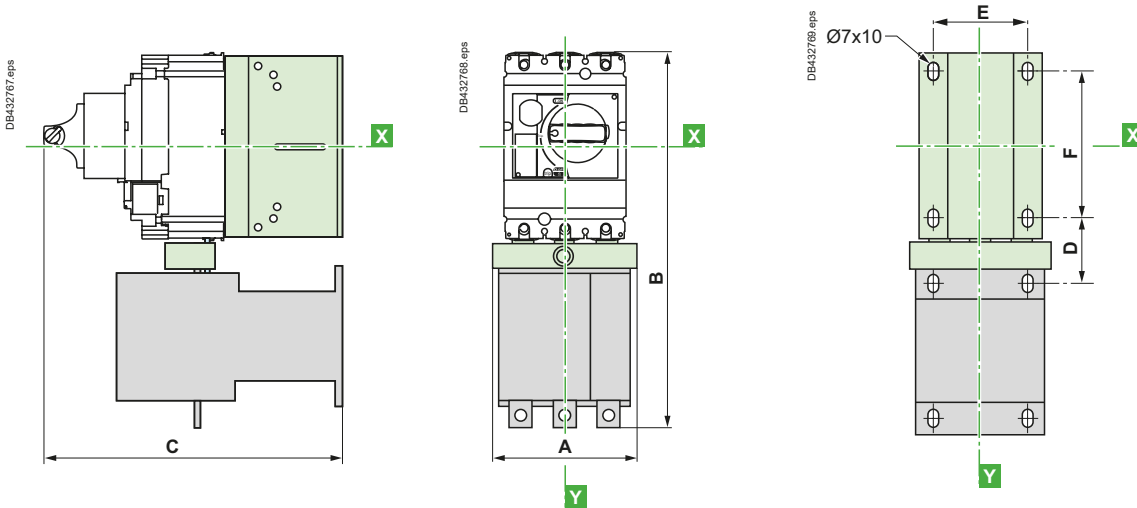
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

### Dimensions and mounting

#### GV5P

Combination of GV5P and contactor LC1F●●●/LC1D●●● with kit GV7AC0●



	A	B	C	D	E	F
GV5P + LC1F115 + GV7AC06	119	334	243	44	85	120
GV5P + LC1F150 + GV7AC06	119	334	243	46	85	120
GV5P + LC1F185 + GV7AC06	119	338	249	48	85	120
GV5P + LC1D115 + GV7AC08	120	332	205	48	85	120
GV5P + LC1D150 + GV7AC08	120	332	205	48	85	120

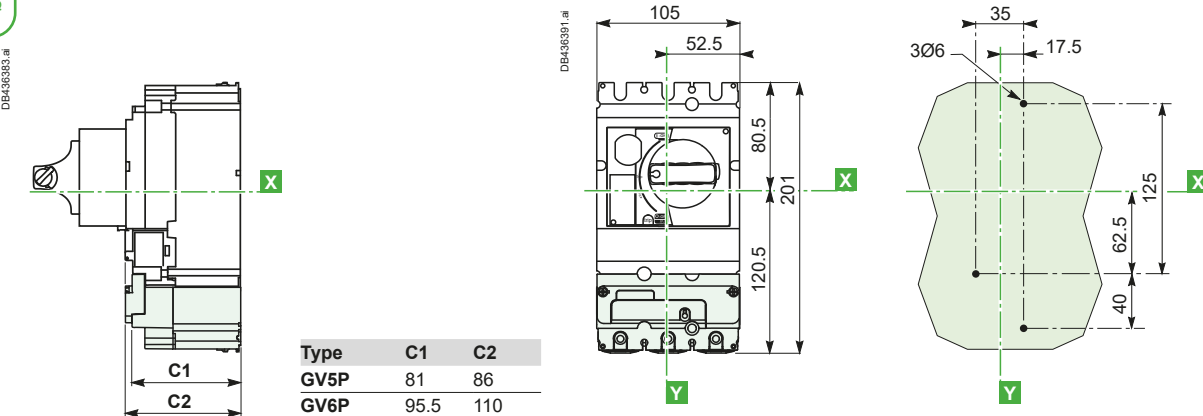
Minimum distance between 2 circuit breakers mounted side by side = 0

Motor circuit breakers

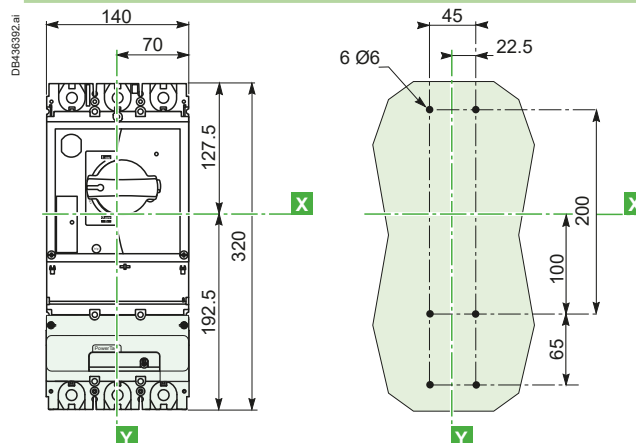
#### GV5P/GV6P

With additional PowerTag

GV5P with LV434020 / Panel mounting



GV6P with LV434022 / Panel mounting



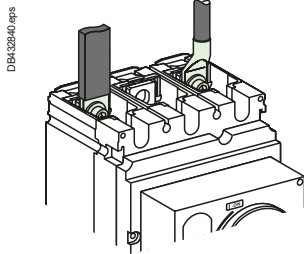
# TeSys Power

## Giga - Frame 5 - Frame 6 Motor circuit breakers

### Dimensions and mounting

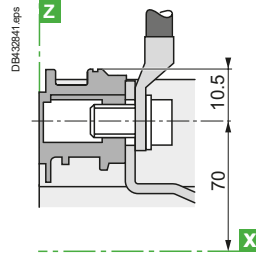
#### GV5P/GV6P

##### Front connection without accessories



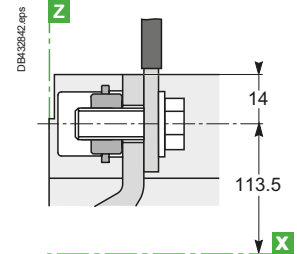
##### GV5P

##### Cables with lugs bars



##### GV6P

##### Bars/cables with lugs

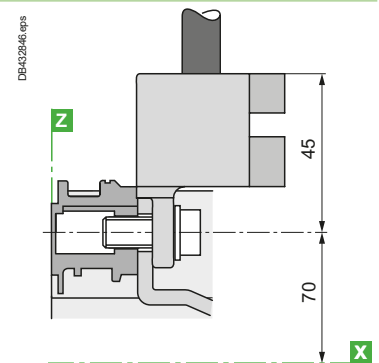
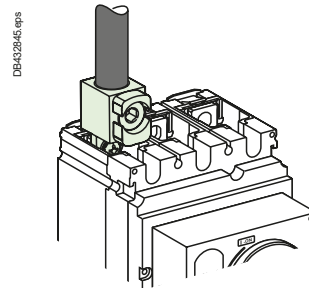
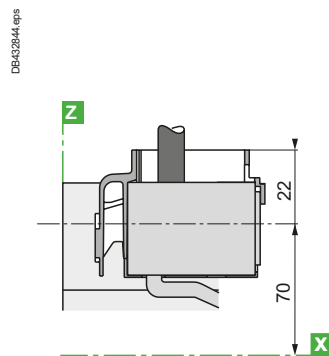
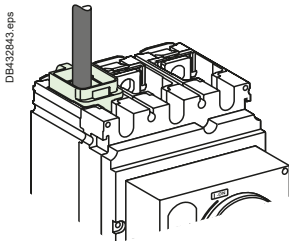


#### GV5P

##### Bare-cables connectors

##### GV7AC021/LV429227/GV7AC022

##### LV429244

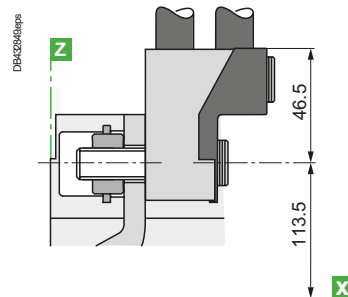
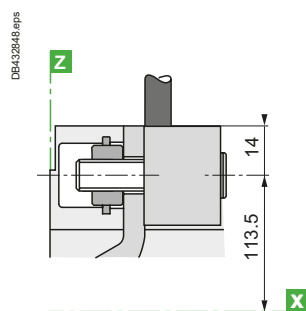
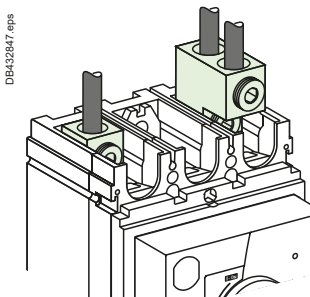


#### GV6P

##### Bare-cables connectors

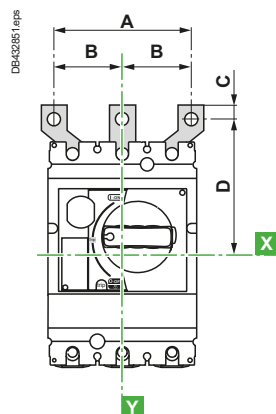
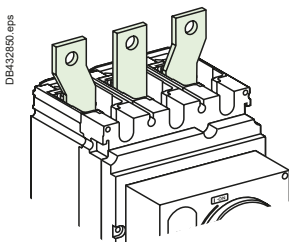
##### LV432479

##### LV432481



#### GV5P/GV6P

##### Spreaders



Type	A	B	C	D
GV5P/ Spreaders GV7AC03	114	45	11	100
GV6P/ Spreaders LV432490	135	52.5	15	152.5
GV6P/ Spreaders LV432492	170	70	15	166

Motor  
circuit  
breakers

# TeSys Power

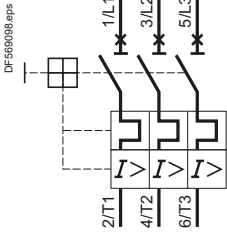
## Giga - Frame 5 - Frame 6 Motors circuit breakers

### Schemes

#### Schemes

##### Motor circuit breakers

GV5P/ 6P



##### Add-on auxiliary contacts according to their location <sup>(1)</sup>

29450, 29452

Location 1  
C/O contact



Location 2  
Trip indication



Location 3  
Electrical fault  
indication <sup>(2)</sup>



Location 4  
C/O contact



A self-adhesive label, supplied with the contact, can be affixed to the front face of the circuit-breaker to allow personalised marking according to the function of the contact or contacts.

(1) See pages B6/52 to B6/54.

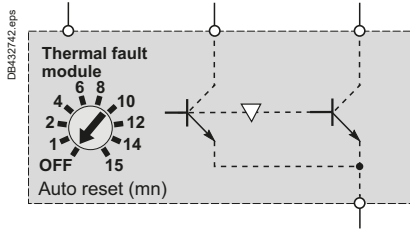
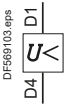
(2) Adapter LV429451 is mandatory for electrical trip indication in GV5.

##### Electric trips

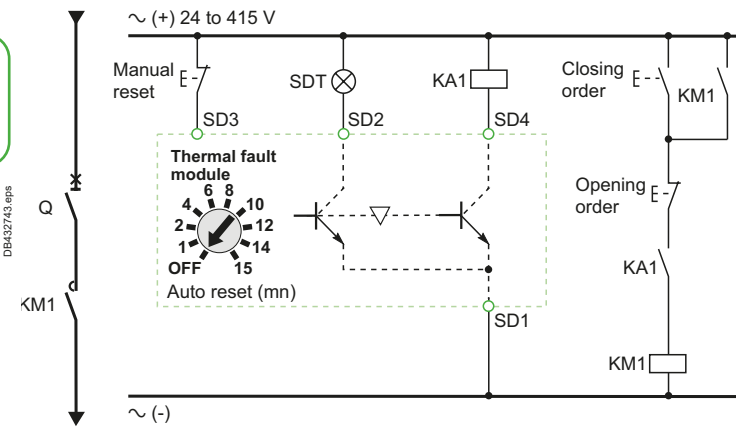
LV42940●

LV42938●

Thermal fault module LV429424



##### Recommended application schemes for LV429424



- SD1, SD3:** thermal fault module input power supply
  - SD2:** over-load fault signal output. This output will stay-put until reset
  - SD4:** contactor control output
  - SD2 and SD4:** Static outputs: 24 to 415 V AC / V DC; 80 mA max
  - KM1:** LC1D or LC1F contactor
  - KA1:** CA2 or CAD type control relays
- Terminals shown in green **○** must be connected by customer.



# PowerLogic™ Energy measurement solutions



Motor  
circuit  
breakers

# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Flex

### Characteristics

#### Energy measurement – PowerLogic

PowerTag Energy Flex 63 A (F63)

#### Main characteristics

Rated voltage	3P	Un	Phase-to-phase	V	380... 415 V AC ± 20 %
	3P+N	Un	Phase-to-neutral	V	220... 240 V AC ± 20 %
			Phase-to-phase	V	380... 415 V AC ± 20 %
Frequency				Hz	50/60
Maximum current		I <sub>max</sub>		A	63
Basic current		I <sub>b</sub>		A	10
Saturation current				A	130
Maximum consumption			3P/3P+N	VA	≤ 2
Starting current		I <sub>st</sub>		mA	40

#### Additional characteristics

Operating temperature		°C	-25 to +60
Storage temperature		°C	-40 to +85
Overvoltage category		As per IEC 61010-1	Cat. III
Measuring category		As per IEC 61010-2-030	Cat. III
Pollution degree			3
Altitude		m	≤ 2000
Degree of protection		Device only	IP20
		IK	05

#### Radio-frequency communication

ISM band 2.4 GHz		GHz	2.4 to 2.4835	
Channels		As per IEEE 802.15.4	11 to 26	
Isotropic Radiated Power		Equivalent (EIRP)	dBm	0
Maximum transmission time			ms	< 5
Channel occupancy		Messages sent every	s	5 minimum

#### Characteristics of measuring functions

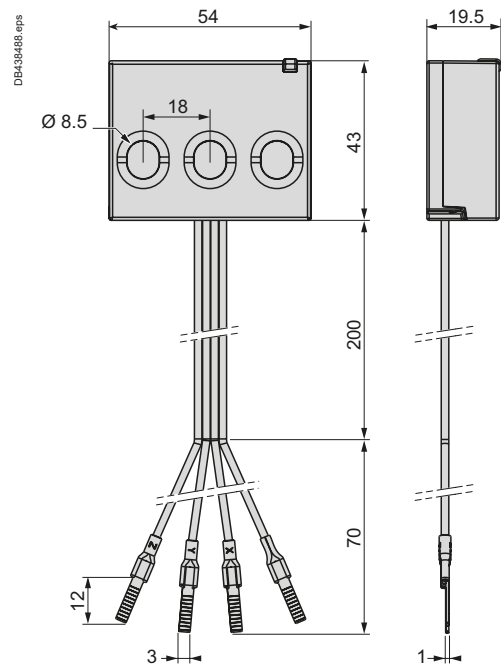
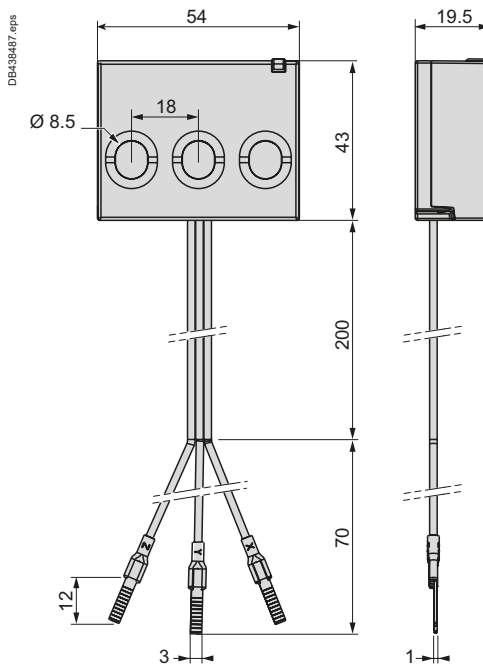
Function	Symbol	Performance category as per IEC 61557-12 (PMD-I/DD/K55/1)	Measuring range
		Class	
Active power	P	1	9 W to 63 kW
Active energy	E <sub>a</sub>	1	Total and partial 0 to 99999999.9 kWh
Current	I	1	40 mA to 63 A
Voltage	U	0.5	Un ± 20 %
Power factor	PFA	1	0 to 1

#### Dimensions

A9MEM1573

3P

3P + N



A9MEM1570



References:  
page B6/59

# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Flex

### Characteristics

#### Energy measurement – PowerLogic

PowerTag Energy Flex 160 A (F160)

#### Main characteristics (as per IEC 61557-12)

Rated voltage	Un	Phase-to-neutral	V	100...277 V AC ± 20 %
		Phase-to-phase		173...480 V AC ± 20 %
Frequency			Hz	50/60
Maximum current	I <sub>max</sub>		A	160
Maximum operating current				1.2 x I <sub>max</sub>
Saturation current				2 x I <sub>max</sub>
Maximum consumption			VA	3
Starting current	I <sub>st</sub>		mA	100
Basic current	I <sub>b</sub>		A	25

#### Additional characteristic

Operating temperature		°C	-25 to +70
Storage temperature		°C	-40 to +85
Overvoltage category	As per IEC 61010-1		Cat. IV
Measuring category	As per IEC 61010-2-030		Cat. IV
Pollution degree			3
Altitude		m	Up to 2000 without derating <sup>(1)</sup>
Degree of protection device			IP20 IK05

#### Radio-frequency communication

ISM band 2.4 GHz		GHz	2.4 to 2.4835
Channels	As per IEEE 802.15.4		11 to 26
Isotropic Radiated Power	Equivalent (EIRP)	dBm	0
Maximum transmission time		ms	< 5
Channel occupancy	For 1 device	s	messages sent every 5

#### Characteristics of measuring functions

Function	Symbol	Performance category as per IEC 61557-12 (PMD-II/DD/K70/1)		Measuring range
		Class	Measuring range	
Total active power (Active power per phase)	P	1	2.5 to 160 A	24 W (8 W) to 192 kW
Total reactive power (Reactive power per phase)	Q <sub>A</sub>	2		30 VAR (10 VAR) to 192 kVAR
Total apparent power (Apparent power per phase)	S <sub>A</sub>	2		38 VA (13 VA) to 192 kVA
Active Energy: per phase, total, partial, delivered and received	E <sub>a</sub>	1		0 to 281.10 <sup>9</sup> kWh
Reactive energy: per phase, total, partial, delivered and received	E <sub>rA</sub>	2		0 to 281.10 <sup>9</sup> kVARh
Apparent energy: per phase, total, partial	E <sub>apA</sub>	2		0 to 281.10 <sup>9</sup> kVAh
Frequency	f	1	50 / 60 Hz ± 2 %	45 to 65 Hz
Phase current	I	1	5 to 160 A	100 mA to 320 A
Neutral current	I <sub>NC</sub>	2		
Voltages (Line to Line)	U	0.5	Un ± 20 %	138 to 576 V AC
Power factor (per phase, total)	PF <sub>A</sub>	1	From 0.5 inductive to 0.8 capacitive	-1 to 1

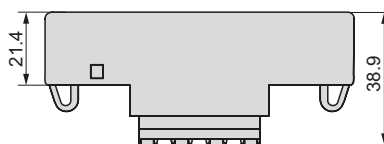
<sup>(1)</sup> Above 2000 m, please consult us.

#### Dimensions

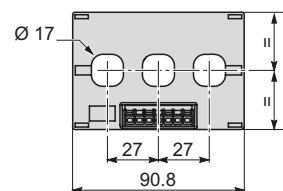
PowerTag Energy Flex 160 A



DB438489.eps



DB438490.eps



# PowerLogic™ Energy measurement solutions

## PowerTag™ Energy Monoconnect 250 A, 630 A

### Characteristics

#### Energy measurement – PowerLogic

##### PowerTag Energy Monoconnect 250 A, 630 A

#### Main characteristics

Rated voltage	Un	Phase-to-neutral	V	230 V AC ± 20 %
		Phase-to-phase	V	400 V AC ± 20 %
Frequency			Hz	50/60
Maximum current	I <sub>max</sub>		A	250/630
Maximum operating current				1.2 x I <sub>max</sub>
Saturation current				2 x I <sub>max</sub>
Maximum consumption			VA	3.7
Starting current	I <sub>st</sub>		mA	160/400
Basic current	I <sub>b</sub>		A	40/100

#### Additional characteristic

Operating temperature		°C	-25 to +70
Storage temperature		°C	-50 to +85
Overvoltage category	As per IEC 61010-1		Cat. IV
Measuring category	As per IEC 61010-2-030		Cat. III
Pollution degree			3
Altitude			Up to 2000 m without derating <sup>(1)</sup>
Degree of protection device			IP20 IK07

Ref.

#### Radio-frequency communication

ISM band 2.4 GHz		GHz	2.4 to 2.4835
Channels	As per IEEE 802.15.4		11 to 26
Isotropic Radiated Power	Equivalent (EIRP)	dBm	0
Maximum transmission time		ms	< 5
Channel occupancy	For 1 device	s	messages sent every 5

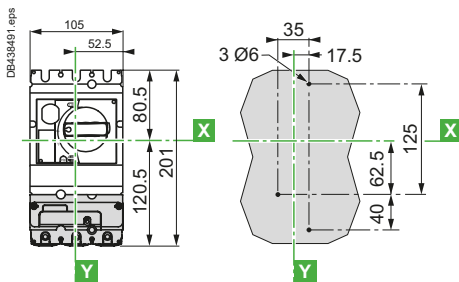
#### Characteristics of measuring functions

Function	Symbol	Performance category as per IEC 61557-12 (PMD-II/DD/K70/1)		Measuring range (250 A / 630 A)
		Class	Measuring range	
Total active power (Active power per phase)	P	1	4 to 250 A / 10 to 630 A	88 W (29 W) to 416 kW / 222 W (74 W) to 1048 kW
Total reactive power (Reactive power per phase)	Q <sub>A</sub>	2		88 VAR to 416 kVAR / 221 VAR to 1048 kVAR
Total apparent power (Apparent power per phase)	S <sub>A</sub>	2		88 VA to 416 kVA / 221 VA to 1048 kVA
Active Energy: per phase, total, partial, delivered and received	E <sub>a</sub>	1		0 to 281.109 kWh
Reactive energy: per phase, total, partial, delivered and received	E <sub>rA</sub>	2		0 to 281.109 kVARh
Frequency	f	1	45 to 55 Hz	45 to 65 Hz
Phase current	I	1	8 to 250 A / 20 to 630 A	160 mA to 500 A / 400 mA to 1260 A
Voltages (Line to Line)	U	0.5	Un ± 20 %	320 to 480 V AC
Power factor	PF <sub>A</sub>	1	From 0.5 inductive to 0.8 capacitive	-1 to 1

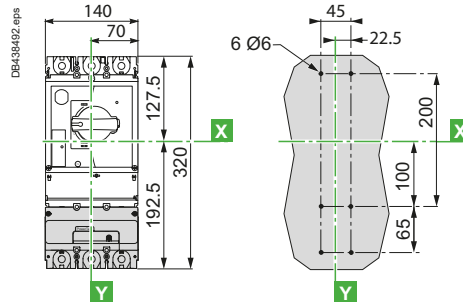
<sup>(1)</sup> Above 2000 m, please consult us.

#### Dimensions

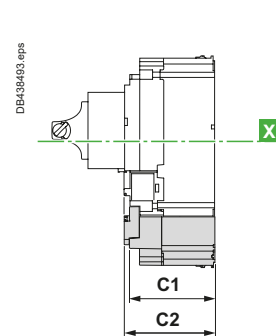
##### GV5P with LV434020 / Panel mounting



##### GV6P with LV434022 / Panel mounting



##### With additional PowerTag



Type	C1	C2
GV5P	81	86
GV6P	95.5	110

References:  
page B6/61

Motor circuit breakers

#### Energy measurement – PowerLogic

##### PowerTag Link

#### Main characteristics

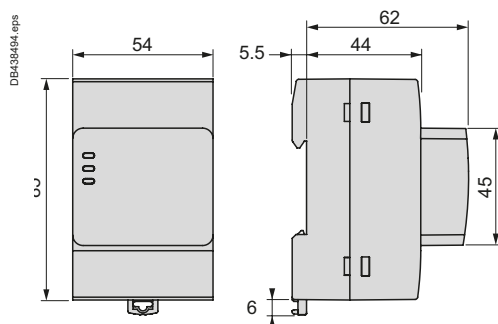
Supply voltage	Us	<b>V</b>	110/230 V AC ± 20 %, 2 A
Frequency		<b>Hz</b>	50/60
Power consumption		<b>VA</b>	5
Communication interface			Ethernet 10/100 BASE-T, Cable length ≤ 100 m Cat.6 STP
Wireless communication			Up to 20 or 100 PowerTag Energy sensors
Integrated connection type			DHCP client (Ethernet port)
Local indication	Product state		Green, orange and red LED
	Ethernet state (LAN ST)		Green, orange and red LED
Overvoltage category			III
Radio-frequency communication	ISM band 2.4 GHz	<b>GHz</b>	2.4 to 2.4835
Degree of protection (IEC 60529)	Device only		IP20
	Device in modular enclosure		IP40
Fire resistance			Insulation class II 650 °C, 30 s
Environment			In compliance with the RoHS directive REACH Regulations

#### Additional characteristics

Operating temperature		<b>°C</b>	-25 to +60
Storage temperature		<b>°C</b>	-40 to +85
Pollution degree			2
Tropicalization (IEC 60068-2-30)			Treatment 2 (relative humidity of 93 % at 40°C)
Operating altitude		<b>m</b>	0 to 2000
Electromagnetic compatibility	Reference standards		
	Immunity		EN 55035
	Emissions		EN 55032
	Electromagnetic compatibility and Radio spectrum Matters (ERM)		EN 300328 EN 301489-1 EN 301489-17

#### Dimensions

##### PowerTag Link



Ref.

Motor  
circuit  
breakers



# TeSys Modular circuit breakers

0.5 to 20 A

(for equipment and control circuits)



Motor  
circuit  
breakers



Motor circuit breakers

Environment			GB2CB	GB2CD	GB2DB	GB2CS					
Circuit breaker type			IEC 60947-1, 947-2, EN 60947-1, 60947-2								
Conforming to standards			IEC 60947-1, 947-2, EN 60947-1, 60947-2								
Product certifications			cCSAus <sup>(1)</sup>	cCSAus <sup>(1)</sup>	-	-					
Degree of protection	Conforming to IEC 60529		IP 20								
Shock resistance	Conforming to IEC 60068-2-27		22 gn for 20 ms								
Vibration resistance	Conforming to IEC 60068-2-6		5 gn (5...110 Hz)								
Ambient air temperature around the device	Storage	°C	-40...+80								
	Operation	°C	-20...+60								
Flame resistance	Conforming to IEC 60695-2-11	°C	960								
Maximum operating altitude		m	3000								
Operating position	In relation to normal vertical mounting plane										
			GB2CB, CD, CS		GB2DB						
Cabling	Solid cable	mm <sup>2</sup>	Minimum c.s.a.		Maximum c.s.a.						
	Flexible cable with cable end	mm <sup>2</sup>	1 x 0.75		1 x 6 or 2 x 4						
Tightening torque		N.m	1.2								
<b>Technical characteristics</b>											
Utilisation category	Conforming to IEC 60947-2		A		A						
Rated operational voltage (Ue)	Conforming to IEC 60947-2	V	250 <sup>(2)</sup>		250						
	Conforming to CSA C22-2 Nr 14 and UL 1077	V	277		277						
Rated operational frequency	Conforming to IEC 60947-2	Hz	50/60		50/60						
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947-2	kV	4		4						
Total power dissipated per pole		W	2		2						
Mechanical and electrical durability	C.O.: Closing - Opening	C.O.	8000		8000						
Operational current correction coefficient (a or --)	According to the permissible ambient temperature	°C	-20	-10	0	+10	+20	+30	+40	+50	+60
	Correction coefficient		1.2	1.15	1.1	1.05	1	0.95	0.90	0.85	0.80
Tripping threshold	Of the magnetic trips		12...16 In		12...16 In		12...16 In		5...7 In		

(1) Except for GB2CB16, GB2CB22, GB2CD16, GB2CD22.

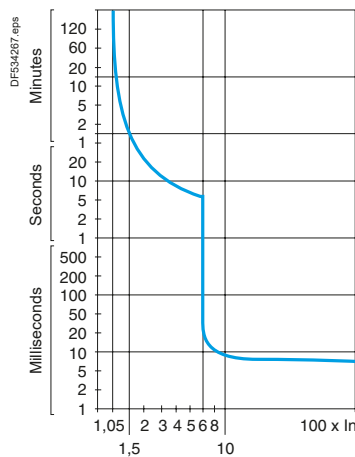
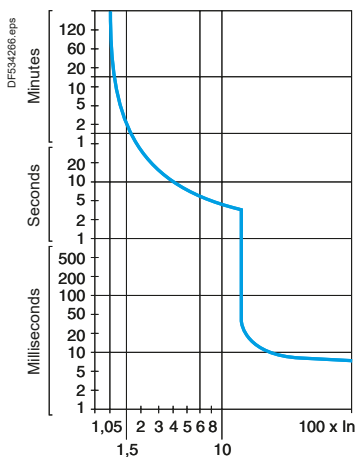
(2) Ue = 415 V when a GB2 circuit breaker is fitted on every live conductor.

### Tripping curves

Average operating time at 20 °C without prior current flow (cold state)

GB2CB, GB2CD, GB2 DB

GB2CS





# TeSys Power

## Modular circuit breakers for auxiliary circuits - Thermal-magnetic

### Characteristics

Circuit breaker type			GB2											
			CB05	CB06	CB07	CB08	CB09	CB10	CB12	CB14	CB16	CB20	CB21	CB22
Rating		A	0.5	1	2	3	4	5	6	8	10	12	16	20
Breaking capacity conforming to IEC 60947-2 ~ 50/60 Hz	110 V	Icu	kA	50	50	15	10	6	3	3	2	2	2	2
		Ics % <sup>(1)</sup>		100	50	50	50	50	75	75	75	75	75	75
	230/240 V	Icu	kA	50	50	15	3	3	2	1.5	1.5	1.5	1.5	1.5
		Ics % <sup>(1)</sup>		25	25	25	50	50	75	75	75	75	75	75
Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2	110 V	aM	A	*	*	20	25	25	40	40	50	50	63	63
		gG	A	*	*	25	32	32	50	50	63	63	80	80
	230/240 V	aM	A	*	*	16	20	20	32	32	40	40	50	50
		gG	A	*	*	25	32	32	40	40	50	50	63	63

Circuit breaker type			GB2											
			CD05	CD06	CD07	CD08	CD09	CD10	CD12	CD14	CD16	CD20	CD21	CD22
Rating		A	0.5	1	2	3	4	5	6	8	10	12	16	20
Breaking capacity conforming to IEC 60947-2 ~ 50/60 Hz	110 V	Icu	kA	50	50	15	10	6	3	3	2	2	2	2
		Ics % <sup>(1)</sup>		100	50	50	50	50	75	75	75	75	75	75
	230/240 V	Icu	kA	50	50	15	3	3	2	1.5	1.5	1.5	1.5	1.5
		Ics % <sup>(1)</sup>		25	25	25	50	50	75	75	75	75	75	75
Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2	110 V	aM	A	*	*	20	25	25	40	40	50	50	63	63
		gG	A	*	*	25	32	32	50	50	63	63	80	80
	230/240 V	aM	A	*	*	16	20	20	32	32	40	40	50	50
		gG	A	*	*	25	32	32	40	40	50	50	63	63

Circuit breaker type			GB2											
			DB05	DB06	DB07	DB08	DB09	DB10	DB12	DB14	DB16	DB20	DB21	DB22
Rating		A	0.5	1	2	3	4	5	6	8	10	12	16	20
Breaking capacity conforming to IEC 60947-2 ~ 50/60 Hz	110 V	Icu	kA	50	50	15	10	6	3	3	2	2	2	2
		Ics % <sup>(1)</sup>		100	50	50	50	50	75	75	75	75	75	75
	230/240 V	Icu	kA	50	50	15	3	3	2	1.5	1.5	1.5	1.5	1.5
		Ics % <sup>(1)</sup>		25	25	25	50	50	75	75	75	75	75	75
	400/415 V	Icu	kA	50	50	15	3	3	2	1.5	1.5	1.5	1.5	1.5
		Ics % <sup>(1)</sup>		25	25	25	50	50	75	75	75	75	75	75
Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2	110 V	aM	A	*	*	20	25	25	40	40	50	50	63	63
		gG	A	*	*	25	32	32	50	50	63	63	80	80
	230/240 V	aM	A	*	*	16	20	20	32	32	40	40	50	50
		gG	A	*	*	25	32	32	40	40	50	50	63	63
	400/415 V	aM	A	*	*	16	20	20	32	32	40	40	50	50
		gG	A	*	*	25	32	32	40	40	50	50	63	63

(1) As % of Icu.

\* Fuse not required. Breaking capacity Icu > Isc.



Motor circuit breakers

# TeSys Power

## Modular circuit breakers for auxiliary circuits - Thermal-magnetic

### Characteristics

Circuit breaker type				GB2													
				●●05	●●06	●●07	●●08	●●09	●●10	●●12	●●14	●●16	●●20	●●21	●●22		
Breaking capacity (Icu) conforming to IEC 60947-2 ...	24 V	kA		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		
	48 V	kA		1	1	1	1	1	1	1	1	–	–	–	–		
Operational current conforming to IEC 60947-5-1 ...	DC-12	24 V	A	0.5	1	2	3	4	5	6	8	10	12	16	20		
		48 V	A	0.5	1	2	3	4	5	6	8	10	12	16	20		
	DC-13	24 V	A	0.5	1	2	3	4	5	6	8	10	12	16	20		
		48 V	A	0.5	1	2	3	4	5	6	8	–	–	–	–		
Circuit breaker type				GB2													
Rating				CS05						CS06							
Breaking capacity conforming to IEC 60947-2 ~ 50/60 Hz	110 V	Icu	kA	50						50							
		Ics % <sup>(1)</sup>		100						100							
	230/240 V	Icu	kA	50						50							
		Ics % <sup>(1)</sup>		25						25							
	400/415 V <sup>(2)</sup>	Icu	kA	50						50							
		Ics % <sup>(1)</sup>		25						25							
Breaking capacity (Icu) conforming to IEC 60947-2 ...	24 V	kA		1.5						1.5							
	48 V	kA		1						1							
Operational current conforming to IEC 60947-5-1 ...	DC-12	24 V	A	0.5						1							
		48 V	A	0.5						1							
	DC-13	24 V	A	0.5						1							
		48 V	A	0.5						1							
Maximum permissible line length for star-delta starting (length of cable containing 2 or more conductors)	With contactors LC●D09 ... D18	Operational voltage	V	48	110	230	48	110	230								
		C.s.a.	0.60 mm <sup>2</sup>	m	<sup>(3)</sup>	31	365	6	85	230							
			0.75 mm <sup>2</sup>	m	<sup>(3)</sup>	39	460	8	110	290							
			1 mm <sup>2</sup>	m	<sup>(3)</sup>	52	610	10	145	380							
			1.5 mm <sup>2</sup>	m	<sup>(3)</sup>	78	910	15	220	570							
			2.5 mm <sup>2</sup>	m	<sup>(3)</sup>	130	1520	26	360	950							
			4 mm <sup>2</sup>	m	<sup>(3)</sup>	200	2400	41	580	1500							
		With contactors LC●D25 ... D32	Operational voltage	V	48	110	230	48	110	230							
				C.s.a.	0.60 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	230	<sup>(3)</sup>	56	230					
					0.75 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	290	<sup>(3)</sup>	70	290					
					1 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	390	<sup>(3)</sup>	95	380					
					1.5 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	580	<sup>(3)</sup>	140	570					
					2.5 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	970	<sup>(3)</sup>	230	950					
					4 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	1500	<sup>(3)</sup>	375	1500					
				With contactors LC●D40 ... D80	Operational voltage	V	48	110	230	48	110	230					
						C.s.a.	0.60 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	46	<sup>(3)</sup>	13	100			
							0.75 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	60	<sup>(3)</sup>	17	130			
							1 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	80	<sup>(3)</sup>	22	170			
							1.5 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	120	<sup>(3)</sup>	34	250			
							2.5 mm <sup>2</sup>	m	<sup>(3)</sup>	<sup>(3)</sup>	190	<sup>(3)</sup>	56	420			
	4 mm <sup>2</sup>					m	<sup>(3)</sup>	<sup>(3)</sup>	310	<sup>(3)</sup>	90	680					

(1) As % of Icu.

(2) One GB2CS circuit breaker on each live conductor.

(3) Use relays.



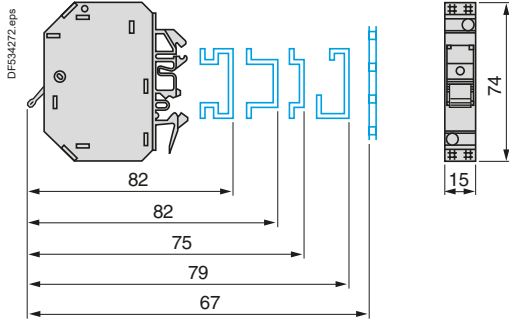
# TeSys Power

## Modular circuit breakers for auxiliary circuits - Thermal-magnetic

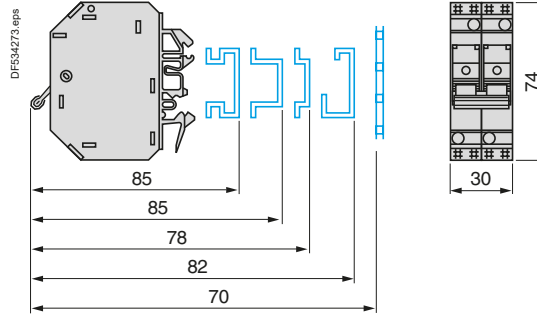
### Dimensions and schemes

#### Dimensions

##### GB2CB●●, GB2CD●●, GB2CS●●



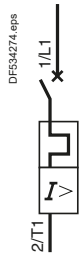
##### GB2DB●●



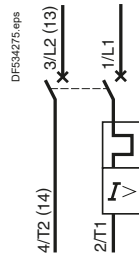
Marking: up to twelve AB1 R clip-in markers.

#### Schemes

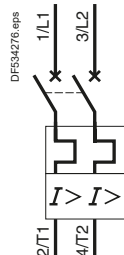
##### GB2CB●●



##### GB2CD●●



##### GB2DB●●



##### GB2CS●●



Ref.



Motor  
circuit  
breakers



TeSys SK, K Relays	
Product	Pages
Mini relays - 2 contacts, simultaneous action TeSys SK, SKE	 B7/2
Relays - 4 contacts, simultaneous action TeSys K	 B7/4
Auxiliary contact blocks, accessories TeSys K	 B7/6
TeSys Deca Relays	
Relays 5 contacts, simultaneous action	 B7/8
TeSys Deca Accessories	 B7/10

Control  
relays

Technical Data for Designers B7/13

# TeSys Control

## SK, SKE Mini control relays

### Product references

PB121522.tif



CA2SK11●●

#### Mini control relays

- Width of mini control relays 27 mm.
- Mounting on 35 mm rail.
- Connection by connectors.

Control circuit supply	Auxiliary contacts		Basic reference, to be completed by adding the voltage code <sup>(1)</sup>
a.c. supply	2	–	CA2SK20●●
	1	1	CA2SK11●●
d.c. supply	2	–	CA3SK20●●
	1	1	CA3SK11●●

PB121523.eps



CA2SKE20●●

#### Mini control relay with alternating contacts

This mini control relay with alternating contacts (see function diagram page B7/17) makes it possible to automatically split the operating time between 2 circuits of a redundant system. By regularly energising the “safety circuits”, this device makes it possible to ensure that they are operating correctly.

- Width of mini control relay 45 mm.
- Fixing by Ø4 screws.
- Connection by connectors.
- Cannot be fitted with front-mounted auxiliary contact block.
- Cannot be fitted with coil suppressor module.

Control circuit supply	Auxiliary contacts		Basic reference, to be completed by adding the voltage code <sup>(1)</sup>
a.c. supply	2	–	CA2SKE20●●

<sup>(1)</sup> Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

#### Mini control relays CA2SK and CA2SKE

Volts ~ 50/60 Hz	24	48	110	120	220	230	240	380	400
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7

#### Mini control relays CA3SK

Volts –	12	24	36	48	72
Code	JD	BD	CD	ED	SD

Control relays

# TeSys Control

## SK, SKE Mini control relays - Contact block - Suppressor





### Product references



LA1SK●●

#### Instantaneous auxiliary contact blocks

##### Clip-on front mounting

For use on control relays	Maximum number of blocks per contactor	Composition		Reference
CA2SK20	1			LA1SK20
		-		LA1SK02
				LA1SK11

#### Suppressor modules

##### Connection without need for tools by clipping onto right-hand side of contactor

For use on control relays	Type	For voltages	Sold in lots of	Unit reference
CA2SK and CA3SK	Varistor (1)	~ and ≍ 24 V...48 V	10	LA4SKE1E
		~ and ≍ 110 V...250 V	10	LA4SKE1U
	Diode (2)	≍ 24 V...250 V	10	LA4SKC1U

- (1) Protection provided by limiting the transient voltage to  $2 U_c$  max.  
Maximum reduction of transient voltage peaks.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- (2) No overvoltage or oscillating frequency.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).



LA4SK●1●



# TeSys Control

## K Control relays

### Product references

PE123768.epps



CA2KN22●●

#### Control relays for a.c. control circuit

- Mounting on 35 mm rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

Control circuit Consumption	Auxiliary contacts	Basic reference, to be completed by adding the voltage code <sup>(1)</sup>

#### Screw clamp connections

4.5 VA	4 –	CA2KN40●●
	3 1	CA2KN31●●
	2 2	CA2KN22●●

#### Spring terminal connections

4.5 VA	4 –	CA2KN403●●
	3 1	CA2KN313●●
	2 2	CA2KN223●●

#### Faston connectors, 1 x 6.35 or 2 x 2.8

4.5 VA	4 –	CA2KN407●●
	3 1	CA2KN317●●
	2 2	CA2KN227●●

#### Solder pins for printed circuit boards

4.5 VA	4 –	CA2KN405●●
	3 1	CA2KN315●●
	2 2	CA2KN225●●

#### Control relays for d.c. control circuit

- Mounting on 35 mm rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

#### Screw clamp connections

3 W	4 –	CA3KN40●●
	3 1	CA3KN31●●
	2 2	CA3KN22●●

#### Spring terminal connections

3 W	4 –	CA3KN403●●
	3 1	CA3KN313●●
	2 2	CA3KN223●●

#### Solder pins for printed circuit boards

3 W	4 –	CA3KN405●●
	3 1	CA3KN315●●
	2 2	CA3KN225●●

(1) Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used.

Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Control relays CA2K (0.8...1.15 Uc) (0.85...1.1 Uc)

Volts ~	12	20	24 <sup>(2)</sup>	36	42	48	110	115	127	220/	230	230/	380/	400	400/	440	500	660/
50/60 Hz										230		240	400		415			690
Code	J7	Z7	B7	C7	D7	E7	F7	FE7	FC7	M7	P7	U7	Q7	V7	N7	R7	S7	Y7

Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: J72

Control relays CA3K (0.8...1.15 Uc)

Volts ∴	12	20	24 <sup>(2)</sup>	36	48	60	72	100	110	125	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add 3 to the code required. Example: JD3.

(2) When connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (~ code Z7, ∴ code ZD) so as to compensate for the incurred voltage drop.



PE123768.buf



CA2KN●●5●●

Control relays

PE123770.tif



CA3KN●●3●●



# TeSys Control

## K Control relays

### Product references

PB123771.eps



CA4KN40●●●

### Low consumption control relays d.c. control circuit

- Mounting on 35 mm rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

Control circuit Consumption	Auxiliary contacts	Basic reference, to be completed by adding the voltage code <sup>(1)</sup>
<b>Screw clamp connections</b>		
1.8 W	4 –	CA4KN40●●
	3 1	CA4KN31●●
	2 2	CA4KN22●●
<b>Spring terminal connections</b>		
1.8 W	4 –	CA4KN403●●
	3 1	CA4KN313●●
	2 2	CA4KN223●●
<b>Faston connectors, 1 x 6.35 or 2 x 2.8</b>		
1.8 W	4 –	CA4KN407●●
	3 1	CA4KN317●●
	2 2	CA4KN227●●
<b>Solder pins for printed circuit boards</b>		
1.8 W	4 –	CA4KN405●●
	3 1	CA4KN315●●
	2 2	CA4KN225●●

**(1) Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used.**

Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Control relays CA4K (Wide range coil: 0.7...1.3 Uc)

Volts ~	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.



Control relays

# TeSys Control

## K Contact blocks - Time delays

### Product references



LA1KN22



LA1KN003



LA1KN007





Control relays



LA2KT2E

### Instantaneous auxiliary contact blocks


#### Clip-on front mounting, 1 per control relay

Connection	Composition		Reference
			
Screw clamp terminals	2	–	LA1KN20
	–	2	LA1KN02
	1	1	LA1KN11
	4	–	LA1KN40 <sup>(1)</sup>
	3	1	LA1KN31 <sup>(1)</sup>
	2	2	LA1KN22 <sup>(1)</sup>
	1	3	LA1KN13 <sup>(1)</sup>
Spring terminals	–	4	LA1KN04 <sup>(1)</sup>
	2	–	LA1KN203
	–	2	LA1KN023
	1	1	LA1KN113
	4	–	LA1KN403 <sup>(1)</sup>
	3	1	LA1KN313 <sup>(1)</sup>
	2	2	LA1KN223 <sup>(1)</sup>
Faston connectors 1 x 6.35 or 2 x 2.8	1	3	LA1KN133 <sup>(1)</sup>
	–	4	LA1KN043 <sup>(1)</sup>
	2	–	LA1KN207
	4	–	LA1KN407 <sup>(1)</sup>
	3	1	LA1KN317 <sup>(1)</sup>

### Electronic time delay contact blocks

- Relay output with common point changeover contact,  $\sim$  or  $\equiv$  240 V, 2 A maximum
- Control voltage 0.85...1.1 U<sub>c</sub>
- Maximum switching capacity 250 VA or 150 W
- Operating temperature -10...+ 60 °C
- Reset time: 1.5 s during the time delay period 0.5 s after the time delay period

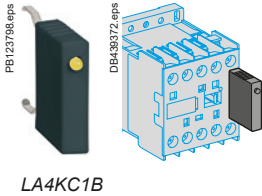
#### Clip-on front mounting, 1 per control relay

Voltage	Type	Timing range	Composition	Reference
<b>V</b>		<b>s</b>		
$\sim$ or $\equiv$ 24...48	On-delay	1...30	1	LA2KT2E
$\sim$ 110...240	On-delay	1...30	1	LA2KT2U

#### Other versions

Electronic timers type RE4.  
Please consult your Regional Sales Office.

<sup>(1)</sup> Block of 4 contacts for use on CA2K and CA3K.



LA4KC1B

### Suppressor modules incorporating LED indicator

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference
Clips onto front of relay with locating device. No tools required.	Varistor <sup>(1)</sup>	~ and --- 12...24 V	5	LA4KE1B
		~ and --- 32...48 V	5	LA4KE1E
		~ and --- 50...129 V	5	LA4KE1FC
		~ and --- 130...250 V	5	LA4KE1UG
Diode + Zener diode <sup>(2)</sup>		--- 12...24 V	5	LA4KC1B
		--- 32...48 V	5	LA4KC1E
RC <sup>(3)</sup>		~ 110...250 V	5	LA4KA1U

### Mounting accessories

Description	Application		Sold in lots of	Unit reference
Mounting plates	On 2 U <sub>T</sub> rails	110/120 mm fixing centres	10	DX1AP25

### Marking accessories

Description	Application		Sold in lots of	Unit reference
Marker holder	Clip-on fixing on front face	–	100	LA9D90
Clip-in markers	4 maximum per relay	Strips of 10 identical numbers 0 to 9	25	AB1R● <sup>(4)</sup>
		Strips of 10 identical capital letters A to Z	25	AB1G● <sup>(4)</sup>



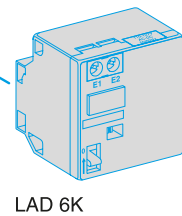
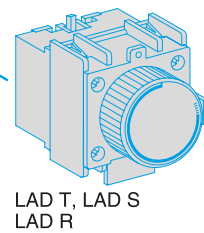
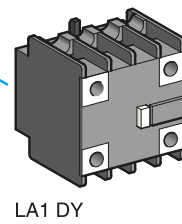
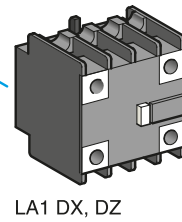
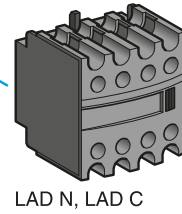
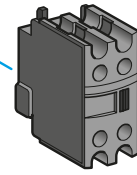
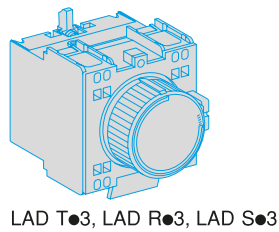
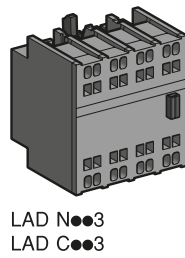
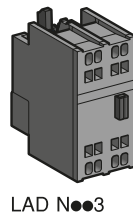
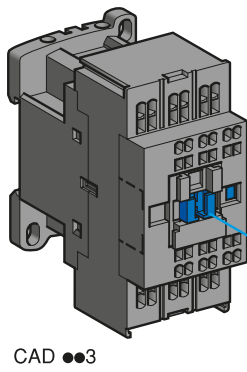
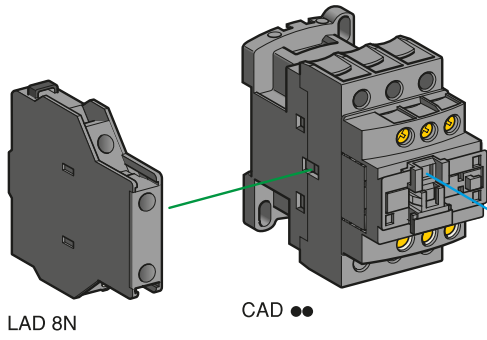
LA9D90



AB1R9

- <sup>(1)</sup> Protection provided by limiting the transient voltage to 2 U<sub>c</sub> max.  
Maximum reduction of transient voltage peaks.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- <sup>(2)</sup> No overvoltage or oscillating frequency.  
Polarised component.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- <sup>(3)</sup> Protection by limiting the transient voltage to 3 U<sub>c</sub> max. and limitation of the oscillating frequency.  
Slight increase in drop-out time (1.2 to 2 times the normal time).
- <sup>(4)</sup> Complete the reference by replacing the dot with the required character.





Control relays

See page opposite for mounting possibilities according to control relay type and rating

PB121687.eps



CAD50●●

PB121688.eps



CAD503●●

PB121689.eps



LADN22

PB123800.eps



LA1DY20

### Control relays for connection by screw clamp terminals

Type	Number of contacts	Composition	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>
Instantaneous	5	5 —	CAD50●● <sup>(3)</sup>
		3 2	CAD32●● <sup>(3)</sup>

### Control relays for connection by spring terminals

Instantaneous	5	5 —	CAD503●●
		3 2	CAD323●●

### Instantaneous auxiliary contact blocks for connection by screw clamp terminals

For use in normal operating environments

Number of contacts	Maximum number per relay		Composition	Reference
	Clip-on mounting front	side		
2	1	—	1 1	LADN11
	—	1 on LH side	1 1	LAD8N11 <sup>(6)</sup>
	1	—	2 —	LADN20
	—	1 on LH side	2 —	LAD8N20 <sup>(6)</sup>
	1	—	— 2	LADN02
	—	1 on LH side	— 2	LAD8N02 <sup>(6)</sup>
4 <sup>(4)</sup>	1	—	2 2	LADN22 LADN22S <sup>(7)</sup>
			1 3	LADN13
			4 —	LADN40
			— 4	LADN04
			3 1	LADN31
4 <sup>(4)</sup>	1	—	2 2	LADC22

Including 1 N/O and 1 N/C make before break.

### With dust and damp protected contacts, for use in particularly harsh industrial environments

Number of contacts	Maximum number per relay	Composition		Reference
		Front mounting protected <sup>(5)</sup>	not protected	
2	1	2 — —	— —	LA1DX20
		— 2 —	— —	LA1DX02
		2 — 2	— —	LA1DY20 <sup>(8)</sup>
4 <sup>(4)</sup>	1	2 — —	2 —	LA1DZ40
		2 — —	1 1	LA1DZ31

### Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for contact blocks LAD 8 and blocks with dust and damp protected contacts.

For all other instantaneous auxiliary contact blocks, add the digit 3 to the end of the references selected above.

Example: LADN11 becomes LADN113.

<sup>(1)</sup> Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used. Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

#### a.c. supply

Volts ~	24	42	48	110	115	220	230	240	380	400	415	440
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

#### d.c. supply (coils with integral suppression device fitted as standard)

Volts —	12	24	36	48	60	72	110	125	220	250	440
U from 0.7 to 1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

#### Low consumption (coils with integral suppression device fitted as standard)

Volts —	5	12	20	24	48	110	220	250
Code	AL	JL	ZL	BL	EL	FL	ML	UL

<sup>(2)</sup> LC: low consumption.

<sup>(3)</sup> To order control relays with connection by lugs, add the digit 6 to the end of the selected reference.

Example: CAD50●● becomes CAD506●●.

<sup>(4)</sup> Blocks with 4 auxiliary contacts cannot be used on low consumption control relays.

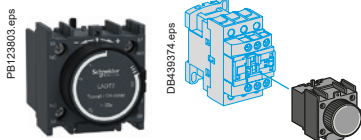
<sup>(5)</sup> Product fitted with 4 earth screen continuity terminals.

<sup>(6)</sup> These contact blocks are allowed with AC coil control relay only.

<sup>(7)</sup> With red front face - for safety chain indication.

<sup>(8)</sup> With 2 earth screen continuity poles.





LADT2

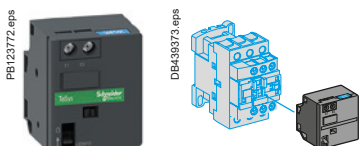
**Time delay auxiliary contact blocks for connection by screw clamp terminals <sup>(1)</sup>**

Number and type of contacts	Maximum number per relay Front mounting	Time delay		Reference
		Type	Range	
1 N/C and 1 N/O	1	On-delay	0.3...3 s <sup>(2)</sup>	LADT0
			1...30 s	LADT2
			10...180 s	LADT4
		Off-delay	1...30 s <sup>(3)</sup>	LADS2
			0.3...3 s <sup>(2)</sup>	LADR0
			1...30 s	LADR2
			10...180 s	LADR4

(Sealing cover: see page B8/42)

**Time delay auxiliary contact blocks for connection by spring terminals**

Add the digit 3 to the references selected above. Example: LADT0 becomes LADT03.



LAD6K10M

**Mechanical latch blocks <sup>(4)</sup>**

Unlatching control	Maximum number per relay Front mounting	Basic reference to be completed <sup>(5)</sup>
Manual or electric	1	LAD6K10●

**Suppressor modules**

These modules clip onto the top of the control relay and the electrical connection is instantly made. Fitting of an input module is still possible.

**RC circuits (Resistor-Capacitor)**

- Effective protection for circuits highly sensitive to "high frequency" interference.
- Voltage limited to 3 Uc maximum and oscillating frequency limited to 400 Hz maximum.
- Slight time delay on drop-out (1.2 to 2 times the normal time).

For mounting on	Operational voltage	Reference
CAD ~	~ 24...48 V	LAD4RCE
	~ 50...127 V	LAD4RCG
	~ 110...250 V	LAD4RCU

**Varistors (peak limiting)**

- Protection provided by limiting the transient voltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.
- Slight time delay on drop-out (1.1 to 1.5 times the normal time).

CAD ~	~ 24...48 V	LAD4VE
	~ 50...127 V	LAD4VG
	~ 110...250 V	LAD4VU

**Freewheel diode**

- No overvoltage or oscillating frequency.
- Increase in drop-out time (6 to 10 times the normal time).
- Polarised component.

CAD ---	--- 5...600 V	LAD4DDL <sup>(6)</sup>
---------	---------------	------------------------

**Bidirectional peak limiting diode <sup>(7)</sup>**

- Protection provided by limiting the transient overvoltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.

CAD ~	~ 24 V	LAD4TB
	~ 72 V	LAD4TS
CAD ---	--- 24 V	LAD4TBDL
	--- 72 V	LAD4TSDL
	--- 125 V	LAD4TGD
	--- 250 V	LAD4TUDL

<sup>(1)</sup> These contact blocks cannot be used on low consumption control relays.

<sup>(2)</sup> With extended scale from 0.1 to 0.6 s.

<sup>(3)</sup> With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.

<sup>(4)</sup> Power should not be simultaneously applied or maintained to the mechanical latching block of the CADN. The duration of the control signal to the mechanical latching block and the CADN should be ≥ 100 ms.

<sup>(5)</sup> Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

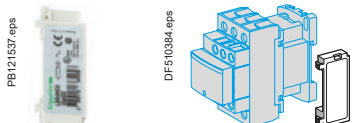
Volts ~ and ---	24	32/36	42/48	60/72	100	110/127	220/240	256/277	380/415
Code	B	C	E	EN	K	F	M	U	Q

<sup>(6)</sup> Not compatible with low consumption control relays.

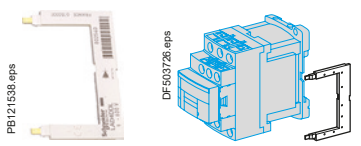
<sup>(7)</sup> CAD●● --- and low consumption control relays are fitted with a built-in bi-directional peak limiting diode suppressor as standard. On control relays produced after 15th July 2004, this diode is removable. It can therefore be replaced by the user (see references LAD4T●●● above). It can also be replaced by a freewheel diode LAD4DDL.



Control relays



LAD4RCU

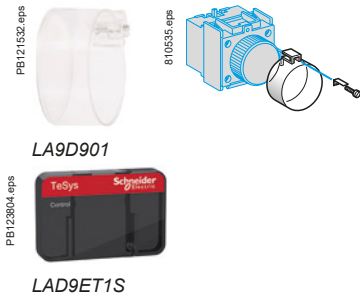


LAD4DDL

# TeSys Control

## Deca Accessories, spare coils

### Product references



#### Accessories (to be ordered separately)

Description	For mounting on	Sold in lots of	Unit reference
<b>For marking</b>			
Sheet of 64 blank legends, self-adhesive, 8 x 33 mm	CAD, LAD (4 contacts)	10	LAD21
Sheet of 112 blank legends, self-adhesive, 8 x 12 mm	LAD (2 contacts), LADT		LAD22
"SIS Label" labelling software for legends LAD21 and LAD22, supplied on CD-Rom	Multi-language version: English, French, German, Italian, Spanish	1	XYB2U
Legend holder, snap-in, 8 x 18 mm	LC1D09...38 LC1DT20...40 LADN (4 contacts) LADT, LADR	100	LAD90

#### For protection

Sealing cover	LADT, LADR	1	LA9D901
Safety cover preventing access to the moving contact carrier	CAD	1	LAD9ET1
Red cover (for safety chain indication)	CAD	1	LAD9ET1S

#### Spare parts: coils

##### Specifications

- Average consumption at 20 °C:
  - inrush ( $\cos \varphi = 0.75$ ) 50/60 Hz: 70 VA at 50 Hz,
  - sealed ( $\cos \varphi = 0.3$ ) 50/60 Hz: 8 VA at 60 Hz,
- Operating range ( $\theta < 60$  °C): 0.85 to 1.1  $U_c$

Control circuit voltage $U_c$	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>
V	$\Omega$	H	
<b>50/60 Hz</b>			
12	1.33	0.05	LXD1J7
24	5.37	0.22	LXD1B7
32	10.1	0.39	LXD1C7
42	17	0.67	LXD1D7
48	21.7	0.87	LXD1E7
110	124.1	4.6	LXD1F7
115	129.8	5	LXD1FE7
120	150.6	5.4	LXD1G7 <sup>(2)</sup>
200	410.7	15	LXD1L7
208	430.4	16	LXD1LE7 <sup>(2)</sup>
220	515.4	18	LXD1M7 <sup>(3)</sup>
230	538.6	20	LXD1P7
240	562.3	22	LXD1U7
277	800.7	29	LXD1W7 <sup>(2)</sup>
380	1551	55	LXD1Q7 <sup>(4)</sup>
400	1633	60	LXD1V7
415	1694	65	LXD1N7
440	1993	73	LXD1R7
480	2398	87	LXD1T7 <sup>(2)</sup>
500	2499	95	LXD1S7
575	3294	125	LXD1SC7
600	3810	136	LXD1X7
660	4656	165	LXD1YC7
690	5020	180	LXD1Y7

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

<sup>(2)</sup> Coil for use only on 60 Hz.

<sup>(3)</sup> Suitable for use on 230 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/84 and B8/86).

<sup>(4)</sup> Suitable for use on 400 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/84 and B8/86).


# TeSys Control

## SK, K, Deca Control relays

### Product references

CA2KN223B7	CA2SK20E7	CA3SK20BD	CAD32JD
CA2KN223F7	CA2SK20F7	CA3SK20JD	CAD32JL
CA2KN223P7	CA2SK20G7	CA4KN223BW3	CAD32L7
CA2KN223P72	CA2SK20M7	CA4KN225BW3	CAD32M7
CA2KN22B7	CA2SK20P7	CA4KN22BW3	CAD32MD
CA2KN22B72	CA2SK20Q7	CA4KN22EW3	CAD32N7
CA2KN22D7	CA2SK20T7	CA4KN22FW3	CAD32P7
CA2KN22E7	CA2SK20U7	CA4KN22SW3	CAD32Q7
CA2KN22F7	CA2SK20UE7	CA4KN313BW3	CAD32R7
CA2KN22F72	CA2SKE20B7	CA4KN31BW3	CAD32SD
CA2KN22FC7	CA2SKE20G7	CA4KN31FW3	CAD32T7
CA2KN22FE7	CA2SKE20M7	CA4KN31SW3	CAD32U7
CA2KN22G7	CA2SKE20P7	CA4KN403BW3	CAD32UD
CA2KN22G72	CA2SKE20Q7	CA4KN40BW3	CAD32V7
CA2KN22L7	CA2SKE20T7	CA4KN40EW3	CAD32X7
CA2KN22M7	CA2SKE20U7	CA4KN40FW3	CAD32XD
CA2KN22M72	CA3KN223BD	CAD323B7	CAD32Y7
CA2KN22N7	CA3KN223BD3	CAD323BD	CAD503BD
CA2KN22P7	CA3KN22BD	CAD323BL	CAD503BL
CA2KN22P72	CA3KN22BD3	CAD323E7	CAD503FD
CA2KN22Q7	CA3KN22ED	CAD323F7	CAD503FE7
CA2KN22R7	CA3KN22ED3	CAD323FE7	CAD503P7
CA2KN22T7	CA3KN22FD	CAD323G7	CAD506B7
CA2KN22U7	CA3KN22FD3	CAD323JD	CAD506BD
CA2KN22V7	CA3KN22GD	CAD323P7	CAD506ED
CA2KN313P72	CA3KN22GD3	CAD326B7	CAD506F7
CA2KN315F7	CA3KN22JD	CAD326BD	CAD506FD
CA2KN31B7	CA3KN22MD	CAD326BL	CAD506KD
CA2KN31D7	CA3KN22MD3	CAD326CD	CAD506M7
CA2KN31E7	CA3KN22ND	CAD326E7	CAD506MD
CA2KN31F7	CA3KN22SD	CAD326F7	CAD506P7
CA2KN31G7	CA3KN313BD	CAD326FD	CAD506R7
CA2KN31K7	CA3KN313BD3	CAD326G7	CAD50B7
CA2KN31M7	CA3KN315BD	CAD326GD	CAD50BD
CA2KN31M72	CA3KN317SD	CAD326K7	CAD50BL
CA2KN31P7	CA3KN31BD	CAD326KD	CAD50D7
CA2KN31P72	CA3KN31BD3	CAD326L7	CAD50E7
CA2KN31U7	CA3KN31ED	CAD326M7	CAD50ED
CA2KN31V7	CA3KN31ED3	CAD326MD	CAD50F7
CA2KN40B7	CA3KN31FD	CAD326P7	CAD50FD
CA2KN40B72	CA3KN31FD3	CAD326Q7	CAD50FE7
CA2KN40E7	CA3KN31GD	CAD326R7	CAD50G7
CA2KN40F7	CA3KN31GD3	CAD326SD	CAD50GD
CA2KN40FC72	CA3KN31JD	CAD326SL	CAD50K7
CA2KN40G7	CA3KN31MD	CAD326U7	CAD50L7
CA2KN40M7	CA3KN31MD3	CAD326V7	CAD50M7
CA2KN40N7	CA3KN31ND3	CAD326VD	CAD50MD
CA2KN40P7	CA3KN31UD	CAD32B7	CAD50N7
CA2KN40T7	CA3KN403BD	CAD32BD	CAD50P7
CA2KN40U7	CA3KN403BD3	CAD32BL	CAD50Q7
CA2SK11B7	CA3KN40BD	CAD32CD	CAD50R7
CA2SK11E7	CA3KN40BD3	CAD32CD	CAD50SD
CA2SK11F7	CA3KN40ED	CAD32D7	CAD50U7
CA2SK11G7	CA3KN40ED3	CAD32E7	CAD50UD
CA2SK11M7	CA3KN40EPD	CAD32EL	CAD50Y7
CA2SK11P7	CA3KN40FD	CAD32F7	
CA2SK11T7	CA3KN40FD3	CAD32FC7	
CA2SK11U7	CA3KN40GD	CAD32FD	
CA2SK11UE7	CA3KN40GD3	CAD32FE7	
CA2SK11V7	CA3KN40MD	CAD32FL	
CA2SK20B7	CA3KN40MD3	CAD32G7	
CA2SK20D7	CA3SK11BD	CAD32GD	

Control relays

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.



# Technical Data for Designers

## Contents

### TeSys SK Mini control relays:

- > characteristics ..... B7/14 and B7/15
- > dimensions ..... B7/16
- > schemes ..... B7/17

### TeSys K Control relays:

- > characteristics ..... B7/18 and B7/19
- > dimensions ..... B7/20
- > schemes ..... B7/21

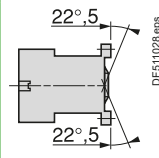
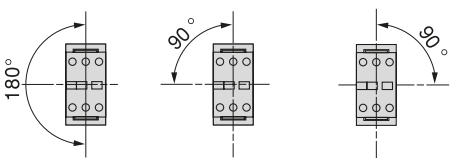
### Deca Control relays:

- > characteristics ..... B7/22 to B7/24
- > curves ..... B7/25
- > dimensions ..... B7/26
- > schemes ..... B7/27

# TeSys Control

## SK, SKE Mini control relays

### Characteristics

Environment			
Rated insulation voltage (Ui)	Conforming to IEC 60947, CSA 22-2 n° 14, UL 508	<b>V</b>	690
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5
Approvals			cULus, EAC, UKCA, CB certification
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2X
Ambient air temperature around the device	Storage	<b>°C</b>	-50...+70
	Operation	<b>°C</b>	-20...+50
Maximum operating altitude	Without derating	<b>m</b>	2000
Operating position		<b>Vertical axis</b>  Without derating	<b>Horizontal axis</b>  Without derating
Connection by connectors	Solid cable	<b>mm²</b>	<b>Min.</b> 1 x 1.5 or 2 x 1.5
	Flexible cable without cable end	<b>mm²</b>	<b>Max.</b> 1 x 6 or 2 x 4
	Flexible cable with cable end	<b>mm²</b>	1 x 6 or 2 x 2.5
Tightening torque	Pozidriv n° 1 head	<b>N.m</b>	0.8
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 4 contacts
Control circuit characteristics			
<b>Control relay</b>		<b>V</b>	<b>CA2SK</b> ~ 24...400
Rated control circuit voltage (Uc)			<b>CA2SKE</b> ~ 12...72
Control voltage limits (≤ 50 °C)	For operation		0.85...1.1 Uc
	For drop-out		≤ 0.20 Uc
Average consumption at 20 °C and at Uc	Inrush		16 VA
	Sealed		23 VA
Heat dissipation		<b>W</b>	4.9 VA
Operating time at 20 °C and at Uc	Between coil energisation and opening of the N/C contacts	<b>ms</b>	8...16
	closing of the N/O contacts	<b>ms</b>	7...14
	Between coil de-energisation and opening of the N/O contacts	<b>ms</b>	6...8
	closing of the N/C contacts	<b>ms</b>	8...10
Maximum operating rate	In operating cycles per hour		1200
Mechanical durability at Uc in millions of operating cycles	50/60 Hz coil		10
	Standard ~ coil		10

Ref.



Control relays

# TeSys Control

## SK, SKE Mini control relays

### Characteristics

#### Auxiliary contact characteristics of mini control relays and instantaneous contact blocks

Rated operational voltage (Ue)		V	Up to 690
Rated insulation voltage (Ui)	Conforming to IEC 96047	V	690
Conventional rated thermal current (Ith)	For ambient temperature $\leq 55^\circ\text{C}$	A	10
Frequency of the operational current		Hz	Up to 400
Short-circuit protection	Conforming to IEC 60947, gI fuse	A	10

#### Operational power of contacts conforming to IEC 60947

	a.c. supply, category AC-15						d.c. supply, category DC-13						
	V	24	48	110/ 127	220/ 230	380/ 400	440	V	24	48	110	220	440
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).							Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.						
1 million operating cycles	VA	48	96	240	440	800	880	W	120	80	60	52	51
3 million operating cycles	VA	17	34	86	158	288	317	W	55	38	30	28	26
10 million operating cycles	VA	7	14	36	66	120	132	W	15	11	9	8	7
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000	W	720	600	400	300	230

Ref.



Control relays

# TeSys Control

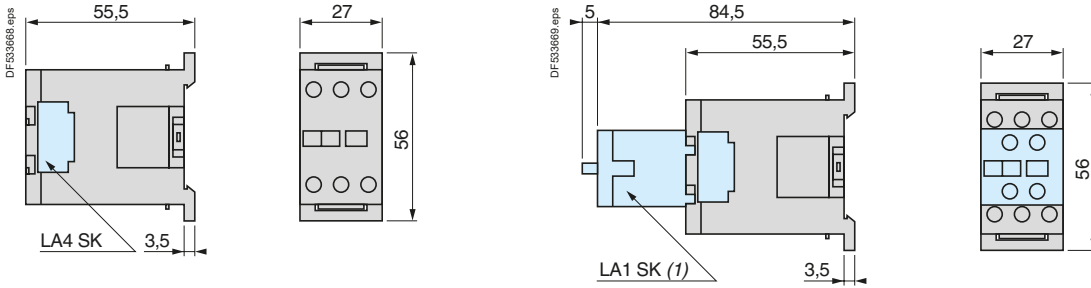
## SK, SKE Mini control relays

### Dimensions and mounting

#### Dimensions

##### Mini control relays

##### CA2SK and CA3SK



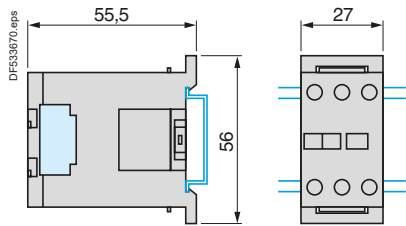
(1) Only on CA2SK20.

#### Mounting

##### Mini control relays

##### CA2SK and CA3SK

On mounting rail NSYDR200BD or NSYDR200 (└ 35 mm)

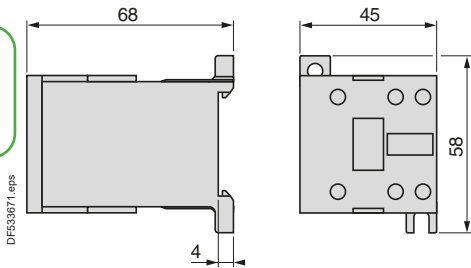


Ref.



#### Dimensions

##### CA2SKE



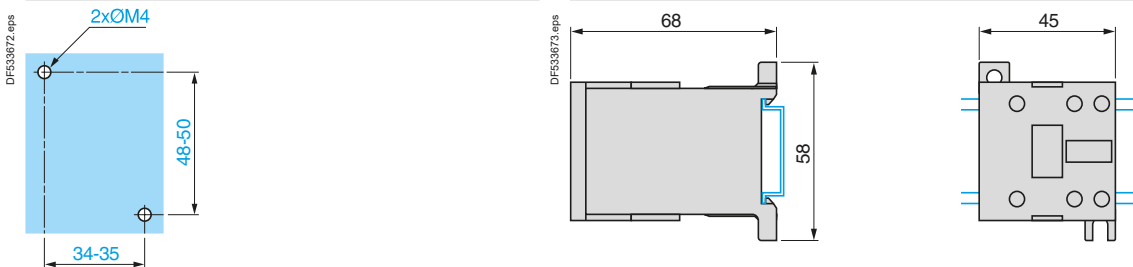
Control relays

#### Mounting

##### CA2SKE

On panel

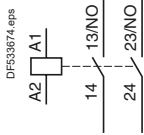
On mounting rail NSYDR200BD or NSYDR200 (└ 35 mm)



#### Schemes

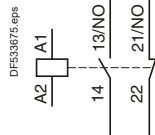
##### CA2SK20, CA3SK20

2 N/O



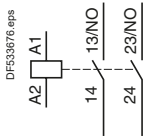
##### CA2SK11, CA3SK11

1 N/O + 1 N/C



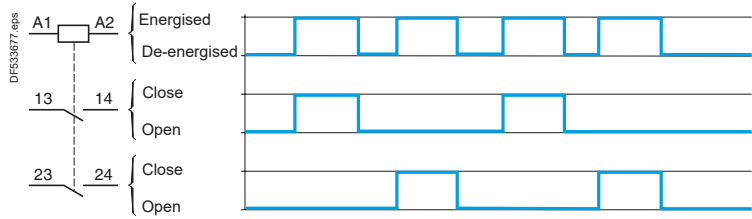
##### CA2SKE

2 N/O



##### CA2SKE

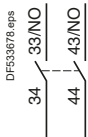
Function diagram



#### Instantaneous auxiliary contacts

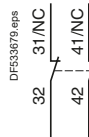
2 N/O

##### LA1SK20



2 N/C

##### LA1SK02



1 N/O + 1 N/C

##### LA1SK11



Ref.



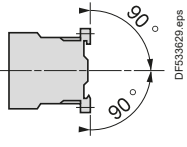
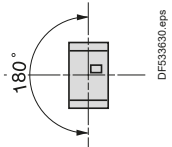
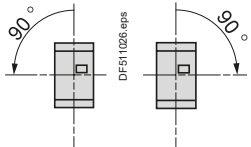
Control relays

# TeSys Control

## K Control relays

### Characteristics

#### Environment

Conforming to standards		IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5			
Product certifications		UL, CSA, CCC, EAC, UKCA, CB certification			
Operating positions		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>Vertical axis</b></p>  <p>Without derating</p> </div> <div style="text-align: center;"> <p><b>Horizontal axis</b></p>  <p>Without derating</p> </div> <div style="text-align: center;">  <p>Possible positions for <b>CA2K</b> only, with derating, please consult your Regional Sales Office.</p> </div> </div>			
Connection		<b>Min.</b>	<b>Max.</b>	<b>Max. to IEC 60947</b>	
Screw clamp connections	Solid cable	<b>mm<sup>2</sup></b>	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 0.75	2 x 4	2 x 2.5
	Flexible cable with cable end	<b>mm<sup>2</sup></b>	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminals	Solid cable	<b>mm<sup>2</sup></b>	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 0.75	1 x 1.5	2 x 1.5
Faston connectors	Clip	<b>mm</b>	2 x 2.8 or 1 x 6.35		
Solder pins for printed circuit board	With locating device between power and control circuits		4 mm x 35 microns		
Tightening torque	Philips head n° 2 and Ø6	<b>N.m</b>	0.8		
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2x (devices with screw clamp terminals or pins for printed circuit board)		
Ambient air temperature around the device	Storage	<b>°C</b>	-50...+80		
	Operation	<b>°C</b>	-25...+50		
Maximum operating altitude	Without derating	<b>m</b>	2000		
Vibration resistance 5...300 Hz	Control relay open		2 gn		
	Control relay closed		4 gn		
Conforming to IEC/EN 60068-2-27					
Flame resistance	Conforming to IEC 60695-2-11		850 °C		
Shock resistance (1/2 sine wave, 11 ms)	Control relay open		10 gn		
	Control relay closed		15 gn		
Conforming to IEC/EN 60068-2-27					

#### Control circuit characteristics

Control relay type			CA2K	CA3K	CA4K
Rated control circuit voltage (Uc)		<b>V</b>	~ 12...690	~ 12...250	~ 12...120
Control voltage limits (y 50 °C) single voltage coil	For operation		0.8...1.15 Uc	0.8...1.15 Uc	0.7...1.3 Uc
	For drop-out		≤ 0.2 Uc	≤ 0.1 Uc	≤ 0.1 Uc
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–	–
	Standard ~ coil		–	20	–
	Wide range, low consumption ~ coil		–	–	30
Maximum operating rate	In operating cycles per hour		10 000	10 000	6000
Average consumption at 20 °C and at Uc	Inrush		30 VA	3 W	1.8 W
	Sealed		4.5 VA	3 W	1.8 W
Heat dissipation		<b>W</b>	1.3	3	1.8
Operating time at 20 °C and at Uc	Between coil energisation and opening of the N/C contacts	<b>ms</b>	5...15	25...35	25...35
		<b>ms</b>	10...20	30...40	30...40
	Between coil de-energisation and opening of the N/O contacts	<b>ms</b>	10...20	10	10...20
		<b>ms</b>	15...25	15	15...25
Maximum immunity to microbreaks		<b>ms</b>	2	2	2



# TeSys Control

## K Control relays & contact blocks

### Characteristics

#### Contact characteristics of control relays and instantaneous contact blocks

Number of auxiliary contacts	On <b>CA●K</b> On <b>LA1K</b>		4 2 or 4 for <b>CA2K</b> and <b>CA3K</b> , 2 for <b>CA4K</b>	
Rated operational voltage (Ue)	Up to	<b>V</b>	690	
Rated insulation voltage (Ui)	Conforming to IEC 60947	<b>V</b>	690	
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1	<b>V</b>	600	
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C	<b>A</b>	10	
Frequency of the operational current		<b>Hz</b>	Up to 400	
Minimum switching capacity	U min	<b>V</b>	17	
	I min	<b>mA</b>	5	
Short-circuit protection	Conforming to IEC 60947, gG fuse	<b>A</b>	10	
Rated making capacity	Conforming to IEC 60947			
Short-time rating	Permissible for			
		1 s	<b>A</b>	80
		500 ms	<b>A</b>	90
		100 ms	<b>A</b>	110
Insulation resistance		<b>MΩ</b>	> 10	
Non-overlap distance	CA●K and LA1K: linked contacts conforming to INRS, BIA and CNA specifications	<b>mm</b>	0.5 (see schemes page B7/21)	

#### Operational power of contacts conforming to IEC 60947

##### a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ )

##### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	110/ 127	220/ 230	380/ 400	440	600/ 690	V	24	48	110	220	440	600
1 million operating cycles	<b>VA</b>	48	96	240	440	800	880	1200	<b>W</b>	120	80	60	52	51	50
3 million operating cycles	<b>VA</b>	17	34	86	158	288	317	500	<b>W</b>	55	38	30	28	26	25
10 million operating cycles	<b>VA</b>	7	14	36	66	120	132	200	<b>W</b>	15	11	9	8	7	6
Occasional making capacity	<b>VA</b>	1000	2050	5000	10000	14000	13000	9000	<b>W</b>	720	600	400	300	230	200

#### 1 Breaking limit of contacts valid for:

- maximum of 50 operating cycles at 10 s intervals (power broken = making current x  $\cos \varphi 0.7$ ).

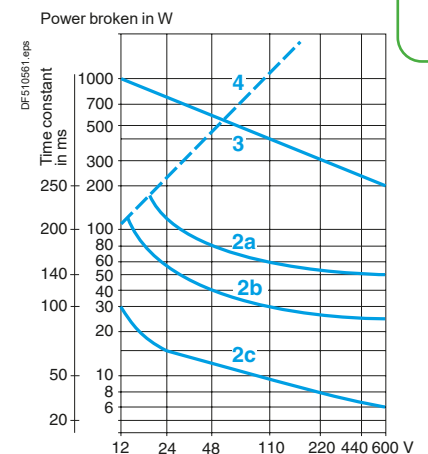
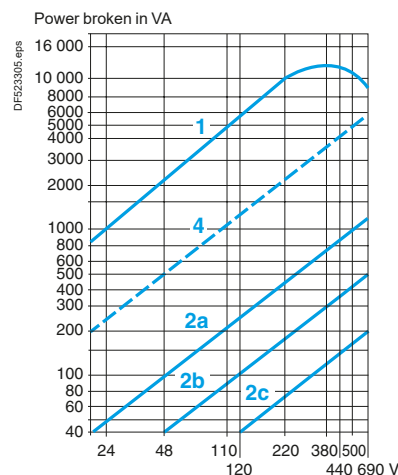
#### 2 Electrical durability of contacts for:

- 1 million operating cycles (**2a**)
- 3 million operating cycles (**2b**)
- 10 million operating cycles (**2c**).

#### 3 Breaking limit of contacts valid for:

- maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

#### 4 Thermal limit



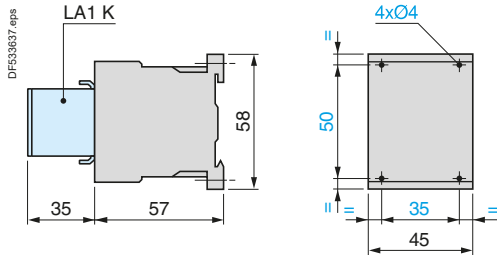
# TeSys Control K Control relays

## Dimensions and mounting

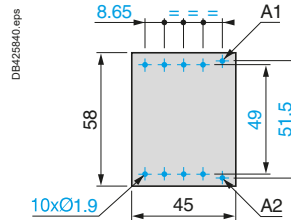
### Control relays

#### CA2K, CA3K, CA4K

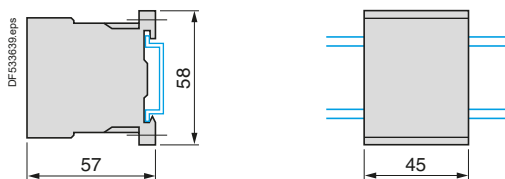
##### On panel



##### On printed circuit board



##### On mounting rail NSYDR200BD or NSYDR200 (L 35 mm)



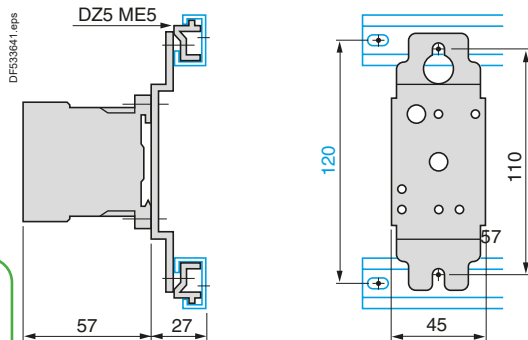
### DX1AP25

#### On asymmetrical rail with clip-on mounting plates

Ref.



Control relays

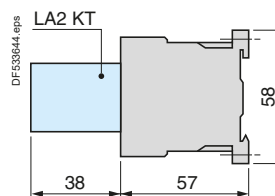


### Electronic time delay contact blocks

#### LA2KT



##### On control relay

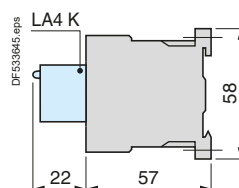


### Suppressor modules

#### LA4K



##### On control relay

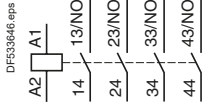




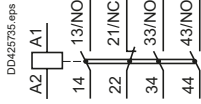
#### Control relays

##### CA2K, CA3K, CA4K

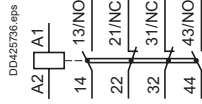
4 N/O



3 N/O + 1 N/C

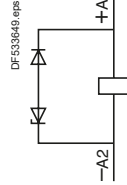


2 N/O + 2 N/C

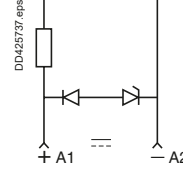


#### With integral suppression device

##### CA3K



##### CA4K



#### Instantaneous auxiliary contact blocks LA1K

##### For CA2K, CA3K, CA4K

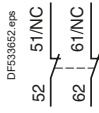
2 N/O

LA1KN20, LA1 KN207



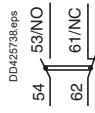
2 N/C

LA1KN02, LA1 KN027



1 N/O + 1 N/C

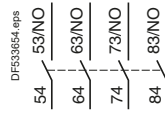
LA1KN11, LA1 KN117



##### For CA2K, CA3K

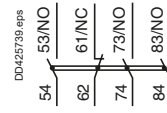
4 N/O

LA1KN40, LA1 KN407



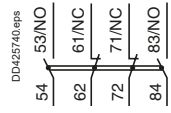
3 N/O + 1 N/C

LA1KN31, LA1 KN317



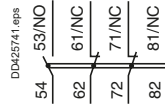
2 N/O + 2 N/C

LA1KN22



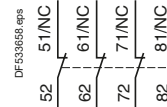
1 N/O + 3 N/C

LA1KN13



4 N/C

LA1KN04

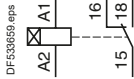


#### Electronic time delay contact blocks LA2KT

##### For CA2K, CA3K, CA4K

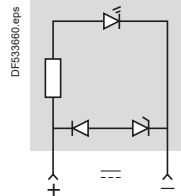
1 C/O

LA2KT2

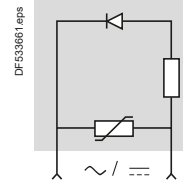


#### Suppressor modules

##### LA4KC



##### LA4KE



Ref.



Control relays

# TeSys Control

## Deca Control relays

### Characteristics

#### Environment

Control relay type			CAD ~	CAD ---	CAD --- low consumption	
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1 Overvoltage category III and degree of pollution 3	V	690	690	690	
	Conforming to UL, CSA	V	600	600	600	
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947	kV	6	6	6	
Separation of electrical circuits	Conforming to IEC 60536		Reinforced insulation up to 400 V			
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5			
Product certifications			UL, CSA, CCC, EAC, UKCA, CB certification, EU-RO-MR by DNV-GL			
Degree of protection	Conforming to IEC 60529		Front face protected against direct finger contact IP 2X		Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	°C	-60...+80			
	Operation <sup>(1)</sup>	°C	-40...+60			
	Allowed <sup>(1)</sup>	°C	+60...+70 at Uc to 1, ●● x Uc			
Maximum operating altitude	Without derating	m	3000	3000	3000	
Operating positions	Without derating in the following positions					
		Positions that are not allowed				
Shock resistance <sup>(2)</sup> half sine wave for 11ms	Control relay open		10 gn	10 gn	10 gn	
	Control relay closed		15 gn	15 gn	15 gn	
Vibration resistance <sup>(2)</sup> 5...300 Hz	Control relay open		2 gn	2 gn	2 gn	
	Control relay closed		4 gn	4 gn	4 gn	
Screw clamp connections	Flexible conductor without cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4
		2 conductors	mm <sup>2</sup>	1...4	1...4	1...4
	Flexible conductor with cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4
		2 conductors	mm <sup>2</sup>	1...2.5	1...2.5	1...2.5
	Solid conductor without cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4
		2 conductors	mm <sup>2</sup>	1...4	1...4	1...4
	Tightening torque		N.m	1.7	1.7	1.7
Spring terminal connections	1 or 2 flexible or rigid conductors without cable end	mm <sup>2</sup>	1...2.5	1...2.5	1...2.5	

(1) As per IEC60947-1, operating time and drop out voltage given and tested for -5...+40 °C.

(2) In the least favourable direction, without change of contact state, with coil supplied at Uc.

Control circuit characteristics					
Control relay type			CAD ~	CAD ---	CAD low consumption
Rated control circuit voltage (Uc)		<b>V</b>	12...690	12...440	--- 5...72
Control voltage limits					
Operation	With coil 50/60 Hz		0.8...1.1 Uc at 50 Hz 0.85...1.1 Uc at 60 Hz	–	–
	With standard coil, wide range		–	0.7...1.25 Uc	0.7...1.25 Uc
Drop-out			0.3...0.6 Uc	0.1...0.25 Uc	0.1...0.25 Uc
Average consumption at 20 °C and at Uc					
	~ 50/60 Hz (at 50 Hz)	<b>VA</b>	Inrush: 70 sealed: 8	–	–
	With standard coil	<b>W</b>	–	Inrush or sealed: 5.4	Inrush or sealed: 2.4
Operating time (at rated control circuit voltage and at 20 °C)					
	Between coil energisation and - opening of the N/C contacts	<b>ms</b>	4...19	55 ± 15 %	67 ± 15 %
	- closing of the N/O contacts	<b>ms</b>	12...22	63 ± 15 %	77 ± 15 %
	Between coil de-energisation and - opening of the N/O contacts	<b>ms</b>	4...12	20 ± 20 %	27 ± 20 %
	- closing of the N/C contacts	<b>ms</b>	6...17	25 ± 20 %	35 ± 20 %
Short supply failure					
	Maximum duration without affecting hold-in of the device	<b>ms</b>	2	2	2
Maximum operating rate					
	In operating cycles per second		3	3	3
Mechanical durability In millions of operating cycles					
	With coil 50/60 Hz (at 50 Hz)		30	–	–
	With standard coil --- wide range		–	30	30
Time constant L/R					
		<b>ms</b>	–	28	40

Ref.



Control relays

Characteristics of instantaneous contacts incorporated in the control relay				
Number of contacts				5
Rated operational voltage (Ue)	Up to		<b>V</b>	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1		<b>V</b>	690
	Conforming to UL, CSA		<b>V</b>	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C		<b>A</b>	10
Frequency of the operational current			<b>Hz</b>	25...400
Minimum switching capacity	U min		<b>V</b>	17
	I min		<b>mA</b>	5
Short-circuit protection	Conforming to IEC 60947-5-1			gG fuse: 10 A
Rated making capacity	Conforming to IEC 60947-5-1	I rms		~ 140, --- 250
Short-time rating	Permissible for	1 s	<b>A</b>	100
		500 ms	<b>A</b>	120
		100 ms	<b>A</b>	140
Insulation resistance			<b>MΩ</b>	> 10
Non-overlap time	Guaranteed between N/C and N/O contacts		<b>ms</b>	1.5 (on energisation and on de-energisation)
Tightening torque	Philips head n° 2 and Ø6		<b>N.m</b>	1.7
Non-overlap distance				Linked contacts in association with auxiliary contacts LADN
Mechanically linked contacts	Conforming to IEC 60947-5-1			The 3 N/O contacts and the 2 N/C contacts of CAD N32 are linked mechanically by one mobile contact carrier.

Ref.



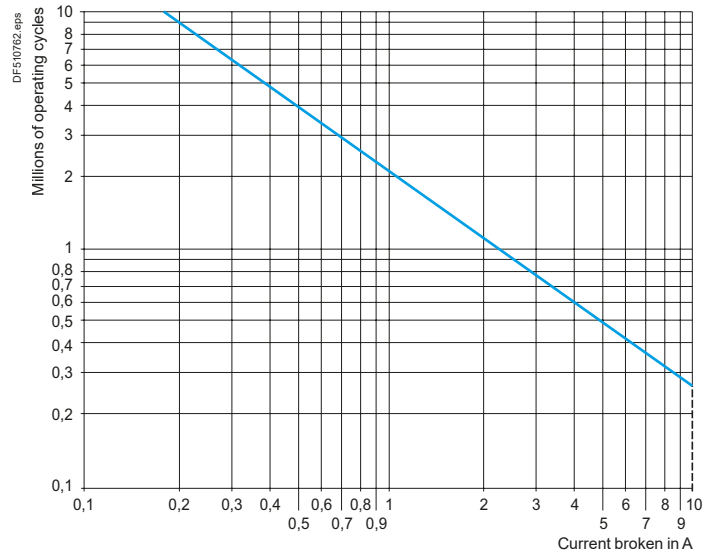
Control relays

**Rated operational power of contacts (conforming to IEC 60947-5-1)**

**a.c. supply, categories AC-14 and AC-15**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet:  
making current ( $\cos \phi 0.7$ ) = 10 times the power broken ( $\cos \phi 0.4$ ).

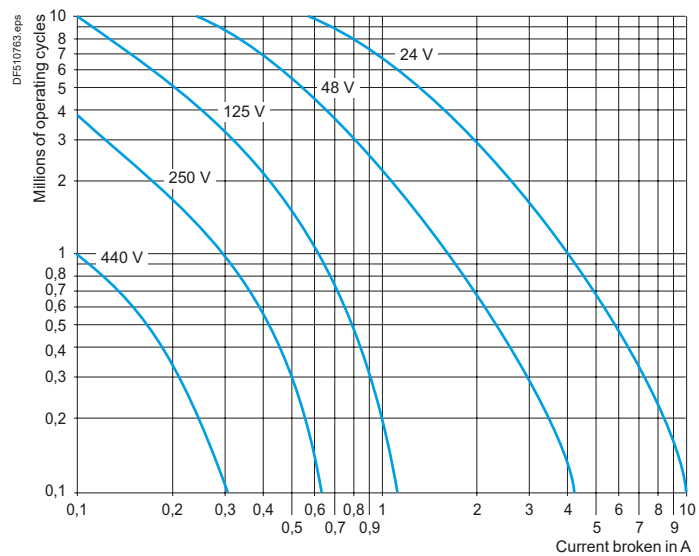
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100



**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

Operating cycles	V	24	48	125	250	440
1 million	W	96	76	76	76	44
3 million	W	48	38	38	32	–
10 million	W	14	12	12	–	–



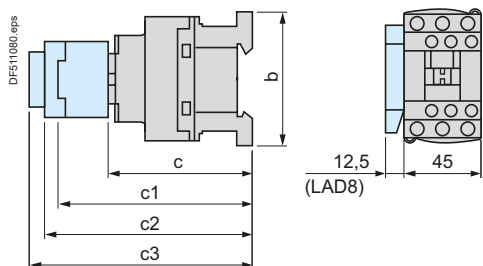
# TeSys Control

## Deca Control relays

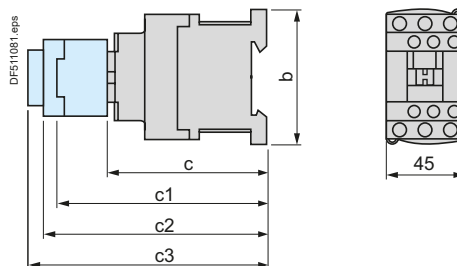
### Dimensions and mounting

#### Dimensions

##### CAD ~



##### CAD --- or LC (low consumption)



CAD	32	323
b	50	503
c without cover or add-on blocks	84	84
with cover, without add-on blocks	86	86
c1 with LADN or C (2 or 4 contacts)	117	117
c2 with LAD6K10	129	129
c3 with LADT, R, S	137	137
with LADT, R, S and sealing cover	141	141

CAD	32	323
b	50	503
c without cover or add-on blocks	93	93
with cover, without add-on blocks	95	95
c1 with LADN or C (2 or 4 contacts)	126	126
c2 with LAD6K10	138	138
c3 with LADT, R, S	146	146
with LADT, R, S and sealing cover	150	150

Operating cycles	V	24	48	125	250	440
1 million	W	120	90	75	68	61
3 million	W	70	50	38	33	28
10 million	W	25	18	14	12	10

Ref.

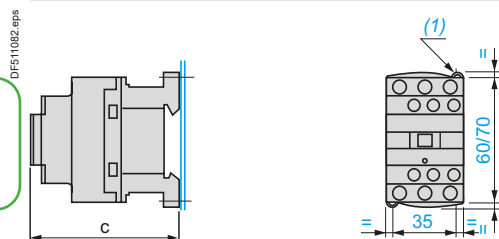


Control relays

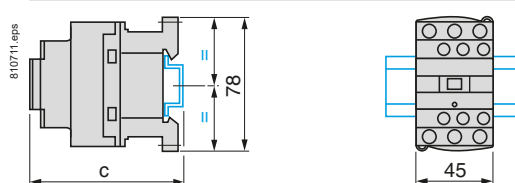
#### Mounting

##### CAD

###### Panel mounted



###### Mounted on rail NSYDR200BD or NSYDR200



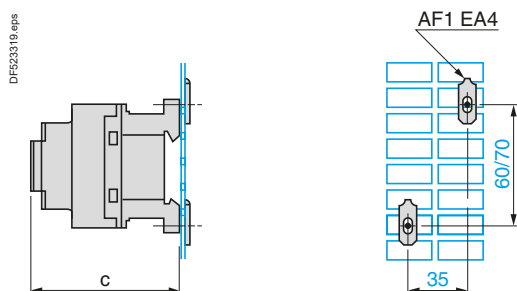
	CAD ~	CAD --- or LC
c with cover	86	95

	CAD ~	CAD --- or LC
c (NSYDR200BD) (2)	88	97
c (NSYDR200BD) (2)	96	105

(1) 2 elongated holes 4.5 x 9.

(2) With cover.

###### Mounted on plate AM1P



	CAD ~	CAD --- or LC
c with cover	86	95

References:  
pages B7/9 to B7/11

Illustration:  
page B7/8

Characteristics:  
pages B7/22 to B7/24

Curves:  
page B7/25

Schemes:  
page B7/27







TeSys SK, K contactors		
Type of product	Range	Pages
Contactors 27 and 45 mm width for use in modular panels TeSys SK	From 12 to 20 A	 B8/2
Contactors TeSys K	From 6 to 16 A	 B8/4
Reversing pre-assembled contactors TeSys K	From 6 to 16 A	 B8/8
Auxiliary contact blocks - accessories		B8/13
 TeSys S207 series contactors for railways applications. Click on image to download.	 TeSys S335 series contactors for electrodomestic application. Click on image to download.	
TeSys Deca contactors		
AC-3, AC-1, UL CSA applications- TeSys Deca green contactors (with AC/DC compatible coil)	From 9 to 80 A	B8/16
AC-3 applications - 3-pole, 4-pole TeSys Deca contactors	From 9 to 150 A	 B8/22
AC-1 applications - 3-pole, 4-pole TeSys Deca contactors	From 25 to 200 A	B8/23
UL CSA application - 3-pole TeSys Deca contactors	From 25 to 200 A	B8/28
Reversing, changeover pre-assembled TeSys Deca contactors	From 9 to 150 A	 B8/29
Reversing contactors TeSys Deca green contactors (with AC/DC compatible coil)	From 9 to 80 A	B8/33
Contactors for switching capacitor banks	From 12.5 to 60 kVAR	 B8/34
Auxiliary contact blocks – accessories – spare coils for TeSys Deca		B8/36
Modular contactors		
Modular contactors	From 16 to 100 A	 B8/51
Modular Dual tariff contactors	16, 25, 40 or 100 A	 B8/52
Modular Impulse relay	Up to 16 A	 B8/53
Auxiliary contact blocks - accessories		B8/54

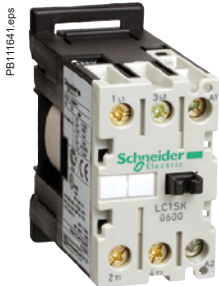
# TeSys Control

## SK Contactors

### Product references

- Width of contactor 27 mm.
- Mounting on 35 mm rail.
- Screw clamp terminals.

LC1SK contactors can be fitted with an add-on block or auxiliary contact block, LP1SK and LC1SKGC contactors can't.



LC1SK0600●●

#### Mini-contactors for motor in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 <sup>(1)</sup>			Rated operational voltage in AC-3 up to 400 V	Number of poles	Instantaneous auxiliary contacts	Basic reference. Complete with code indicating control circuit voltage <sup>(2)(3)</sup>
220 V	380 V	660 V	—	2	—	LC1SK0600●●
230 V	415 V	690 V				
kW	kW	kW	A			
1.1	2.2	2.2	6	2	—	—

#### Mini-contactors for motor in category AC-1

Non inductive loads maximum current ( $\theta \leq 55^\circ\text{C}$ ) utilisation category AC-1	Control circuit supply	Number of poles	Instantaneous auxiliary contacts	Basic reference. Complete with code indicating control circuit voltage <sup>(2)(3)</sup>
A	a.c.	2	—	LC1SK0600●●
	d.c.	2	—	LP1SK0600●●

(1) For use in AC-3 category and 3-phase circuits, an LA1SK●● auxiliary contact block should be ordered separately for mounting on the contactor.

(2) Standard control circuit voltages (variable delivery times, please consult your Regional Sales Office):

Mini-contactors LC1SK	24	48	110	120	220	230	240	380	400
Volts ~ 50/60 Hz									
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7

Mini-contactors LP1SK	12	24	36	48	72
Volts ---					
Code	JD	BD	CD	ED	SD

(3) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

#### Add-on power pole (for 3-phase circuits) with aux. contact

For use on contactor LC1SK0600●● with 1 NO power pole (6 A AC-3, 10 A AC-1) and with 1 NC aux. contact (Ith 10 A). Ue 690 V AC 50/60 Hz for both contacts	Number of poles	Instantaneous auxiliary contacts	Reference
Clip-on front mounting	1	— 1	LA1SK01

#### Instantaneous auxiliary contact blocks

For use on contactor LC1SK0600●●. Aux. contacts: Ith 10 A. Ue: 690 V AC 50/60 Hz	Maximum number of blocks per contactor	Composition	Reference
Clip-on front mounting	1	2 —	LA1SK20
		— 2	LA1SK02
		1 1	LA1SK11

#### Coil suppressor modules

Clip-on fixing and electrical connection on right-hand side, without use of tools				
For use on contactors	Type	For voltages	Sold in lots of	Unit reference
LC1SK0600●●	Varistor <sup>(1)</sup>	~ and --- 24 V...48 V	10	LA4SKE1E
LP1SK0600●●, LC1SKGC	Diode <sup>(2)</sup>	~ and --- 110 V...250 V	10	LA4SKE1U
		--- 24 V...250 V	10	LA4SKC1U

(1) Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

(2) No overvoltage or oscillating frequency. Slight increase in drop-out time (1.1 to 1.5 times the normal time).



LA1SK01



LA4SK●1●

# TeSys Control

## SKGC Contactors

### Product references

Mini-contactors 25 and 47 mm pitch for use in modular panels.

■ Mounting on 35 mm rail or fixing by four Ø4 screws, except for LC1SKGC200.

■ Connection by connectors.

■ Mini-contactor fitted with transparent, sealable protective cover to prevent front face access.



LC1SKGC200

#### Mini-contactors, width 27 mm

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in AC-3 up to 400 V	Non inductive loads category AC-1 maximum current $\theta \leq 50^\circ\text{C}$	No. of poles			Basic reference, to be completed by adding the voltage code <sup>(1)(2)</sup>
220 V	380 V	660 V			1	2	3	
230 V	415 V	690 V						
kW	kW	kW	A	A				
-	-	-	5	20	2	-	-	LC1SKGC200●●



LC1SKGC300

#### Mini-contactors, width 45 mm

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in AC-3 up to 400 V	Non inductive loads category AC-1 maximum current $\theta \leq 50^\circ\text{C}$	No. of poles			Basic reference, to be completed by adding the voltage code <sup>(1)(2)</sup>
220 V	380 V	660 V			1	2	3	
230 V	415 V	690 V						
kW	kW	kW	A	A				
1.1	4	4	9	20	3	1	-	LC1SKGC310●●
					3	-	1	LC1SKGC301●●

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts ~ 50/60 Hz	24	48	110	120	220	230	240	380	400
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7

(2) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

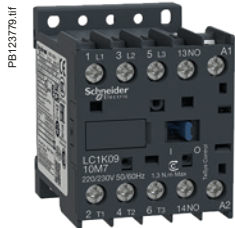


Contactors

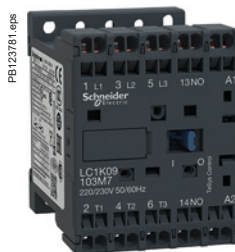
# TeSys Control

## K Contactors

### Product references



LC1K0910●●



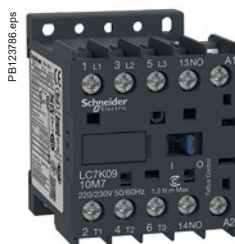
LC1K09103●●



LC1K09107●●



LC1K09105●●



LC7K0910●●

Mounting on 35 mm rail or Ø4 screw fixing.  
Screws in the open "ready-to-tighten" position.  
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3-pole contactors - Motor control 6 to 16 A in categories AC-3 AC-4 - a.c. coil

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts 	Basic reference, to be completed by adding the voltage code <sup>(1) (2)</sup>
220 V 230 V	380 V 415 V	440/500 V 660/690 V			
kW	kW	kW	A		
<b>Screw clamp connections</b>					
1.5	2.2	3	6	1 -	LC1K0610●●
				- 1	LC1K0601●●
2.2	4	4	9	1 -	LC1K0910●●
				- 1	LC1K0901●●
3	5.5	4 (> 440) 5.5 (440)	12	1 -	LC1K1210●●
				- 1	LC1K1201●●
4	7.5	4 (> 440) 5.5 (440)	16	1 -	LC1K1610●●
				- 1	LC1K1601●●

### Spring terminal connections <sup>(3)</sup>

For 6 to 12 A ratings only, in the references selected above, insert a figure 3 before the voltage code.  
Example: LC1K0610●● becomes LC1K06103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure 7 before the voltage code.  
Example: LC1K0610●● becomes LC1K06107●●.

### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure 5 before the voltage code.  
Example: LC1K0610●● becomes LC1K06105●●.

### 3-pole silent contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.  
Coil with rectifier incorporated, suppressor fitted as standard.

### Screw clamp connections

1.5	2.2	3	6	1 -	LC7K0610●●
				- 1	LC7K0601●●
2.2	4	4	9	1 -	LC7K0910●●
				- 1	LC7K0901●●
3	5.5	4 (> 440) 5.5 (440)	12	1 -	LC7K1210●●
				- 1	LC7K1201●●

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
Example: LC7K0610●● becomes LC7K06107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
Example: LC7K0610●● becomes LC7K06105●●.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - a.c. <sup>(4)</sup>

Contactors LC1K (0.8...1.15 Uc) (0.85...1.1 Uc)

Volts	12	20	24 <sup>(1)</sup>	36	42	48	110	115	120	127	200/208	220/230	230	230/240
50 Hz <sup>(5)</sup>			B5		D5	E5							P5	
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7	M7	P7	U7
Volts	256	277	380/400		400	400/415	440	480	500	575	600	660/690		
50/60 Hz	W7	UE7	Q7	-	V7	N7	R7	T7	S7	SC7	X7	Y7	-	-

Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: J72.

Contactors LC7K (0.85...1.1 Uc)

Volts	24	42	48	110	115	220	230/240
50/60 Hz	B7	D7	E7	F7	FE7	M7	U7

<sup>(1)</sup> For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4KE1FC (50...129 V) or LA4KE1UG (130...250 V), see page B8/14.

<sup>(2)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(3)</sup> For LC●K●●●●3 / LP●K●●●●3 with spring terminal, lth max = 10 A.

<sup>(4)</sup> (0.8...1.15 Uc) for single voltage coil; (0.85...1.1 Uc) for dual voltage coil, exemple 200/208 V AC.

<sup>(5)</sup> Only available for 'screw clamp terminals' versions.

# TeSys Control

## K Contactors

### Product references



LP1K0910●●



LP1K09103●●



LP1K09105●●



LP4K0910●●

Contactors selection according to utilisation category, see pages A5/34 to A5/39 and A5/42 to A5/45.  
Mounting on 35 mm rail or Ø4 screw fixing.  
Screws in the open "ready-to-tighten" position.

Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3-pole contactors - Motor control 6 to 12 A in categories AC-3 AC-4 - d.c. coil

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts 	Basic reference, to be completed by adding the voltage code (1) (2)
220 V	380 V	440/500 V			
230 V	415 V	660/690 V			
kW	kW	kW	A		
Screw clamp connections					
1.5	2.2	3	6	1 -	LP1K0610●●
				- 1	LP1K0601●●
2.2	4	4	9	1 -	LP1K0910●●
				- 1	LP1K0901●●
3	5.5	4 (> 440)	12	1 -	LP1K1210●●
		5.5 (440)		- 1	LP1K1201●●

### Spring terminal connections (3)

In the references selected above, insert a figure 3 before the voltage code.

Example: LP1K0610●● becomes LP1K06103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.

Example: LP1K0610●● becomes LP1K06107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.

Example: LP1K0610●● becomes LP1K06105●●.

### 3-pole low consumption contactors

Compatible with programmable controller outputs.

Wide range coil (0.7...1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

### Screw clamp connections

1.5	2.2	3	6	1 -	LP4K0610●●
				- 1	LP4K0601●●
2.2	4	4	9	1 -	LP4K0910●●
				- 1	LP4K0901●●
3	5.5	4 (> 440)	12	1 -	LP4K1210●●
		5.5 (440)		- 1	LP4K1201●●

### Spring terminal connections

In the references selected above, insert a figure 3 before the voltage code.

Example: LP4K0610●● becomes LP4K06103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.

Example: LP4K0610●● becomes LP4K06107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.

Example: LP4K0610●● becomes LP4K06105●●.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

d.c. supply (contactors LP1K: 0.8...1.15 Uc)																	
Volts	12	20	24 (1)	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add 3 to the code required. Example: **JD3**

### Low consumption (contactors LP4K: 0.7...1.3 Uc)

Volts	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

(1) For LP1K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (~ control circuit voltage code Z7, ∞ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

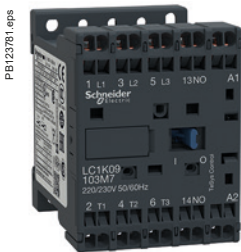
(2) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(3) For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

Contactor selection according to utilisation category, see pages A5/40 and A5/41.  
 Mounting on 35 mm rail or Ø4 screw fixing.  
 Screws in the open "ready-to-tighten" position.  
 Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.



LC1K09004●●



LC1K09103●●



LC1K09107●●



LC7K0910●●

### 3 or 4-pole contactors - Load control up to 20 A in category AC-1 - a.c. coil <sup>(1)</sup>

Non-inductive loads Category AC-1 Maximum current at $\theta \leq 50^\circ\text{C}$	Number of poles	Instantaneous auxiliary contacts	Basic reference, to be completed by adding the voltage code <sup>(2)(3)</sup>

Screw clamp connections					
20	3	-	1	-	LC1K0910●● or LC1K1210●●
	3	-	-	1	LC1K0901●● or LC1K1201●●
	4	-	-	-	LC1K09004●● or LC1K12004●●
	2	2	-	-	LC1K09008●●

### Spring terminal connections <sup>(4)</sup>

In the references selected above, insert a figure 3 before the voltage code.  
 Example: LC1K0910●● becomes LC1K09103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
 Example: LC1K0910●● becomes LC1K09107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
 Example: LC1K0910●● becomes LC1K09105●●.

### 3 or 4-pole silent contactors <sup>(1)</sup>

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.  
 Coil with rectifier incorporated, suppressor fitted as standard.

### Screw clamp connections

20	3	-	1	-	LC7K0910●● or LC7K1210●●
	3	-	-	1	LC7K0901●● or LC7K1201●●
	4	-	-	-	LC7K09004●● or LC7K12004●●
	2	2	-	-	LC7K09008●●

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
 Example: LC7K0910●● becomes LC7K09107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
 Example: LC7K0910●● becomes LC7K09105●●.

<sup>(1)</sup> Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/40.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - a.c. <sup>(5)</sup>

Contactors LC1K (0.8...1.15 Uc) (0.85...1.1 Uc)

Volts	12	20	24 <sup>(2)</sup>	36	42	48	110	115	120	127	200/208	220/230	230	230/240
50 Hz <sup>(6)</sup>			B5		D5	E5							P5	
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7	M7	P7	U7
Volts	256	277	380/400		400	400/415	440	480	500	575	600	660/690		
50/60 Hz	W7	UE7	Q7		V7	N7		R7	T7	S7	SC7	X7	Y7	

Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: J72.

Contactors LC7K (0.8...1.1 Uc)

Volts	24	42	48	110	115	220	230/240	
50/60 Hz	B7		D7	E7	F7	FE7	M7	U7

<sup>(2)</sup> For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4KE1FC (50...129 V) or LA4KE1UG (130...250 V), see page B8/14.

<sup>(3)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(4)</sup> For LC●K●●●●●3 / LP●K●●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

<sup>(5)</sup> (0.8...1.15 Uc) for single voltage coil; (0.85...1.1 Uc) for dual voltage coil, exemple 200/208 V AC.

<sup>(6)</sup> Only available for 'screw clamp terminals' versions.

# TeSys Control K Contactors

## Product references

Contactor selection according to utilisation category, see pages A5/40 and A5/41.  
Mounting on 35 mm rail or Ø4 screw fixing.  
Screws in the open "ready-to-tighten" position.  
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.



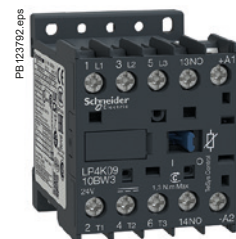
LP1K09004●●



LP1K09103●●



LP1K09105●●



LP4K0910●●●

### 3 and 4-pole contactors - Load control - 20 A in category AC-1 - d.c. coil <sup>(1)</sup>

Non-inductive loads Category AC-1 Maximum current at $\theta \leq 50^\circ\text{C}$	Number of poles 	Instantaneous auxiliary contacts 	Basic reference, to be completed by adding the voltage code <sup>(2)(3)</sup>
<b>A</b>			
<b>Screw clamp connections</b>			
20	3	- 1 -	LP1K0910●● or LP1K1210●●
	3	- - 1	LP1K0901●● or LP1K1201●●
	4	- - -	LP1K09004●● or LP1K12004●●
	2	2 - -	LP1K09008●●

### Spring terminal connections <sup>(4)</sup>

In the references selected above, insert a figure 3 before the voltage code.  
Example: LP1K0910●● becomes LP1K09103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
Example: LP1K0910●● becomes LP1K09107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
Example: LP1K0910●● becomes LP1K09105●●.

### 3 or 4-pole 20 A / AC-1 - d.c. low consumption coil <sup>(1)</sup>

Compatible with programmable controller outputs.  
Wide range coil (0.7...1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

### Screw clamp connections

20	3	- 1 -	LP4K0910●●● or LP4K1210●●●
	3	- - 1	LP4K0901●●● or LP4K1201●●●
	4	- - -	LP4K09004●●● or LP4K12004●●●
	2	2 - -	LP4K09008●●●

### Spring terminal connections

In the references selected above, insert a figure 3 before the voltage code.  
Example: LP4K0910●● becomes LP4K09103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
Example: LP4K0910●● becomes LP4K09107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
Example: LP4K0910●● becomes LP4K09105●●.

<sup>(1)</sup> Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/40.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - d.c. (contactors LP1K: 0.8...1.15 Uc)

Volts $\overline{\text{---}}$	12	20	24 <sup>(2)</sup>	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add 3 to the code required. Example: JD3.

#### Coil voltage codes - low consumption d.c. (contactors LP4K: 0.7...1.3 Uc)

Volts $\overline{\text{---}}$	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

<sup>(2)</sup> For LP1K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (~ control circuit voltage code Z7,  $\overline{\text{---}}$  control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

<sup>(3)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(4)</sup> For LC●K●●●●3 / LP●K●●●●3 with spring terminal, lth max = 10 A.

Reversing contactor selection according to utilisation category, see pages A5/34 to A5/39 and A5/42 to A5/45. Integral mechanical interlock.

It is essential to link the contacts of the electrical interlock.

Pre-wired power circuit connections as standard on screw clamp versions.

Mounting on 35 mm rail or Ø4 screw fixing. Screws in the open "ready-to-tighten" position.

Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3-pole reversing contactors - Motor control 6 to 16 A in categories AC-3 AC-4 - a.c. coil

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts per contactor	Basic reference, to be completed by adding the voltage code <sup>(1)(2)</sup>
220 V	380 V	440/500 V			
230 V	415 V	660/690 V			

kW	kW	kW	A		
1.5	2.2	3	6	1 -	LC2K0610●●

				- 1	LC2K0601●●
2.2	4	4	9	1 -	LC2K0910●●

				- 1	LC2K0901●●
3	5.5	4 (> 440)	12	1 -	LC2K1210●●

				- 1	LC2K1201●●
4	7.5	4 (> 440)	16	1 -	LC2K1610●●

				- 1	LC2K1601●●
--	--	--	--	-----	------------

### Spring terminal connections <sup>(3)</sup>

For 6 to 12 A ratings only, in the references selected above, insert a figure 3 before the voltage code.

Example: LC2K0610●● becomes LC2K06103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure 7 before the voltage code.

Example: LC2K0610●● becomes LC2K06107●●.

### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure 5 before the voltage code.

Example: LC2K0610●● becomes LC2K06105●●.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - a.c. <sup>(4)</sup>

Reversing contactors LC2K (0.8...1.15 Uc) (0.85...1.1 Uc)														
Volts	12	20	24 <sup>(1)</sup>	36	42	48	110	115	120	127	200/208	220/230	230	230/240
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7	M7	P7	U7
Volts	256	277	380/400	400	400/415	440	480	500	575	600	660/690			
50/60 Hz	W7	UE7	Q7		V7	N7		R7	T7	S7	SC7	X7	Y7	

Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: J72.

(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4KE1FC (50...129 V) or LA4KE1UG (130...250 V), see page B8/14.

(2) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(3) For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

(4) (0.8...1.15 Uc) for single voltage coil; (0.85...1.1 Uc) for dual voltage coil, exemple 200/208 V AC.

PB123764.tif



LC2K0910●●

PB123765.eps



LC2K09105●●





Reversing contactor selection according to utilisation category, see pages A5/34 to A5/39 and A5/42 to A5/45.  
Integral mechanical interlock.  
It is essential to link the contacts of the electrical interlock.  
Pre-wired power circuit connections as standard on screw clamp versions.  
Mounting on 35 mm rail or Ø4 screw fixing.  
Screws in the open "ready-to-tighten" position.  
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3-pole reversing contactors - Motor control 6 to 12 A in categories AC-3 AC-4 - d.c. coil

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts per contactor	Basic reference, to be completed by adding the voltage code <sup>(1)(2)</sup>
220 V	380 V	440/500 V			
kW	kW	kW	A		
230 V	415 V	660/690 V			
<b>Screw clamp connections</b>					
1.5	2.2	3	6	1 -	LP2K0610●●
				- 1	LP2K0601●●
2.2	4	4	9	1 -	LP2K0910●●
				- 1	LP2K0901●●
3	5.5	4 (> 440)	12	1 -	LP2K1210●●
		5.5 (440)		- 1	LP2K1201●●

#### Spring terminal connections<sup>(3)</sup>

In the references selected above, insert a figure 3 before the voltage code.  
Example: LP2K0610●● becomes LP2K06103●●.

#### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
Example: LC2K0610●● becomes LC2K06107●●.

#### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure 5 before the voltage code.  
Example: LC2K0610●● becomes LC2K06105●●.

### 3-pole low consumption reversing contactors

Compatible with programmable controller outputs.  
Wide range coil (0.7...1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

#### Screw clamp connections

1.5	2.2	3	6	1 -	LP5K0610●●
				- 1	LP5K0601●●
2.2	4	4	9	1 -	LP5K0910●●
				- 1	LP5K0901●●
3	5.5	4 (> 440)	12	1 -	LP5K1210●●
		5.5 (440)		- 1	LP5K1201●●

#### Spring terminal connections

In the references selected above, insert a figure 3 before the voltage code.  
Example: LP5K0610●● becomes LP5K06103●●.

#### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.  
Example: LP5K0610●● becomes LP5K06107●●.

#### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.  
Example: LP5K0610●● becomes LP5K06105●●.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - d.c.

Reversing contactors LP2K (0.8...1.15 Uc)

Volts	12	20	24 <sup>(1)</sup>	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add 3 to the code required. Example: JD3.

#### Coil voltage codes - low consumption d.c.

Reversing contactors LP5K (0.7...1.3 Uc)

Volts	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

(1) For LP2K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (~ control circuit voltage code Z7, --- control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

(2) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(3) For LC●K●●●●3 / LP●K●●●●3 with spring terminal, lth max = 10 A.

PE123784.tif



LC2K0910●●

PE123785.eps



LC2K09105●●



**Warning: reversing contactors LC2K0910●● and LC2K0901●● are pre-wired for reverse motor operation as standard.**

Reversing contactor selection according to utilisation category, see pages A5/40 and A5/41. Integral mechanical interlock.

**It is essential to link the contacts of the electrical interlock.**

Mounting on 35 mm rail or Ø4 screw fixing.

Screws in the open "ready-to-tighten" position.

Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3 or 4-pole reversing contactors - Load control - 20 A in category AC-1 - a.c. coil <sup>(1)</sup>

Non-inductive loads Category AC-1 Maximum current at $\theta \leq 50^\circ\text{C}$	Number of poles	Instantaneous auxiliary contacts per contactor	Basic reference, to be completed by adding the voltage code <sup>(2)(3)</sup>

### A Screw clamp connections

20	3	-	1	-	LC2K0910●● or LC2K1210●●
	3	-	-	1	LC2K0901●● or LC2K1201●●
	4	-	-	-	LC2K09004●● or LC2K12004●●

### Spring terminal connections <sup>(4)</sup>

In the references selected above, insert a figure 3 before the voltage code.

Example: LC2K0910●● becomes LC2K09103●●.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.

Example: LC2K0910●● becomes LC2K09107●●.

### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.

Example: LC2K0910●● becomes LC2K09105●●.

<sup>(1)</sup> Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/40.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - a.c. <sup>(5)</sup>

Reversing contactors LC2K (0.8...1.15 Uc) (0.85...1.1 Uc)														
Volts	12	20	24 <sup>(2)</sup>	36	42	48	110	115	120	127	200/208	220/230	230	230/240
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7	M7	P7	U7
Volts	256	277	380/400	400	400/415	440	480	500	575	600	660/690			
50/60 Hz	W7	UE7	Q7	V7	N7	R7	T7	S7	SC7	X7	Y7			

Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: J72.

<sup>(2)</sup> For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4KE1FC (50...129 V) or LA4KE1UG (130...250 V), see page B8/14.

<sup>(3)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(4)</sup> For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

<sup>(5)</sup> (0.8...1.15 Uc) for single voltage coil; (0.85...1.1 Uc) for dual voltage coil, exemple 200/208 V AC.

**Warning: reversing contactors LP2K0910●● and LP2K0901●● are pre-wired for reverse motor operation as standard.**

Reversing contactor selection according to utilisation category, see pages A5/40 and A5/41.

Integral mechanical interlock.

**It is essential to link the contacts of the electrical interlock.**

Mounting on 35 mm rail or Ø4 screw fixing.

Screws in the open "ready-to-tighten" position.

Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

### 3 or 4-pole reversing contactors - Load control - 20 A in category AC-1 - d.c. coil <sup>(1)</sup>

Non-inductive loads Category AC-1 Maximum current at $\theta \leq 50^\circ\text{C}$	Number of poles	Instantaneous auxiliary contacts per contactor		Basic reference, to be completed by adding the voltage code <sup>(2) (3)</sup>	
<b>A</b>					
<b>Screw clamp connections</b>					
20	3	-	1	-	LP2K0910●● or LP2K1210●●
	3	-	-	1	LP2K0901●● or LP2K1201●●
	4	-	-	-	LP2K09004●● or LP2K12004●●

#### Spring terminal connections <sup>(4)</sup>

In the references selected above, insert a figure 3 before the voltage code.

Example: LP2K0910●● becomes LP2K09103●●.

#### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.

Example: LP2K0910●● becomes LP2K09107●●.

#### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.

Example: LP2K0910●● becomes LP2K09105●●.

### 3 or 4-pole reversing contactors - 20 A / AC-1 - d.c. low consumption coil <sup>(1)</sup>

Compatible with programmable controller outputs.

Wide range coil (0.7...1.30 U<sub>c</sub>), suppressor fitted as standard, consumption 1.8 W.

#### Screw clamp connections

20	3	-	1	-	LP5K0910●●● or LP5K1210●●●
	3	-	-	1	LP5K0901●●● or LP5K1201●●●
	4	-	-	-	LP5K09004●●● or LP5K12004●●●

#### Spring terminal connections

In the references selected above, insert a figure 3 before the voltage code.

Example: LP5K0910●● becomes LP5K09103●●.

#### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure 7 before the voltage code.

Example: LP5K0910●● becomes LP5K09107●●.

#### Solder pins for printed circuit boards

In the references selected above, insert a figure 5 before the voltage code.

Example: LP5K0910●● becomes LP5K09105●●.

<sup>(1)</sup> Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/40.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

#### Coil voltage codes - d.c. (reversing contactors LP2K: 0.8...1.15 U<sub>c</sub>)

Volts ∴	12	20	24 <sup>(2)</sup>	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add 3 to the code required. Example: JD3.

#### Coil voltage codes - low consumption d.c. (reversing contactors LP5K: 0.7...1.3 U<sub>c</sub>)

Volts ∴	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

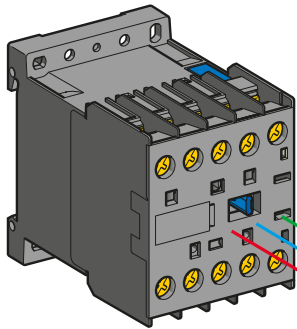
Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

<sup>(2)</sup> For LP2K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (~ control circuit voltage code Z7, ∴ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

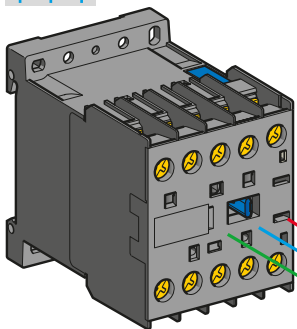
<sup>(3)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(4)</sup> For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

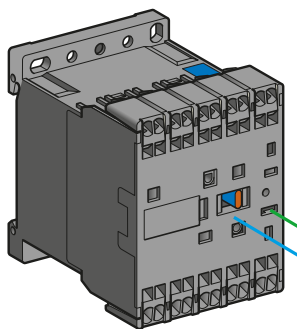
DB4394106 eps



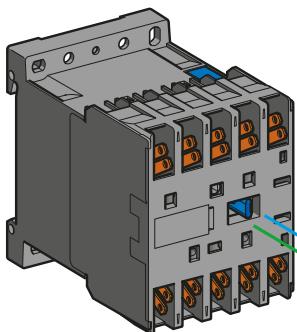
LC1, LC7, LP1 K



LC1, LC7, LP1 K



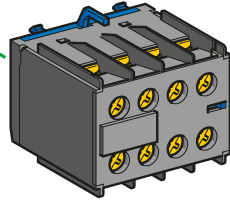
LC1, LP1 K



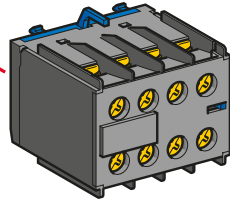
LC1, LC7, LP1 K



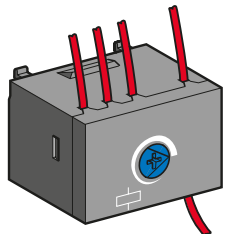
Contactors



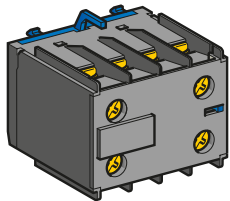
LA1 KN...M



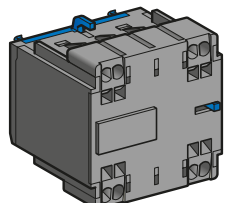
LA1 KN...



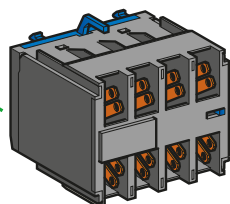
LA2 KT2...



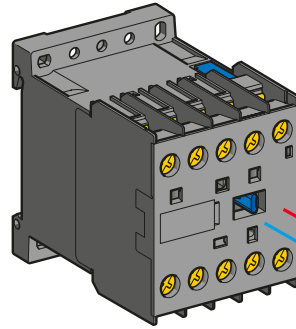
LA1 KN...P



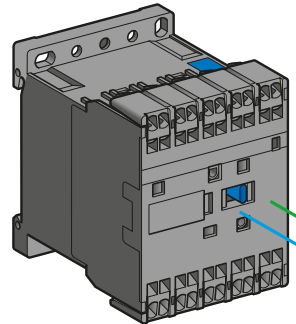
LA1 KN...3



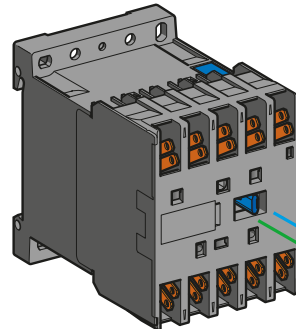
LA1 KN...7



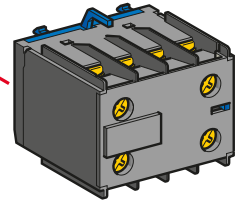
LP4



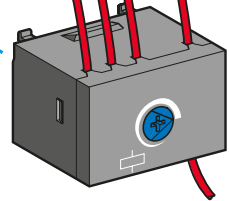
LP4



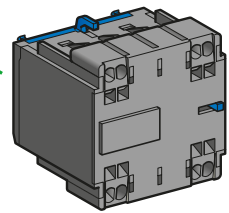
LP4



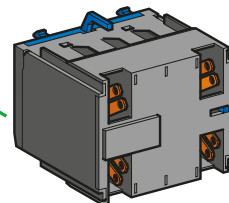
LA1 KN...



LA2 KT2...



LA1 KN...3



LA1 KN...7

# TeSys Control

## K Contactors - Auxiliary contacts blocks

### Product references



LA1KN22



LA1KN223



LA1KN407

### Instantaneous auxiliary contact blocks

Recommended for standard applications. Clip-on front mounting, 1 block per contactor

Connection	For use on contactors	Composition	Reference
Screw clamp terminals	All products with screw clamp terminals	2 –	LA1KN20
		– 2	LA1KN02
		1 1	LA1KN11
		4 –	LA1KN40
	All products with screw clamp terminals except low consumption	3 1	LA1KN31
		2 2	LA1KN22
		1 3	LA1KN13
		– 4	LA1KN04
Spring terminals	All products with spring terminals	2 –	LA1KN203
		– 2	LA1KN023
		1 1	LA1KN113
		4 –	LA1KN403
	All products with spring terminals except low consumption	3 1	LA1KN313
		2 2	LA1KN223
		1 3	LA1KN133
		– 4	LA1KN043
Faston connectors, 1 x 6.35 or 2 x 2.8	All products with Faston connectors	2 –	LA1KN207
	All products with Faston connectors except low consumption	4 –	LA1KN407
		3 1	LA1KN317

### With terminal referencing to standard EN 50012. Clip-on front mounting, 1 block per contactor

Screw clamp terminals with referencing	All 3-pole + N/O products with screw clamp terminals except LP4 and LP5K12	– 2	LA1KN02M
		1 1	LA1KN11M
conforming to standard EN 50012	All 3-pole + N/O products with screw clamp terminals except LP4 or LP5K06, K09 and K12	3 1	LA1KN31M
		2 2	LA1KN22M

### Electronic time delay auxiliary contact blocks

Relay output with common point changeover contact,  $\sim$  or  $\overline{\sim}$  240 V, 2 A maximum.

Control voltage 0.85...1.1  $U_c$ .

Maximum switching capacity 250 VA or 150 W.

Operating temperature -10...+60 °C.

Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period.

#### Clip-on front mounting, 1 block per contactor

Voltage	Type	Timing range	Composition	Reference
$\sim$ or $\overline{\sim}$ 24...48	On-delay	1...30	1	LA2KT2E
$\sim$ 110...240	On-delay	1...30	1	LA2KT2U



# TeSys Control

## K Contactors - Suppressor modules

### Product references



LA4K●●●

PB123798\_R.eps

#### References

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference
Clip-on fixing on the front of contactors LC1 and LP1, with locating device. No tools required.	Varistor <sup>(1)</sup>	~ and ≍ 12...24 V	5	LA4KE1B
		~ and ≍ 32...48 V	5	LA4KE1E
		~ and ≍ 50...129 V	5	LA4KE1FC
		~ and ≍ 130...250 V	5	LA4KE1UG
Diode + Zener diode <sup>(2)</sup>		≍ 12...24 V	5	LA4KC1B
		≍ 32...48 V	5	LA4KC1E
	RC <sup>(3)</sup>	~ 110...250 V	5	LA4KA1U

**(1)** Protection provided by limiting the transient voltage to 2 Uc max.  
Maximum reduction of transient voltage peaks.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).

**(2)** No overvoltage or oscillating frequency.  
Polarised component.  
Slight increase in drop-out time (1.1 to 1.5 times the normal time).

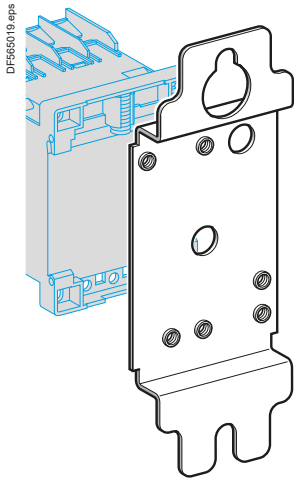
**(3)** Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.  
Slight increase in drop-out time (1.2 to 2 times the normal time).



# TeSys Control

## K Contactors - Accessories

### Product references



DX1AP25



LA9E01

#### Mounting and marking accessories

Description	Application		Sold in lots of	Unit reference
Mounting plates <sup>(1)</sup>	For fixing on 2 U rails	110/120 mm fixing centres	10	DX1AP25
Marker holder	Clip-on	Onto front of contactor	100	LA9D90
Clip-in markers	4 maximum per contactor	Strips of 10 identical numbers 0...9	25	AB1R● <sup>(2)</sup>
		Strips of 10 identical letters A...Z	25	AB1G● <sup>(2)</sup>

#### Connection accessories

Description	Application		Sold in lots of	Unit preference
Paralleling links	For 2 poles	With screw clamps	4	LA9E01
	For 4 poles	With screw clamps	2	LA9E02
Set of 6 power connections	For 3-pole reversing contactors for motor control	For contactors with screw clamp terminals	100	LA9K0969

<sup>(1)</sup> Order 1 mounting plate for fixing a contactor and 2 mounting plates for fixing a reversing contactor.

<sup>(2)</sup> Complete the reference by replacing the dot with the required character.



#### Control Panel Technical Guide:

Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

> Ref. Document: CPTG011\_EN



> Click on QR code to download

### Deca green, enriching Deca family

Deca conventional contactors 9 to 150 A, for motor control and other applications.

Deca green delivers a consistent low consumption range of contactors from 9 A to 80 A, covering control voltage from 24 to 250 V, with same coils for AC and DC.



When implemented with other Schneider Electric products\*, Deca green contactors are part of a comprehensive solution that is ideal for all types of industrial machines and processes.

#### Deca Overload relay

By combining a Deca green contactor with our new Deca electronic overload relay, you will have less heat generation, and further reduce energy consumption.



\* such as PLC I/O type M580, M340, M221 or M241 or extended I/O type Advantys STB range, or in association with Deca electronic overload relays or Tera Motor management system.



# TeSys Control

## Deca Contactors

### Introduction



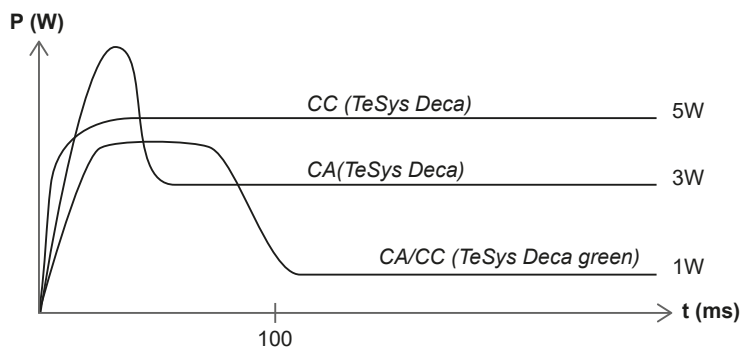
### Highly competitive coil consumption

Small changes can generate big savings. The new Deca green contactor is equipped with an innovative electronic coil. These electronic-coil contactors require **up to 80 % less energy** than electro-mechanical contactors. This innovation results in concrete values: for example, large plants can noticeably reduce their energy bills and heat dissipation in cabinet.

09-12-18 A    25-32-38 A    40-50-65-80 A

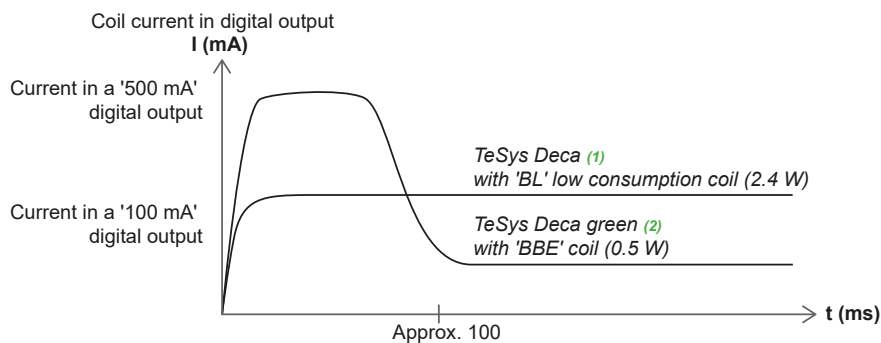
### Coil currents comparison

Deca green contactors (AC/DC coil) vs Deca contactors (AC, DC coils)



Deca green brings a significant reduction of energy consumption.

Deca green contactors ("BBE" coil) vs Deca contactors (low consumption "BL" coil)



(1) Up to 38 A.  
(2) 40 to 80 A.

Deca green contactor is well adapted to direct control by PLC static outputs, even in its high ratings.

# TeSys Control

## Deca green Contactors

### Product references



LC1D09●●●



LC1D40●●●

Deca green contactors have a dark grey casing and a 3-character code voltage.

### 3-pole contactors - Motor control up to 37 kW / 400 V - Category AC-3

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )						Rated operational current in AC-3 440 V up to	Instan- taneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>  Fixing <sup>(2)</sup>	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V				

kW	kW	kW	kW	kW	kW	A			kg
----	----	----	----	----	----	---	--	--	----

#### Connection by screw clamp terminals

2.2	4	4	4	5.5	5.5	9	1	1	LC1D09●●●	0.368
3	5.5	5.5	5.5	7.5	7.5	12	1	1	LC1D12●●●	0.373
4	7.5	9	9	10	10	18	1	1	LC1D18●●●	0.378
5.5	11	11	11	15	15	25	1	1	LC1D25●●●	0.433
7.5	15	15	15	18.5	18.5	32	1	1	LC1D32●●●	0.438
9	18.5	18.5	18.5	18.5	18.5	38	1	1	LC1D38●●●	0.442

#### Power connections by EverLink® BTR <sup>(3)</sup> screw connectors and control by screw clamp terminal

11	18.5	22	22	22	30	40	1	1	LC1D40●●●	0.992
15	22	25	30	30	33	50	1	1	LC1D50●●●	0.997
18.5	30	37	37	37	37	65	1	1	LC1D65A●●●	1.002
22	37	37	37	37	37	66	1	1	LC1D80A●●●	1.002

#### Connection for lugs or bars

For LC1D40A to LC1D80A, insert a figure 6 before the voltage code.

Example: LC1D40A●●● becomes LC1D40A6●●●

### Auxiliary contact blocks and add-on modules

See pages B8/36 to B8/42.

### Control voltage codes

#### AC/DC or 24 V DC supply

Volts	24 (DC only)	24-60	48-130	100-250
-------	--------------	-------	--------	---------

LC1D09 ... D38,  
LC1D40A ... D80A

U 0.85...1.1 Uc		BNE	EHE	KUE
-----------------	--	-----	-----	-----

LC1D09 ... D38

U 0.8 ... 1.2 Uc	BNE			
------------------	-----	--	--	--

LC1D40A ... D80A

U 0.8...1.2 Uc	BBE			
----------------	-----	--	--	--

<sup>(1)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(2)</sup> LC1D09 to D80A: clip-on mounting on 35 mm rail NSYSR or screw fixing.

<sup>(3)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see B8/42).



PB121708.tif



LC1D09●●●

PB121710.tif



LC1D40A●●●

PB121712.eps



LC1DT60A●●●

Deca green contactors have a dark grey casing and a 3-character code voltage.

### 3-pole contactors - Load control from 25 to 80 A - Category AC-1

Non inductive loads maximum current ( $\theta \leq 60^\circ\text{C}$ ) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts		Partial reference, to be completed by adding the control voltage code <sup>(1)</sup>	Weight
				Fixing <sup>(2)</sup>	
<b>A</b>					<b>kg</b>
<b>Connection by screw clamp terminals</b>					
25	3	1	1	LC1D09●●● or LC1D12●●●	0.368 0.373
32	3	1	1	LC1D18●●●	0.378
40	3	1	1	LC1D25●●●	0.433
50	3	1	1	LC1D32●●● or LC1D38●●●	0.438 0.442
<b>Connection by EverLink®, BTR screw connectors <sup>(3)</sup></b>					
60	3	1	1	LC1D40A●●●	0.992
80	3	1	1	LC1D50A●●● or LC1D65A●●● <sup>(4)</sup> or LC1D80A●●● <sup>(4)</sup>	0.997 1.002 1.002

### Connection for lugs or bars

For LC1D40A to LC1D80A, insert a figure 6 before the voltage code.

Example: LC1D40A●●● becomes LC1D40A6●●●

### 4-pole contactors

#### Connection by EverLink®, BTR <sup>(3)</sup> screw connectors

60	4	1	1	LC1DT60A●●●	1.230
80	4	1	1	LC1DT80A●●●	1.290

### Connection for lugs or bars

For LC1DT60A to LC1DT80A, insert a figure 6 before the voltage code.

Example: LC1DT60A●●● becomes LC1DT60A6●●●

### 4-pole changeover contactors

#### Connection by EverLink®, BTR <sup>(3)</sup> screw connectors

60	4	1	1	LC2DT60A●●●	2.460
80	4	1	1	LC2DT80A●●●	2.580

### Control voltage codes

#### AC/DC 24 V DC supply

Volts	24 (DC only)	24-60	48-130	100-250
<b>LC1D09...D80A and LC●DT60A...DT80A</b>				
U 0.85 .... 1.1 Uc		BNE	EHE	KUE
<b>LC1D09 .... D38</b>				
U 0.8 .... 1.2 Uc	BNE			
<b>LC1D40 to LC1D80A, LC●DT60A to LC●DT80A</b>				
U 0.8...1.2 Uc	BBE			

<sup>(1)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(2)</sup> LC1D09 to D80A, LC●DT60A and LC●DT80A: clip-on mounting on 35 mm  $\perp$  rail NSYSDR or screw fixing.

<sup>(3)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).

<sup>(4)</sup> Coordination tables according to the number of operation cycles, consult online datasheets for values.



PE121708.fr



LC1D09●●●

PE121710.fr



LC1D40A●●●



Deca green contactors have a dark grey casing and a 3-character code voltage.

### 3-pole contactors conforming to UL and CSA standards (North American market) - 25 to 80 A

Standard power ratings of motors 50/60 Hz						Associated cable type 75 °C-Cu	Continuous current	Type of contactor required Partial reference, to be completed by adding the control voltage code <sup>(1)</sup> Fixing, connection <sup>(2)</sup>
Single-phase 1 Ø		3-phase 3 Ø						
115 V	230 V	200 V	230 V	460 V	575 V			
	240 V	208 V	240 V	480 V	600 V			
HP	HP	HP	HP	HP	HP		A	

#### Connection by screw clamp terminals

1/3	1	2	2	5	7.5	AWG 18 - 10	25	LC1D09●●●
0.5	2	3	3	7.5	10	AWG 18 - 10	25	LC1D12●●●
1	3	5	5	10	15	AWG 18 - 8	32	LC1D18●●●
2	3	7.5	7.5	15	20	AWG 14 - 6	40	LC1D25●●●
2	5	10	10	20	25	AWG 14 - 6	50	LC1D32●●●

#### Power connections by EverLink® BTR <sup>(3)</sup> screw connectors and control by spring terminals

3	5	10	10	30	30	AWG 16 - 2	60	LC1D40A●●●
3	7.5	15	15	40	40	AWG 16 - 2	70	LC1D50A●●●
5	10	20	20	40	50	AWG 16 - 2	80	LC1D65A●●●
5	10	20	20	40	50	AWG 16 - 2	80	LC1D80A●●●

#### Connection for lugs or bars

For LC1D40A to LC1D80A, insert a figure 6 before the voltage code.

Example: LC1D40A●●● becomes LC1D40A6●●●

### Applications with High-Fault Short-Circuit Current ratings

High-fault short-circuit current ratings are: 100 kA at 600 V with Class J fuses and 85 kA (D09-38), 100 kA (D40A-65A) at 480 V and 50 kA at 600 V with circuit breakers.

#### Control voltage codes

##### AC/DC 24 V DC supply

Volts	24 (DC only)	24-60	48-130	100-250
<b>LC1D09 ... D32, LC1D40A ... D80A</b>				
U 0.85 ... 1.1 Uc		BNE	EHE	KUE
<b>LC1D09 ... D38</b>				
U 0.8 ... 1.2 Uc		BNE		
<b>LC1D40A ... D80A</b>				
U 0.8...1.2 Uc		BBE		

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC1D09 to D80: clip-on mounting on 35 mm rail NSYS DR or screw fixing.

(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).

Deca green contactors - Coordination with PLC output modules (static/relay/triac)

#### Selection of PLC coordinated contactors

Laboratory tests have been carried out in order to validate trouble free contactor closings and openings with different PLC output modules.

The coil must be defined according to the contactor rating range and output module. See selection table below.

The PLC your are using				>>>	Compatible contactors <sup>(1)</sup>	Coil code
PLC type	Output type	Output I (A)	Output module commercial reference			
M221 / M241 / M251	Static output: 24 V DC	0.5	TM3DQ8●●● and Q16●●● (T, TG, U, UG)	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	BL, BNE BBE
		0.3 (sealed) 0.8 (inrush)	TM3XTYS4	>>>	LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	BBE, BD, BNE
		0.1	TM3DQ16●● and Q32●● (TK, UK)	>>>	LC1D09●● to LC1D38●●	BL
	Relay output: 24 V DC / 230 V AC	2	TM3DQ8 and DQ16 (R,RG), TM3DM8 and DM24 (R,RG)	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	Code of any DC coil up to 24 V or any AC coil up to 230 V
M340 / M580	Static output: 24 V DC	0.5	BMXDDO1602 and DM16022	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	BL, BNE BBE
		0.1	BMXDDO3202, BMXDDM3202K, BMXDDO6402K	>>>	LC1D09●● to LC1D38●●	BL
	Relay output: 24 V DC / 230 V AC	2	BMXDRA0805 and DM16025	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	Code of any DC coil up to 24 V or any AC coil up to 230 V
	Triac output: 230 V AC	0.6	BMXDAO1605	>>>	LC1D09●● to LC1D38●●, LC1D40●●● to LC1D80A●●●, LC1DT60A●●● to LC1DT80A●●●	Code of any AC coil up to 230 V (P7 code = 230 V)
ADVANTYS	Static output: 24 V DC	0.5	STBDDO3200	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	BL, BNE BBE
	Triac output: 230 V AC	2	STBDAO8210	>>>	LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●●	Code of any AC coil up to 230 V (P7 code = 230 V AC)

#### Coils consumption characteristics

Coil type	Uc DC - min -max	Average consumption at UC DC / 20 °C	
		Inrush	Sealed
BL	24 V - 0.8 Uc to 1.1 Uc	2.4 W - 2.4 VA	2.4 W - 2.4 VA
BNE		14 W - 14 VA	0.7 W - 0.7 VA
BBE		11 W - 11 VA	0.5 W - 0.5 VA

(1) Replace dot by coil code. Ex LC1D09●● becomes LC1D09BL.

# TeSys Control

## Deca Contactors

### Product references



LC1D09●●



LC1D25●●



LC1D80A●●



LC1D95●●



LC1D115●●

### 3-pole contactors - Motor control up to 75 kW at 400 V, in category AC-3

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )							Rated operational current in AC-3 440 V up to	Instan- taneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>	Weight <sup>(3)</sup>	
220 V	380 V	415 V	440 V	500 V	660 V	1000 V	A			Fixing <sup>(2)</sup>	kg
230 V	400 V				690 V						
<b>Connection by screw clamp terminals</b>											
2.2	4	4	4	5.5	5.5	-	9	1	1	LC1D09●●	0.320
3	5.5	5.5	5.5	7.5	7.5	-	12	1	1	LC1D12●●	0.325
4	7.5	9	9	10	10	-	18	1	1	LC1D18●●	0.330
5.5	11	11	11	15	15	-	25	1	1	LC1D25●●	0.370
7.5	15	15	15	18.5	18.5	-	32	1	1	LC1D32●●	0.375
9	18.5	18.5	18.5	18.5	18.5	-	38	1	1	LC1D38●●	0.380
<b>Power connections by EverLink® BTR screw connectors <sup>(4)</sup> and control by screw clamp terminal</b>											
11	18.5	22	22	22	30	-	40	1	1	LC1D40A●●	0.850
15	22	25	30	30	33	-	50	1	1	LC1D50A●●	0.855
18.5	30	37	37	37	37	-	65	1	1	LC1D65A●●	0.860
22	37	37	37	37	37	-	66	1	1	LC1D80A●●	0.860
<b>Connection by screw clamp terminals or connectors</b>											
22	37	45	45	55	45	45	80	1	1	LC1D80●●	1.590
25	45	45	45	55	45	45	95	1	1	LC1D95●●	1.610
30	55	59	59	75	80	65	115	1	1	LC1D115●●	2.500
40	75	80	80	90	100	75	150	1	1	LC1D150●●	2.500

#### Connection by lugs or bars

In the references selected above, insert a figure **6** before the voltage code.

Example: LC1D09●● becomes LC1D096●●.

#### Separate components

Auxiliary contact blocks and add-on modules: see pages B8/36 to B8/42.

#### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

##### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
LC1D09...D150 (D115 and D150 coils with built-in suppression as standard, by bi-directional peak limiting diode).													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
LC1D09...D65 (not available with "connection for lugs or bars")													
50 Hz	B5	D5	E5				P5						
LC1D80...D115													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	-	E6	F6	-	M6	-	U6	Q6	-	-	R6	-

##### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
LC1D09...D38 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
LC1D40A...D65A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 Uc	JD	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	RD
LC1D80...D95											
U 0.85...1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
U 0.75...1.2 Uc	JW	BW	CW	EW	-	SW	FW	-	MW	-	-
LC1D115 and D150 (coil with built-in suppression device as standard)											
U 0.75...1.2 Uc	-	BD	-	ED	ND	SD	FD	GD	MD	UD	RD

#### Low consumption DC (for low consumption AC/DC: Deca green contactors, page B8/18)

Volts	5	12	20	24	48	110	220	250
LC1D09...D38 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)								
U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC1D09 to D80A: clip-on mounting on 35 mm rail NSYSR or screw fixing.  
LC1D80 to D95 ~: clip-on mounting on 35 mm rail NSYSR or 75 mm rail AM1DL or screw fixing.  
LC1D80 to D95 -: clip-on mounting on 75 mm rail AM1DL or screw fixing.

(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from LC1D09 to D38, 0.075 kg from LC1D40A to D80A and 1 kg for LC1D80 and D95.

(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).

(5) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: LC1D40ABBE.

# TeSys Control

## Deca Contactors

### Product references

PE121713.tif



LC1D123●●

PE121720.eps



LC1D80A3●●

### 3-pole contactors - Motor control up to 30 kW at 400 V, in category AC-3

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )	Rated operational current in AC-3 440 V up to	Instan- taneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>
220 V 380 V 415 V 440 V 500 V 660 V 1000 V 230 V 400 V			Fixing <sup>(2)</sup>

kW	kW	kW	kW	kW	kW	kW	A			
2.2	4	4	4	5.5	5.5		9	1	1	LC1D093●●
3	5.5	5.5	5.5	7.5	7.5		12	1	1	LC1D123●●
4	7.5	9	9	10	10		18	1	1	LC1D183●●
5.5	11	11	11	15	15		25	1	1	LC1D253●●
7.5	15	15	15	18.5	18.5		32 <sup>(3)</sup>	1	1	LC1D323●●

Power connections by EverLink® BTR screw connectors <sup>(4)</sup> and control by spring terminals										
11	18.5	22	22	22	30	30	40	1	1	LC1D40A3●●
15	22	25	30	30	33	33	50	1	1	LC1D50A3●●
18.5	30	37	37	37	37	37	65	1	1	LC1D65A3●●
22	37	37	37	37	37	37	66	1	1	LC1D80A3●●

**Connection by Faston connectors**  
 These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil and auxiliary terminals.  
 For contactors LC1D09 and LC1D12 only, replace the figure **3** with a **9** in the references selected above.  
 Example: LC1D093●● becomes LC1D099●●.

### Separate components

**Auxiliary contact blocks and add-on modules:** see pages B8/36 to B8/42.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

a.c. supply													
Volts	24	42	48	110	115	220	230	240	380	400	415	440	
LC1D09...D80A													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	
d.c. supply													
Volts	12	24	36	48	60	72	110	125	220	250	440		
LC1D09...D32 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.7...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD		
LC1D40A...D65A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.75...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD		
Low consumption													
Volts $\overline{\text{---}}$	5	12	20	24	48	110	220	250					
LC1D09...D32 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.8...1.25 U <sub>c</sub>	AL	JL	ZL	BL	EL	FL	ML	UL					

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.  
 (1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.  
 (2) LC1D09 to D32: clip-on mounting on 35 mm rail NSYSDR or screw fixing.  
 (3) Must be wired with 2 x 4 mm<sup>2</sup> cables in parallel on the upstream side. On the downstream side, outgoing terminal block LAD331 may be used (Quickfit technology, see page B1/18). When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).  
 (4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).



Contactors

# TeSys Control

## Deca Contactors

### Product references

PB12/651.eps



LC1D09●●

PB12/723.eps



LC1D80A●●



Contactors

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

- (1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.
- (2) **LC1D09 to D80A**: clip-on mounting on 35 mm rail NSYSR or screw fixing.  
**LC1D80 and D95**: clip-on mounting on 35 mm rail NSYSR or 75 mm rail AM1DL or screw fixing.  
**LC1 or LP1D80 to D95**: clip-on mounting on 75 mm rail AM1DL or screw fixing.  
**LC1D115 and D150**: clip-on mounting on 2 x 35 mm rails NSYSR or screw fixing.
- (3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1D09 to D38**, 0.075 kg from **LC1D40A to D80A** and 1 kg for **LC1D80 and D95**.
- (4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).
- (5) Coordination tables according to the number of operating cycles, see AC-1 curve, page A5/40.
- (6) 32 A with 2 x 4 mm<sup>2</sup> cables connected in parallel.
- (7) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Exemple: **LC1D40ABBE**.

### 3-pole contactors - Load control from 25 to 200 A in category AC-1

Non inductive loads maximum current (θ ≤ 60 °C) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>	Weight <sup>(3)</sup>
			Fixing <sup>(2)</sup>	
<b>A</b>				<b>kg</b>
<b>Connection by screw clamp terminals</b>				
25	3	1	1	LC1D09●● 0.320 or LC1D12●● 0.325
32	3	1	1	LC1D18●● 0.330
40	3	1	1	LC1D25●● 0.370
50	3	1	1	LC1D32●● 0.375 or LC1D38●● 0.380
<b>Connection by EverLink®, BTR screw connectors <sup>(4)</sup></b>				
60	3	1	1	LC1D40A●● 0.850
80	3	1	1	LC1D50A●● 0.855 or LC1D65A●● <sup>(5)</sup> 0.860 or LC1D80A●● <sup>(5)</sup> 0.860
<b>Connection by screw clamp terminals or connectors</b>				
125	3	1	1	LC1D80●● 1.590 or LC1D95●● <sup>(5)</sup> 1.610
200	3	1	1	LC1D115●● 2.500 or LC1D150●● <sup>(6)</sup> 2.500

### 3-pole contactors for connection by lugs

In the references selected above, insert a figure **6** before the voltage code.  
 Example: **LC1D09●●** becomes **LC1D096●●**.

### Standard control circuit voltages

(for other voltages, please consult your Regional Sales Office)

#### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
<b>LC1D09...D150</b> ( LC1D115 and D150 coils with built-in suppression device as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
<b>LC1D09...D65</b> (not available with "connection for lugs or bars")													
50 Hz	B5	D5	E5				P5						

#### LC1D80...D150

50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	-	E6	F6	-	M6	-	U6	Q6	-	-	R6	-

#### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
<b>LC1D09...D38</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
<b>LC1D40A ...D65A</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 Uc	JD	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	RD
<b>LC1 or LP1D80 and D95</b>											
U 0.85...1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
U 0.75...1.2 Uc	JW	BW	CW	EW	-	SW	FW	-	MW	-	-
<b>LC1D115 and D150</b> (coils with built-in suppression device fitted as standard)											
U 0.75...1.2 Uc	-	BD	-	ED	ND	SD	FD	GD	MD	UD	RD

#### Low consumption

Volts	5	12	20	24	48	110	220	250
<b>LC1D09...D38</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)								
U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL





LC1D123●●



LC1D80A3●●

### 3-pole contactors - Load control from 16 to 80 A in category AC-1

Non inductive loads maximum current ( $\theta \leq 60^\circ\text{C}$ ) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>	Weight <sup>(3)</sup>
			Fixing <sup>(2)</sup>	

A	Connection by spring terminals			kg	
16	3	1	1	LC1D093●● <sup>(4)</sup> or LC1D123●● <sup>(4)</sup>	0.320 0.325
25	3	1	1	LC1D183●● <sup>(5)</sup> or LC1D253●● <sup>(6)</sup> or LC1D323●● <sup>(6)</sup>	0.335 0.325 0.325

### Power connections by EverLink® BTR screw connectors <sup>(7)</sup> and control by spring terminals

60	3	1	1	LC1D40A3●●	0.850
80	3	1	1	LC1D50A3●● <sup>(8)</sup> or LC1D65A3●● <sup>(8)</sup> or LC1D80A3●● <sup>(8)</sup>	0.855 0.860 0.860

### 3-pole contactors for connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals. For contactors LC1D09 and LC1D12 only, in the references selected from the previous page, insert a figure **9** before the voltage code. Example: **LC1D09●●** becomes **LC1D099●●**.

### Separate components

Auxiliary contact blocks and add-on modules: see pages B8/36 to B8/42.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

a.c. supply													
Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
<b>LC1D09...D80A</b>													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
d.c. supply													
Volts	12	24	36	48	60	72	110	125	220	250	440		
<b>LC1D09...D32</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD		
<b>LC1D40A...D65A</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.75...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD		
Low consumption													
Volts	5	12	20	24	48	110	220	250					
<b>LC1D09...D32</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)													
U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL					

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

- (1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.
- (2) LC1D09 to D80A: clip-on mounting on 35 mm rail NSYSR or screw fixing.
- (3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from LC1D09 to D38 and 0.075 kg from LC1D40A to D80A.
- (4) 20 A with 2 x 2.5 mm<sup>2</sup> cables connected in parallel.
- (5) 32 A with 2 x 4 mm<sup>2</sup> cables connected in parallel.
- (6) 40 A with 2 x 4 mm<sup>2</sup> cables connected in parallel.
- (7) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).
- (8) Coordination tables according to the number of operating cycles, see AC-1 curve, page A5/40.

PB121714.fr



LC1DT20●●

PB121715.fr



LC1DT80A●●

PB123776.eps



LC1D65008●●



Contactors

#### 4-pole contactors - Load control, 20 to 200 A in category AC-1

Non inductive loads maximum current ( $\theta \leq 60^\circ\text{C}$ ) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts	Basic reference, to be completed by adding the control voltage code <sup>(1)</sup> Fixing <sup>(2)</sup>	Weight <sup>(3)</sup>

A kg

#### Connection by screw clamp terminals

20	4	–	1	1	LC1DT20●●	0.365
	2	2	1	1	LC1D098●●	0.365
25	4	–	1	1	LC1DT25●●	0.365
	2	2	1	1	LC1D128●●	0.365
32	4	–	1	1	LC1DT32●●	0.425
	2	2	1	1	LC1D188●●	0.425
40	4	–	1	1	LC1DT40●●	0.425
	2	2	1	1	LC1D258●●	0.425

#### Connection by EverLink®, BTR screw connectors

60	4	–	1	1	LC1DT60A●●	1.090
80	4	–	1	1	LC1DT80A●●	1.150

#### Connection by screw clamp terminals or connectors

60	2	2	–	–	LC1D40008●●	1.440
					or LP1D40008●●	2.210
80	2	2	–	–	LC1D65008●●	1.450
					or LP1D65008●●	2.220
125	4	–	–	–	LC1D80004●●	1.760
					or LP1D80004●●	2.685
	2	2	–	–	LC1D80008●●	1.840
					or LP1D80008●●	2.910
200	4	–	–	–	LC1D115004●●	2.860

#### 4-pole contactors for connection by lugs or bars

In the references selected above, insert a figure 6 before the voltage code.

Example: LC1DT20●● becomes LC1DT206●●.

#### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

##### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
<b>LC1D09...D150 and LC1DT20...DT80A</b> (LC1D115 and D150 coils with built-in suppression device as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–
<b>LC1D80...D115</b>													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

##### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
<b>LC1D09...D25 and LC1DT20...DT40</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
<b>LC1DT60A ...DT80A</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 Uc	JD	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	RD
<b>LP1D40...D80</b>											
U 0.85...1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
U 0.75...1.2 Uc	JW	BW	CW	EW	–	SW	FW	–	MW	–	–
<b>LC1D115</b> (coil with built-in suppression device as standard)											
U 0.75...1.2 Uc	–	BD	–	ED	ND	SD	FD	GD	MD	UD	RD

##### Low consumption

Volts	5	12	20	24	48	110	220	250
<b>LC1D09...D25 and LC1DT20...DT40</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)								
U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC1D09 to D38 and LC1DT20 to DT80A: clip-on mounting on 35 mm rail NSYSR or screw fixing.

LC1D80 ~: clip-on mounting on 35 mm rail NSYSR or 75 mm rail AM1DL or screw fixing.

LC1 or LP1D80 ~: clip-on mounting on 75 mm rail AM1DL or screw fixing.

LC1D115 and D150: clip-on mounting on 2 x 35 mm rails NSYSR or screw fixing.

(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from LC1D09 to D38, 0.075 kg from LC1DT60A and D80A and 1 kg for LC1D80.

(4) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: LC1DT60ABBE.



LC1DT253●●



LC1DT80A3●●

#### 4-pole contactors - Load control, 20 to 80 A in category AC-1

Non inductive loads maximum current ( $\theta \leq 60^\circ\text{C}$ ) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts	Basic reference, to be completed by adding the voltage code <sup>(1)</sup>	Weight <sup>(3)</sup>
			Fixing <sup>(2)</sup>	

A kg

#### Connection by spring terminals

20	4	–	1	1	LC1DT203●●	0.380
	2	2	1	1	LC1D0983●●	0.380
25	4	–	1	1	LC1DT253●●	0.380
	2	2	1	1	LC1D1283●●	0.380
32	4	–	1	1	LC1DT323●●	0.425
	2	2	1	1	LC1D1883●●	0.425
40	4	–	1	1	LC1DT403●●	0.425
	2	2	1	1	LC1D2583●●	0.425

#### Connection by EverLink®, BTR screw connectors and control circuit by spring terminals

60	4	–	1	1	LC1DT60A3●●	1.090
80	4	–	1	1	LC1DT80A3●●	1.150

#### Separate components

Auxiliary contact blocks and add-on modules: see pages B8/36 to B8/42.

#### Standard control circuit voltages

(for other voltages, please consult your Regional Sales Office)

##### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
-------	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

LC1D09...D25 and LC1DT20...DT80A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–
----------	----	----	----	----	-----	----	----	----	----	----	----	----	---

##### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
-------	----	----	----	----	----	----	-----	-----	-----	-----	-----

LC1D09...D25 and LC1DT20...DT40 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
-----------------	----	----	----	----	----	----	----	----	----	----	----

LC1DT60A...80A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

U 0.75...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
------------------	----	----	----	----	----	----	----	----	----	----	----

##### Low consumption

Volts	5	12	20	24	48	110	220	250
-------	---	----	----	----	----	-----	-----	-----

LC1D09...D25 and LC1DT20...DT40 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL
-----------------	----	----	----	----	----	----	----	----

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC1D09 to D38 and LC1DT20 to DT80A: clip-on mounting on 35 mm  $\text{U}_T$  rail NSYS DR or screw fixing.

(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from LC1D09 to D38, 0.075 kg for LC1DT60A and DT80A.





LC1D09●●



LC1D25●●



LC1D80A●●



LC1D95●●

**Contactors conforming to UL and CSA standards (North American market) - 25 to 160 A**

Standard power ratings of motors 50/60 Hz						Associated cable type 75 °C-Cu	UL continuous current	Type of contactor required Basic reference, to be completed by adding the control voltage code <sup>(1)</sup> Fixing, connection <sup>(2)</sup>
Single-phase 1 Ø		3-phase 3 Ø						
120 V	240 V	208 V	240 V	480 V	600 V			
HP	HP	HP	HP	HP	HP		A	

Connection by screw clamp terminals								
1/3	1	2	2	5	7.5	AWG 18 - 10	25	LC1D09●●
0.5	2	3	3	7.5	10	AWG 18 - 10	25	LC1D12●●
1	3	5	5	10	15	AWG 18 - 8	32	LC1D18●●
2	3	7.5	7.5	15	20	AWG 14 - 6	40	LC1D25●●
2	5	10	10	20	25	AWG 14 - 6	50	LC1D32●● <sup>(3)</sup>
2	5	10	10	20	25	AWG 14 - 6	50	LC1D38●● <sup>(3)</sup>

Power connections by EverLink® BTR screw connectors and control by spring terminals								
3	5	10	10	30	30	AWG 16 - 2	60	LC1D40A●●
3	7.5	15	15	40	40	AWG 16 - 2	70	LC1D50A●●
5	10	20	20	40	50	AWG 16 - 2	80	LC1D65A●●
5	10	20	20	40	50	AWG 16 - 2	80	LC1D80A●●

Connection by screw clamp terminals or connectors								
7.5	15	25	30	60	60	AWG 10 - 2	110	LC1D80●●
7.5	15	25	30	60	60	AWG 10 - 2	110	LC1D95●●
-	-	30	40	75	100	AWG 8-1/0	160	LC1D115●●
-	-	40	50	100	125	AWG 8-1/0	160	LC1D150●●

**Applications with High-Fault Short-Circuit ratings**

High-fault short-circuit current ratings are: 100 kA (D09-80, D115-150) at 600 V with Class J fuses and 85 kA (D09-38), 100 kA (D40A-80, D115-150) at 480 V and 50 kA (D09-80, D115-150) at 600 V with circuit breakers.

**Application example**

For a 15 HP-230 V motor

Select a contactor type **LC1D50A**.

Information: the contactor rating selected corresponds to "size 2", the associated cable is type AWG3 75 °C-Cu.

**Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)**

a.c. supply																
Volts	24	42	48	110	115	120	208	220	230	240	380	400	415	440	480	500
<b>LC1D09...D150</b> (D115 and D150 coils with built-in suppression device as standard)																
50/60 Hz	B7	D7	E7	F7	FE7	G7 <sup>(4)</sup>	LE7 <sup>(4)</sup>	M7	P7	Q7	V7	N7	R7	T7 <sup>(4)</sup>	S7	
<b>LC1D09...D65</b> (not available with "connection for lugs or bars")																
50 Hz	B5	D5	E5						P5							
<b>LC1D80...D115</b>																
50 Hz	B5	D5	E5	F5	FE5	G5	-	M5	P5	U5	Q5	V5	N5	R5	-	S5
60 Hz	B6	-	E6	F6	-	G6	L6	M6	-	U6	Q6	-	-	R6	T6	-

d.c. supply																
Volts	12	24	36	48	60	72	110	125	220	250	440					
<b>LC1D09...D32</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)																
U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD					
<b>LC1D40A...D65A</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)																
U 0.75...1.25 Uc	JD	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	<sup>(5)</sup>	RD					
<b>LC1D80 and D95</b>																
U 0.85...1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD					
U 0.75...1.2 Uc	JW	BW	CW	EW	-	SW	FW	-	MW	-	-					
<b>LC1D115 and D150</b> (coils with built-in suppression device as standard)																
U 0.75...1.2 Uc	-	BD	-	ED	ND	SD	FD	GD	MD	UD	RD					

Low consumption											
Volts ~	5	12	20	24	48	72	110	220	250		
<b>LC1D09...D38</b> (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.8...1.25 Uc	AL	JL	ZL	BL	EL	SL	FL	ML	UL		

- (1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.
- (2) **LC1D09** to **D65A**: clip-on mounting on 35 mm L rail **NSYS DR** or screw fixing.  
**LC1D80** and **LC1D95**: clip-on mounting on 35 mm L rail **NSYS DR** or 75 mm L rail **AM1 DL** or screw fixing.
- LC1D115** and **D150**: clip-on mounting on 2 x 35 mm L rails **NSYS DR** or screw fixing.
- (3) Versions with spring terminals **LC1D323** and **LC1D383** are not certified UL/CSA.
- (4) Contactors **LC1D40A**, **50A**, **65A**, **80A**: for this coil voltage use is only on 60 Hz.
- (5) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: **LC1D40ABBE**.

# TeSys Control

## Deca Reversing contactors

### Product references



LC2D12●●



LC2D65A●●



LC2D1156●●

### 3-pole reversing contactors - Motors up to 75 kW / 400 V in category AC-3

Horizontally mounted - Pre-wired power connections.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )								Rated opera- tional current in AC-3 440 V up to	Instan- taneous auxiliary contacts per contactor	Contactors supplied with coil Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>		Weight <sup>(3)</sup>
220 V	380 V	415 V	440 V	500 V	660 V	1000 V	Fixing <sup>(2)</sup>					
230 V	400 V				690 V							
kW	kW	kW	kW	kW	kW	kW	A					kg

#### With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or connectors

2.2	4	4	4	5.5	5.5	-	9	1	1	LC2D09●● <sup>(4)</sup>	0.687
3	5.5	5.5	5.5	7.5	7.5	-	12	1	1	LC2D12●● <sup>(4)</sup>	0.697
4	7.5	9	9	10	10	-	18	1	1	LC2D18●● <sup>(4)</sup>	0.707
5.5	11	11	11	15	15	-	25	1	1	LC2D25●● <sup>(4)</sup>	0.787
7.5	15	15	15	18.5	18.5	-	32	1	1	LC2D32●● <sup>(4)</sup>	0.797
9	18.5	18.5	18.5	18.5	18.5	-	38	1	1	LC2D38●● <sup>(4)</sup>	0.807
11	18.5	22	22	22	30	-	40	1	1	LC2D40A●●	1.870
15	22	25	30	30	33	-	50	1	1	LC2D50A●●	1.880
18.5	30	37	37	37	37	-	65	1	1	LC2D65A●●	1.890
22	37	45	45	55	45	-	80	1	1	LC2D80●●	3.200
25	45	45	45	55	45	-	95	1	1	LC2D95●●	3.200

#### With mechanical interlock and electrical interlocking, for connection by screw clamp terminals or connectors

30	55	59	59	75	80	65	115	1	1	LC2D115●●	6.350
40	75	80	80	90	100	75	150	1	1	LC2D150●●	6.400

#### Connection by lugs or bars

For reversing contactors LC2D09 to LC2D38, LC2D115 and LC2D150, in the references selected above, insert a figure **6** before the voltage code. Example: **LC2D09●●** becomes **LC2D096●●**.

To build a 40 to 65 A reversing contactor, for connection by lugs, order 2 contactors **LC1D●●A6** and mechanical interlock **LAD4CM** (see page B8/43).

### Component parts

Auxiliary contact blocks and add-on modules: see pages B8/36 to B8/42.

#### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

##### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
LC2D09...D150 (D115 and D150 coils with built-in suppression device as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
LC2D80...D115													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	-	E6	F6	-	M6	-	U6	Q6	-	-	R6	-

##### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
LC2D09...D38 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.7...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
LC2D40A...D65A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

##### Low consumption

Volts ---	5	12	20	24	48	110	220	250
LC2D09...D38 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)								
U 0.8...1.25 U <sub>c</sub>	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

<sup>(1)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(2)</sup> LC2D09 to D65A: clip-on mounting on 35 mm rail NSYSR or screw fixing.

LC2D80 and D95: clip-on mounting on 35 mm rail NSYSR or 75 mm rail AM1DL or screw fixing.

LC2D115 and D150: clip-on mounting on 35 mm rail NSYSR or screw fixing.

<sup>(3)</sup> The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for LC2D09 to D38, 0.150 kg for LC1D40A to D65A.

<sup>(4)</sup> For reversing contactors with electrical interlocking pre-wired at the factory, add suffix V to the references selected above. Example: **LC2D09B7** becomes **LC2D09B7V**.

**Note:** when assembling a reversing contactor, it is good practice to incorporate a 50 ms time delay.



# TeSys Control

## Deca Reversing contactors

### Product references



LC2D123●●

### 3-pole reversing contactors - Motors up to 15 kW / 400 V in category AC-3

#### Pre-wired power connections.

Mechanical interlock without electrical interlocking.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )	Rated operational current in AC-3 440 V up to	Instantaneous auxiliary contacts per contactor	Contactors supplied with coil Basic reference, to be completed by adding the voltage code <sup>(1)</sup>	Weight <sup>(3)</sup>										
220 V 380 V 415 V 440 V 500 V 660 V 230 V 400 V			Fixing <sup>(2)</sup>											
kW	kW	kW	kW	kW	A									kg

#### For connection by spring terminals

2.2	4	4	4	5.5	5.5	9	1	1	LC2D093●●	0.687
3	5.5	5.5	5.5	7.5	7.5	12	1	1	LC2D123●●	0.697
4	7.5	9	9	10	10	18	1	1	LC2D183●●	0.707
5.5	11	11	11	15	15	25	1	1	LC2D253●●	0.787
7.5	15	15	15	18.5	18.5	32 <sup>(4)</sup>	1	1	LC2D323●●	0.797

#### Power connection by EverLink<sup>®</sup>, BTR screw connectors <sup>(5)</sup> and control by spring terminals

11	18.5	22	22	22	30	40	1	1	LC2D40A3●●	1.870
15	22	25	30	30	33	50	1	1	LC2D50A3●●	1.880
18.5	30	37	37	37	37	65	1	1	LC2D65A3●●	1.890

#### For connection by Faston connectors

All power connections are to be made by the customer.

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals.

For reversing contactors LC2D09 and LC2D12 only, in the references selected above, replace the figure 3 before the voltage code with a figure 9.

Example: LC2D093●● becomes LC2D099●●.

### Component parts

Auxiliary contact blocks and add-on modules: see pages B8/36 to B8/42.

### Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

#### a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
LC2D09...D65A													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7

#### d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
LC2D09...D32 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.7...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
LC2D40A...D65A (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)											
U 0.75...1.25 U <sub>c</sub>	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

#### Low consumption

Volts ---	5	12	20	24	48	110	220	250
LC2D09...D32 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)								
U 0.8...1.25 U <sub>c</sub>	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/45 to B8/48.

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC2D09 to D32: clip-on mounting on 35 mm rail NSYSDR or screw fixing.

(3) The weights indicated are for reversing contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for LC2D09 to D32, 0.150 kg for LC2D40A to D65A.

(4) Must be wired with 2 x 4 mm<sup>2</sup> cables in parallel on the upstream side. On the downstream side, outgoing terminal block LAD331 may be used (Quickfit technology, see page B1/18). When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).

(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).

# TeSys Control

## Deca Changeover contactors

### Product references

PB121716.eps



LC2DT20●●

PB123820.eps



LC2D115004●●

#### 4-pole changeover contactor pairs - 20 to 200 A in category AC-1

##### Pre-assembled. Pre-wired power connections

LC2DT20 to LC2DT40: mechanical interlock without electrical interlocking.

LC2D80004: order separately 2 auxiliary contact blocks LADN●1 to obtain electrical interlocking between the 2 contactors (see page B8/36).

For electrical interlocking incorporated in the mechanical interlock, please consult your Regional Sales Office.

LC2D115004: mechanical interlock with integral, pre-wired electrical interlocking.

##### For connection by screw clamp terminals or connectors

Utilisation category AC-1 Non-inductive loads Maximum rated operational current ( $\theta \leq 60^\circ\text{C}$ )	Instantaneous auxiliary contacts per contactor		Contactors supplied with coil	Weight kg
			Basic reference, to be completed by adding the voltage code <sup>(1)(2)</sup> Fixing <sup>(3)</sup>	
<b>A</b>				
20	1	1	LC2DT20●●	0.730
25	1	1	LC2DT25●●	0.730
32	1	1	LC2DT32●●	0.850
40	1	1	LC2DT40●●	0.850
125	–	–	LC2D80004●●	3.200
200	–	–	LC2D115004●●	7.400

##### For connection by lugs or bars

20	1	1	LC2DT206●●	0.730
25	1	1	LC2DT256●●	0.730
32	1	1	LC2DT326●●	0.850
40	1	1	LC2DT406●●	0.850

##### For customer assembly

##### For connection by screw clamp terminals or connectors

60	1	1	LC1DT60A●● <sup>(4)</sup>	–
80	1	1	LC1DT80A●● <sup>(4)</sup>	–

##### For connection by lugs or bars

60	1	1	LC1DT60A6●● <sup>(4)</sup>	–
80	1	1	LC1DT80A6●● <sup>(4)</sup>	–

**Auxiliary contact blocks and add-on modules:** see pages B8/36 to B8/42.

**Note:** when assembling changeover contactor pairs, it is good practice to incorporate a 50 ms time delay.

(1) See note (2) on next page.

(2) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(3) LC2DT20 to LC2DT80: clip-on mounting on 35 mm  $\perp$  rail NSYS DR or screw fixing.  
LC2D80: clip-on mounting on 35 mm  $\perp$  rail NSYS DR or 75 mm  $\perp$  rail AM1 DL or screw fixing.

LC2D115: clip-on mounting on 2 x 35 mm  $\perp$  rails NSYS DR or screw fixing.

(4) For these operational currents, order 2 identical contactors and a mechanical interlock LAD4 CM (see page B8/43).





Example of necessary components for customer assembly:  
2 x LC1DT80A3 contactors + LAD4CM mechanical interlock

## 4-pole changeover contactor pairs for 20 to 80 A control in category AC-1

### Pre-assembled, for customer assembly

#### Pre-wired power connections, for connection by spring terminals.

Utilisation category AC-1 Non-inductive loads Maximum rated operational current ( $\theta \leq 60^\circ\text{C}$ )	Instantaneous auxiliary contacts per contactor		Contactors supplied with coil
			Basic reference, to be completed by adding the control voltage code <sup>(1)</sup>
			Fixing <sup>(2)</sup>
<b>A</b>			
20	1	1	LC2DT203●●
<b>Power connection by EverLink®, BTR screw connectors <sup>(3)</sup> and control by spring terminals</b>			
60	1	1	LC1DT60A3●● <sup>(4)</sup>
80	1	1	LC1DT80A3●● <sup>(4)</sup>

### Separate components

Auxiliary contact blocks and add-on modules: see pages B8/19 to B8/19.

### Standard control circuit voltages

(for other voltages, please consult your Regional Sales Office)

#### a.c. supply

Volts 24 42 48 110 115 220 230 240 380 400 415 440 500

#### LC2DT20...DT40, LC2DT60A...DT80A

50/60 Hz B7 D7 E7 F7 FE7 M7 P7 U7 Q7 V7 N7 R7 -

#### LC2D80004...D115004

50 Hz B5 D5 E5 F5 FE5 M5 P5 U5 Q5 V5 N5 R5 S5

60 Hz B6 - E6 F6 - M6 - U6 Q6 - - R6 -

#### d.c. supply

Volts 12 24 36 48 60 72 110 125 220 250 440

LC2DT20...DT40, LC1DT60...DT80 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

U 0.7...1.25 Uc JD BD CD ED ND SD FD GD MD UD RD

#### Low consumption

Volts --- 5 12 20 24 48 110 220 250

LC2DT20...DT40 (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode)

U 0.8...1.25 Uc AL JL ZL BL EL FL ML UL

For other voltages between 5 and 690 V, see pages B8/19 to B8/19.

<sup>(1)</sup> Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

<sup>(2)</sup> Clip-on mounting on 35 mm rail NSYSR or screw fixing.

<sup>(3)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/19).

<sup>(4)</sup> For these operational currents, order 2 identical contactors and a mechanical interlock LAD4CM (see page B8/19).





# TeSys Control

## Deca green Reversing contactors

### Product references

PE121720.fr



LC2D09●●●

PE121721.fr



LC2D40●●●

Deca green contactors have a dark grey casing and a 3-character code voltage.

### 3-pole reversing contactors - Motors up to 37 kW / 400 V in category AC-3

#### Pre-wired power connections

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 ( $\theta \leq 60^\circ\text{C}$ )							Rated operational current in AC-3 440 V up to	Instantaneous auxiliary contacts per contactor	Contactors supplied with coil Partial reference, to be completed by adding the control voltage code <sup>(1)</sup>	Weight
220 V	380 V	415 V	440 V	500 V	660 V	690 V				
230 V	400 V								Fixing <sup>(2)</sup>	
kW	kW	kW	kW	kW	kW	kW	A			kg

#### With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or Everlink BTR screw connectors <sup>(3) (4)</sup>

2.2	4	4	4	5.5	5.5	9	1	1	LC2D09●●●	0.783
3	5.5	5.5	5.5	7.5	7.5	12	1	1	LC2D12●●●	0.793
4	7.5	9	9	10	10	18	1	1	LC2D18●●●	0.803
5.5	11	11	11	15	15	25	1	1	LC2D25●●●	0.913
7.5	15	15	15	18.5	18.5	32	1	1	LC2D32●●●	0.923
9	18.5	18.5	18.5	18.5	18.5	38	1	1	LC2D38●●●	0.933
11	18.5	22	22	22	30	40	1	1	LC2D40A●●● <sup>(3)</sup>	2.154
15	22	25	30	30	33	50	1	1	LC2D50A●●● <sup>(3)</sup>	2.164
18.5	30	37	37	37	37	65	1	1	LC2D65A●●● <sup>(3)</sup>	2.174
22	37	37	37	37	37	66	1	1	LC2D80A●●● <sup>(3)</sup>	2.174

### Auxiliary contact blocks and add-on modules

See pages B8/36 to B8/42.

#### Coil voltage codes

##### AC/DC 24 V DC supply

Volts	24 (DC only)	24-60	48-130	100-250
<b>LC2D09...D32,</b>				
<b>LC2D40A ... D80A</b>				
U 0.85...1.1 Uc		BNE	EHE	KUE
<b>LC2D09...D38</b>				
U 0.8...1.2 Uc		BNE		
<b>LC2D40A ...D80A</b>				
U 0.8...1.2 Uc		BBE		

(1) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(2) LC2D09 to D80A: clip-on mounting on 35 mm rail NSYSR or screw fixing.

(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).

(4) Electrical interlocking is recommended when 2 orders (direct and reverse) could appeared in the same time.

# TeSys Control

## Deca Contactors for switching capacitor banks

### Product references



LC1DGK●●, LC1DLK●●, LC1DMK●●



LC1DVK12●●



Contactors

### Contactors for switching 3-phase capacitor banks (power factor correction)

Special contactors **LC1D●K** are designed for switching 3-phase, single or multiple-step capacitor banks (up to 6 steps). Over 6 steps, it is recommended to use chokes in order to limit the inrush current and thus improve the lifetime of the installation. The contactors conform to standards IEC 60070 and 60831, UL and CSA.

### Contactor applications

#### Specification

Contactors fitted with a block of early make poles and damping resistors, limiting the value of the current on closing to 60 I<sub>n</sub> max.

This current limitation increases the life of all the components of the installation, in particular that of the fuses and capacitors.

#### Operating conditions

Short-circuit protection must be provided by gI type fuses rated at 1.7...2 I<sub>n</sub>. It will ensure the service continuity of the whole installation in case of a capacitor contactor end of life

#### Maximum operational power

The power values given in the selection table below are for the following operating conditions:

Prospective peak current at switch-on	LC1D●K	200 I <sub>n</sub>
Maximum operating rate	LC1DFK, DGK, DLK, DMK	240 operating cycles/hour
	LC1DPK, DTK, DWK	240 operating cycles/hour
Electrical durability at nominal load	All contactor ratings	400 V 300 000 operating cycles
		690 V 200 000 operating cycles

Operational power at 50/60 Hz <sup>(1)</sup> θ ≤ 60 °C <sup>(2)</sup>				Instantaneous auxiliary contacts		Tightening torque on cable end	Basic reference, to be completed by adding the voltage code <sup>(3) (4)</sup>	Weight
230 V	400 V	440 V	690 V	N/O	N/C			
415 V						N.m		kg
7	12.5	12.5	21	1	2	1.7	LC1DFK●●	0.430
9.5	16.7	16.7	28.5	1	2	2.5	LC1DGK●●	0.450
11	20	21	33	1	2	2.5	LC1DLK●●	0.600
14	25	27	42	1	2	2.5	LC1DMK●●	0.630
17	30	32	50	1	2	5	LC1DPK●●	1.300
22	40	43	67	1	2	5	LC1DTK●●	1.300
35	63	67	104	1	2	9	LC1DVK12●●	1.650

#### Switching of multiple-step capacitor banks (with equal or different power ratings)

The correct contactor for each step is selected from the above table, according to the power rating of the step to be switched.

**Example:** 50 kVAR 3-step capacitor bank. Temperature: 50 °C and U = 400 V or 440 V.  
One 25 kVAR step: contactor LC1DMK, one 15 kVAR step: contactor LC1DGK, and one 10 kVAR step: contactor LC1DFK.

(1) Operational power of the contactor according to the scheme on the page opposite.

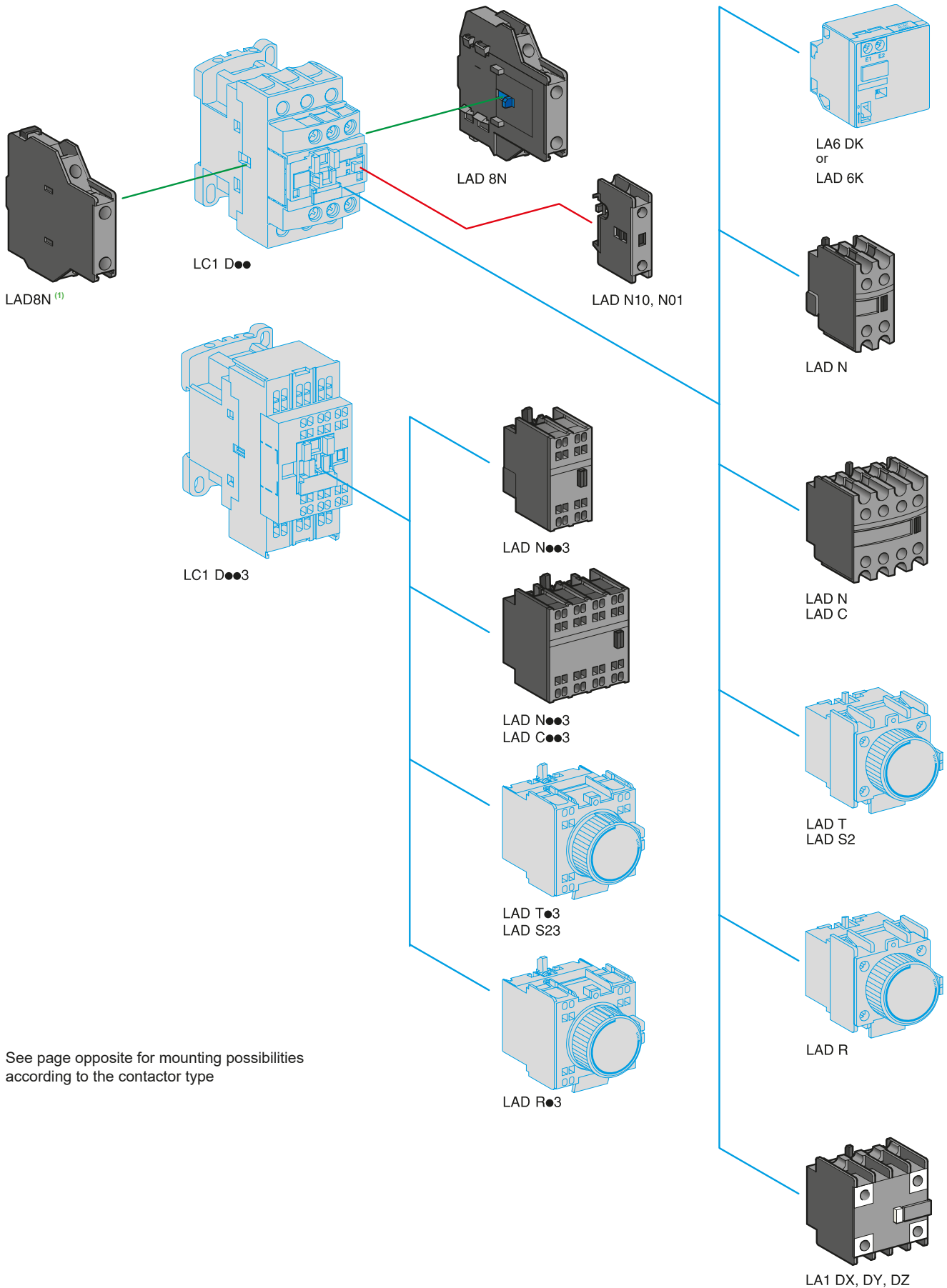
(2) The average temperature over a 24-hour period, in accordance with standards IEC 60070 and 60831 is 45 °C.

(3) Standard control circuit voltages (the delivery time is variable, please consult your Regional Sales Office):

Volts	24	48	110	120	220	230	240	380	400	415	440
50/60 Hz	B7	E7	F7	G7	M7	P7	U7	Q7	V7	N7	R7

(4) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.





See page opposite for mounting possibilities according to the contactor type

<sup>(1)</sup> No left side mounting on Deca green contactors.

# TeSys Control

## Deca Contactors - Auxilliary contact blocks

### Product references



LADN22



LAD8N11



LA1DX●●, LA1DZ●●

### Instantaneous auxiliary contact blocks for connection by screw clamp terminals

For use in normal operating environments

Clip-on mounting	Number of contacts per block	Composition					Reference
Front	1	-	-	-	1	-	LADN10
		-	-	-	-	1	LADN01
	2	-	-	-	1	1	LADN11
		-	-	-	2	-	LADN20
	4	-	-	-	-	2	LADN02
		-	-	-	1	3	LADN13
		-	-	-	4	-	LADN40
		-	-	-	-	4	LADN04
		-	-	-	3	1	LADN31
		-	-	-	2	2	LADC22
Side (contact blocks compatible with AC coil contactors only)	2	-	-	-	1	1	LAD8N11
		-	-	-	2	-	LAD8N20
		-	-	-	-	2	LAD8N02

### For terminal referencing conforming to EN 50012

Front on 3P contactors and 4P contactors 20 to 80 A	2	-	-	-	1	1	LADN11G
Front on 4P contactors 125 to 200 A	4	-	-	-	2	2	LADN22G
	2	-	-	-	1	1	LADN11P
	4	-	-	-	2	2	LADN22P

### With dust and damp protected contacts, for use in particularly harsh industrial environments

Front	2	-	2	-	-	-	LA1DX20
		1	1	-	-	-	LA1DX11
		2	-	-	-	-	LA1DX02
	4	-	2	2	-	-	LA1DY20 <sup>(2)</sup>
		-	2	-	2	-	LA1DZ40
		-	2	-	1	1	LA1DZ31

### Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure 6 to the end of the references selected above. Example: LADN11 becomes LADN116.

### Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for LAD8, LADN with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure 3 to the end of the references selected above. Example: LADN11 becomes LADN113.

Maximum number of auxiliary contacts that can be fitted:

Contactors	Type	Number of poles and size	Instantaneous auxiliary contacts			Time delay Front mounted			
			Side mounted	Front mounted					
				1 contact	2 contacts	4 contacts			
AC	AC/DC	3P	LC1D09...D38	1 on LH or 1 on RH side <sup>(3)</sup>	and -	1	or 1	or 1	
			LC1D40A...D80A	1 on LH or 1 on RH side	and -	1	or 1	or 1	
		4P	LC1D80 and D95 (50/60 Hz)	1 on each side	or 2	and 1	or 1	or 1	
			LC1D80 and D95 (50 or 60 Hz)	1 on each side	and 2	and 1	or 1	or 1	
			LC1D115 and D150	1 on LH side	and -	1	or 1	or 1	
			LC1DT20...DT40	1 on LH side	and -	1	or 1	or 1	
			LC1DT60A and DT80A	1 on LH or 1 on RH side	and -	1	or 1	or 1	
			LC1D40008, D65008 and D80	1 on each side	or 1	or 1	or 1	or 1	
		DC	3P	LC1D115	1 on each side	and 1	or 1	or 1	or 1
				LC1D09...D38	-	-	1	or 1	or 1
LC1D40A...D80A	-			-	1	or 1	or 1		
LC1D80 and D95	-			1	or 1	or 1	or 1		
LC1D115 and D150	1 on LH side			and -	1	or 1	or 1		
4P	LC1DT20...DT40			-	-	1	or 1	or 1	
	LC1DT60A and DT80A			-	-	1	or 1	or 1	
	LC1D40008, D65008 and D80			-	2	and 1	or 1	or 1	
	LC1D115			1 on each side	-	and 1	or 1	or 1	
	LC			LC1D115	1 on each side	-	and 1	or 1	or 1
LC <sup>(4)(5)</sup>	3P	LC1D09...D38	-	-	1	-	-		
		4P	LC1DT20...DT40	-	-	1	-	-	

(1) With red front face - for safety chain indication.

(2) Device fitted with 4 earth screen continuity terminals.

(3) 1 on LH side for AC coils - 1 on RH side for AC/DC coils.

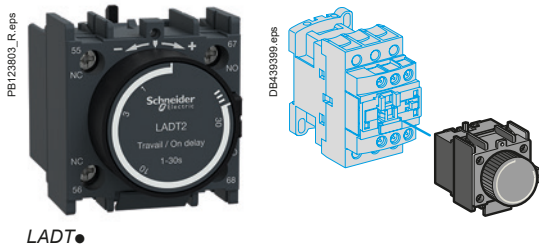
(4) LC: low consumption.

(5) LA1D●●● dust & damp proof auxiliary contact blocks not allowed.

# TeSys Control

## Deca Contactors - Time delay auxiliary contact blocks

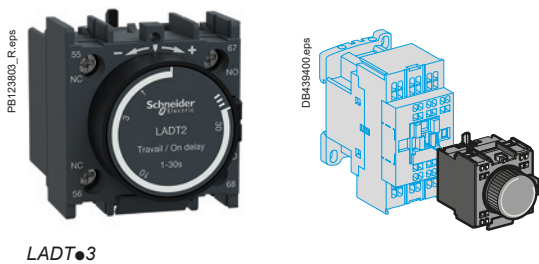
### Product references



#### Time delay auxiliary contact blocks for connection by screw clamp terminals

Maximum number of auxiliary contact blocks that can be fitted per contactor, see page B8/36.  
Sealing cover to be ordered separately, see page B8/42.  
LADS2: with switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.

Clip-on mounting	Number of contacts	Time delay		Reference
		Type	Setting range	
Front	1 N/O + 1 N/C	On-delay	0.3...3 s	LADT0
			1...30 s	LADT2
			10...180 s	LADT4
		Off-delay	1...30 s	LADS2
			0.3...3 s	LADR0
			1...30 s	LADR2
		10...180 s	LADR4	



#### Time delay auxiliary contact blocks for connection by lugs

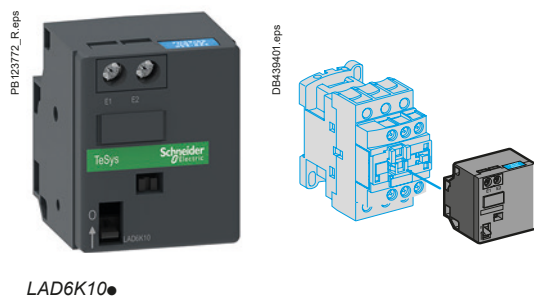
Add the figure 6 to the end of the references selected above. Example: LADT0 becomes LADT06.

#### Time delay auxiliary contact blocks for connection by spring terminals

Add the figure 3 to the end of the references selected above. Example: LADT0 becomes LADT03.

#### Time delay auxiliary contact blocks for connection by Faston connectors

Add the figure 9 to the end of the references selected above. Example: LADT0 becomes LADT09.



#### Mechanical latch blocks <sup>(1)</sup>

Clip-on mounting	Unlatching control	For use on contactor	Basic reference, to be completed by adding the control voltage code <sup>(2) (3)</sup>
Front	Manual or electric	LC1D09...D38 (~ or ---) <sup>(4)</sup>	LAD6K10●
		LC1DT20...DT40 (~ or ---)	
		LC1D40A...D80A (3 P ~ or ---)	LAD6K10●
		LC1DT60A and DT80A (4 P ~ or ---)	
		LC1D80...D150 (3 P ~)	LA6DK20●
		LC1D80 and D150 (3 P ---)	
		LC1D80 (4 P ~)	
		LC1D80 and D115 (4 P ~)	
		LP1D80 and LC1D115 (4 P ---)	
		LC1D40 and D65 (4 P ~)	LA6DK10●
LP1D40 and D65 (4 P ---)			

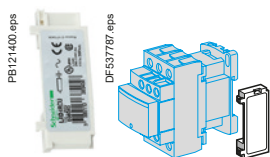
- (1) The mechanical latch block must not be powered up at the same time as the contactor. The duration of the control signal for the mechanical latch block and the contactor should be: ≥ 100 ms for a contactor operating on an a.c. supply, ≥ 250 ms for a contactor operating on a d.c. supply. Maximum impulse duration for the LAD6K10● mechanical latch block: 10 seconds.
- (2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts 50/60 Hz, 24	32/36	42/48	60/72	100	110/127	220/240	256/277	380/415	---
Code	B	C	E	EN	K	F	M	U	Q

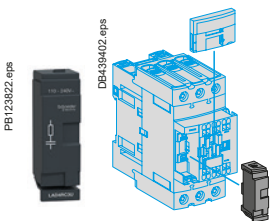
(3) Please check the availability of your variant in the index page B8/55. The SEARCH function of your viewer can be used.

(4) The DC, low consumption contactors (coil code ●L) are not compatible with the mechanical latch blocks LAD6K10●.

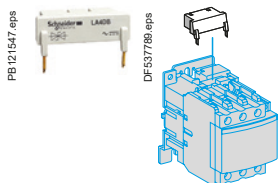




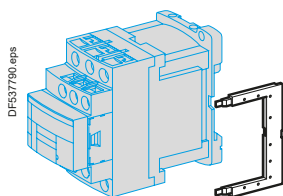
LAD4RCU LAD4●●



LAD4RC3●, LAD4V3●,  
LAD4D3U, LAD4T3●



LA4DC3U



LAD4DDL or LAD4TDL



LAD4DDL

### RC circuits (Resistor-Capacitor)

Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5 % total harmonic distortion. Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max. Slight increase in drop-out time (1.2 to 2 times the normal time).

Mounting	For use with contactor <sup>(1)</sup> Rating	Type		Reference
		V ~	V ---	
Clip-on side mounting <sup>(2)(3)</sup>	D09...D38 (3P) DT20...DT40	24...48	–	LAD4RCE
		50...127	–	LAD4RCG
		110...250	–	LAD4RCU
Clip-on front mounting <sup>(2)(3)</sup>	D40A...D65A (3P) DT60A...DT80A (4P)	24...48	–	LAD4RC3E
		50...127	–	LAD4RC3G
		110...240	–	LAD4RC3U
		380...415	–	LAD4RC3N
Screw fixing <sup>(4)</sup>	D80...D150 (3P) D40...D115 (4P)	24...48	–	LA4DA2E
		50...127	–	LA4DA2G
		110...240	–	LA4DA2U
		380...415	–	LA4DA2N
		–	–	–

### Varistors (peak limiting)

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Clip-on side mounting <sup>(2)(3)</sup>	D09...D38 (3P) DT20...DT40	24...48	–	LAD4VE
		50...127	–	LAD4VG
		110...250	–	LAD4VU
Clip-on front mounting <sup>(2)(3)</sup>	D40A...D65A (3P) DT60A...DT80A (4P)	24...48	24...48	LAD4V3E
		50...127	50...127	LAD4V3G
		110...250	110...250	LAD4V3U
Screw fixing <sup>(4)</sup>	D80...D115 (3P) D80...D115 (4P)	24...48	–	LA4DE2E
		50...127	–	LA4DE2G
		110...250	–	LA4DE2U
		–	24...48	LA4DE3E
		–	110...250	LA4DE3U

### Flywheel diodes

No overvoltage or oscillating frequency. Increase in drop-out time (6 to 10 times the normal time). Polarised component.

Clip-on side mounting <sup>(3)(5)</sup>	D09...D38 (3P), DT20...DT40	–	5...600	LAD4DDL
Clip-on front mounting <sup>(3)</sup>	D40A...D65A (3P), DT60A...DT80A (4P)	–	24...250	LAD4D3U
Screw fixing <sup>(4)</sup>	D80 and D95 (3P), D40...D80 (4P)	–	24...250	LA4DC3U

### Bidirectional peak limiting diodes

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks.

Clip-on side mounting <sup>(2)</sup>	D09...D38 (3P) DT20...DT40 (4P) <sup>(6)</sup>	24	–	LAD4TB
		–	24	LAD4TBDL
		72	–	LAD4TS
		–	72	LAD4TSDL
		–	125	LAD4TGDL
Clip-on front mounting <sup>(2)</sup>	D40A...D65A (3P) DT60A...DT80A (4P) <sup>(6)</sup>	–	250	LAD4TUDL
		12...24	12...24	LAD4T3B
		25...72	25...72	LAD4T3S
		73...125	73...125	LAD4T3G
		126...250	126...250	LAD4T3U
Screw fixing <sup>(4)</sup>	–	251...440	251...440	LAD4T3R
		–	24	LA4DB3B
		–	72	LA4DB3S

(1) For satisfactory protection, a suppressor module must be fitted across the coil of each contactor except for Deca green (●●E coil), as surge protection is already embedded.

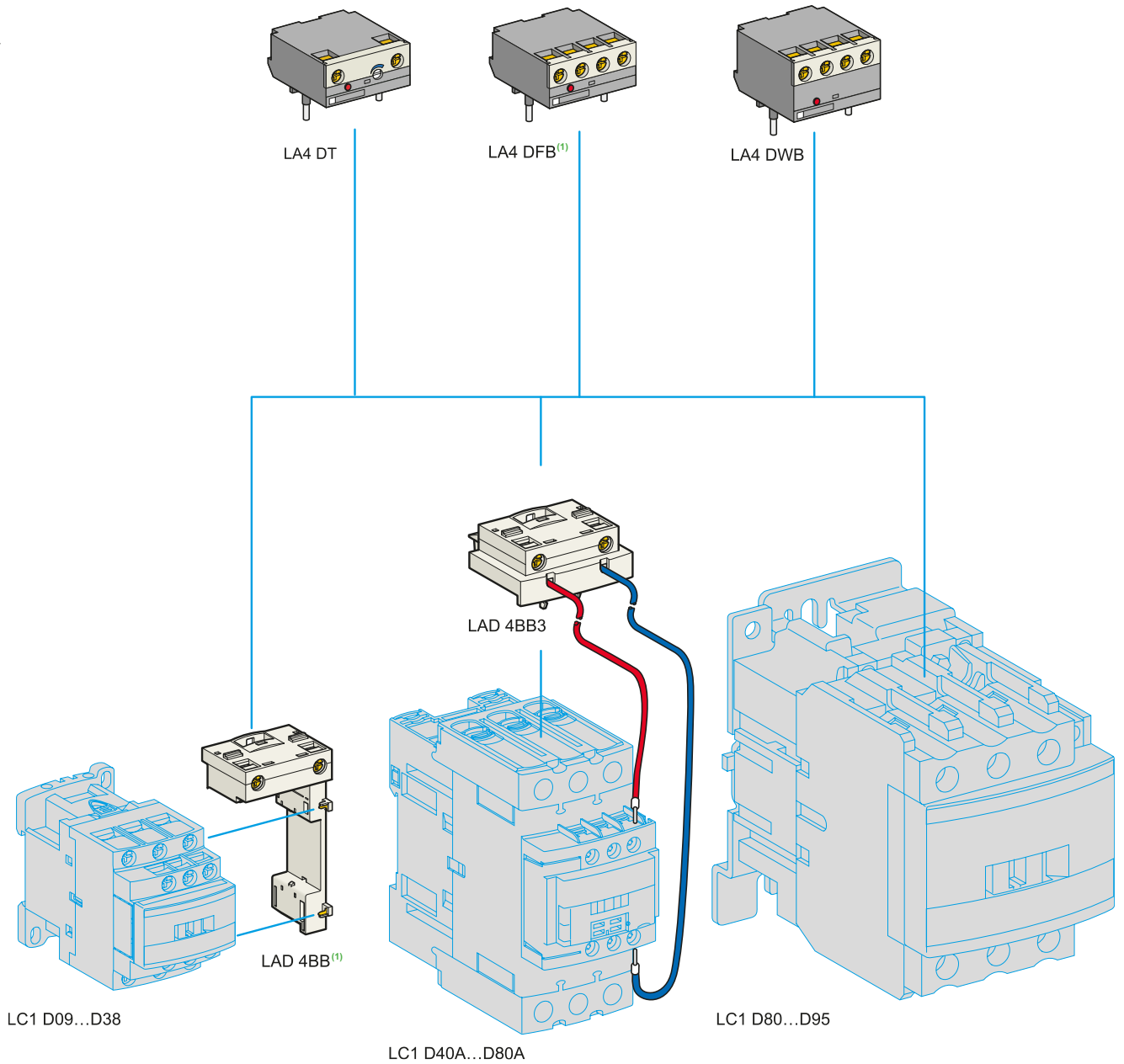
(2) Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.

(3) In order to install these accessories, the existing suppression device must first be removed.

(4) Mounting at the top of the contactor on coil terminals A1 and A2.

(5) Not compatible with low consumption contactors.

(6) From D09 to D65A and from LC1DT20 to DT80A, d.c. low consumption are fitted with a built-in bidirectional peak limiting diode suppressor as standard. This bidirectional peak limiting diode is removable and can therefore be replaced by the user. (See reference above).



Contactors

See page opposite for mounting possibilities according to the contactor type.

(1) For Deca contactor with AC coil only.



LA4DT●●



LA4DFB



LA4DBL



LAD4BBVU



### Electronic serial timer modules <sup>(1)</sup>

- 3-pole contactors LC1D09 to D38: mounted using adapter LAD4BB, to be ordered separately, see below.
- 3-pole contactors LC1D40A to D65A: mounted using adapter LAD4BB3, to be ordered separately, see below.
- 3-pole contactors LC1D80 to D150 and 4-pole contactors LC1D40 to D115: mounted directly across terminals A1 and A2 of the contactor.

#### On-delay type

Operational voltage ~		Time delay	Reference
24...250 V	100...250 V		
LC1D09...D80A (3P)	LC1D80...D150 (3P)	0.1...2 s	LA4DT0U
		1.5...30 s	LA4DT2U
		25...500 s	LA4DT4U

### Interface modules

- 3-pole contactors LC1D09 to D38: mounted using adapter LAD4BB, to be ordered separately, see below.
- 3-pole contactors LC1D40A to D80A: mounted using adapter LAD4BB3, to be ordered separately, see below.

#### Relay interface

Operational voltage ~		Supply voltage E1-E2 (---)	Reference
24...250 V			
LC1D09...D150 (3P)		24 V	LA4DFB

#### Static relay interface

Operational voltage ~		Supply voltage E1-E2 (---)	Reference
24...250 V	100...250 V		
LC1D09...D80A (3P)	LC1D80...D115 (3P)	24 V	LA4DWB

### Adapter kit for low control signal

For use on contactors	Composition	Reference
LC1D40A...D80A (3P) <sup>(2)</sup>	<ul style="list-style-type: none"> <li>■ 1 LAD4BB3 coil wiring adapter</li> <li>■ 1 LA4DFB relay interface module</li> </ul>	LA4DBL

### Wiring adapters for coil retrofit of 3 pole contactors

#### For adapting existing wiring to a new product

For use on contactors		Reference	
LC1D09...D38	Without coil suppression	LAD4BB <sup>(3)</sup>	
	With coil suppression	~ 24...48 V	LAD4BBVE
		~ 50...127 V	LAD4BBVG
LC1D40A...80A	Without coil suppression	~ 110...250 V	LAD4BBVU
			LAD4BB3

<sup>(1)</sup> For 24 V operation, the contactor must be fitted with a 21 V coil (code Z). See pages B8/45 to B8/48.

<sup>(2)</sup> The kit is compatible with a coil voltage of ~ 24 V to ~ 250 V (B7 to U7) and --- 24 V to --- 250 V (BD to UD).

<sup>(3)</sup> LAD4BB can not be used with 4 poles contactors.



# TeSys Control

## Deca Contactors - Accessories

### Product references



LA9D3260



LA9D11560



LA9D115503



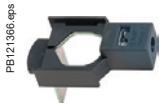
LA9D96570



LA9D11570



LA9D80962



LA9D11567

### Accessories for main pole and control connections

Description		For use with contactors LC1		Sold in lots of	Unit reference
		~	...		
Connectors for cable, size (1 connector)	4-pole 10 mm <sup>2</sup>	DT20, DT25	DT20, DT25	1	LA9D2560
	3-pole 25 mm <sup>2</sup>	D09...D38	D09...D38	1	LA9D3260
EverLink® terminal block	3-pole	D40A...D80A	D40A...D80A	1	LA9D96560
Connectors for cables (2 connectors)	3-pole 120 mm <sup>2</sup>	D115, D150	D115, D150	1	LA9D115603
	4-pole 120 mm <sup>2</sup>	D115	D115	1	LA9D115604
Connectors for lug type terminals (2 connectors)	3-pole	D1156, D1506	D1156, D1506	1	LA9D115503
	Protective covers for connectors for lug type terminals	3-pole	D40A6...D80A6	D40A6...D80A6	1
IP 20 covers for lug type terminals (for mounting with circuit breakers GV3 P●●6 and GV3 L●●6)		D1156, D1506	D1156, D1506	1	LA9D115703 <sup>(1)</sup>
	4-pole	D60A6...D80A6	D60A6...D80A6	1	LA9D96580
		D1156, D1506	D1156, D1506	1	LA9D115704
Links for parallel connection of	3 poles	D40A6...D80A6	D40A6...D80A6	1	LA9D96575
	2 poles	D09...D38	D09...D38	10	LA9D2561
		DT32, DT40 (4P)	DT32, DT40 (4P)	10	LA9D96061
		D40A...D80A	D40A...D80A	1	LA9D9P32
		D80, D95	D80, D95	2	LA9D80961
3 poles	D09...D38	D09...D38	10	LA9D9P3 <sup>(2)</sup>	
	D40A...D80A	D40A...D80A	1	LA9D9P33	
	D80, D95	D80, D95	1	LA9D80962	
4 poles	DT20, DT25	DT20, DT25	2	LA9D1263	
	D80	D80	2	LA9D80963	
Staggered coil connection	–	D80	10	LA9D09966	
Control circuit take-off from main pole	D80, D95	D80, D95	10	LA9D8067	
	D115, D150	D115, D150	10	LA9D11567	
Spreaders for increasing the pole pitch to 45 mm	D115, D150	D115, D150	3	GV7AC03	

(1) For 3-pole contactors: 1 set of 6 covers, for 4-pole contactors: 1 set of 8 covers.

(2) Separate connecting bar for connecting 2 poles in parallel.



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Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

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PB121387.eps  
GV2G245



PB121388.eps  
PB121389.eps  
GV1G09 GV3S



PB123823.eps  
LAD9ET1



PB123804.eps  
LAD9ET1S



PB123824.eps  
LAD21...22



PB123825.eps  
LAD90



PB121374.eps  
LAD7X3

### Sets of contacts and arc chambers

Description	For contactor	Reference
Sets of contacts	3-pole	LC1D115 LA5D1158031
		LC1D150 LA5D150803
	4-pole	LC1D115004 LA5D115804
Arc chambers	3-pole	LC1D115 LA5D11550

### Power connection accessories

Terminal block	For supply to one or more GV2G busbar sets	GV1G09
Set of 63 A busbars for parallelling of contactors	2 contactors LC1D09...D18 or D25...D38	GV2G245
	4 contactors LC1D09...D18 or D25...D38	GV2G445
Set of 115 A busbars for parallelling of contactors	2 contactors LC1D40A...D80A	GV3G264
	3 contactors LC1D40A...D80A	GV3G364 <sup>(1)</sup>
Set of S-shape busbars	For circuit breakers GV3P●● and GV3L●● <sup>(3)</sup> and contactors LC1D40A...D73A	GV3S

### Protection accessories

Description	Use	Sold in lots of	Reference
Sealing cover	For LADT, LADR	1	LA9D901
Safety cover preventing access to the moving contact carrier	LC1D09...D80A and DT20...DT80A	1	LAD9ET1
	Red cover (for safety chain indication)	1	LAD9ET1S
	Red cover (for safety chain indication)	1	LAD9ET3S
	LC1D115 and D150	1	LAD9ET4
	Red cover (for safety chain indication)	1	LAD9ET4S

### Marking accessories

Description	Use	Sold in lots of	Unit reference
Sheet of 64 blank legends, self-adhesive, 8 x 33 mm <sup>(2)</sup>	Contactors (except 4P) LC1D80...D115, LADN (4 contacts), LA6DK	10	LAD21
Sheet of 112 blank legends, self-adhesive, 8 x 12 mm <sup>(2)</sup>	LADN (2 contacts), LADT, LADR, LRD	10	LAD22
Marker holder snap-in, 8 x 22 mm	4-pole contactors, LC1D80...D115, LA6DK	100	LA9D92
Marker holder snap-in, 8 x 18 mm	LC1D09...D65A, LC1DT20...DT80A, LADN (4 contacts), LADT, LADR	100	LAD90
Bag of 300 blank legends self-adhesive, 7 x 21 mm	On holder LA9D92	1	LA9D93

### Mounting accessories

Retrofit plate for screw fixing	For replacement of LC1D40 to D80 with LC1D40A to D80A	1	LAD7X3
Mounting plate	For replacement of LC1F115 or F150 with LC1D115 or D150	1	LA9D730
Size 4 Allen key, insulated, 1000 V	For use on contactors LC1D40A to LC1D150	5	LADALLEN4

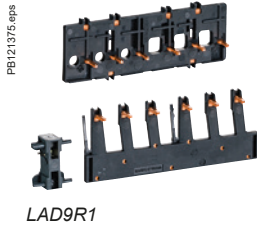
<sup>(1)</sup> With this set of busbars, any one contactor can be supplied directly by its EverLink® double cage power terminal block. The other two contactors are supplied by the busbar set. The 115 A limitation is therefore applied to these two contactors. Example: 1 LC1D65A supplied directly + 1 contactor LC1D65A and 1 contactor LC1D50A supplied via the busbar set = 115 A. This combination is compatible with busbar set GV3G364.

<sup>(2)</sup> These legends are for sticking onto the safety cover of the contactors or add-on block, if fitted.  
<sup>(3)</sup> With 73 A current limit for GV3L73, GV3P73.

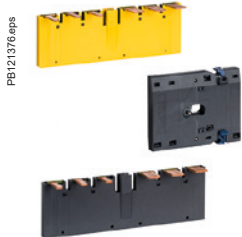
# TeSys Control

## Deca Contactors - Assembly kits

### Product references



LAD9R1



LAD9R3

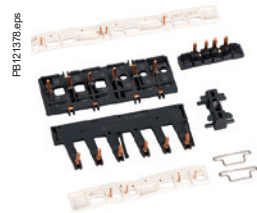


LA9D8069



LAD91217

[Discover in video](#)



LAD91218

[Discover in video](#)

### For 3-pole reversing contactors for motor control

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

Description	For contactors <sup>(1)</sup> (2 identical contactors)	Reference
<b>Kits for assembly of reversing contactors</b>		
Kit comprising: ■ a mechanical interlock <b>LAD9V2</b> with electrical interlocking <b>LAD9V1</b> ■ a set of power connections <b>LAD9V5</b> (parallel) and <b>LAD9V6</b> (reversing).	LC1D09 to D38	<b>LAD9R1V</b>
Kit comprising: ■ a mechanical interlock <b>LAD9V2</b> without electrical interlocking ■ a set of power connections <b>LAD9V5</b> (parallel) and <b>LAD9V6</b> (reversing).	LC1D09 to D38	<b>LAD9R1</b>
Kit comprising: ■ a mechanical interlock <b>LAD4CM</b> ■ a set of power connections <b>LA9D65A69</b> .	LC1D40A to D80A	<b>LAD9R3</b>

### Mechanical interlocks

Mechanical interlock with integral electrical interlocking	LC1D80 and D95 (~)	<b>LA9D4002</b>
	LC1D80 and D95 (---)	<b>LA9D8002</b>
	LC1D115 and D150	<b>LA9D11502</b>
Mechanical interlock without integral electrical interlocking	LC1D09 to D38	<b>LAD9V2</b>
	LC1D40A to D80A	<b>LAD4CM</b>
	LC1D80 and D95 (~)	<b>LA9D50978</b>
	LC1D80 and D95 (---)	<b>LA9D80978</b>

### Sets of power connections

Comprising: ■ a set of parallel bars ■ a set of reverser bars.	LC1D09 to D38 with screw clamp terminals or connectors	<b>LAD9V5 + LAD9V6</b>
	LC1D09...D32 with spring terminal connections	<b>LAD9V12 + LAD9V13 <sup>(2)</sup></b>
	LC1D40A to D80A	<b>LA9D65A69</b>
	LC1D80 and D95 (~)	<b>LA9D8069</b>
	LC1D80 and D95 (---)	<b>LA9D8069</b>
	LC1D115 and D150	<b>LA9D11569</b>

### For star-delta starter

Description	For contactors	Reference	Without timer LADS2
Mounting kit comprising: ■ 1 time delay contact block <b>LADS2 (LC1D09...D80)</b> , ■ power circuit connections ( <b>LC1D09...D80</b> ), ■ hardware required for fixing the contactors onto the mounting plate ( <b>LC1D80</b> ).	LC1D09 to D38 <sup>(3)</sup>	<b>LAD91217</b>	<b>LAD91218</b>
	LC1D25 to D38 <sup>(4)</sup>	<b>LAD93217</b>	<b>LAD93218</b>
	LC1D40A to D80A	<b>LAD9SD3</b>	-
Equipment mounting plates	LC1D80	<b>LA9D8017</b>	-
	LC1D09 to D38	<b>LA9D12974</b>	
	LC1D40A to D80A	-	
	LC1D80	<b>LA9D80973</b>	

<sup>(1)</sup> To order the 2 contactors: see pages B8/23 and B8/29.

<sup>(2)</sup> To assemble a reversing contactor with spring terminal connections, the following components must be ordered:

- 1 mechanical interlock **LAD9V2**,

- 1 upstream power connection kit and 1 downstream power connection kit.

Upstream power connection kit **LAD9V10**: installed in the Quickfit system with power connection module **LAD341**.

(If module **LAD341** is not used, replace **LAD9V10** with **LAD9V12**).

Downstream power connection kit **LAD9V11**: installed in the Quickfit system with outgoing terminal block **LAD331**.

(If **LAD331** is not used, replace **LAD9V11** with **LAD9V13**).

<sup>(3)</sup> For assembly of 3 contactors of the same physical size (depth).

<sup>(4)</sup> For assembly of Main + Delta contactors **LC1D25** to **LC1D38** with Star contactor **LC1D09** to **LC1D18**.



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# TeSys Control

## Deca Contactors - Assembly kits

### Product references

PB121370.eps



LADT9R1V

PB121381.eps



LA9D50978



PB121380.eps



LA9D8070

Contactor

PB121382.eps



LAD9R3S

#### For 4-pole changeover contactor pairs (3-phase distribution + neutral)

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

Description	For contactors <sup>(1)</sup> (2 identical contactors)	Reference
-------------	---	-----------

#### Kits for assembly of changeover contactor pairs

Kit comprising: ■ a mechanical interlock LAD9V2 with electrical interlocking LAD9V1, ■ a set of power connections (changeover) LAD9V7.	LC1DT20 to DT40 with screw clamps or connectors	LADT9R1V
--	---	----------

Kit comprising: ■ a mechanical interlock LAD9V2 without electrical interlocking, ■ a set of power connections (changeover) LAD9V7.	LC1DT20 to DT40 with screw clamps or connectors	LADT9R1
--	---	---------

#### Mechanical interlocks

With integral electrical interlocking	LC1D80004	LA9D4002
	LP1D80004	LA9D8002
	LC1D115004	LA9D11502
Without integral electrical interlocking	LC1DT20 to DT40 with screw clamps or connectors	LA9D9V2 <sup>(2)</sup>
	LC1DT203 to DT403 with spring terminals	LA9D9V2 <sup>(2)</sup>
	LC1DT60A and DT80A	LAD4CM
	LC1D80004	LA9D50978
	LP1D80004	LA9D80978

#### Sets of power connections

Comprising a set of parallel bars	LC1D80004	LA9D8070
	LP1D80004	LA9D8070
	LC1D115004	LA9D11570
	LC1D80004	LA9D8070 <sup>(2)</sup>
	LP1D80004	LA9D8070 <sup>(2)</sup>

#### For 3-pole changeover contactor pairs

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

Description	For contactors <sup>(1)</sup> (2 identical contactors)	Reference
-------------	---	-----------

#### Kits for assembly of changeover contactor pairs

Kit comprising: ■ a mechanical interlock LAD4CM ■ a set of parallel bars LA9D65A6	LC1D40A...D80A	LAD9R3S
---	----------------	---------

#### Mechanical interlocks

Without integral electrical interlocking	LC1D40A...D80A	LAD4CM
With integral electrical interlocking	LC1D115 and D150	LA9D11502

#### Sets of power connections

Comprising a set of parallel bars	LC1D40A...D80A	LA9D65A6
	and D150	LA9D11571

<sup>(1)</sup> To order the 2 contactors: see pages B8/23 and B8/29.

<sup>(2)</sup> Order 2 contact blocks LADN●1 to build the electrical interlock, see page B8/36.



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PG121383.eps

LXD1●●

## a.c coils for ~ contactors LC1D09...D38 and LC1DT20...DT40

### Specifications

Average consumption at 20 °C:

■ inrush ( $\cos \phi = 0.75$ ) 70 VA,

■ sealed ( $\cos \phi = 0.3$ ) 50 Hz: 7 VA, 60 Hz: 7.5 VA.

Operating range ( $\theta \leq 60$  °C): 50 Hz: 0.8...1.1 Uc, 60 Hz: 0.85...1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>
V	$\Omega$	H	
			<b>50/60 Hz</b>
12	1.33	0.05	LXD1J7
24	5.37	0.22	LXD1B7
32	10.1	0.39	LXD1C7
42	17	0.67	LXD1D7
48	21.7	0.87	LXD1E7
110	124.1	4.6	LXD1F7
115	129.8	5	LXD1FE7
120	150.6	5.4	LXD1G7 <sup>(2)</sup>
200	410.7	15	LXD1L7
208	430.4	16	LXD1LE7 <sup>(2)</sup>
220	515.4	18	LXD1M7 <sup>(3)</sup>
230	538.6	20	LXD1P7
240	562.3	22	LXD1U7
277	800.7	29	LXD1W7 <sup>(2)</sup>
380	1551	55	LXD1Q7 <sup>(4)</sup>
400	1633	60	LXD1V7
415	1694	65	LXD1N7
440	1993	73	LXD1R7
480	2398	87	LXD1T7 <sup>(2)</sup>
500	2499	95	LXD1S7
575	3294	125	LXD1SC7
600	3810	136	LXD1X7
660	4656	165	LXD1YC7
690	5020	180	LXD1Y7

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

<sup>(2)</sup> Coil for use only on 60 Hz.

<sup>(3)</sup> Suitable for use on 230 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/82 and B8/84).

<sup>(4)</sup> Suitable for use on 400 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/82 and B8/84).



PB121384.eps

LXD3●●

## a.c coils for ~ contactors LC1D40A...D80A, LC1DT60A and LC1DT80A

### Specifications

Average consumption at 20 °C:

- inrush ( $\cos \phi = 0.75$ ) 160 VA,
- sealed ( $\cos \phi = 0.3$ ) 50 Hz: 15 VA, 60 Hz: 15 VA.

Operating range ( $\theta \leq 60$  °C): 50 Hz: 0.8...1.1 Uc, 60 Hz: 0.85...1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10\%$	Inductance of closed circuit	Reference <sup>(1)</sup>
V	$\Omega$	H	
			<b>50/60 Hz</b>
24	1.98	0.12	<b>LXD3B7</b>
42	6.18	0.37	<b>LXD3D7</b>
48	7.97	0.48	<b>LXD3E7</b>
110	42.28	2.50	<b>LXD3F7</b>
115	48.76	2.74	<b>LXD3FE7</b>
120	37.63	2.07	<b>LXD3G7</b> <sup>(2)</sup>
208	105	6.22	<b>LXD3LE7</b> <sup>(2)</sup>
220	182	10	<b>LXD3M7</b> <sup>(3)</sup>
230	192	10.9	<b>LXD3P7</b>
240	202	11.9	<b>LXD3U7</b>
380	512	29.9	<b>LXD3Q7</b> <sup>(4)</sup>
400	607	33.1	<b>LXD3V7</b>
415	635	35.6	<b>LXD3N7</b>
440	682	40.1	<b>LXD3R7</b>
480	607	33.1	<b>LXD3T7</b> <sup>(2)</sup>
575	1238	68.4	<b>LXD3SC7</b>
600	1304	74.5	<b>LXD3X7</b>

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

<sup>(2)</sup> This coil can only be used on 60 Hz.

<sup>(3)</sup> Suitable for use on 230 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/82 and B8/84).

<sup>(4)</sup> Suitable for use on 400 V / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/82 and B8/84).

PB121385.eps



LX1D6●●

## a.c coils for 3 or 4-pole contactors LC1D40, D50, D65, D80, D95

### Specifications

Average consumption at 20 °C:

■ inrush ( $\cos \phi = 0.75$ ) 50 Hz: 200 VA, 60 Hz: 220 VA

■ sealed ( $\cos \phi = 0.3$ ) 50 Hz: 20 VA, 60 Hz: 22 VA.

Operating range ( $\theta \leq 55$  °C): 0.85... 1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>	Average resistance at 20 °C $\pm 10$ %		Inductance of closed circuit	Reference <sup>(1)</sup>	
				$\Omega$	H			$\Omega$
				50 Hz			60 Hz	
24	1.4	0.09	LX1D6B5	1.05	0.06		LX1D6B6	
110	31	1.9	LX1D6F5	22	1.2			
115	31	1.9	LX1D6FE5	–	–		–	
208	–	–	–	86	4.3		LX1D6L6	
220	–	–	–	98	4.8		LX1D6M6	
220/230	127	7.5	LX1D6M5	–	–		–	
240	152	8.7	LX1D6U5	120	5.7		LX1D6U6	
380	–	–	–	300	14		LX1D6Q6	
440	513	30	LX1D6R5	392	19			
480	–	–	–	480	23		LX1D6T6	

### Specifications

Average consumption at 20 °C:

■ inrush ( $\cos \phi = 0.75$ ) 50/60 Hz: 245 VA at 50 Hz

■ sealed ( $\cos \phi = 0.3$ ) 50/60 Hz: 26 VA at 50 Hz.

Operating range ( $\theta \leq 55$  °C): 0.85... 1.1 Uc.

						50/60 Hz
24	–	–	–	1.22	0.08	LX1D6B7
48	–	–	–	5	0.32	LX1D6E7
110	–	–	–	26	1.7	LX1D6F7
120	–	–	–	32	2	LX1D6G7
220/230 <sup>(2)</sup>	–	–	–	102	6.7	LX1D6M7
230	–	–	–	115	7.7	LX1D6P7
230/240 <sup>(3)</sup>	–	–	–	131	8.3	LX1D6U7
380/400 <sup>(4)</sup>	–	–	–	310	20	LX1D6Q7
400	–	–	–	349	23	LX1D6V7
415	–	–	–	390	24	LX1D6N7
440	–	–	–	410	27	LX1D6R7

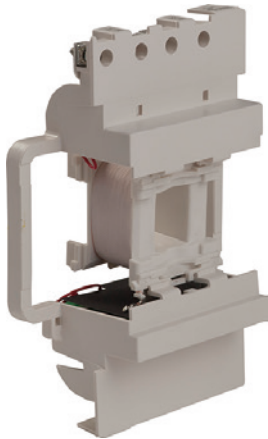
<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

<sup>(2)</sup> For use on 230 V / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/82 and B8/84. This coil can be used on 240 V at 60 Hz.

<sup>(3)</sup> This coil can be used on 220/240 V at 50 Hz and on 240 V only at 60 Hz.

<sup>(4)</sup> For use on 400 V / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/82 and B8/84.

PE121366.eps



LX1D8●●

## a.c coils for 3 or 4-pole contactors LC1D115

### Specifications

Average consumption at 20 °C:

■ inrush ( $\cos \phi = 0.8$ ) 50 or 60 Hz: 300 VA

■ sealed ( $\cos \phi = 0.3$ ) 50 or 60 Hz: 22 VA.

Operating range ( $\theta \leq 55$  °C): 0.85...1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>
V	$\Omega$	H		$\Omega$	H	
			<b>50 Hz</b>	<b>60 Hz</b>		
24	–	–	–	0.87	0.07	LX1D8B6
32	2.14	0.17	LX1D8C5	–	–	–
42	3.91	0.28	LX1D8D5	–	–	–
48	–	–	–	3.91	0.28	LX1D8E6
127	32.75	2.44	LX1D8FC5	–	–	–
208	–	–	–	67.92	5.06	LX1D8L6
220	104.77	7.65	LX1D8M5	–	–	–
380	338.51	22.26	LX1D8Q5	243.07	17.04	LX1D8Q6
440	441.56	30.34	LX1D8R5	338.51	22.26	LX1D8R6
500	566.62	38.12	LX1D8S5	–	–	–

## a.c coils for 3 or 4-pole contactors LC1D115, LC1D150

### Specifications

Average consumption at 20 °C:

■ inrush:  $\cos \phi = 0.9$  - 280 to 350 VA

■ sealed:  $\cos \phi = 0.9$  - 2 to 18 VA.

Operating range ( $\theta \leq 55$  °C): 0.8...1.15 Uc.

Coils with integral suppression device fitted as standard, class B.

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>	Average resistance at 20 °C $\pm 10$ %	Inductance of closed circuit	Reference <sup>(1)</sup>
V	$\Omega$	H		$\Omega$	H	
<b>50/60 Hz</b>						
24	–	–	–	147	3.03	LX1D8B7
32	–	–	–	301	8.28	LX1D8C7
48	–	–	–	1061	24.19	LX1D8E7
110	–	–	–	4377	109.69	LX1D8F7
115	–	–	–	4377	109.69	LX1D8FE7
120	–	–	–	4377	109.69	LX1D8G7
208	–	–	–	10 895	260.15	LX1D8LE7
220	–	–	–	9895	210.72	LX1D8M7
230	–	–	–	9895	210.72	LX1D8P7
240	–	–	–	9895	210.72	LX1D8U7
277	–	–	–	21 988	533.17	LX1D8UE7
380	–	–	–	21 011	482.42	LX1D8Q7
400	–	–	–	21 011	482.42	LX1D8V7
415	–	–	–	21 011	482.42	LX1D8N7
440	–	–	–	21 501	507.47	LX1D8R7
480	–	–	–	32 249	938.41	LX1D8T7

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.



#### d.c. coils for 3-pole contactors LC1D80 or 4-pole contactors LP1D80

##### Specifications

Average consumption: 22 W.

Operating range: 0.85...1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Reference <sup>(1)</sup>	Weight
V	Ω	H		kg
12	6.6	0.46	LX4D7JD	0.680
24	27	1.89	LX4D7BD	0.680

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

PB121387.jpg



LX4D7JD

### d.c. coils for contactors LC1D115, D150

#### Specifications

Consumption: inrush 270 to 365 W, sealed 2.4 to 5.1 W.

Operating range: 0.75...1.2 Uc.

Coils with integral suppression device fitted as standard, class B.



LX4D8●D

Control circuit voltage Uc	Average resistance at 20 °C ± 10 %	Inductance of closed circuit	Reference <sup>(1)</sup>	Weight
V	Ω	H		kg
24	147	3.03	<b>LX4D8BD</b>	0.300
60	1673	38.44	<b>LX4D8ND</b>	0.300
220	9895	210.72	<b>LX4D8MD</b>	0.300
250	18 022	345.40	<b>LX4D8UD</b>	0.300

<sup>(1)</sup> The last 2 digits in the reference represent the voltage code.

# TeSys Control Modular Contactors

## Product references



GC2520



GC4040



GC10020

Modular Contactors - 17.5 mm pitch for modular panels								
No. of poles	Diagram	Number of 17.5 mm modules	Commercial reference 50 Hz coil - different voltages					Sold in lots of
			12 V	24 V	48 V	110 V	220/240 V	
<b>Maximum current rating category AC-7a - 16 A</b>								
1	—	1	—	—	GC1610E5	—	GC1610M5 ★	12
1	1	1	—	GC1611B5	—	GC1611F5	GC1611M5 ★	12
2	—	1	—	GC1620B5	—	GC1620F5 ★	GC1620M5 ★	12
2	2	2	—	—	—	GC1622F5 ★	GC1622M5	6
3	—	2	—	—	—	—	GC1630M5 ★	6
4	—	2	—	—	—	GC1640F5	GC1640M5 ★	6
<b>Maximum current rating category AC-7a - 25 A</b>								
—	2	1	—	GC2502B5	GC2502E5	★	GC2502M5 ★	12
—	4	2	—	GC2504B5	GC2504E5	★	GC2504M5 ★	6
1	—	1	—	GC2510B5	—	—	GC2510M5 ★	12
1	1	1	—	—	—	—	GC2511M5 ★	12
2	—	1	GC2520J5	GC2520B5	—	—	GC2520M5 ★	12
2	2	2	—	GC2522B5	—	—	GC2522M5 ★	6
3	—	2	—	—	—	GC2530F5	GC2530M5 ★	6
3	1	2	—	—	—	—	GC2531M5	6
4	—	2	—	—	GC2540E5	GC2540F5 ★	GC2540M5 ★	6
<b>Maximum current rating category AC-7a - 40 A</b>								
—	2	2	—	—	—	—	GC4002M5 ★	6
—	4	3	—	—	—	—	GC4004M5	4
1	1	2	—	—	—	—	GC4011M5 ★	6
2	—	2	—	—	—	GC4020F5 ★	GC4020M5 ★	6
2	2	3	—	—	—	—	GC4022M5	4
3	—	3	—	—	—	—	GC4030M5 ★	4
4	—	3	—	—	—	—	GC4040M5 ★	4
<b>Maximum current rating category AC-7a - 63 A</b>								
—	2	2	—	—	—	—	GC6302M5	6
—	4	3	—	GC6304B5	—	—	GC6304M5	4
2	—	2	—	—	—	—	GC6320M5	6
3	—	3	—	—	—	—	GC6330M5 ★	4
4	—	3	—	GC6340B5	GC6340E5	—	GC6340M5 ★	4
<b>Maximum current rating category AC-7a - 100 A</b>								
2	—	3	—	—	—	—	GC10020M5	4
4	—	6	—	GC10040B5	—	—	GC10040M5 ★	2

★ for 60 Hz coil replace last figure 5 by 6.



Contactors

# TeSys Control

## Modular "Dual tariff" contactors

### Product references



GY2520M5



GY6340M5

Modular "dual tariff" contactors - 17.5 mm pitch for modular panels							
No. of poles	Number of 17.5 mm modules	Commercial reference 50 Hz coil - different voltages					Sold in lots of
		12 V	24 V	48 V	110 V	220/240 V	
<b>Maximum current rating category AC-7a - 16 A</b>							
2	1	–	GY1620B5	–	–	GY1620M5	12
4	2	–	–	–	–	GY1640M5	6
<b>Maximum current rating category AC-7a - 25 A</b>							
2	1	–	–	–	–	GY2520M5 ★	12
4	2	–	–	–	–	GY2540M5	6
<b>Maximum current rating category AC-7a - 40 A</b>							
2	2	–	–	–	–	GY4020M5	6
4	3	–	–	–	–	GY4040M5	4
<b>Maximum current rating category AC-7a - 63 A</b>							
2	2	–	–	–	–	GY6320M5	6
4	3	–	GY6340B5	–	–	GY6340M5	4

★ for 60 Hz coil replace last figure 5 by 6.



# TeSys Control

## Modular Impulse relays

### Product references

D043251.eps



GF1620B7

#### Modular impulse relays - 17.5 mm pitch for modular panels

Maximum current rating category AC-1	Composition	Coil voltages		Sold in lots of	Unit reference	
		~ 50/60 Hz	DC			
16	2	-	V	V		
			12	6	12	GF1620J7
			24	12	12	GF1620B7
			110	48	12	GF1620F7
	1	1	230/240	110	12	GF1620U7
			12	6	12	GF1611J7
			24	12	12	GF1611B7
			220	-	12	GF1611M7
			230/240	110	12	GF1611U7



Contactors

# TeSys Control

## Modular Contactors - Accessories

### Product references



GAP23

Instantaneous auxiliary contact blocks					
Number of contacts	Number of poles			Reference	
2					
	1	1	-	GAC0521	
	-	2	-	GAC0531	
-	-	1			GAC0511



GAC5

Accessories					
Description	For use on contactor	Number of modules	Operational voltage in V	Sold in lots of	Unit reference
Coil suppression blocks comprising 2 RC circuits	-	1	12...48	1	GAP21
			110...240	1	GAP23
Ventilation 1/2 module clips onto  rail	-	1/2	-	10	GAC5
Set of screw shields (10 top parts + 10 bottom parts)	40 or 63 A 2 contacts	2	-	1	A9A15922
	40 or 63 A 3 or 4 contacts	3	-	1	A9A15923



A9A15922




A9A15923



DPE09P7	GF1611M7	LA4DA2U	LA9D32974	LAD6K10B	LADC223
DPE12P7	GF1611U7	LA4DB3B	LA9D4002	LAD6K10E	LADC226
DPE1801P7	GF1620B7	LA4DB3S	LA9D40961	LAD6K10F	LADN01
DPE18P7	GF1620F7	LA4DBL	LA9D40963	LAD6K10J	LADN02
DPE2501P7	GF1620U7	LA4DC1U	LA9D5017	LAD6K10K	LADN023
DPE25P7	GS2AH4120F	LA4DC3U	LA9D50978	LAD6K10M	LADN026
DPE32B7	GV1G09	LA4DE1E	LA9D511	LAD7X3	LADN04
DPE32P7	GV2G05	LA4DE1G	LA9D6567	LAD8N02	LADN043
GAC0511	GV2G245	LA4DE1U	LA9D6569	LAD8N026	LADN046
GAC0521	GV2G254	LA4DE2E	LA9D65A6	LAD8N11	LADN10
GAC0531	GV2G272	LA4DE2G	LA9D65A69	LAD8N116	LADN11
GAC5	GV2G345	LA4DE2U	LA9D730	LAD8N11G	LADN113
GAP21	GV2G354	LA4DE3E	LA9D8002	LAD8N20	LADN113G
GAP23	GV2G445	LA4DE3U	LA9D8017	LAD8N206	LADN113P
GC10020M5	GV2G454	LA4DFB	LA9D8018	LAD90	LADN116
GC10040M5	GV2G472	LA4DT0U	LA9D8067	LAD901	LADN11G
GC1610M5	GV2G554	LA4DT2U	LA9D8069	LAD9011	LADN11P
GC1611B5	GV3G264	LA4DT4U	LA9D80691	LAD903	LADN13
GC1611F5	GV3G364	LA4DWB	LA9D8070	LAD904	LADN133
GC1611M5	GV3S	LA4KA1U	LA9D8079	LAD91209	LADN136
GC1620B5	GY1620B5	LA4KC1B	LA9D80961	LAD91217	LADN13G
GC1620D7	GY1620M5	LA4KC1E	LA9D80962	LAD91218	LADN13P
GC1620F5	GY2520M5	LA4KC2B	LA9D80963	LAD912GV	LADN20
GC1620M5	GY2520M6	LA4KE1B	LA9D80973	LAD92560	LADN203
GC1620M6	GY2540M5	LA4KE1E	LA9D80978	LAD93217	LADN206
GC1622F5	GY4020M5	LA4KE1FC	LA9D894	LAD93218	LADN22
GC1622M5	GY4040M5	LA4KE1UG	LA9D898	LAD96061	LADN223
GC1630M5	GY6320M5	LA4SKC1U	LA9D90	LAD96560	LADN223G
GC1640F5	GY6340M5	LA4SKE1E	LA9D901	LAD96566	LADN226
GC1640M5	LA1DX02	LA4SKE1U	LA9D92	LAD96570	LADN22G
GC2502B5	LA1DX11	LA5D11550	LA9D93	LAD96575	LADN22P
GC2502E5	LA1DX20	LA5D1158031	LA9D99	LAD96580	LADN22S
GC2502M5	LA1DY20	LA5D115804	LA9E01	LAD9722	LADN31
GC2504B5	LA1DZ31	LA5D150803	LA9E02	LAD9723	LADN313
GC2504M5	LA1DZ40	LA6DK10C	LA9K0969	LAD9744	LADN313G
GC2510B5	LA1KN02	LA6DK10J	LA9K105I	LAD9BB18	LADN316
GC2510M5	LA1KN023	LA6DK10U	LA9K105S	LAD9BB32	LADN31G
GC2511M5	LA1KN02M	LA6DK20B	LA9KNS35	LAD9DL3	LADN31P
GC2520B5	LA1KN04	LA6DK20E	LAD21	LAD9ET1	LADN40
GC2520F6	LA1KN043	LA6DK20F	LAD22	LAD9ET1S	LADN403
GC2520J5	LA1KN11	LA6DK20J	LAD4BB	LAD9ET2	LADN403G
GC2520M5	LA1KN113	LA6DK20M	LAD4BB3	LAD9ET3S	LADN406
GC2520M6	LA1KN11M	LA6DK20Q	LAD4BBVE	LAD9ET4	LADN40G
GC2522B5	LA1KN13	LA7D902	LAD4BBVG	LAD9ET4S	LADR0
GC2522M5	LA1KN133	LA9D0921	LAD4BBVU	LAD9P3	LADR03
GC2530F5	LA1KN20	LA9D09976	LAD4CM	LAD9P32	LADR06
GC2530M5	LA1KN203	LA9D09980	LAD4D3U	LAD9P33	LADR2
GC2530M6	LA1KN207	LA9D09981	LAD4DDL	LAD9R1	LADR23
GC2531M5	LA1KN22	LA9D11502	LAD4RC3E	LAD9R11	LADR26
GC2540E5	LA1KN223	LA9D11517	LAD4RC3G	LAD9R1V	LADR4
GC2540M5	LA1KN223M	LA9D115503	LAD4RC3N	LAD9R3	LADR43
GC2540M6	LA1KN22M	LA9D115603	LAD4RC3U	LAD9R3S	LADR46
GC4002M5	LA1KN31	LA9D115604	LAD4RCE	LAD9SD3	LADS2
GC4004M5	LA1KN313	LA9D11567	LAD4RCG	LAD9SD3S	LADS23
GC4011M5	LA1KN316	LA9D11569	LAD4RCU	LAD9V1	LADS26
GC4020F5	LA1KN317	LA9D115691	LAD4T3B	LAD9V10	LADT0
GC4020F6	LA1KN31M	LA9D115692	LAD4T3G	LAD9V11	LADT03
GC4020M5	LA1KN40	LA9D11570	LAD4T3R	LAD9V12	LADT06
GC4020M6	LA1KN403	LA9D115703	LAD4T3S	LAD9V13	LADT2
GC4022M5	LA1KN407	LA9D115704	LAD4T3U	LAD9V14	LADT23
GC4030M5	LA1SK01	LA9D11571	LAD4TB	LAD9V15	LADT26
GC4040M5	LA1SK02	LA9D1263	LAD4TBDL	LAD9V16	LADT4
GC4040M6	LA1SK11	LA9D1269	LAD4TGDL	LAD9V17	LADT46
GC6302M5	LA1SK20	LA9D12974	LAD4TS	LAD9V2	LADT9R1
GC6304B5	LA2KT2E	LA9D15017	LAD4TSDL	LAD9V5	LADT9R1V
GC6304M5	LA2KT2U	LA9D16906	LAD4TUDL	LAD9V6	LAZR90M
GC6320M5	LA4DA1E	LA9D1860	LAD4V3E	LAD9VP1	LAZR90Q
GC6330M5	LA4DA1G	LA9D1869	LAD4V3G	LAD9VP2	LAZR91F
GC6330M6	LA4DA1U	LA9D2561	LAD4V3U	LAD9VP3	LC1D066BD
GC6340B5	LA4DA2E	LA9D2569	LAD4VE	LAD9VP4	LC1D066F7
GC6340M5	LA4DA2G	LA9D3260	LAD4VG	LADALLEN4	LC1D066M7
GF1611B7	LA4DA2N	LA9D3269	LAD4VU	LADC22	LC1D06P7

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LC1D093B7	LC1D09FL	LC1D115B7	LC1D128F7	LC1D150BD	LC1D18BL
LC1D093BD	LC1D09G7	LC1D115BD	LC1D128FD	LC1D150D7	LC1D18BNE
LC1D093BL	LC1D09GD	LC1D115D7	LC1D128G7	LC1D150E7	LC1D18C7
LC1D093E7	LC1D09JD	LC1D115E5	LC1D128L7	LC1D150ED	LC1D18CD
LC1D093ED	LC1D09JL	LC1D115E7	LC1D128M7	LC1D150F7	LC1D18D5
LC1D093F7	LC1D09K7	LC1D115ED	LC1D128MD	LC1D150FD	LC1D18D7
LC1D093FD	LC1D09KUE	LC1D115F5	LC1D128P7	LC1D150FE7	LC1D18E5
LC1D093FE7	LC1D09L7	LC1D115F6	LC1D128RD	LC1D150G7	LC1D18E7
LC1D093FL	LC1D09LE7	LC1D115F7	LC1D128T7	LC1D150GD	LC1D18ED
LC1D093G7	LC1D09M7	LC1D115FD	LC1D128U7	LC1D150K7	LC1D18EHE
LC1D093GD	LC1D09MD	LC1D115FE7	LC1D129SD	LC1D150LE7	LC1D18EL
LC1D093M7	LC1D09N7	LC1D115G6	LC1D12B5	LC1D150M7	LC1D18F7
LC1D093MD	LC1D09ND	LC1D115G7	LC1D12B7	LC1D150MD	LC1D18FC7
LC1D093N7	LC1D09P5	LC1D115GD	LC1D12BD	LC1D150N7	LC1D18FD
LC1D093ND	LC1D09P7	LC1D115K7	LC1D12BL	LC1D150P7	LC1D18FE7
LC1D093P7	LC1D09Q7	LC1D115L7	LC1D12BNE	LC1D150Q7	LC1D18FL
LC1D093U7	LC1D09R7	LC1D115LE7	LC1D12C7	LC1D150R7	LC1D18G7
LC1D096B7	LC1D09RD	LC1D115M5	LC1D12CD	LC1D150SD	LC1D18GD
LC1D096BD	LC1D09SD	LC1D115M7	LC1D12D5	LC1D150T7	LC1D18J7
LC1D096BL	LC1D09T7	LC1D115MD	LC1D12D7	LC1D150U7	LC1D18JD
LC1D096CD	LC1D09U7	LC1D115N7	LC1D12E5	LC1D150V7	LC1D18JL
LC1D096F7	LC1D09UD	LC1D115P5	LC1D12E7	LC1D17000F7CS003	LC1D18K7
LC1D096FD	LC1D09V7	LC1D115P7	LC1D12ED	LC1D17000M7CS003	LC1D18KUE
LC1D096FL	LC1D09W7	LC1D115Q7	LC1D12EHE	LC1D183B7	LC1D18L7
LC1D096G7	LC1D09X7	LC1D115R7	LC1D12EL	LC1D183BD	LC1D18LE7
LC1D096KD	LC1D09Y7	LC1D115RD	LC1D12F7	LC1D183BL	LC1D18M7
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# TeSys Control

## Contactors

### Product references

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LC1D80BW	LC1D95V7	LC1DT25JD	LC1DT60AE7	LC1K0601E5	LC1K09008M7
LC1D80CW	LC1DFKB7	LC1DT25LE7	LC1DT60AEHE	LC1K0601E7	LC1K09008M72
LC1D80D7	LC1DFKF7	LC1DT25M7	LC1DT60AF7	LC1K0601F7	LC1K09008N7
LC1D80E5	LC1DFKM7	LC1DT25MD	LC1DT60AFD	LC1K0601F72	LC1K09008P7
LC1D80E7	LC1DFKP7	LC1DT25P7	LC1DT60AFE7	LC1K0601G7	LC1K09008S7

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LC1K09008U7	LC1K12013F7	LC1SK0600V7	LC2D12EHE	LC2D32F7	LC2D80004M7
LC1K09008V7	LC1K12015P7	LC1SKGC200B7	LC2D12F7	LC2D32FE7	LC2D80004P5
LC1K09008W7	LC1K1201B5	LC1SKGC200E7	LC2D12FD	LC2D32G7	LC2D80004P7
LC1K09008Y7	LC1K1201B7	LC1SKGC200F7	LC2D12FE7	LC2D32G7V	LC2D80ABBE
LC1K09013B7	LC1K1201D5	LC1SKGC200M7	LC2D12G7	LC2D32KUE	LC2D80ABNE
LC1K09013P7	LC1K1201D7	LC1SKGC200P7	LC2D12GV7	LC2D32M7	LC2D80AEHE
LC1K09015B7	LC1K1201E5	LC1SKGC200U7	LC2D12KUE	LC2D32P7	LC2D80AKUE
LC1K09015FE7	LC1K1201E7	LC1SKGC200V7	LC2D12M7	LC2D32P7V	LC2D80B7
LC1K09015M7	LC1K1201F7	LC1SKGC301P7	LC2D12P7	LC2D32Q7	LC2D80E7
LC1K09016K7	LC1K1201M7	LC1SKGC310E7	LC2D12Q7	LC2D32V7	LC2D80F5
LC1K09017B7	LC1K1201N7	LC1SKGC310M7	LC2D12R7	LC2D386BL	LC2D80F7
LC1K09017E7	LC1K1201P5	LC1SKGC310P7	LC2D150B7	LC2D38B7	LC2D80FE7
LC1K0901B5	LC1K1201P7	LC1SKGC400P7	LC2D150BD	LC2D38BD	LC2D80G7
LC1K0901B7	LC1K1201U7	LC2D093BD	LC2D150E7	LC2D38BL	LC2D80K7
LC1K0901B72	LC1K1201V7	LC2D093BL	LC2D150F7	LC2D38E7	LC2D80M7
LC1K0901C7	LC1K12103M7	LC2D096BD	LC2D150G7	LC2D38EHE	LC2D80P7
LC1K0901D5	LC1K12103P7	LC2D096BL	LC2D150M7	LC2D38F7	LC2D80S7
LC1K0901D7	LC1K12105B7	LC2D096FD	LC2D150P7	LC2D38KUE	LC2D95E7
LC1K0901E5	LC1K12105M7	LC2D099B7	LC2D150Q7	LC2D38P7	LC2D95F7
LC1K0901E7	LC1K12105P7	LC2D09B7	LC2D183BD	LC2D40A3FE7	LC2D95M7
LC1K0901F7	LC1K1210B5	LC2D09B7V	LC2D18B7	LC2D40AB7	LC2D95P7
LC1K0901F72	LC1K1210B7	LC2D09BD	LC2D18B7V	LC2D40ABBE	LC2DT20P7
LC1K0901G7	LC1K1210D5	LC2D09BDV	LC2D18BD	LC2D40ABD	LC2DT25BD
LC1K0901M7	LC1K1210D72	LC2D09BDV	LC2D18BDV	LC2D40ABNE	LC2DT25E7
LC1K0901N7	LC1K1210E5	LC2D09BLV	LC2D18BL	LC2D40AE7	LC2DT25G7
LC1K0901P5	LC1K1210E7	LC2D09BNE	LC2D18BNE	LC2D40AEHE	LC2DT25P7
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LC1K0901P72	LC1K1210F72	LC2D09ED	LC2D18E7	LC2D40AFE7	LC2DT32E7
LC1K0901Q7	LC1K1210FE7	LC2D09EHE	LC2D18ED	LC2D40AG7	LC2DT32F7
LC1K0901T7	LC1K1210G7	LC2D09F7	LC2D18EHE	LC2D40AJD	LC2DT32G7
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LC1K09103B7	LC1K1210P7	LC2D09G7V	LC2D18G7	LC2D40AP7	LC2DT403E7
LC1K09103M7	LC1K1210P72	LC2D09JL	LC2D18G7V	LC2D40AV7	LC2DT40BD
LC1K09105D7	LC1K1210Q7	LC2D09K7	LC2D18JD	LC2D40F7	LC2DT40E7
LC1K09105E7	LC1K1210T7	LC2D09KUE	LC2D18KUE	LC2D50AB7	LC2DT40F7
LC1K09105F7	LC1K1210U7	LC2D09M7	LC2D18L7	LC2D50ABBE	LC2DT40G7
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LC1K09107E7	LC1K16004F7	LC2D09P7	LC2D18P7	LC2D50ABNE	LC2DT40M7
LC1K09107F7	LC1K16015P7	LC2D09Q7	LC2D18Q7	LC2D50AE7	LC2DT40P7
LC1K0910B5	LC1K1601B5	LC2D09U7	LC2D18V7	LC2D50AED	LC2K06015B7
LC1K0910B7	LC1K1601B7	LC2D09U7V	LC2D256BL	LC2D50AEHE	LC2K06015M7
LC1K0910D5	LC1K1601D5	LC2D09V7	LC2D25B7	LC2D50AF7	LC2K0601B7
LC1K0910E5	LC1K1601E5	LC2D115004M5	LC2D25B7V	LC2D50AFD	LC2K0601B72
LC1K0910E7	LC1K1601E7	LC2D115004M7	LC2D25BD	LC2D50AFE7	LC2K0601E7
LC1K0910F7	LC1K1601F7	LC2D115004P5	LC2D25BL	LC2D50AG7	LC2K0601F7
LC1K0910F72	LC1K1601M7	LC2D115004P7	LC2D25BNE	LC2D50AK7	LC2K0601FE7
LC1K0910G7	LC1K1601P5	LC2D1156F7	LC2D25D7	LC2D50AKUE	LC2K0601G7
LC1K0910K7	LC1K1601P7	LC2D1156M7	LC2D25E7	LC2D50AL7	LC2K0601K7
LC1K0910L7	LC1K1601Q7	LC2D115B7	LC2D25ED	LC2D50AM7	LC2K0601M7
LC1K0910M7	LC1K1601V7	LC2D115BD	LC2D25EHE	LC2D50AND	LC2K0601P7
LC1K0910M72	LC1K16106M7	LC2D115E7	LC2D25F7	LC2D50AP7	LC2K0601P72
LC1K0910N7	LC1K1610B5	LC2D115F7	LC2D25FE7	LC2D50G7	LC2K0601U7
LC1K0910P5	LC1K1610B7	LC2D115FE7	LC2D25G7	LC2D65AB7	LC2K06103P7
LC1K0910P7	LC1K1610D5	LC2D115G7	LC2D25G7V	LC2D65ABBE	LC2K06105B7
LC1K0910P72	LC1K1610D7	LC2D115M5	LC2D25K7	LC2D65ABD	LC2K06105M7
LC1K0910Q7	LC1K1610E5	LC2D115M7	LC2D25KUE	LC2D65ABNE	LC2K0610B7
LC1K0910R7	LC1K1610F7	LC2D115P7	LC2D25M7	LC2D65AE7	LC2K0610D72
LC1K0910S7	LC1K1610K7	LC2D123BD	LC2D25P7	LC2D65AED	LC2K0610E7
LC1K0910SC7	LC1K1610M7	LC2D123BL	LC2D25P7V	LC2D65AEHE	LC2K0610F7
LC1K0910T7	LC1K1610P5	LC2D126L7	LC2D25U7	LC2D65AF7	LC2K0610FE7
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LC1K0910V7	LC1K1610Q7	LC2D12B7	LC2D323BD	LC2D65AG7	LC2K0610P7
LC1K12004B7	LC1K1610U7	LC2D12BD	LC2D32B7	LC2D65AKUE	LC2K0610P72
LC1K12004M7	LC1K1610V7	LC2D12BDV	LC2D32BD	LC2D65AL7	LC2K0610U7
LC1K12004P7	LC1SK0600B7	LC2D12BL	LC2D32BDV	LC2D65AM7	LC2K0610V7
LC1K12004T7	LC1SK0600E7	LC2D12BLV	LC2D32BL	LC2D65AP7	LC2K09004B7
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LC1K12008B7S17	LC1SK0600M7	LC2D12BNE	LC2D32D7	LC2D65AU7	LC2K09004F7
LC1K12008E7S17	LC1SK0600P7	LC2D12D7	LC2D32E7	LC2D65F7	LC2K09004G7
LC1K12008F7S17	LC1SK0600U7	LC2D12E7	LC2D32E7	LC2D65G7	LC2K09004M7
		LC2D12ED	LC2D32EHE	LC2D80004M5	


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# TeSys Control

## Contactors

### Product references

LC2K09013P7	LC3D18AB7	LP1K0601ND	LP1K120043BD3	LP4K0610EW3	LX1D8F7
LC2K09015D7	LC3D18AF7	LP1K0601SD	LP1K12004BD	LP4K0610FW3	LX1D8FE7
LC2K09015E7	LC3D18AU7	LP1K06103BD	LP1K12004FD	LP4K09004BW3	LX1D8G7
LC2K09015F7	LC3D320AG7	LP1K06103BD3	LP1K12004JD	LP4K090085BW3	LX1D8L7
LC2K09015P7	LC3D320AP7	LP1K06103ED	LP1K12013BD3	LP4K090087BW3	LX1D8M5
LC2K0901B7	LC3D32AB7	LP1K06105BD	LP1K12015BD	LP4K09008BW3	LX1D8M7
LC2K0901D7	LC3D32AF7	LP1K06106BD	LP1K12015MD	LP4K09008EW3	LX1D8N7
LC2K0901E7	LC3D32AP7	LP1K0610BD	LP1K12015MDS35	LP4K09008SW3	LX1D8P7
LC2K0901F7	LC3D80B7	LP1K0610BD3	LP1K1201BD	LP4K09013BW3	LX1D8Q5
LC2K0901F72	LC3D80B7A64	LP1K0610ED	LP1K1201BD3	LP4K09015BW3	LX1D8Q7
LC2K0901G7	LC3D80E7A64	LP1K0610FD	LP1K1201ED	LP4K0901BW3	LX1D8R7
LC2K0901M7	LC3D80F7	LP1K0610FD3	LP1K1201FD	LP4K0901FW3	LX1D8T7
LC2K0901P7	LC3D80F7A64	LP1K0610JD	LP1K1201MD	LP4K09103BW3	LX1D8U7
LC2K0901U7	LC3D80M7	LP1K0610MD	LP1K12103BD	LP4K09105BW3	LX1D8V7
LC2K0901V7	LC3D80P7	LP1K0610MPD	LP1K12103BD3	LP4K09106BW3S16	LX4D2UD
LC2K09103B7	LC3D80P7A64	LP1K090043BD	LP1K12105BD	LP4K09107BW3	LX4D7BD
LC2K09103E7	LC3D80U7A64	LP1K090045BD	LP1K1210BD	LP4K09103BW3	LX4D7JD
LC2K09105B7	LC3K09P7	LP1K090045ND	LP1K1210BD3	LP4K0910FW3	LX4D8BD
LC2K09105E7	LC7K0601M7	LP1K09004BD	LP1K1210ED	LP4K0910JW3	LX4D8MD
LC2K09105M7	LC7K0610M7	LP1K09004BD3	LP1K1210FD	LP4K12004BW3	LXD1B7
LC2K09107B7	LC7K09004B7	LP1K09004ED	LP1K1210JD	LP4K12015BW3	LXD1C7
LC2K0910B7	LC7K09004M7	LP1K09004FD	LP1K1210MD	LP4K12016BW3S16	LXD1D7
LC2K0910D7	LC7K09015M7	LP1K09004GD	LP1K1210SD3	LP4K1201BW3	LXD1E7
LC2K0910D72	LC7K0901M7	LP1K09004JD	LP1SK0600BD	LP4K1201EW3	LXD1F7
LC2K0910E7	LC7K0910B7	LP1K09004MD	LP1SK0600ED	LP4K12103BW3	LXD1FE7
LC2K0910F7	LC7K0910M7	LP1K090085BD	LP1SK0600JD	LP4K12106BW3S16	LXD1G7
LC2K0910M7	LC7K1201E7	LP1K090085MD	LP2K06013BD	LP4K1210BW3	LXD1J7
LC2K0910P7	LC7K1201F7	LP1K090085MDS35	LP2K06015BD	LP4K1210SW3	LXD1L7
LC2K0910U7	LC7K1201M7	LP1K09008BD	LP2K06015BD3	LP5K06015BW3	LXD1LE7
LC2K12004F7	LC7K1210F7	LP1K09008BD3	LP2K0601BD	LP5K0601BW3	LXD1M7
LC2K1201B7	LP1D400086SW	LP1K09008ED	LP2K0601BD3	LP5K0610BW3	LXD1N7
LC2K1201B72	LP1D40008BD	LP1K09008FD	LP2K0601ED	LP5K09004BW3	LXD1P7
LC2K1201E7	LP1D40008ED	LP1K09008JD	LP2K0601JD	LP5K09013BW3	LXD1Q7
LC2K1201F7	LP1D40008FD	LP1K09008MD	LP2K06103BD3	LP5K0901BW3	LXD1R7
LC2K1201G7	LP1D40008GD	LP1K09008ND	LP2K0610BD	LP5K0910BW3	LXD1S7
LC2K1201M7	LP1D40008MD	LP1K09013BD	LP2K0610BD3	LP5K12004BW3	LXD1SC7
LC2K1201P7	LP1D40008MW	LP1K09013BD3	LP2K0610JD	LP5K12015BW3	LXD1T7
LC2K1201U7	LP1D40008ND	LP1K09015BD	LP2K09004BD3	LP5K1201BW3	LXD1U7
LC2K12105B7	LP1D65008BD	LP1K09015UD	LP2K09013BD	LP5K1201SW3	LXD1V7
LC2K12105F7	LP1D65008FD	LP1K0901BD	LP2K09015BD	LP5K1210BW3	LXD1W7
LC2K12107B7	LP1D800046SW	LP1K0901BD3	LP2K0901BD	LX1D6B5	LXD1X7
LC2K1210B7	LP1D80004BD	LP1K0901ED	LP2K0901BD3	LX1D6B6	LXD1Y7
LC2K1210D7	LP1D80004BW	LP1K0901ED3	LP2K0901ED	LX1D6B7	LXD3B7
LC2K1210E7	LP1D80004ED	LP1K0901FD	LP2K0901JD	LX1D6E7	LXD3D7
LC2K1210F7	LP1D80004FD	LP1K0901GD	LP2K0901ND	LX1D6F5	LXD3E7
LC2K1210G7	LP1D800086SW	LP1K0901JD	LP2K09105BD	LX1D6F7	LXD3F7
LC2K1210K7	LP1D80008BD	LP1K0901MD	LP2K0910BD	LX1D6G7	LXD3FE7
LC2K1210L7	LP1D80008BW	LP1K0901ND	LP2K0910BD3	LX1D6L6	LXD3G7
LC2K1210M7	LP1D80008ED	LP1K0901SD3	LP2K0910ED	LX1D6M5	LXD3LE7
LC2K1210P7	LP1D80008FD	LP1K09103BD	LP2K1201BD	LX1D6M6	LXD3M7
LC2K1601K7	LP1D80008MD	LP1K09103BD3	LP2K1201BD3	LX1D6M7	LXD3N7
LC2K1610B7	LP1D80008MW	LP1K09105BD	LP2K12105BD	LX1D6N7	LXD3P7
LC2K1610F7	LP1K06013BD	LP1K09105BD3	LP2K1210BD	LX1D6P7	LXD3Q7
LC2K1610P7	LP1K06013BD3	LP1K0910BD	LP2K1210BD3	LX1D6Q7	LXD3R7
LC3D115F7A64	LP1K06013MD3	LP1K0910BD3	LP2K1210JD	LX1D6R7	LXD3T7
LC3D115M7A64	LP1K06015BD	LP1K0910ED	LP4K06013BW3	LX1D6T6	LXD3U7
LC3D115P7	LP1K06016BD	LP1K0910ED3	LP4K06016BW3S16	LX1D6U5	LXD3V7
LC3D115P7A64	LP1K0601BD	LP1K0910FD	LP4K0601BW3	LX1D6U6	LXD3X7
LC3D150M7A64	LP1K0601BD3	LP1K0910GD	LP4K0601SW3	LX1D6U7	
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LC3D150P7A64	LP1K0601FD	LP1K0910MD	LP4K06105BW3	LX1D8B7	
LC3D180AB7	LP1K0601MD	LP1K0910SD	LP4K0610BW3	LX1D8E7	

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# Technical Data for Designers

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- > dimensions.....B8/71

### TeSys K Contactors:

- > characteristics.....B8/72 to B8/75
- > dimensions.....B8/76 to B8/79

### Deca green, Deca contactors:

- > characteristics.....B8/80 to B8/93
- > dimensions.....B8/94 to B8/107

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- > dimensions.....B8/115 and B8/116

### Modular Dual tariff contactors:

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- > dimensions.....B8/121 and B8/122

### Modular Impulse relay:

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- > dimensions.....B8/127

Standard IEC tests - Contactors  
conforming to UL/CSA.....B8/128

# TeSys Control

## SK Contactors

### Characteristics

Environment			
Rated insulation voltage (Ui)	Conforming to 60947	<b>V</b>	690
Conforming to standards			IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1
Approvals			cULus, EAC, UKCA, CB certification
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2x
Ambient air temperature around the device	Storage	<b>°C</b>	-50...+70
	Operation	<b>°C</b>	-20...+50
Maximum operating altitude	Without derating	<b>m</b>	2000
Operating position			<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>Vertical axis</b></p> <p>Without derating</p> </div> <div style="text-align: center;"> <p><b>Horizontal axis</b></p> <p>Without derating</p> </div> </div>
Cabling, screw clamp terminals			Min
	Solid conductor	<b>mm<sup>2</sup></b>	1 x 1.5 or 2 x 1.5
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 0.5 or 2 x 0.35
	Flexible cable with cable end	<b>mm<sup>2</sup></b>	1 x 0.35 or 2 x 0.35
			Max
			1 x 6 or 2 x 4
			1 x 6 or 2 x 2.5
			1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	<b>N.m</b>	0.8
Terminal referencing			Conforming to standards En 50005

Ref.



Contactors

# TeSys Control

## SK Contactors

### Characteristics

Pole characteristics			
Conventional thermal current (I <sub>th</sub> )	For ambient temperature ≤ 55 °C	A	12
Rated operational frequency		Hz	50/60
Frequency limits of the operational current		Hz	Up to 400
Rated operational voltage (U <sub>e</sub> )		V	690
Rated making capacity	I rms conforming to IEC 60947-1	A	66
Rated breaking capacity (for U <sub>e</sub> ≤ 400 V)	Conforming to IEC 60947-1	A	52
Short time rating	In free air for a time "t" from cold state (θ ≤ 55 °C)	A	50
Short-circuit protection	gl fuse U ≤ 440 V	A	16
Average impedance per pole	At I <sub>th</sub> and 50 Hz	mΩ	4
Maximum rated operational current			
For a temperature ≤ 55 °C	AC-3 <sup>(1)</sup> (U <sub>e</sub> ≤ 400 V)	A	6
	AC-1	A	12
Utilisation in category AC-1 resistive circuits, heating, lighting (U <sub>e</sub> ≤ 440 V)	Increase in operational current by paralleling of poles	A	20

Auxiliary contact characteristics of add-on blocks			
Rated operational voltage (U <sub>e</sub> )	Up to	V	690
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947, IEC 60947-1	V	690
Conventional thermal current (I <sub>th</sub> )	For ambient temperature ≤ 55 °C	A	10
Frequency of operational current		Hz	Up to 400
Short-circuit protection	Conforming to IEC 60947 and IEC 60947-1, gl fuse	A	10

#### Operational power of contacts conforming to IEC 60947 a.c. supply, category AC-15

Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the breaking current (cos φ 0.4).

	V	24	48	110/127	220/230	380/400	440
1 million operating cycles	VA	48	96	240	440	800	880
3 million operating cycles	VA	17	34	86	158	288	317
10 million operating cycles	VA	7	14	36	66	120	132
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000

#### d.c. supply, category DC-13

Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	110	220	440	440
1 million operating cycles	W	120	80	60	52	51	880
3 million operating cycles	W	55	38	30	28	26	317
10 million operating cycles	W	15	11	9	8	7	132
Occasional making capacity	W	720	600	400	300	230	13000

<sup>(1)</sup> For LC1 contactors.

# TeSys Control

## SK Contactors

### Characteristics

#### Control circuit characteristics

Type		LC1SK06	LP1SK06
Rated control circuit voltage (Uc)		<b>V</b>	~ 24...400
Control voltage limits (q ≤ 50 °C)	For operation		0.85...1.1 Uc
	For drop-out		≥ 0.20 Uc
Average coil consumption at 20 °C and at Uc	Inrush		16 VA
	Sealed		4.2 VA
Heat dissipation		<b>W</b>	1.4
Operating time at 20 °C and at Uc			
Between coil energisation and	opening of the N/C contacts	<b>ms</b>	8...16
	closing of the N/O contacts	<b>ms</b>	7...14
Between coil de-energisation and	opening of the N/O contacts	<b>ms</b>	6...8
	closing of the N/C contacts	<b>ms</b>	8...10
Maximum operating rate	In operating cycles per hour		1200
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10
	--- coil		10

Ref.



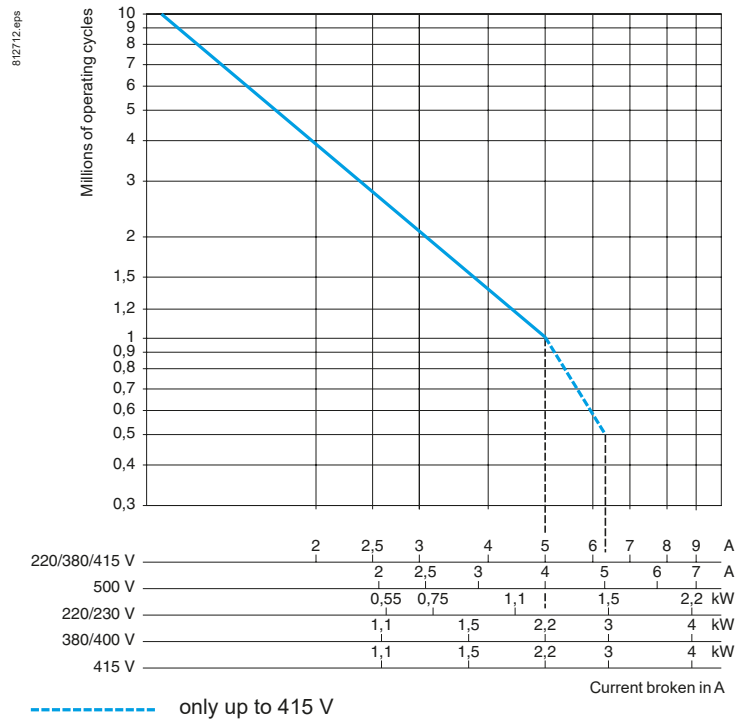
Contactors



### Use in category AC-3 ( $U_e \leq 440\text{ V}$ )

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.

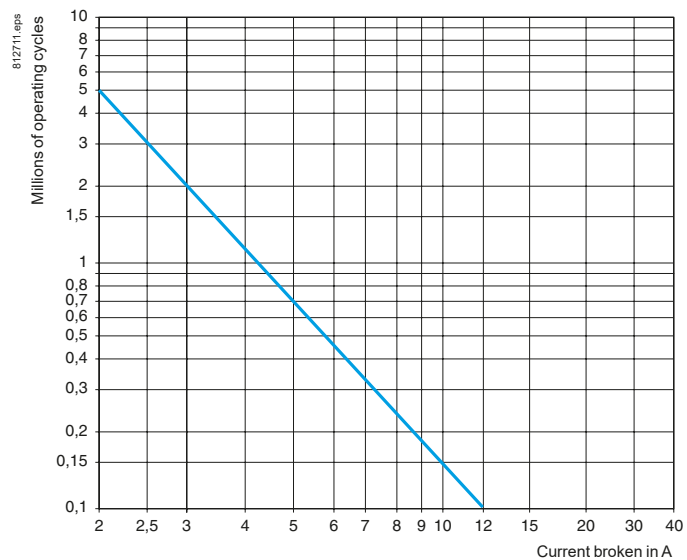
The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current ( $I_e$ ) of the motor.



### Use in category AC-1 ( $U_e \leq 440\text{ V}$ )

Control of resistive circuits ( $\cos \varphi \geq 0.95$ ).

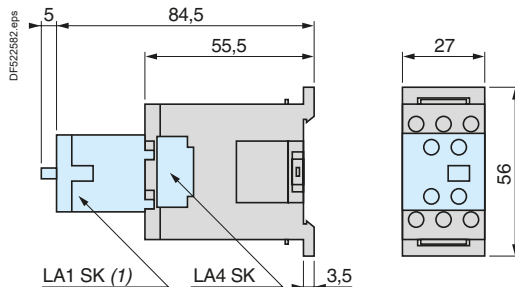
The current broken ( $I_c$ ) in category AC-1 is equal to the current ( $I_e$ ) normally drawn by the load.



#### Dimensions

##### Mini-contactors

##### LC1 and LP1SK06



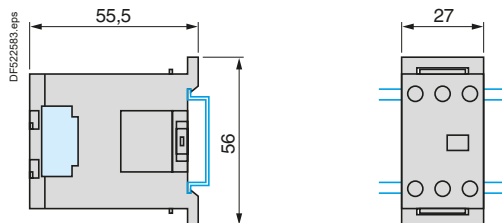
(1) Only on LC1SK06.

#### Mounting

##### Mini-contactors

##### LC1 and LP1SK06

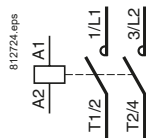
On mounting rail NSYSR200BD or NSYSR200 (L 35 mm)



#### Schemes

##### 2-pole mini-contactors

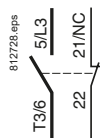
##### LC1 and LP1SK06



##### Add-on power pole block

##### 1 pole + 1 "N/C" aux.

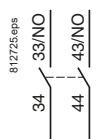
##### LA1SK01



##### Instantaneous auxiliary contacts

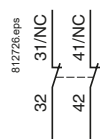
##### 2 "N/O"

##### LA1SK20



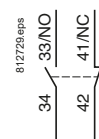
##### 2 "N/C"

##### LA1SK02



##### 1 "N/O" + 1 "N/C"

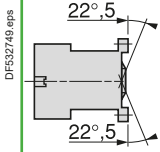
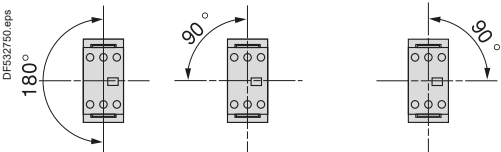
##### LA1SK11



# TeSys Control

## SKGC Contactors

### Characteristics

Environment			
Rated insulation voltage (Ui)	Conforming to IEC 60947	<b>V</b>	690
Conforming to standards			IEC 60947, UL 60947-4-1, CSA C22.2 n° 60947-4-1
Approvals			cULus, UKCA
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact
Ambient air temperature around the device			
	Storage	<b>°C</b>	-50...+70
	Operation	<b>°C</b>	-20...+50
Maximum operating altitude	Without derating	<b>m</b>	2000
Operating position			<p><b>Vertical axis</b></p>  <p>Without derating</p> <p><b>Horizontal axis</b></p>  <p>Without derating</p>
Cabling, connectors			
	Solid conductor	<b>mm<sup>2</sup></b>	Min. 1 x 1.5 or 2 x 1.5      Max. 1 x 6 or 2 x 4
	Flexible cable without cable end	<b>mm<sup>2</sup></b>	1 x 0.5 or 2 x 0.35      1 x 6 or 2 x 2.5
	Flexible cable with cable end	<b>mm<sup>2</sup></b>	1 x 0.35 or 2 x 0.35      1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	<b>N.m</b>	0.8
Terminal referencing			Conforming to standards EN 50005

Ref.



Contactors

Ref.



Contactors

Pole characteristics					
Mini-contactor type			LC1SKGC2	LC1SKGC3 and LC1SKGC4	
Conventional thermal current (Ith)	For ambient temperature $\leq 55\text{ }^{\circ}\text{C}$	A	20	20	
Rated operational frequency		Hz	50/60		
Frequency limit of the operational current		Hz	up to 400		
Rated operational voltage (Ue)		V	690		
Rated making capacity	I rms conforming to IEC 60947	A	50	85	
Rated breaking capacity (for Ue $\leq 400\text{ V}$ )	Conforming to IEC 60947 (I rms)	A	40	68	
Permissible short time rating	In free air for a time "t" from cold state ( $\theta \leq 55\text{ }^{\circ}\text{C}$ )	A	40	60	
Short-circuit protection	gl fuse U $\leq 440\text{ V}$	A	20	20	
Average impedance per pole	At Ith and 50 Hz	m $\Omega$	4	4	
Maximum rated operational current	For temperature $\leq 55\text{ }^{\circ}\text{C}$	AC-3 (Ue $\leq 400\text{ V}$ )	A	5	9
		AC-1	A	20	20
Use in category AC-1 resistive circuits, heating, lighting (Ue $\leq 440\text{ V}$ )	Increase in rated operational current by paralleling of 2 poles	A	32	32	

Auxiliary contact characteristics of mini-contactors			
Rated operational voltage (Ue)	Up to	V	690
Rated insulation voltage (Ui)	Conforming to IEC 60947	V	690
Conventional thermal current (Ith)	For ambient temperature $\leq 55\text{ }^{\circ}\text{C}$	A	10
Frequency of the operational current		Hz	Up to 400
Short-circuit protection	Conforming to IEC 60947, gl fuse	A	10

### Operational power of contacts conforming to IEC 60947

#### a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

	V	24	48	110/ 127	220/ 230	380/ 400	440
1 million operating cycles	VA	48	96	240	440	800	880
3 million operating cycles	VA	17	34	86	158	288	317
10 million operating cycles	VA	7	14	36	66	120	132
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000

#### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	110	220	440	440
1 million operating cycles	W	120	80	60	52	51	880
3 million operating cycles	W	55	38	30	28	26	317
10 million operating cycles	W	15	11	9	8	7	132
Occasional making capacity	W	720	600	400	300	230	13000

# TeSys Control

## SKGC Contactors

### Characteristics

Control circuit characteristics			
Mini-contactor type		LC1SKGC2	LC1SKGC3 and LC1SKGC4
Rated control circuit voltage (Uc)	<b>V</b>	~ 24...400	
Control voltage limits ( $\theta \leq 55^\circ\text{C}$ )	Operation	0.85...1.1 Uc	
	For drop-out	$\geq 0.20$ Uc	
Average coil consumption at 20 °C and at Uc	Inrush	<b>VA</b> 16	23
	Sealed	<b>VA</b> 4.2	4.9
Heat dissipation	<b>W</b>	1.4	1.5
Operating time at 20 °C and at Uc	Between coil energisation and	opening of the N/C contacts	<b>ms</b> 8...16
		closing of the N/O contacts	<b>ms</b> 7...14
	Between coil de-energisation and	opening of the N/O contacts	<b>ms</b> 6...8
		closing of the N/C contacts	<b>ms</b> 8...10
Maximum operating rate	In operating cycles per hour	1200	
Mechanical durability at Uc	50/60 Hz coil in millions of operating cycles	10	

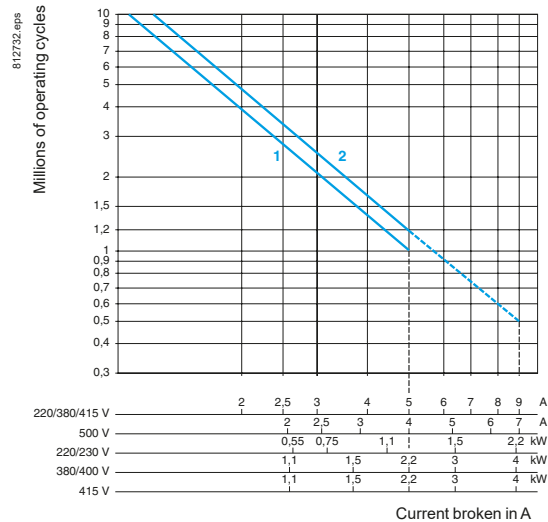
Ref.



Contactors

### Use in category AC-3 ( $U_e \leq 440\text{ V}$ )

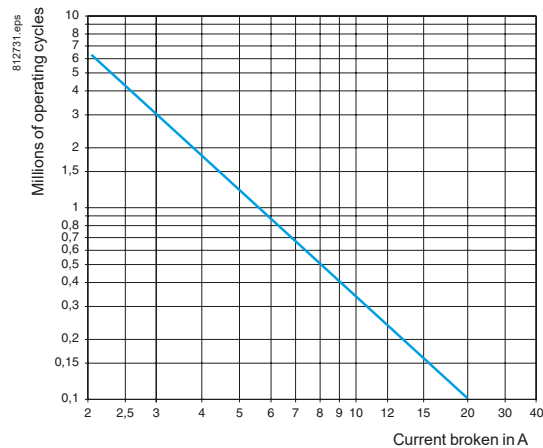
Control of 3-phase asynchronous squirrel cage motors with breaking whilst running. The current broken ( $I_c$ ) in category AC-3 is equal to the rated operational current of the motor.



1. LC1SKGC2
  2. LC1SKGC3 and SKGC4
- only up to 415 V

### Use in category AC-1 ( $U_e \leq 440\text{ V}$ )

Control of resistive circuits ( $\cos \varphi \geq 0.95$ ). The current broken ( $I_c$ ) in category AC-1 is equal to the current ( $I_e$ ) normally drawn by the load.



Ref.



Contactors

# TeSys Control SKGC Contactors

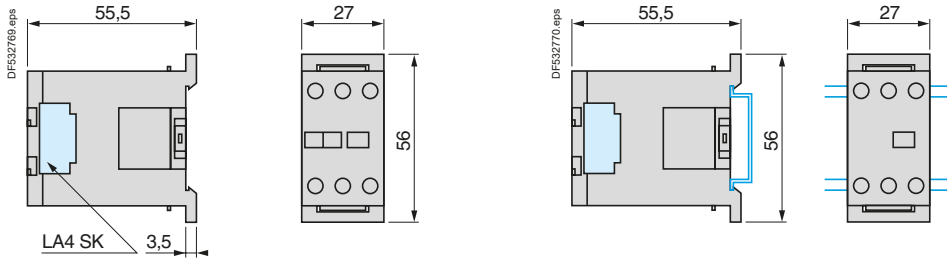
## Dimensions, mounting and schemes

### Dimensions

Mini-contactors LC1SKGC2

### Mounting

On mounting rail NSYSR200BD or NSYSR200 (└ 35 mm)



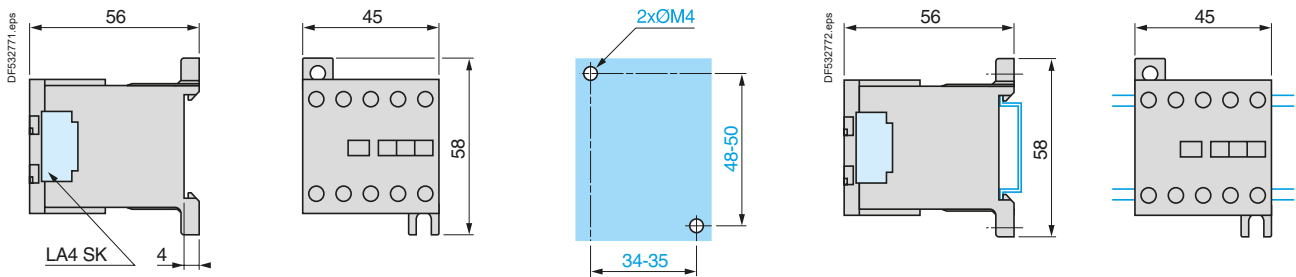
### Dimensions

Mini-contactors LC1SKGC3 and SKGC4

### Mounting

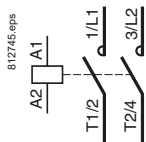
On panel

On mounting rail NSYSR200BD or NSYSR200 (└ 35 mm)



### 2-pole mini-contactors

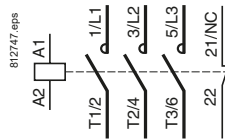
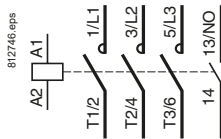
LC1SKGC2



### 3-pole mini-contactors

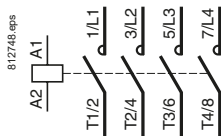
LC1SKGC310

LC1SKGC301



### 4-pole mini-contactors

LC1SKGC400



# TeSys Control

## K Contactors and reversing contactors

### Characteristics

Environment characteristics																																					
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4																																		
Product certifications		LC● and LP●K06 to K12 LC● and LP●K16	UL, CSA, CCC, EAC, UKCA, CB certification UKCA, CB certification, CCC, EA																																		
Operating positions			<p>Vertical axis      Horizontal axis</p> <p>Without derating      Without derating      Possible positions for LC●K only. Contactor pull-in voltage: 0.85 Uc</p>																																		
Connection			<table border="1"> <thead> <tr> <th></th> <th>Min.</th> <th>Max.</th> <th>Max. to IEC 60947</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Screw clamp terminals</td> <td>Solid conductor</td> <td>1 x 1.5</td> <td>2 x 4</td> <td>1 x 4 + 1 x 2.5</td> </tr> <tr> <td>Flexible conductor without cable end</td> <td>1 x 0.75</td> <td>2 x 4</td> <td>2 x 2.5</td> </tr> <tr> <td>Flexible conductor with cable end</td> <td>1 x 0.34</td> <td>1 x 1.5 + 1 x 2.5</td> <td>1 x 1.5 + 1 x 2.5</td> </tr> <tr> <td rowspan="2">Spring terminals</td> <td>Solid conductor</td> <td>1 x 0.75</td> <td>1 x 1.5</td> <td>2 x 1.5</td> </tr> <tr> <td>Flexible conductor without cable end</td> <td>1 x 0.75</td> <td>1 x 1.5</td> <td>2 x 1.5</td> </tr> <tr> <td>Faston connectors</td> <td>Clip</td> <td colspan="2">2 x 2.8 or 1 x 6.35</td> </tr> <tr> <td colspan="2">Solder pins for printed circuit board</td> <td></td> <td>With locating device between power and control circuits pins length 5 mm Recommended minimum width and thickness layer for power printed circuit board track : 4mm x 35 microns</td> </tr> </tbody> </table>		Min.	Max.	Max. to IEC 60947	Screw clamp terminals	Solid conductor	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5	Flexible conductor without cable end	1 x 0.75	2 x 4	2 x 2.5	Flexible conductor with cable end	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5	Spring terminals	Solid conductor	1 x 0.75	1 x 1.5	2 x 1.5	Flexible conductor without cable end	1 x 0.75	1 x 1.5	2 x 1.5	Faston connectors	Clip	2 x 2.8 or 1 x 6.35		Solder pins for printed circuit board			With locating device between power and control circuits pins length 5 mm Recommended minimum width and thickness layer for power printed circuit board track : 4mm x 35 microns
	Min.	Max.	Max. to IEC 60947																																		
Screw clamp terminals	Solid conductor	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5																																	
	Flexible conductor without cable end	1 x 0.75	2 x 4	2 x 2.5																																	
	Flexible conductor with cable end	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5																																	
Spring terminals	Solid conductor	1 x 0.75	1 x 1.5	2 x 1.5																																	
	Flexible conductor without cable end	1 x 0.75	1 x 1.5	2 x 1.5																																	
Faston connectors	Clip	2 x 2.8 or 1 x 6.35																																			
Solder pins for printed circuit board			With locating device between power and control circuits pins length 5 mm Recommended minimum width and thickness layer for power printed circuit board track : 4mm x 35 microns																																		
Tightening torque		of screw-clamp terminals only Philips head n° 2 and Ø6	<b>N.m</b> 0.8																																		
Terminal referencing		Conforming to standards EN 50005 and EN 50012	Up to 5 contacts, depending on model																																		
Rated insulation voltage (Ui)		Conforming to IEC 60947-4-1	<b>V</b> 690																																		
		Conforming to CSA 22-2 n° 60947-4-1, UL 60947-4-1	<b>V</b> 600																																		
Rated impulse withstand voltage (Uimp)			<b>kV</b> 8																																		
Degree of protection		Conforming to IEC 60529	Protection against direct finger contact IP2x																																		
Ambient air temperature around the device		Storage	<b>°C</b> -50...+80																																		
		Operation	<b>°C</b> -25...+50 in AC3, -25...+60 in AC1																																		
Maximum operating altitude		Without derating	<b>m</b> 2000																																		
Vibration resistance		5 ... 300 Hz	2 gn																																		
		Conforming to IEC/EN 60068-2-27	4 gn																																		
Flame resistance		according to IEC 60695-2-10	<b>°C</b> 850																																		
Shock resistance (1/2 sine wave, 11 ms)		Conforming to IEC/EN 60068-2-6	On X axis: 6 gn On Y and Z axes: 10 gn																																		
		Conforming to IEC/EN 60068-2-6	On X axis: 10 gn On Y and Z axes: 15 gn																																		

Ref.



Contactors



# TeSys Control

## K Contactors and reversing contactors

### Characteristics

Pole characteristics								
Type	LC● or LP●			K06	K09	K12	K16	
Conventional thermal current (I <sub>th</sub> )	For ambient temperature ≤ 60 °C		A	20 <sup>(1)</sup>				
Rated operational frequency			Hz	50/60				
Frequency limits of the operational current			Hz	Up to 400				
Rated operational voltage (U <sub>e</sub> )			V	690				
Rated making capacity	I rms conforming to IEC 60947		A	110	110	144	160	
Rated breaking capacity	I rms conforming to IEC 60947	220/230 V	A	110	110	–	–	
		380/400 V	A	110	110	–	–	
		415 V	A	110	110	–	–	
		440 V	A	110	110	110	110	
		500 V	A	80	80	80	80	
		660/690 V	A	70	70	70	70	
Permissible short time rating	In free air for a time "t" from cold state (θ ≤ 50 °C)	1 s	A	90	90	115	115	
		5 s	A	85	85	105	105	
		10 s	A	80	80	100	100	
		30 s	A	60	60	75	75	
		1 min	A	45	45	55	55	
		3 min	A	40	40	50	50	
		≥ 15 min	A	20	20	25	25	
Short-circuit protection	gG fuse U ≤ 440 V (aM fuse, see page 22009/2)		A	25				
Average impedance per pole	At I <sub>th</sub> and 50 Hz		mΩ	3				
Use in category AC-1 resistive circuits, heating, lighting (U <sub>e</sub> ≤ 440 V)	Maximum rated operational current for a temperature ≤ 50 °C		A	20				
	Maximum rated operational current for a temperature ≤ 70 °C		A	16 for U <sub>e</sub> only				
	Rated operational current limits in relation to the on-load factor and operating frequency			On-load factor		90 %	60 %	30 %
			A	300 operating cycles/hour		13	15	18
			A	120 operating cycles/hour		15	18	19
			A	30 operating cycles/hour		19	20	20
	Increase in rated operational current by paralleling of poles			Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles				
			2 poles in parallel: K = 1.60					
			3 poles in parallel: K = 2.25					
			4 poles in parallel: K = 2.80					
Use in category AC-3 squirrel cage motors	Operational power according to the voltage. Voltage 50 or 60 Hz	115 V single-ph.	kW	0.37	0.55	–	–	
		220 V single-ph.	kW	0.75	1.1	–	–	
		220/230 V 3-ph.	kW	1.5	2.2	3	4	
		380/415 V 3-ph.	kW	2.2	4	5.5	7.5	
		440/480 V 3-ph.	kW	3	4	5.5/4 (480)	5.5/4 (480)	
		500/600 V 3-ph.	kW	3	4	4	4	
		660/690 V 3-ph.	kW	3	4	4	4	
		Maximum operating rate (in operating cycles/hour in relation to % of rated power)			Op. cycles/h		600	900
				Power		100 %	75 %	50 %

(1) For LC●K●●●●3 / LP●K●●●●3 with spring terminal, I<sub>th</sub> max = 10 A.

# TeSys Control

## K Contactors and reversing contactors

### Characteristics

Control circuit characteristics									
Type		LC1	LC2	LC7	LC8	LP1	LP2	LP4	LP5
Rated control circuit voltage (Uc)	V	~ 12...690 <sup>(1)</sup>		~ 24...240 <sup>(1)</sup>		~ 12...250 <sup>(1)</sup>		~ 12...120	
Control voltage limits (≤ 50 °C) single voltage coil	Operation	0.8...1.15 Uc <sup>(2)</sup>		0.85...1.1 Uc		0.8...1.15 Uc		0.7...1.30 Uc	
	Drop-out	≥ 0.20 Uc		≥ 0.10 Uc		≥ 0.10 Uc		≥ 0.10 Uc	
Average consumption at 20 °C and at Uc	Inrush	30 VA		3 VA		3 W		1.8 W	
	Sealed	4.5 VA		3 VA		3 W		1.8 W	
Heat dissipation	W	1.3		3		3		1.8	
Operating time at 20 °C and at Uc									
Between coil energisation and:	- opening of the N/C contacts	ms	5...15		25...35		25...35		25...35
	- closing of the N/O contacts	ms	10...20		30...40		30...40		30...40
Between coil de-energisation and:	- opening of the N/O contacts	ms	10...20		30		10		10...20
	- closing of the N/C contacts	ms	15...25		40		15		15...25
Maximum immunity to microbreaks	ms	2		2		2		2	
Maximum operating rate	In operating cycles per hour	3600		3600		3600		3600	
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil	10	5	10	5	-	-	-	-
	--- coil	-	-	-	-	10	5	-	-
	Wide range coil, Low consumption	-	-	-	-	-	-	30	5

(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50...129 V) or **LA4KE1UG** (130...250 V), see page B8/14.

(2) **LC1K12, LC1K16...** : 0.85...1.15 Uc.

Ref.



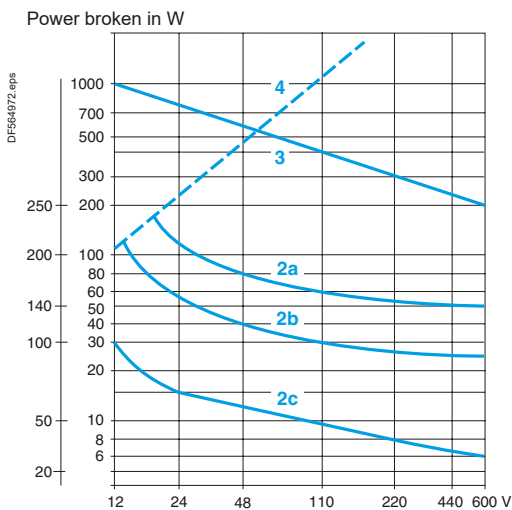
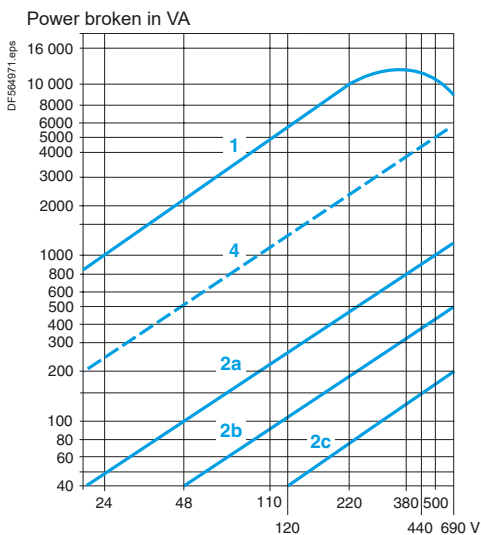
Contactors

# TeSys Control

## K Contactors and reversing contactors

### Characteristics and durability curves

Auxiliary contact characteristics of contactors and instantaneous contact blocks				
Number of auxiliary contacts	On LC●K or LP●K 3-pole			1
	On LA1K			2 or 4
Rated operational voltage (U <sub>e</sub> )	Up to		V	690
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947		V	690
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1		V	600
Conventional thermal current (I <sub>th</sub> )	For ambient temperature ≤ 50 °C		A	10
Frequency of the operational current			Hz	Up to 400
Minimum switching capacity	U min		V	17
	I min		mA	5
Short-circuit protection	Conforming to IEC 60947, gG fuse		A	10
Rated making capacity	Conforming to IEC 60947	I rms	A	110
Short-time rating	Permissible for	1 s	A	80
		500 ms	A	90
		100 ms	A	110
Insulation resistance			MΩ	> 10
Non-overlap distance	LA1K: linked contacts conforming to INRS, BIA and CNA specifications		mm	0.5 (see schemes pages B8/77 and B8/79)



#### Operational power of contacts conforming to IEC 60947 a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

Operating cycles	Voltage (V)							
	V	24	48	110/127	220/230	380/400	440	600/690
1 million operating cycles	VA	48	96	240	440	800	880	1200
3 million operating cycles	VA	17	34	86	158	288	317	500
10 million operating cycles	VA	7	14	36	66	120	132	200
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000	9000

#### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

Operating cycles	Voltage (V)						
	V	24	48	110	220	440	600
1 million operating cycles	W	120	80	60	52	51	50
3 million operating cycles	W	55	38	30	28	26	25
10 million operating cycles	W	15	11	9	8	7	6
Occasional making capacity	W	720	600	400	300	230	200

- Breaking limit of contacts valid for:
  - maximum of 50 operating cycles at 10 s intervals (power broken = making current x  $\cos \varphi 0.7$ ).
- Electrical durability of contacts for:
  - 1 million operating cycles (2a)
  - 3 million operating cycles (2b)
  - 10 million operating cycles (2c).
- Breaking limit of contacts valid for:
  - maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.
- Thermal limit.

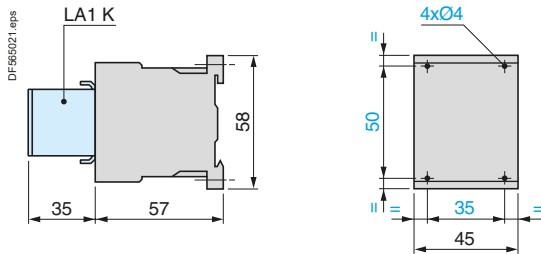
# TeSys Control K Contactors

## Dimensions and mounting

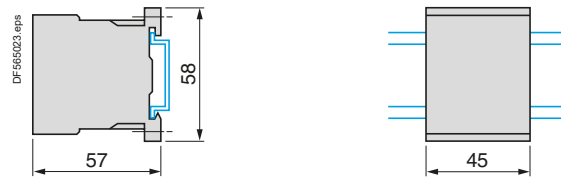
### Contactors

#### LC1K, LC7K, LP1K, LP4K

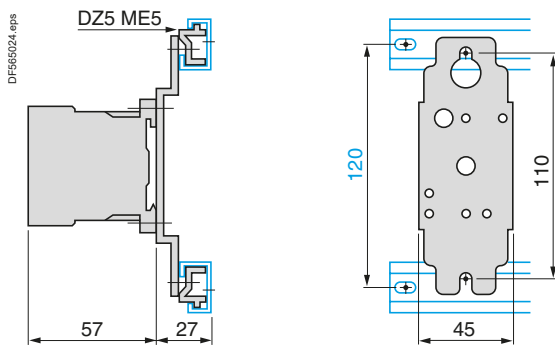
On panel



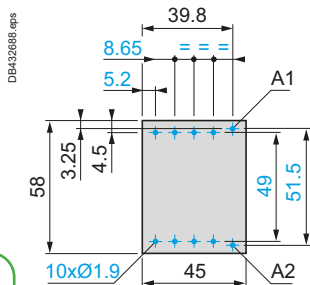
On mounting rail NSYSR200BD or NSYSR200 (≥ 35 mm)



#### DX1AP25



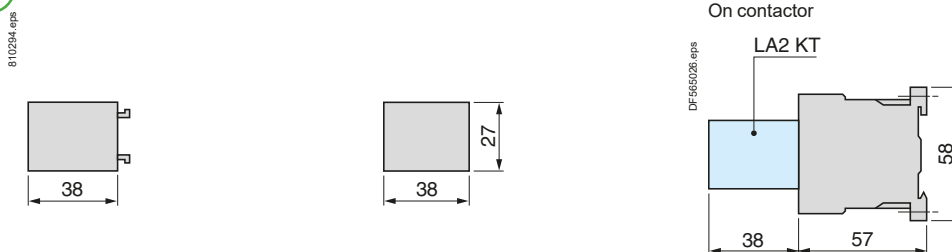
On printed circuit board



### Electronic time delay contact blocks

#### LA2KT

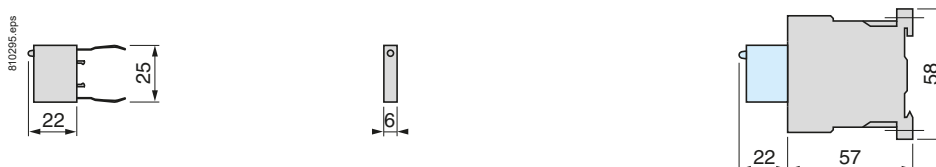
On contactor



### Suppressor modules

#### LA4K

On contactor LC1K or LP1K



References:  
pages B8/4 to B8/7

Characteristics:  
pages B8/72 to B8/75

Schemes:  
page B8/77

B8/76

Life Is On

Schneider  
Electric

Ref.

☰

🔧

Contactors

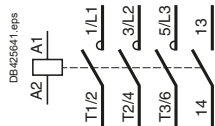
# TeSys Control

## K Contactors

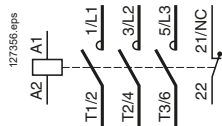
### Schemes

#### 3-pole contactors

3 P + N/O

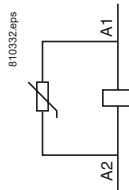


3 P + N/C

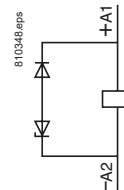


#### With integral suppression device

LC7K

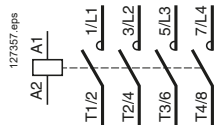


LP4K

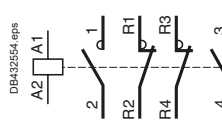


#### 4-pole contactors

4 P

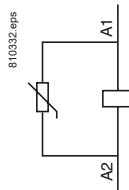


2 P N/O + 2 P N/C

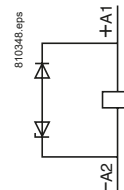


#### With integral suppression device

LC7K



LP4K



#### Instantaneous auxiliary contacts LA1K

LA1KN20, KN207, KN203

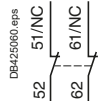
LA1KN02, KN027, KN023

LA1KN11, KN117, KN113

2 N/O

2 N/C

1 N/O + 1 N/C



LA1KN40, KN407, KN403

LA1KN31, KN317, KN313

LA1KN22, KN227, KN223

LA1KN13, KN137, KN133

LA1KN04, KN047, KN043

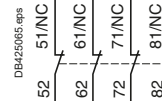
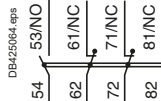
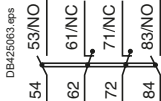
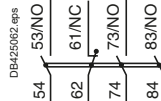
4 N/O

3 N/O + 1 N/C

2 N/O + 2 N/C

1 N/O + 3 N/C

4 N/C



#### Terminal referencing conforming to standard EN 50012

LA1KN02M

LA1KN11M

LA1KN31M

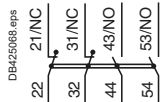
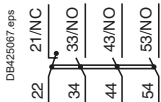
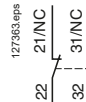
LA1KN22M

2 N/C

1 N/O + 1 N/C

3 N/O + 1 N/C

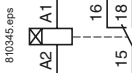
2 N/O + 2 N/C



#### Electronic time delay contact blocks

LA2KT

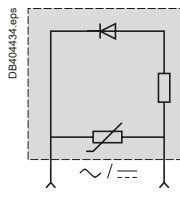
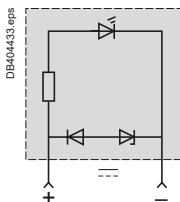
1 C/O



#### Suppressor modules

LA4KC

LA4KE



# TeSys Control

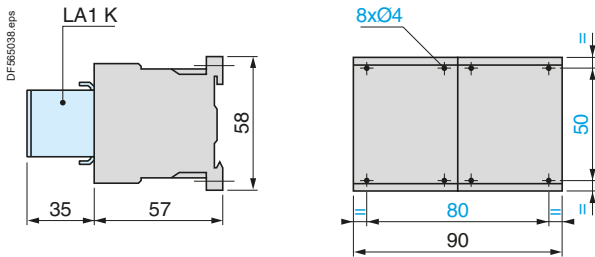
## K Reversing contactors

### Dimensions and mounting

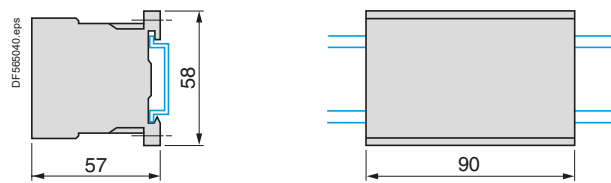
#### Reversing contactors

LC2K, LC8K, LP2K, LP5K

On panel

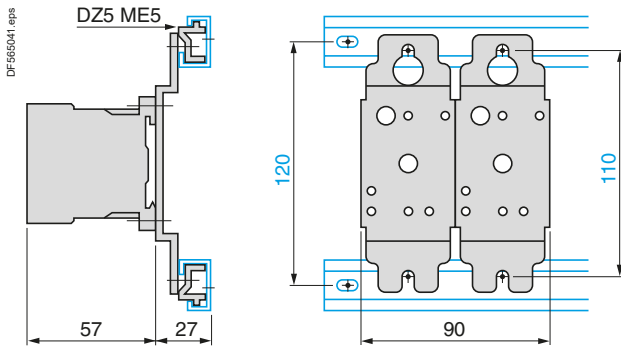


On mounting rail NSYSDR200BD or NSYSDR200 (≥ 35 mm)

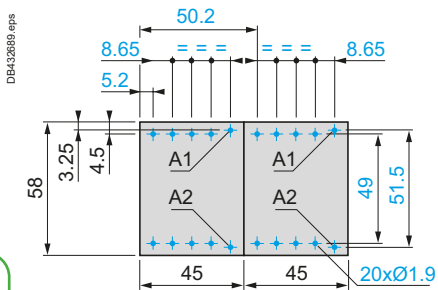


#### 2 x DX1AP25

On one asymmetrical mounting rail DZ5MB on 2 mounting plates DX1AP25.



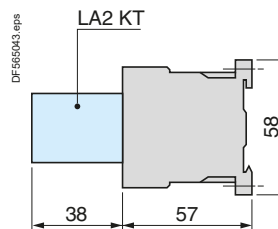
On printed circuit board for reversing contactors or 2 contactors mounted side by side.



#### Electronic time delay contact blocks

LA2KT

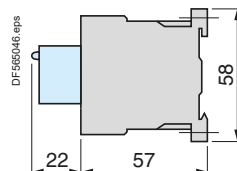
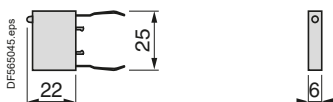
On reversing contactors



#### Suppressor modules

LA4K●

On reversing contactors LC2K or LP2 K



# TeSys Control

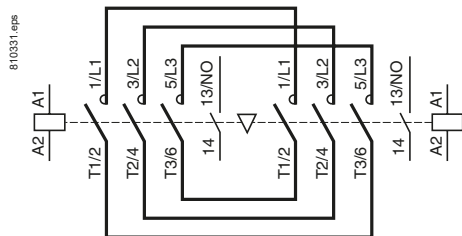
## K Reversing contactors

### Schemes

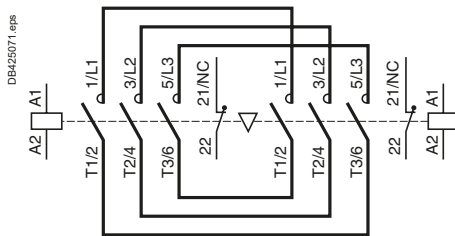
#### 3-pole reversing contactors

With screw clamp connections

3 P + N/O



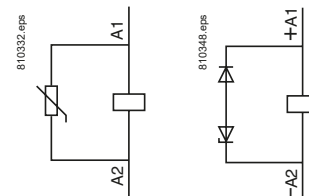
3 P + N/C



With integral suppression device

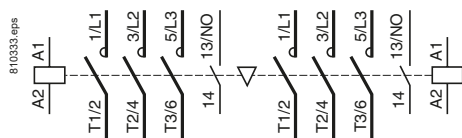
LC8K

LP5K

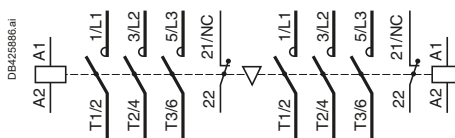


With Faston connectors or solder pins (printed circuit board)

3 P + N/O



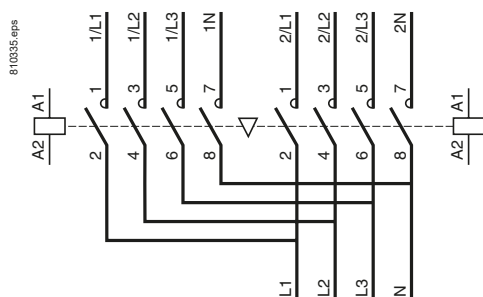
3 P + N/C



#### 4-pole reversing contactors

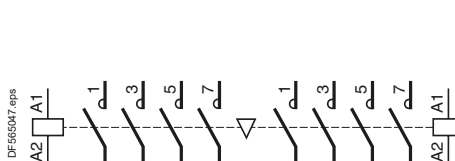
With screw clamp connections

4 P



With Faston connectors or solder pins (printed circuit board)

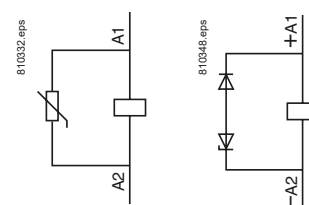
4 P



Integral suppression device

LC8K

LP5K



#### Instantaneous auxiliary contacts LA1K

Terminal referencing conforming to standard EN 50012

LA1KN20, KN207, KN203

LA1KN02, KN027, KN023

LA1KN11, KN117, KN113

LAKN02M

LA1KN11M

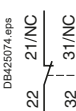
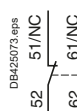
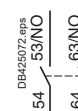
2 N/O

2 N/C

1 N/O + 1 N/C

2 N/C

1 N/O + 1 N/C



LA1KN40, KN407, KN403

LA1KN31, KN317, KN313

LA1KN22, KN227, KN223

LA1KN13, KN137, KN133

LA1KN04, KN047, KN043

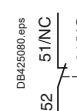
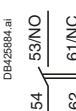
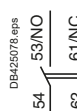
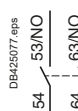
4 N/O

3 N/O + 1 N/C

2 N/O + 2 N/C

1 N/O + 3 N/C

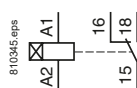
4 N/C



#### Electronic time delay contact blocks

LA2KT

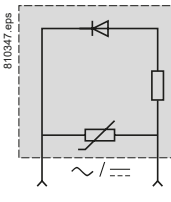
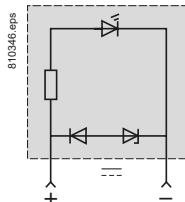
1 C/O



#### Suppressor modules

LA4KC

LA4KE



# TeSys Control

## Deca green, Deca Contactors

### Characteristics

Environment			D09...D18 DT20 and DT25	D25...D38 DT32 and DT40	D40A...D80A DT60A and DT80A	D80...D95 <sup>(1)</sup>	D115 and D150	
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1, overvoltage category III, degree of pollution: 3	V	690				1000	
	Conforming to UL, CSA	V	600					
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947	kV	6				8	
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4					
Product certifications <sup>(1)</sup>			UL, CSA, CCC, EAC, UKCA, CB certification, EU-RO-MR by DNV-GL			UL, CSA, CCC, EAC, UKCA, CB certification, DNV-GL, RINA, BV, LRoS		
Degree of protection <sup>(2)</sup> (front face)	Conforming to IEC 60529							
	Power circuit connections		Protection against direct finger contact IP20					
	Coil connection		Protection against direct finger contact IP20					
Climatic withstand			According to IACS E10 and IEC 60947-1 Annex Q category D				According to IACS E10	
Ambient air temperature around the device	Storage	°C	-60...+80					
	Operation <sup>(3)</sup>	°C	-40...+60					
	Allowed with derating <sup>(3)(4)</sup>	°C	+60...+70 at U <sub>c</sub> to 1.●● x U <sub>c</sub>					
Maximum operating altitude	Without derating	m	3000					
Operating positions <sup>(5)</sup>	Without derating in the following positions		AC and DC coils AC/DC and "BBE" coils		AC coils AC/DC and "BBE" coils		DC coils	
	Positions that are not allowed		For --- contactors LC1D09 to LC1D150.					
Flame resistance	Conforming to IEC 60695-2-11	°C	850					
Shock resistance <sup>(6)</sup> 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27	Contactor open		10 gn	8 gn	10 gn	8 gn	6 gn	
	Contactor closed		15 gn	15 gn	15 gn	10 gn	15 gn	
Vibration resistance <sup>(6)</sup> 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactor open		2 gn					
	Contactor closed		4 gn	4 gn	4 gn	3 gn	4 gn	

(1) Contactor **LC1D95** with d.c. coil is not UL/CSA certified.  
 (2) Protection provided for the cabling c.s.a.'s indicated on the next page and for connection by cable. For lug type: add a protective cover.  
 (3) As per IEC60947-4-1, operating time and drop out voltage given and tested for -5...+40 °C.  
 (4) Refer to operational current in AC1 (page A5/40).  
 (5) When mounting on a vertical rail, use a stop.  
 (6) Without modifying the power contact states, in the most unfavourable direction (coil energised at U<sub>e</sub>).  
 In case of vibration, it is recommended to mount the devices separately by screws on metal plate.







# TeSys Control

## Deca green, Deca Contactors

### Characteristics

#### Pole characteristics Deca, Deca green contactors

Contactor type		LC1	D09 (3P)	DT20 D098	D12 (3P)	DT25 D128	D18 (3P)	DT32 D188	D25 (3P)	DT40 D258
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 60 °C	A	9		12		18		25	
	In AC-1, θ ≤ 60 °C	A	25 <sup>(1)</sup>	20	25 <sup>(1)</sup>	25	32 <sup>(1)</sup>	32	40 <sup>(1)</sup>	40
Rated operational voltage (Ue)	Up to	V	690		690		690		690	
Frequency limits	Of the operational current	Hz	25...400		25...400		25...400		25...400	
Conventional thermal current (Ith)	θ ≤ 60 °C	A	25 <sup>(1)</sup>	20	25 <sup>(1)</sup>	25	32 <sup>(1)</sup>	32	40 <sup>(1)</sup>	40
Rated making capacity (440 V)	Conforming to IEC 60947	A	250		250		300		450	
Rated breaking capacity (440 V)	Conforming to IEC 60947	A	250		250		300		450	
Permissible short time rating No current flowing for preceding 15 minutes with θ ≤ 40 °C	For 1 s	A	210		210		240		380	
	For 10 s	A	105		105		145		240	
	For 1 min	A	61		61		84		120	
	For 10 min	A	30		30		40		50	
Fuse protection against short-circuits (U ≤ 690 V)	Without thermal overload relay, gG fuse	type 1	A	25	40	50	63			
		type 2	A	20	25	35	40			
	With thermal overload relay	A	See pages B11/4 and B11/5, for aM or gG fuse ratings corresponding to the associated thermal overload relay							
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5		2.5		2.5		2	
Power dissipation per pole for the above operational currents	AC-3	W	0.20		0.36		0.8		1.25	
	AC-1	W	1.56		1.56		2.5		3.2	

#### Control circuit characteristics, a.c. supply Deca contactors

Rated control circuit voltage (Uc)	50/60 Hz	V	12...690			
Control voltage limits	50 or 60 Hz coils	Operation	–			
		Drop-out	–			
	50/60 Hz coils	Operation	0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C			
		Drop-out	0.3...0.6 Uc at 60 °C			
Average consumption at 20 °C and at Uc	~ 50 Hz	Inrush	50 Hz coil	VA	–	
			Cos φ		0.75	
		Sealed	50 Hz coil	VA	70	
			Cos φ		0.3	
		~ 60 Hz	Inrush	60 Hz coil	VA	7
				Cos φ		0.75
	Sealed		60 Hz coil	VA	70	
			Cos φ		0.3	
	50/60 Hz coil		VA	7.5		
	Heat dissipation		50/60 Hz	W	2...3	
	Operating time <sup>(2)</sup>	Closing "C"	ms	12...22		
		Opening "O"	ms	4...19		
Mechanical durability in millions of operating cycles	50 or 60 Hz coil		–			
	50/60 Hz coil on 50 Hz		15			
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600			

(1) Versions with spring terminal connections:

16 A for LC1D093 and LC1D123 (20 A possible with 2 x 2.5 mm<sup>2</sup> in parallel),

25 A for LC1D183 to LC1D323 (32 A possible for LC1D183 connected with 2 x 4 mm<sup>2</sup> cables in parallel; 40 A possible for LC1D253 and LC1D323 connected with 2 x 4 mm<sup>2</sup> in parallel).

(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

(3) The opening time is 40...75 ms for LX1D8•7 coils and 6...20 ms for LX1D8•5 and LX1D8•6 coils.

(4) 2400 for LX1D8•5 and LX1D8•6 coils and 1200 for LX1D8•7 coils (refer to page B8/48 for list of coil references).

D32	D38	D40A	DT60A	D50A	D65A	D80A	DT80A	D80	D95	D115	D150
32	38	40	–	50	65	66	–	80	95	115	150
50 <sup>(1)</sup>	50	60	60	80	80	80	80	125	125	200	200
690	690	690	690	690	690	690	690	1000	1000	1000	1000
25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
50	50	60	60	80	80	80	80	125	125	200	200
550	550	800	800	900	1000	1000	1000	1100	1100	1260	1660
550	550	800	800	900	1000	1000	1000	1100	1100	1100	1400
430	430	720	720	810	900	900	900	990	1100	1100	1400
260	310	320	320	400	640	640	640	640	800	950	1200
138	150	165	165	208	260	260	260	320	400	550	580
60	60	72	72	84	110	110	110	135	135	250	250
63	63	80	80	100	125	125	125	200	200	250	315
63	63	80	80	100	125	125	125	160	160	200	250

See pages B11/4 and B11/5 for aM or gG fuse ratings corresponding to the associated thermal overload relay

2	2	1.5	1.6	1.5	1.5	1.5	1.6	0.8	0.8	0.6	0.6
2	3	2.4	–	3.7	6.3	6.3	–	5.1	7.2	7.9	13.5
5	5	5.4	5.8	9.6	9.6	9.6	10.2	12.5	12.5	24	24

12...690	12...690							24...500			
–	–							0.85...1.1 Uc at 55 °C			
–	–							0.3...0.6 Uc at 55 °C	0.3...0.5 Uc at 55 °C		
0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C	0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C							0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 55 °C	0.8...1.15 Uc on 50/60 Hz at 55 °C		
0.3...0.6 Uc at 60 °C	0.3...0.6 Uc at 60 °C							0.3...0.6 Uc at 55 °C	0.3...0.5 Uc at 55 °C		
–	–							200	300	–	
0.75	0.75							0.75	0.8	0.9	
70	160							245	280...350	280...350	
–	–							20	22	–	
0.3	0.3							0.3	0.3	0.9	
7	15							26	2...18	2...18	
–	–							220	300	–	
0.75	0.75							0.75	0.8	0.9	
70	140							245	280...350	280...350	
–	–							22	22	–	
0.3	0.3							0.3	0.3	0.9	
7.5	13							26	2...18	2...18	
2...3	4...5							6...10	3...8	3...4.5	
12...22	12...26	12...26	12...26	12...26	12...26	12...26	12...26	20...35	20...35	20...50	20...35
4...19	4...19	4...19	4...19	4...19	4...19	4...19	4...19	6...20	6...20	6...20 <sup>(3)</sup>	40...75
–	–	–	–	–	–	–	–	10	10	8	–
15	6	6	6	6	6	6	6	4	4	8	8
3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	2400 <sup>(4)</sup>	1200



Contactors

# TeSys Control

## Deca Contactors

### Characteristics

d.c. control circuit characteristics Deca contactors							
Contactor type			LC1D09...D38 LC1DT20...DT40	LC1D40A...D80A LC1DT60A and DT80A	LC1 or LP1D80 LC1D95	LC1D115 and LC1D150	
Rated control circuit voltage (Uc) ---		<b>V</b>	12...440	12...440		24...440	
Rated insulation voltage	Conforming to IEC 60947-1	<b>V</b>	690				
	Conforming to UL, CSA	<b>V</b>	600				
Control voltage limits	Operation	Standard coil	0.7...1.25 Uc at 60 °C	0.75...1.25 Uc at 60 °C	0.85...1.1 Uc at 55 °C	0.75...1.2 Uc at 55 °C	
		Wide range coil	–	–	0.75...1.2 Uc at 55 °C	–	
	Drop-out		0.1...0.25 Uc at 60 °C	0.1...0.3 Uc at 60 °C	0.1...0.3 Uc at 55 °C	0.15...0.4 Uc at 55 °C	
Average consumption at 20 °C and at Uc	---	Inrush	<b>W</b>	5.4	19	22	270...365
		Sealed	<b>W</b>	5.4	7.4	22	2.4...5.1
Operating time <sup>(1)</sup> average at Uc	Closing	"C"	<b>ms</b>	63 ±15 %	50 ±15%	95...130	20...35
	Opening	"O"	<b>ms</b>	20 ±20 %	20 ±20%	20...35	40...75
			<i>Note: The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.</i>				
Time constant (L/R)		<b>ms</b>	28	34	75	25	
Mechanical durability at Uc	In millions of operating cycles		30	10	10	8	
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600	3600	3600	1200	
Low consumption control circuit characteristics Deca contactors							
Rated insulation voltage	Conforming to IEC 60947-1	<b>V</b>	690	–			
	Conforming to UL, CSA	<b>V</b>	600.	–			
Maximum voltage	Of the control circuit on ---	<b>V</b>	250	–			
Average consumption d.c. at 20 °C and at Uc	Wide range coil (0.8...1.25 Uc)	Inrush	<b>W</b>	2.4	–		
		Sealed	<b>W</b>	2.4	–		
Operating time <sup>(1)</sup> at Uc and at 20 °C	Closing	"C"	<b>ms</b>	77 ±15 %	–		
	Opening	"O"	<b>ms</b>	25 ±20 %	–		
Voltage limits (θ ≤ 60 °C) of the control circuit	Operation			0.8 to 1.25 Uc	–		
	Drop-out			0.1...0.3 Uc	–		
Time constant (L/R)		<b>ms</b>	40	–			
Mechanical durability	In millions of operating cycles		30	–			
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600	–			

(1) The operating times depend on the type of contactor electromagnet and its control mode.  
The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.  
The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

Ref.



Contactors

Wide band Deca green contactors AC/DC coil circuit characteristics									
Rated control circuit voltage (Uc)		<b>V</b>	AC/DC 24...250						
Operation		<b>V</b>	0.85 Uc mini...1.1 Uc maxi at 60 °C in AC or DC (BNE coil: 0.8 Uc mini at 24 VDC, 0.85 Uc mini in AC).						
Drop-out		<b>V</b>	0.1 Uc maxi (e.g. 100 to 250 V = 25 V at 60 °C)						
Contactor type		LC1D09...D38			LC1D40A...D80A, LC1DT60A, LC1DT80A				
Coil code		BNE	EHE	KUE	BBE	BNE	EHE	KUE	
Rated control circuit voltage (Uc)		24-60	48-130	100-250	24 DC	24-60	48-130	100-250	
AC supply at 20°C	Consumption inrush	<b>VA</b>	15	25	25	-	15	23	18
	Consumption sealed	<b>VA</b>	0.9	1.3	1.6	-	1	1.4	1.8
	Consumption sealed	<b>mA</b>	28	15	9	-	35	17	9.5
	Heat dissipation	<b>W</b>	0.6	0.8	1.1	-	0.8	0.9	1.3
DC supply at 20°C	Consumption inrush	<b>W</b>	14	24	18	11	16	19	14
	Consumption sealed	<b>mA</b>	23	13	7	20	30	15	7.7
	Heat dissipation	<b>W</b>	0.6	0.8	1.1	0.5	0.7	0.9	1.2
Max operating time <sup>(2)</sup>	Closing "C"	<b>ms</b>	50 ±5 ms			60 ±5 ms			
	Opening "O"	<b>ms</b>	20...90 ms			20...80 ms			
EMC immunity			Meets IEC 60947-4-1 standard, table 12						
EMC emission		IEC 60947-4-1 §9.4.3	Environment A <sup>(1)</sup>						
Maximum operating rate at ambient temperature ≤ 60°C		<b>cycle/h</b>	3600						
Mechanical durability at Uc In millions of operating cycles			15			6			

(1) Use of this product in EMC environment B may require mitigation measures to avoid unwanted disturbance.

(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separates.

Ref.



Contactors

# TeSys Control

## Deca green, Deca Contactors

### Characteristics

#### Power circuit connections

##### Screw clamp terminal connections Deca, Deca green contactors

Contactor type		LC1	D09 and D12 DT20 and DT25	D18 (3P)	D25 (3P)	D32	D38	D18 and D25 (4P) DT32 and DT40	D40A to D80A DT60A and DT80A <sup>(1)</sup>	D80 and D95	D115 and D150
Tightening			Screw clamp terminals				Connector 2 inputs	Screw clamp terminals	Connector 1 input	Connector 2 inputs	
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	1...4	1.5...6	2.5...10			2.5...10	1...35	4...50	10...120
	2 conductors	mm <sup>2</sup>	1...4	1.5...6	2.5...10			2.5...10	1...25 and 1...35	4...25	10...120 + 10...50
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1...4	1...6	1...10			2.5...10	1...35	4...50	10...120
	2 conductors	mm <sup>2</sup>	1...2.5	1...4	1.5...6			2.5...10	1...25 and 1...35	4...16	10...120 + 10...50
Solid cable without cable end	1 conductor	mm <sup>2</sup>	1...4	1.5...6	1.5...10			2.5...16	1...35	4...50	10...120
	2 conductors	mm <sup>2</sup>	1...4	1.5...6	2.5...10			2.5...16	1...25 and 1...35	6...25	10...120 + 10...50
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2			N° 2	–	–	–
	Flat screwdriver Ø		Ø6	Ø6	Ø6			Ø6	–	Ø6...Ø8	–
Hexagonal key			–	–	–			–	4	4	4
Tightening torque		N.m	1.7	1.7	2.5			1.8	5: ≤ 25 mm <sup>2</sup> 8: 35 mm <sup>2</sup>	12	12

##### Spring terminal connections <sup>(2)</sup> Deca contactors

Flexible cable without cable end	1 conductor	mm <sup>2</sup>	2.5 (4: DT25)	4	4	4	–	10	–	–
	2 conductors	mm <sup>2</sup>	2.5 (except DT25)	4	4	4	–	–	–	–

##### Connection by bars or lugs Deca contactors

Bar c.s.a.			–	–	–	–	–	–	–	3 x 16	5 x 25
Lug external Ø		mm	8	8	10	10	8	16.5	17	17	25
Ø of screw		mm	M3.5	M3.5	M4	M4	M3.5	M6	M6	M6	M8
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	–	–	–	–
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	–	Ø8	–	–
Key for hexagonal headed screw			–	–	–	–	–	10	10	10	13
Tightening torque		N.m	1.7	1.7	2.5	2.5	1.8	6	9	9	12

#### Control circuit connections

##### Connection by cable (tightening via screw clamps) Deca, Deca green contactors

Flexible cable without cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm <sup>2</sup>	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5	1...2.5
	2 conductors	mm <sup>2</sup>	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5
Solid cable without cable end	1 conductor	mm <sup>2</sup>	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm <sup>2</sup>	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6
Tightening torque		N.m	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.2

##### Spring terminal connections <sup>(2)</sup> Deca contactors

Flexible cable without cable end	1 conductor	mm <sup>2</sup>	2.5	2.5	2.5	2.5	–	2.5	0.75...2.5	–	–
	2 conductors	mm <sup>2</sup>	2.5	2.5	2.5	2.5	–	2.5	0.75...2.5	–	–

##### Connection by bars or lugs Deca contactors

Lug external Ø		mm	8	8	8	8	8	8	8	8	8
Ø of screw		mm	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Screwdriver	Philips / Pozidriv		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø		Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6	Ø6
Tightening torque		N.m	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.2

(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).

(2) If cable ends are used, choose the next size down (example: for 2.5 mm<sup>2</sup>, use 1.5 mm<sup>2</sup>) and square crimp the cable ends using a special tool.

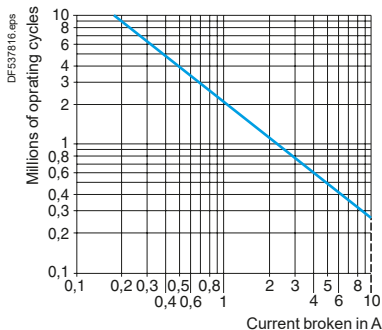


# TeSys Control

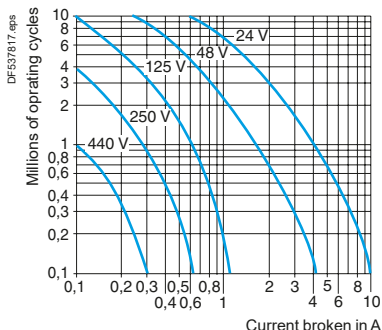
## Deca green, Deca Contactors

### Characteristics

Characteristics of auxiliary contacts incorporated in the contactor			
Mechanically linked contacts	Conforming to IEC 60947-5-1		Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder
Mirror contact	Conforming to IEC 60947-4-1		The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module
Rated operational voltage (Ue)	Up to	<b>V</b>	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	<b>V</b>	690
	Conforming to UL, CSA	<b>V</b>	600
Conventional thermal current (Ith)	For ambient temperature $\leq 60\text{ }^{\circ}\text{C}$	<b>A</b>	10
Frequency of the operational current		<b>Hz</b>	25...400
Minimum switching capacity $\lambda = 10^{-8}$	U min	<b>V</b>	17
	I min	<b>mA</b>	5
Short-circuit protection	Conforming to IEC 60947-5-1		gG fuse: 10 A
Rated making capacity	Conforming to IEC 60947-5-1, I rms	<b>A</b>	$\sim$ : 140, $\text{---}$ : 250
Short-time rating	Permissible for	1 s	<b>A</b> 100
		500 ms	<b>A</b> 120
		100 ms	<b>A</b> 140
Insulation resistance		<b>M<math>\Omega</math></b>	> 10
Non-overlap time	Guaranteed between N/C and N/O contacts	<b>ms</b>	1.5 (on energisation and on de-energisation)
Tightening torque	Pozidriv / Philips head n° 2 and $\text{\O}6$	<b>N.m</b>	1.7



AC-15



DC-13

### Operational power of contacts conforming to IEC 60947-5-1

#### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

Operating cycles	V	24	48	115	230	400	440	600
1 million	<b>VA</b>	60	120	280	560	960	1050	1440
3 million	<b>VA</b>	16	32	80	160	280	300	420
10 million	<b>VA</b>	4	8	20	40	70	80	100

#### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

Operating cycles	V	24	48	125	250	440
1 million	<b>W</b>	96	76	76	76	44
3 million	<b>W</b>	48	38	38	32	–
10 million	<b>W</b>	14	12	12	–	–

Environment						
Contact block type (not dust/damp protected)			LADN or LADC	LADT and LADS	LADR	LAD8
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5			
Product certifications			UL, CSA, CCC, EAC, UKCA, CB certification			
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X			
Ambient air temperature around the device	Storage	°C	-60...+80			
	Operation	°C	-5...+60			
Maximum operating altitude	Without derating		m			
Connection by cable	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end		mm <sup>2</sup>			
Tightening torque			N.m			
Spring terminal connections	Flexible or solid cable without cable end		mm <sup>2</sup>			
Instantaneous and time delay contact characteristics						
Number of contacts			1, 2 or 4	2	2	2
Rated operational voltage (U <sub>e</sub> )	Up to		V			
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947-5-1		V			
	Conforming to UL, CSA		V			
Conventional thermal current (I <sub>th</sub> )	For ambient temperature ≤ 60 °C		A			
Frequency of the operational current			Hz			
Minimum switching capacity	U min		V			
	I min		mA			
Short-circuit protection	Conforming to IEC 60947-5-1 gG fuse		A			
Rated making capacity	Conforming to IEC 60947-5-1 I rms		A			
Short-time rating	Permissible for 1 s		A			
	500 ms		A			
	100 ms		A			
Insulation resistance			MΩ			
Non-overlap time	Guaranteed between N/C and N/O contacts		ms			
Overlap time	Guaranteed between N/C and N/O contacts on LADC22		ms			
Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face	Ambient air temperature for operation		°C			
	Repeat accuracy		%			
	Drift up to 0.5 million operating cycles		%			
	Drift depending on ambient air temperature		%			
Mechanical durability	In millions of operating cycles		30			
Operational power of contacts			See page B8/90			

Ref.



Contactors



Environment							
Contact block type (dust/damp protected)			LA1DX	LA1DZ (4 contacts: 2 protected + 2 non protected)		LA1DY	
			Protected	Protected	Non protected	Protected	
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5				
Product certifications			UL, CSA, CCC, EAC, UKCA, CB certification				
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X				
Ambient air temperature	Storage and operation		°C	-25...+70			
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end		mm <sup>2</sup>	Min: 1 x 1; max: 2 x 2.5			
Tightening torque			N.m	1.7			
Number of contacts				2	2	2	
Contact characteristics							
Rated operational voltage (Ue)	Up to		Vac	125	125	690	125
			Vdc	30	30		30
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1 Conforming to UL, CSA		V	250	250	690	250
			V	–	–	600	–
Conventional thermal current (Ith)	For ambient temperature ≤ 40 °C		A	–	–	10	–
Maximum operational current (Ie)			mA	100	100	–	100
Frequency of the operational current			Hz	–	–	25...400	–
Minimum switching capacity		U min	V	5	5	17	5
		I min	mA	1	1	5	1
Short-circuit protection	Conforming to IEC 60947-1 gG fuse		A	–	–	10	–
Rated making capacity	Conforming to IEC 60947-1		I rms	A	–	–	~:140; ---: 250
Short-time rating	Permissible for	1 s	A	–	–	100	–
		500 ms	A	–	–	120	–
		100 ms	A	–	–	140	–
Insulation resistance			MΩ	> 10	> 10	> 10	> 10
Mechanical durability	In millions of operating cycles			5	5	30	5
Materials and technology used for dust and damp protected contacts				Gold alloy - Single break	Gold alloy - Single break	–	Gold alloy - Single break with crossed bars

 Ref.

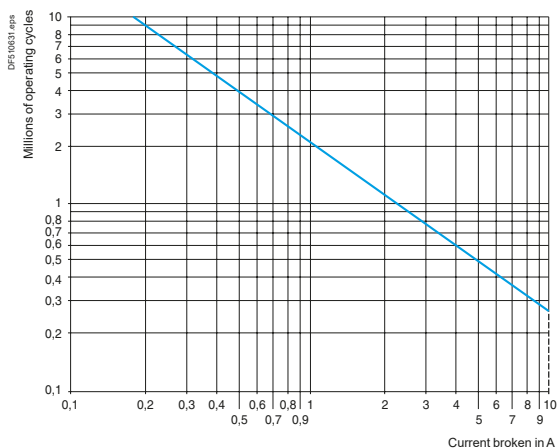
 Contactors

### Rated operational power of not dust/damp protected contacts (conforming to IEC 60947-5-1)

a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \phi 0.7$ ) = 10 times the power broken ( $\cos \phi 0.4$ ).

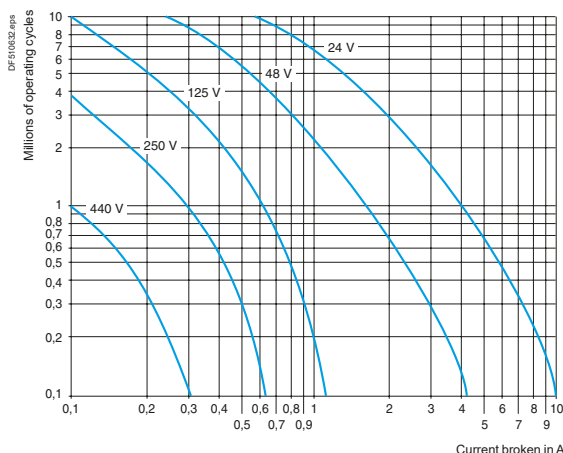
Operating cycles	V	24	48	115	230	400	440	600
1 million	VA	60	120	280	560	960	1050	1440
3 million	VA	16	32	80	160	280	300	420
10 million	VA	4	8	20	40	70	80	100



d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

Operating cycles	V	24	48	125	250	440
1 million	W	96	76	76	76	44
3 million	W	48	38	38	32	—
10 million	W	14	12	12	—	—



Ref.



Contactors

### Characteristics

Environment			
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5
Product certifications			UL, CSA
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation	°C	-25...+55
	Permissible for operation at Uc	°C	-25...+70

Suppressor modules Deca contactors					
Module type		LA4DA, LAD4RC, LAD4RC3	LA4DB, LAD4T, LAD4T3	LA4DC, LAD4D3	LA4DE, LAD4V, LAD4V3
Type of protection		RC circuit	Bidirectional peak limiting diode	Diode	Varistor
Rated control circuit voltage (Uc)	V	~ 24...415	~ or --- 24...440	--- 12...250	~ or --- 24...250
Maximum peak voltage		3 Uc	2 Uc	Uc	2 Uc
Natural RC frequency	24/48 V	Hz	400	–	–
	50/127 V	Hz	200	–	–
	110/240 V	Hz	100	–	–
	380/415 V	Hz	150	–	–

Mechanical latch blocks <sup>(1)</sup> Deca, Deca green contactors					
Mechanical latch block type		LAD6K10		LA6DK20	
For use on contactor		LC1D09...D80A DT20...DT80A		LC1D80...D150 LP1D80 and LC1D115	
Product certifications		UL, CSA		UL, CSA	
Rated insulation voltage	Conforming to IEC 60947-5-1	V	690	690	
Rated control circuit voltage	~ 50/60 Hz and ---	V	24...415	24...415	
Power required	For unlatching	~	VA	25	
		---	W	30	
Maximum operating rate	In operating cycles/hour		1200	1200	
On-load factor			10 %	10 %	
Mechanical durability at Uc	In millions of operating cycles		0.5	0.5	

<sup>(1)</sup> Unlatching can be manually operated or electrically controlled (pulsed).

The LA6DK or LAD6K latch coil and the LC1D operating coil must not be energised simultaneously.

The duration of the LA6DK or LAD6K and LC1D control signals must be ≥ 100 ms.

Environment Deca, Deca green contactors			
<b>Module type</b>		<b>LA4DT (On-delay)</b>	
Conforming to standards		IEC 60255-5	
Product certifications		UL, CSA	
Degree of protection	Conforming to IEC 60529	Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation	°C	-25...+55
	For operation at U <sub>c</sub>	°C	-25...+70
Rated insulation voltage (U <sub>i</sub> )	Conforming to IEC 60947-1	V	250
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end	mm <sup>2</sup>	Min: 1 x 1; max: 2 x 2.5
Tightening torque		N.m	1.7

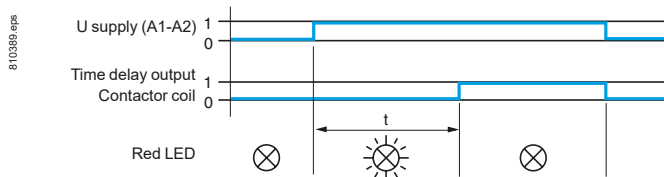
Control circuit characteristics			
Built-in protection	Of the input	By varistor	
	Contactors coil suppression	By varistor	
Rated control circuit voltage (U <sub>c</sub> )		V	~ or ≡: 24...250
Permissible variation			0.8...1.1 U <sub>c</sub>
Type of control			By mechanical contact only

Timing characteristics			
Timing ranges		s	0.1...2; 1.5...30; 25...500
Repeat accuracy	0...40 °C		±3 % (10 ms minimum)
Reset time	During time delay period	ms	150
	After time delay period	ms	50
Immunity to microbreaks	During time delay period	ms	10
	After time delay period	ms	2
Minimum control pulse duration		ms	–
Time delay signalling	By LED		Illuminates during time delay period

Switching characteristics (solid state type)			
Maximum power dissipated		W	2
Leakage current		mA	< 5
Residual voltage		V	3.3
Overvoltage protection			3 kV; 0.5 joule
Electrical durability	In millions of operating cycles		30

### Function diagram

#### Electronic on-delay timer LA4DT



# TeSys Control

## Deca green, Deca Contactors - Interface modules

### Characteristics

Environment Deca, Deca green contactors			
Conforming to standards			IEC 60255-5
Product certifications			UL, CSA
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation	°C	-25...+55
	Permissible for operation at Uc	°C	-25...+70

### Other characteristics

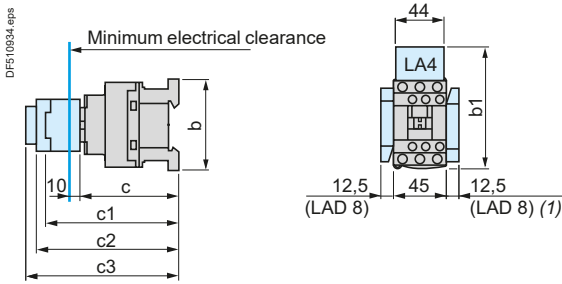
Module type		LA4DFB for Deca contactors With relay	LA4DWB for Deca, Deca green contactors Solid state
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C	<b>A</b>	8
Rated insulation voltage	Conforming to IEC 60947-5-1	<b>V</b>	250
Rated operational voltage	Conforming to IEC 60947-5-1	<b>V</b>	250
Indication of input state		By integral LED which illuminates when the contactor coil is energised	
Input signals	Control voltage (E1-E2)	<b>V</b>	~ 24
	Permissible variation	<b>V</b>	17...30
	Current consumption at 20 °C	<b>mA</b>	25
	State "0" guaranteed for U	<b>V</b>	< 2.4
	I	<b>mA</b>	< 2
State "1" guaranteed for U	<b>V</b>	17	5
Built-in protection	Against reversed polarity		By diode
	Of the input		By diode
Electrical durability at 220 A/240 V	In millions of operating cycles		10
Maximum immunity to microbreaks		<b>ms</b>	4
Power dissipated	At 20 °C	<b>W</b>	0.6
Direct mounting on contactor	With coil		~ 24...250 V
			~ 100...250 V
			~ 380...415 V
Mounting with cabling adapter LAD4BB	With coil		~ 24...250 V
			~ 380...415 V
Mounting with cabling adapter LAD4BB3	With coil		~ 24...250 V
			~ 380...415 V
Total operating time at Uc (of the contactor)	The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.		
With LA4DFB	"C"	<b>ms</b>	20...30
	"O"	<b>ms</b>	16...24
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end	<b>mm²</b>	Min: 1 x 1; max: 2 x 2.5
	Tightening torque	<b>N.m</b>	1.7

# TeSys Control

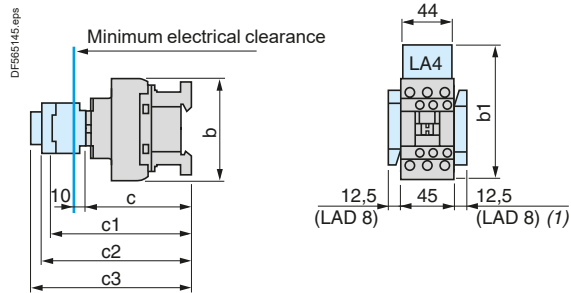
## Deca Contactors - a.c. coil

### Dimensions

#### LC1D09...D18 (3-pole)



#### LC1D25...D38 (3-pole), LC1DT20...DT40 (4-pole)

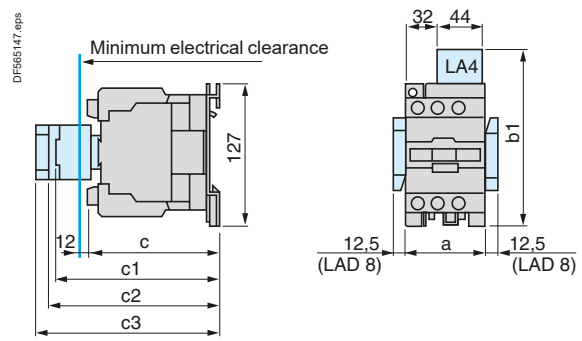
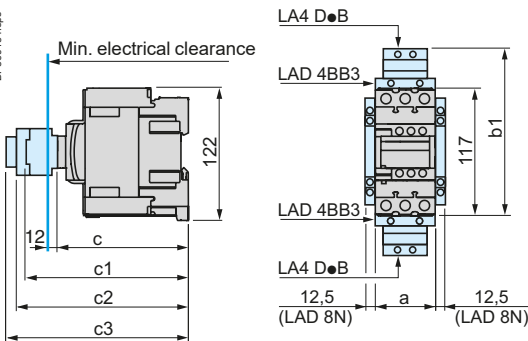


LC1	D09...D18	D093... D123	D099... D129	D25... D38	D183... D323	D098, D128, DT20 and DT25	DT203 and DT253	DT32 and DT40	D188, D258, DT323 and DT403
b without add-on blocks	77	99	80	85	99	85	99	91	105
b1 with LAD4BB	94	107	95,5	98	107	98	-	-	-
with LA4D●2	110 <sup>(1)</sup>	123 <sup>(1)</sup>	111,5 <sup>(1)</sup>	114 <sup>(1)</sup>	123 <sup>(1)</sup>	114	-	-	-
with LA4DF, DT	119 <sup>(1)</sup>	132 <sup>(1)</sup>	120,5 <sup>(1)</sup>	123 <sup>(1)</sup>	132 <sup>(1)</sup>	129	-	-	-
with LA4DW, DL	126 <sup>(1)</sup>	139 <sup>(1)</sup>	127,5 <sup>(1)</sup>	130 <sup>(1)</sup>	139 <sup>(1)</sup>	190	-	-	-
c without cover or add-on blocks	84	84	84	90	90	90	90	97	97
with cover, without add-on blocks	86	86	86	92	92	92	92	99	99
c1 with LADN or C (2 or 4 contacts)	117	117	117	123	123	123	123	131	131
c2 with LAD6K10	129	129	129	135	135	135	135	143	143
c3 with LADT, R, S	137	137	137	143	143	143	143	151	151
with LADT, R, S and sealing cover	141	141	141	147	147	147	147	155	155

(1) Including LAD4BB.

#### LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole)

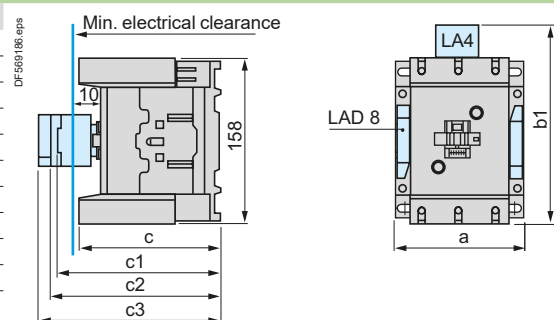
#### LC1D80 and D95 (3-pole), LC1D80004 and D80008 (4-pole), D40008 and D65008 (4-pole)



LC1	D40A...D80A	DT60A...DT80A	D40008	D80	D95, D65008	D80004	D80008
a	55	70	85	85	85	96	96
b1 with LA4D●2	-	-	135	135	135	135	135
with LA4DB3 or LAD4BB3	136	-	-	135	-	-	-
with LA4DF, DT	157	-	142	142	142	142	142
with LA4DM, DW, DL	166	-	150	150	150	150	150
c without cover or add-on blocks	118	118	125	125	125	125	140
with cover, without add-on blocks	120	120	-	130	130	-	-
c1 with LADN (1 contact)	-	-	139	150	150	150	150
with LADN or C (2 or 4 contacts)	150	150	147	158	158	158	158
c2 with LAD6K10 or LA6DK	163	163	159	170	170	170	170
c3 with LADT, R, S	171	171	167	178	178	178	178
with LADT, R, S and sealing cover	175	175	171	182	182	182	182

#### LC1D115 and D150 (3-pole), LC1D115004 (4-pole)

LC1	D115, D150	D115004	D1150046
a	120	150	155
b1 with LA4DA2	174	174	174
with LA4DF, DT	185	185	185
with LA4DM, DL	188	188	188
with LA4DW	188	188	188
c without cover or add-on blocks	132	132	115
with cover, without add-on blocks	136	-	-
c1 with LADN or C (2 or 4 contacts)	150	150	150
c2 with LA6DK20	155	155	155
c3 with LADT, R, S	168	168	168
with LADT, R, S and sealing cover	172	172	172



References:  
pages B8/22 to B8/28

Characteristics:  
pages B8/80 to B8/87

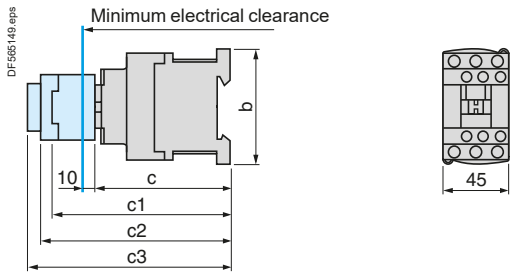
Schemes:  
pages B8/101 and B8/102

# TeSys Control

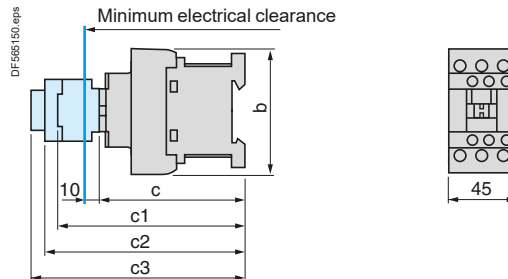
## Deca Contactors - d.c. / low consumption coil

### Dimensions

#### LC1D09...D18 (3-pole)

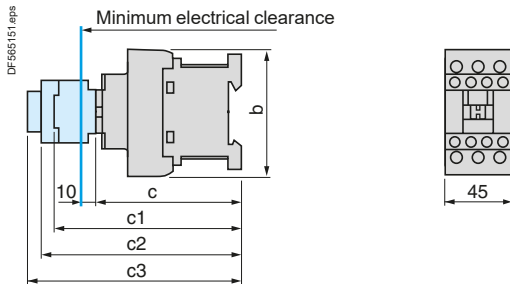


#### LC1D25...D38 (3-pole)



LC1	D09...D18	D093...D123	D099...D129	D25...D38	D183...D323
b	77	99	80	85	99
c without cover or add-on blocks	93	93	93	99	99
with cover, without add-on blocks	95	95	95	101	101
c1 with LADN or C (2 or 4 contacts)	126	126	126	132	132
c2 with LAD6K10	138	138	138	144	144
c3 with LADT, R, S	146	146	146	152	152
with LADT, R, S and sealing cover	150	150	150	156	156

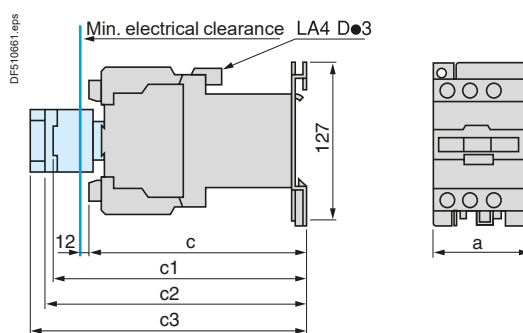
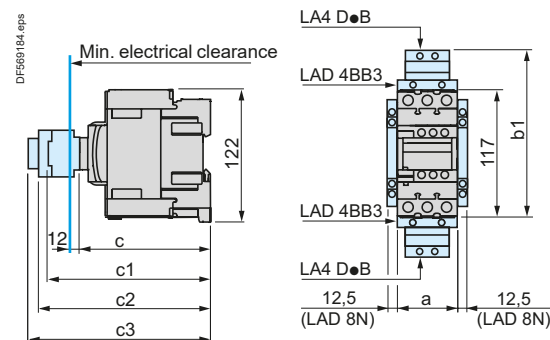
#### LC1DT20...DT40 (4-pole)



LC1	DT20 and DT25 D098 and D128	DT203 and DT253 D0983 and D1283	DT32 and DT40 D188...D258	DT323 and DT403 D1883 and D2583
b	85	99	91	105
c with cover	102	102	107	107
c1 with LADN or C (2 or 4 contacts)	123	123	131	131
c2 with LAD6K10	135	135	143	143
c3 with LADT, R, S	143	143	151	151
with LADT, R, S and sealing cover	147	147	155	155

#### LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole)

#### LC1D80 and D95 (3-pole), LP1D80004, LP1D80008 (4-pole), LP1D40008 and D65008 (4-pole)



	LC1D40A ... D80A	LC1 DT60A...DT80A	LP1D40008 and D65008	LC1 D80 and D95	LP1D80004	LP1D80008
a	55	72	85	85	96	96
b1 with LAD4BB3	136	136	-	-	-	-
with LA4DF, DT	157	157	-	-	-	-
c without cover or add-on blocks	118	118	182	181	181	196
with cover, without add-on blocks	120	120	-	186	-	-
c1 with LADN (1 contact)	-	-	196	204	204	204
with LADN or C (2 or 4 contacts)	150	150	202	210	210	210
c2 with LAD6K10 or LA6DK20	163	163	213	221	221	221
c3 with LADT, R, S	171	171	221	229	229	229
with LADT, R, S and sealing cover	175	175	225	233	233	233

LC1D115●●● and LC1D150●●● with coil: see page B8/94.

References:  
pages B8/22 to B8/28

Characteristics:  
pages B8/80 to B8/87

Schemes:  
pages B8/101 and B8/102

Ref.



Contactors

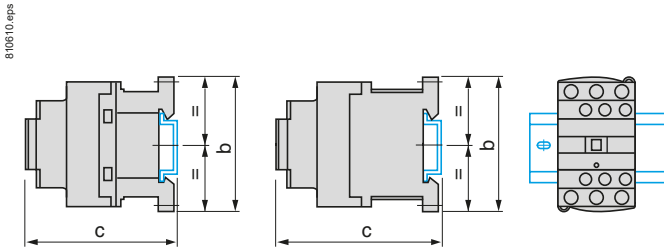
# TeSys Control

## Deca Contactors

### Mounting

#### LC1D09...D38, DT20...DT40

On mounting rail NSYSR200BD, NSYSR200BD or NSYSR200 (width 35 mm)



#### Control circuit: a.c.

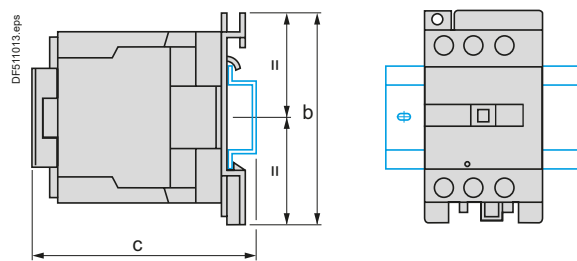
LC1	D09... D18	D25... D38	DT20 and DT25	DT32 and DT40
b	77	85	85	100
c (NSYSR200BD or NSYSR200BD) <sup>(1)</sup>	88	94	94	109
c (NSYSR200) <sup>(1)</sup>	96	102	102	117

#### Control circuit: d.c.

LC1	D09... D18	D25... D38	DT20 and DT25	DT32 and DT40
b	77	85	94	109
c (NSYSR200BD or NSYSR200BD) <sup>(1)</sup>	97	103	103	118
c (NSYSR200) <sup>(1)</sup>	105	110	111	126

#### LC1D40A...D80A, LC1DT60A and DT80A, LC1D80 and D95, LC1D40008 and D65008

On mounting rail AM1DL201 (width 75 mm)<sup>(2)</sup>  
On mounting rail NSSDPR●● or NSYSR200 (width 35 mm)



#### Control circuit: a.c.

LC1	D40A...D80A DT60A...DT80A	D80 and D95	D40008 and D65008
b	122	127	127
c	–	147	143
c (AM1DL201) <sup>(1)</sup>	–	137	133
c (NSSDPR●● or NSYSR200) <sup>(1)</sup>	128	137	133

#### Control circuit: d.c.

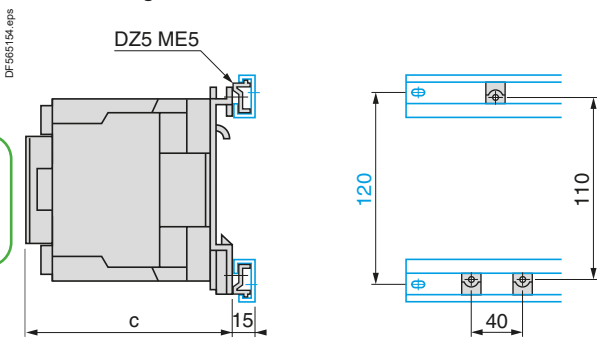
LC1	D40A...D80A DT60A...DT80A	D80 and D95	D40008 and D65008
b	–	205	200
c (AM1DL201) <sup>(1)</sup>	–	195	190
c (NSSDPR●● or NSYSR200) <sup>(1)</sup>	128	–	190

<sup>(1)</sup> With safety cover.

<sup>(2)</sup> Except for LC1D40A...D80A, LC1DT60A and DT80A.

#### LC1D80 and D95, LP1D80

On 2 mounting rails DZ5MB on 120 mm centres



#### Control circuit: a.c.

LC1	D80 and D95
c with cover	130

#### Control circuit: d.c.<sup>(3)</sup>

LC1	D80 and D95
c with cover	186

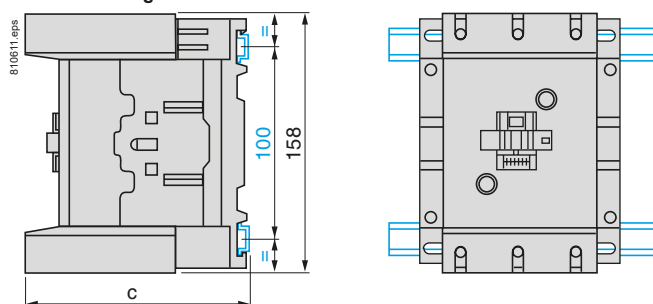
#### LP1

D80	
c	181

<sup>(3)</sup> Leave a 9 mm gap between 2 contactors if left on for more than 4 hours.

#### LC1D115, D150

On 2 mounting rails DZ5MB on 120 mm centres



#### Control circuit: a.c. or d.c.

LC1	D115 and D150	D1156 and D1506
c (NSYSR200BD or NSYSR200BD)	134.5	117.5
c (NSYSR200 or ED●●●)	142.5	125.5



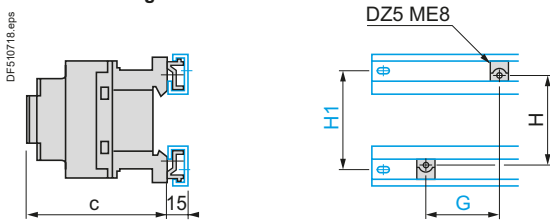
# TeSys Control

## Deca Contactors

### Mounting

#### LC1D09...D38 and LC1DT20...DT40

On 2 mounting rails DZ5MB



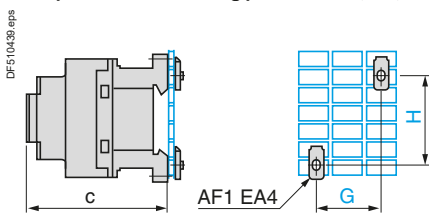
Control circuit:	a.c.		d.c.	
	D09...D18	D25...D38	D09...D18	D25...D38
LC1				
c with cover	86	92	95	101
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

4-pole contactors

LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
	c with cover	92	100	101
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

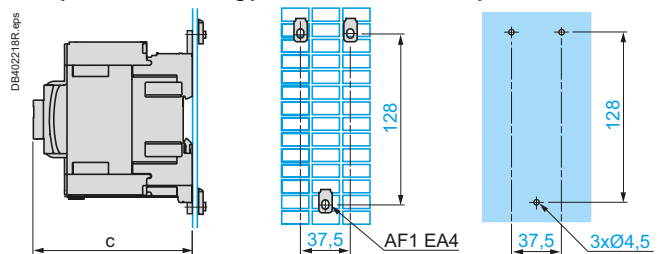
#### LC1D09...D38 and LC1DT20...DT40

On pre-slotted mounting plate AM1 PA, PB, PC



#### LC1D40A...D80A, LC1DT60A...DT80A

On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



#### Control circuit: a.c. d.c.

LC1	a.c.		d.c.	
	D09...D18	D25...D38	D09...D18	D25...D38
c with cover	86	92	95	101
G	35	35	35	35
H	60/70	60/70	70	70

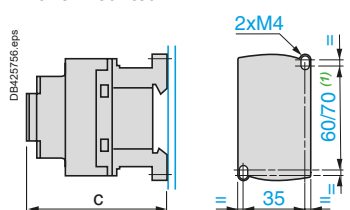
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
	c with cover	80	93	118
G	35	35	35	35
H	60	60	70	70

#### Control circuit: a.c. d.c.

LC1	a.c.		d.c.	
	D40A...D80A, DT60A...DT80A	D40A...D80A, DT60A...DT80A	D40A...65A, DT60A...DT80A	D40A...65A, DT60A...DT80A
c with cover	120	120	120	120

#### LC1D09...D38, LC1DT20...DT40

Panel mounted



(1) for DC coil: 70 mm only.

#### Control circuit: a.c. d.c.

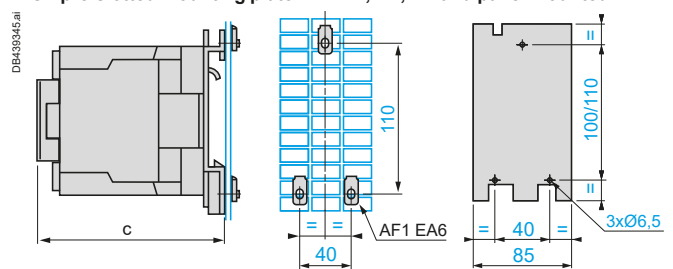
LC1	a.c.		d.c.	
	D09...D18	D25...D38	D09...D18	D25...D38
c with cover	86	92	95	101

LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
	c with cover	90	98	90

#### LC1D80 and D95, LC1D40008 and D65008, LP1D80

On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



#### Control circuit: a.c. d.c.

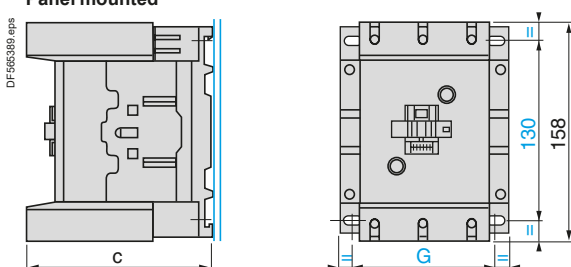
LC1	a.c.		d.c.	
	D80 and D95, D40008 and D65008	D80 and D95, D40008 and D65008	D80 and D95, D40008 and D65008	D80 and D95, D40008 and D65008
c with cover	130	130	186	186

LP1	a.c.		d.c.	
			D80	D80
c without cover	-	-	181	181

#### LC1D115, D150

Panel mounted



LC1	D115	D1156	D150	D1506
c	132	115	132	115
G (3-pole)	96/110	96/110	96/110	96/110
G (4-pole)	130/144	130/144	-	-

References: pages B8/22 to B8/28

Characteristics: pages B8/80 to B8/87

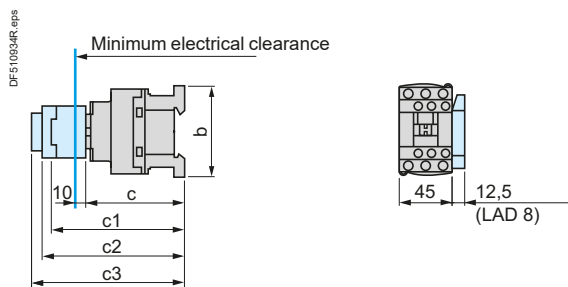
Schemes: pages B8/101 and B8/102

# TeSys Control

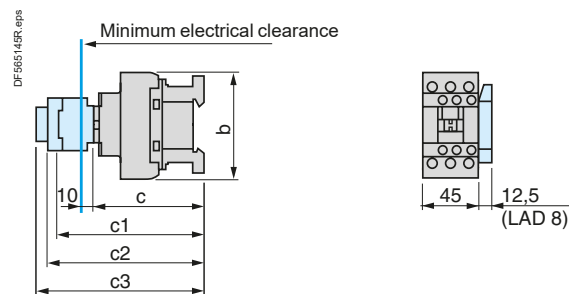
## Deca green Contactors

### Dimensions

#### LC1D09...D18 (3-pole), with AC/DC compatible coil

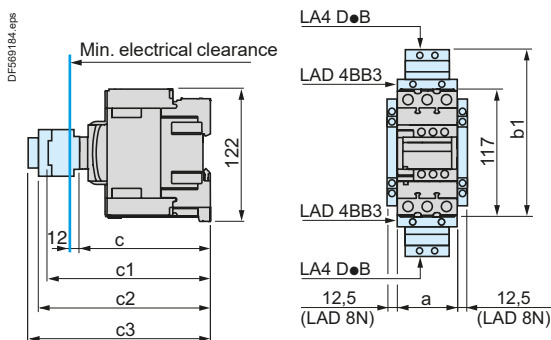


#### LC1D25...D38 (3-pole), with AC/DC compatible coil



LC1	D09...D18	D25...D38
b without add-on blocks	77	85
c without cover or add-on blocks	84	90
with cover, without add-on blocks	86	92
c1 with LADN or C (2 or 4 contacts)	117	123
c2 with LAD6K10	129	135
c3 with LADT, R, S	137	143
with LADT, R, S and sealing cover	141	147

#### LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole), with AC/DC compatible coil



LC1	D40A...D80A	DT60A...DT80A
a	55	70
b1 LAD4BB3	136	-
with LAD4DWB	166	-
c without cover or add-on blocks	118	118
with cover, without add-on blocks	120	120
c1 with LADN (1 contact)	-	-
with LADN or C (2 or 4 contacts)	150	150
c2 with LAD6K10	163	163
c3 with LADT, R, S	171	171
with LADT, R, S and sealing cover	175	175

Ref.



Contactors

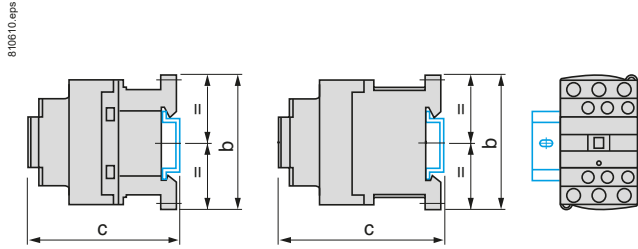
# TeSys Control

## Deca green Contactors

### Mounting

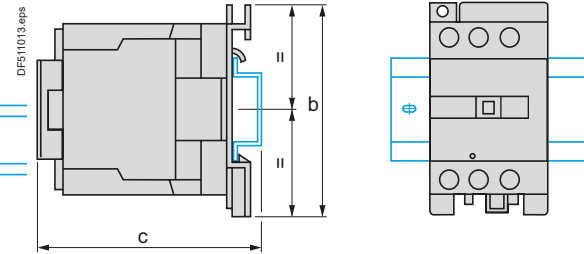
#### LC1D09...D38 (3-pole), with AC/DC compatible coil

On mounting rail NSYSR200BD, NSYSR200BD or NSYSR200 (width 35 mm)



#### LC1D40A...D80A (3-pole), LC1DT60A and DT80A (4-pole), with AC/DC compatible coil

On mounting rail AM1DL201 (width 75 mm) <sup>(2)</sup>  
On mounting rail NSSDPR●● or NSYSR200 (width 35 mm)



LC1	D09...D18	D25...D38
b	77	85
c (NSYSR200BD or NSYSR200BD)	88	94
c (NSYSR200)	96	102

LC1	D40A...D80A DT60A...DT80A
b	122
c	–
c (AM1DL201)	–
c (NSSDPR●● or NSYSR200)	128

Ref.



Contactors

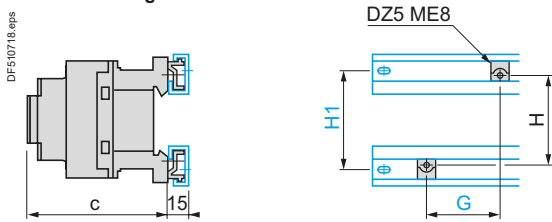
# TeSys Control

## Deca green Contactors

### Mounting

#### LC1D09...D38 (3-pole), with AC/DC compatible coil

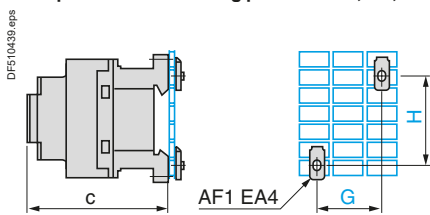
On 2 mounting rails DZ5MB



LC1	D09...D18	D25...D38
c with cover	86	92
G	35	35
H	60	60
H1	70	70

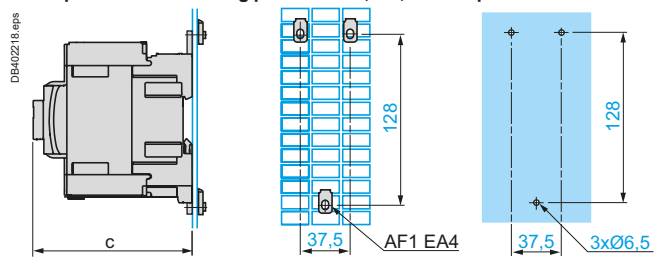
#### LC1D09...D38 (3-pole), with AC/DC compatible coil

On pre-slotted mounting plate AM1PA, PB, PC



#### LC1D40A...D80A (3-pole), LC1DT60A...DT80A (4-pole), with AC/DC compatible coil

On pre-slotted mounting plate AM1PA, PB, PC and panel mounted



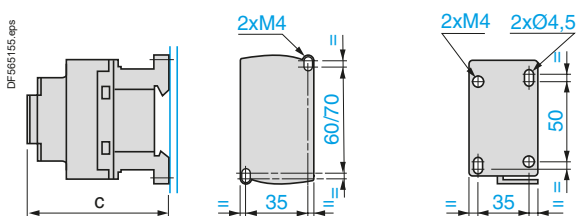
LC1	D40A...D80A, DT60A...DT80A
c with cover	120

Ref.

LC1	D09...D18	D25...D38
c with cover	86	92
G	35	35
H	60/70	60/70

#### LC1D09...D38 (3-pole), with AC/DC compatible coil

Panel mounted



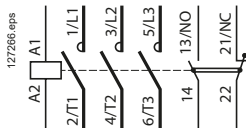
LC1	D09...D18	D25...D38
c with cover	86	92

Contactor

#### Contactors

**Deca, Deca green 3-pole contactors** (References: pages B8/22 to B8/25)

LC1D09 to D150



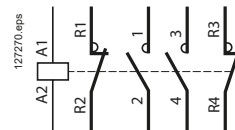
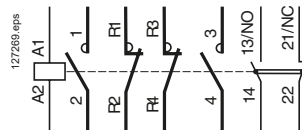
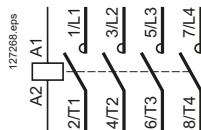
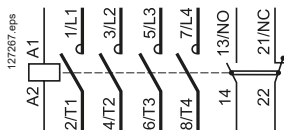
**Deca 4-pole contactors** (References: pages B8/26 and B8/27)

LC1DT20 to DT80A

LC1D115004

LC1D098 to D258

LC1 and LP1D40008 to D80008



#### Front mounting add-on contact blocks

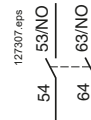
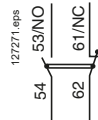
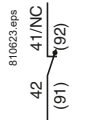
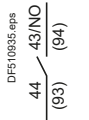
**Instantaneous auxiliary contacts for Deca, Deca green contactors** (References: page B8/36)

1 N/O LADN10 <sup>(1)</sup>

1 N/C LADN01 <sup>(1)</sup>

1 N/O + 1 N/C LADN11

2 N/O LADN20

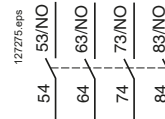
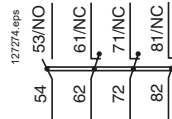
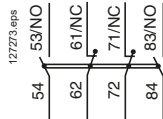


2 N/C LADN02

2 N/O + 2 N/C LADN22

1 N/O + 3 N/C LADN13

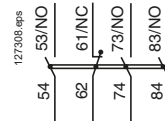
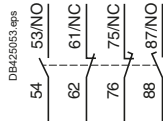
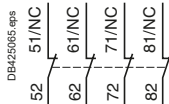
4 N/O LADN40



4 N/C LADN04

2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LADC22

3 N/O + 1 N/C LADN31



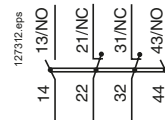
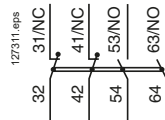
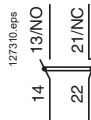
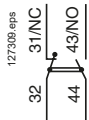
**Instantaneous auxiliary contacts conforming to standard EN 50012 for Deca, Deca green contactors** (References: page B8/36)

1 N/O + 1 N/C LADN11G

1 N/O + 1 N/C LADN11P

2 N/O + 2 N/C LADN22G

2 N/O + 2 N/C LADN22P

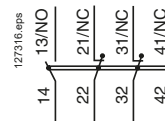
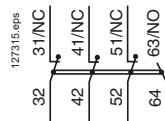
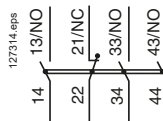
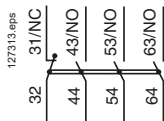


3 N/O + 1 N/C LADN31G

3 N/O + 1 N/C LADN31P

1 N/O + 3 N/C LADN13G

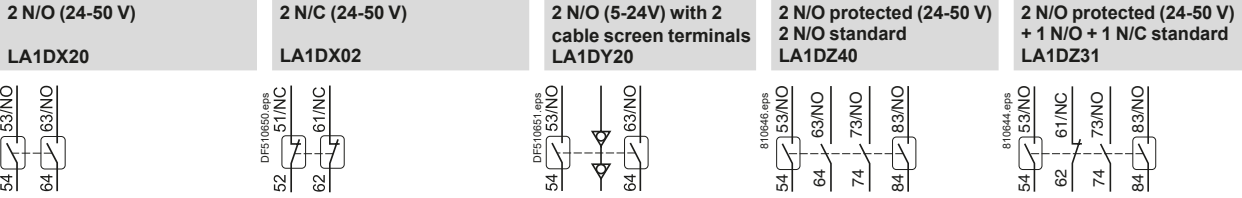
1 N/O + 3 N/C LADN13P



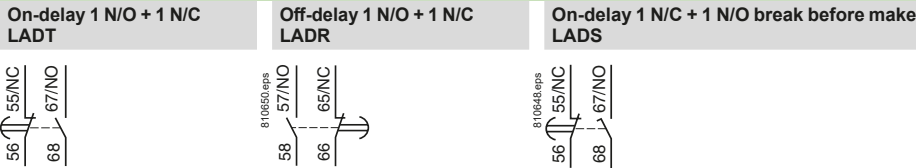
(1) Items in brackets refer to blocks mounted on right-hand side of contactor.

#### Front mounting add-on contact blocks for Deca, Deca green contactors

Dust and damp protected instantaneous auxiliary contacts (References: page B8/36)

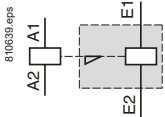


Time delay auxiliary contacts (References: page B8/37)



#### Mechanical latch blocks for Deca, Deca green contactors (References: page B8/37)

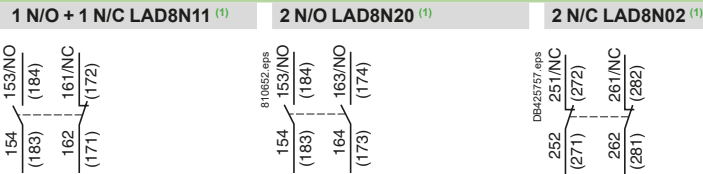
**LAD6K10 and LA6DK20**



Ref.

#### Side mounting add-on contact blocks for Deca, Deca green contactors

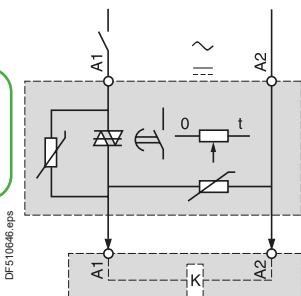
Instantaneous auxiliary contacts (References: page B8/36)



<sup>(1)</sup> Items in brackets refer to blocks mounted on right-hand side of contactor.

#### Electronic serial timer modules for Deca, Deca green contactors

On-delay LA4DTeU

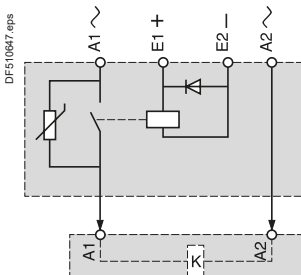


Contactors

#### Interface modules

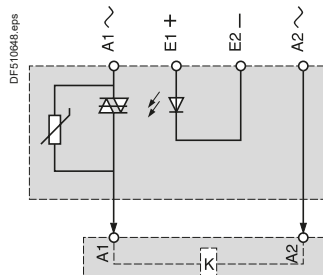
Relay output for Deca contactors

**LA4DFB**



Solid state for Deca, Deca green contactors

**LA4DWB**



References: page B8/85.

References: pages B8/36 to B8/40

Characteristics: pages B8/88 to B8/92

Dimensions: pages B8/94 and B8/95, B8/98

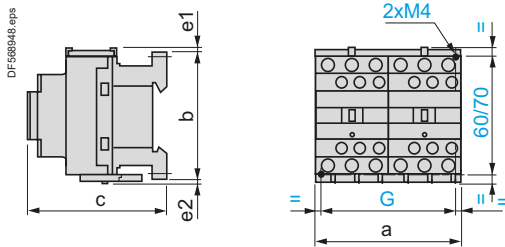
# TeSys Control

## Deca green, Deca Reversing and changeover contactors

### Dimensions

#### LC2D09 to D38 Deca, Deca green contactors

2 x LC1D09 to D38



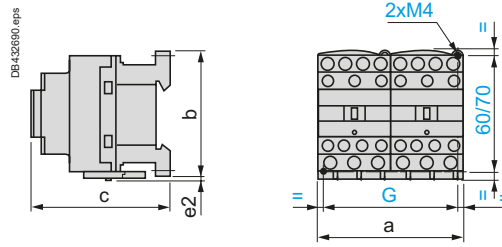
LC2 or 2 x LC1	a	b	c <sup>(1)</sup>	e1	e2	G
D09 to D18 AC, AC/DC	90	77	86	4	1.5	80
D093 to D123 AC	90	99	86	–	–	80
D09 to D18 DC	90	77	95	4	1.5	80
D093 to D123 DC	90	99	95	–	–	80
D25 to D38 AC, AC/DC	90	85	92	9	5	80
D183 to D383 AC	90	99	92	–	–	80
D25 to D32 DC	90	85	101	9	5	80
D183 to D383 DC	90	99	101	–	–	80

e1 and e2: including cabling.

(1) With safety cover, without add-on block.

#### LC2DT20 to DT40 Deca contactors

2 x LC1DT20 to DT40

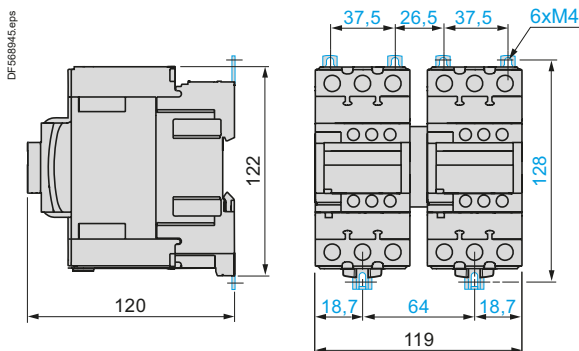


LC2 or 2 x LC1	a	b	c	G	e2
DT20 and DT25 AC	90	85	92	80	20
DT32 and DT40 AC	90	91	99	80	22
DT20 and DT25 DC	90	85	102	80	20
DT32 and DT40 DC	90	91	109	80	22

c, e: including cabling.

#### LC2D40A to D80A for Deca, Deca green contactors

2 x LC1D40A to D80A



Ref.



Contactors

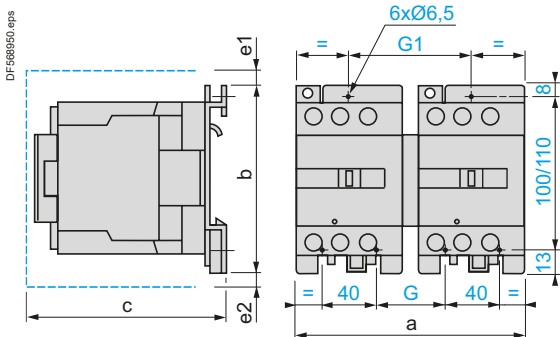
# TeSys Control

## Deca Reversing and changeover contactors

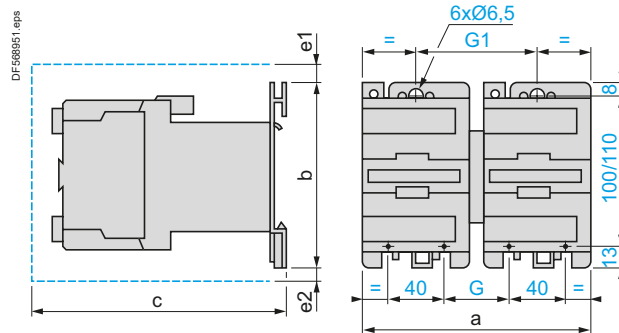
### Dimensions

#### LC2D80 and D95

2 x LC1D80 and D95 ~



2 x LC1D80 and D95 ...



LC2 or 2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95 ~	182	127	158	13	-	56	96
D80004 ~	207	127	158	-	20	71	111

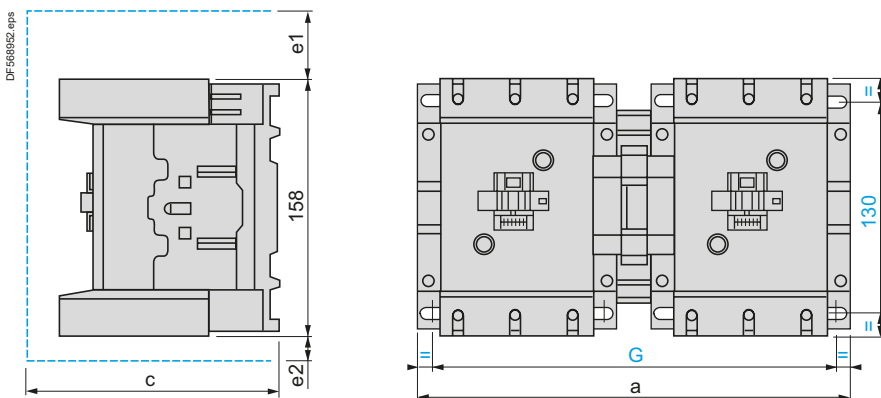
2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95	182	127	215	13	20	56	96

c, e1 and e2: including cabling.

c, e1 and e2: including cabling.

#### LC2D115 and D150

2 x LC1D115 and D150



LC2 or 2 x LC1	a	c	e1	e2	G
D115 and D150	266	148	56	18	242/256
D115004	334	148	-	60	310/324

c, e1 and e2: including cabling.

Ref.



Contactor



# TeSys Control

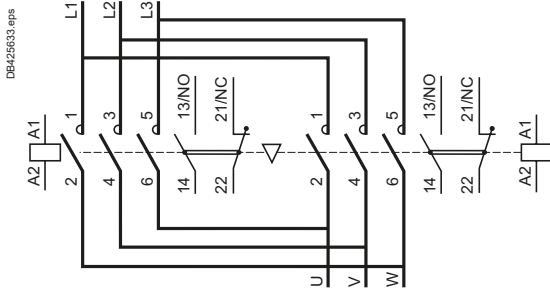
## Deca green, Deca Reversing and changeover contactors

### Schemes

#### Reversing contactors for motor control

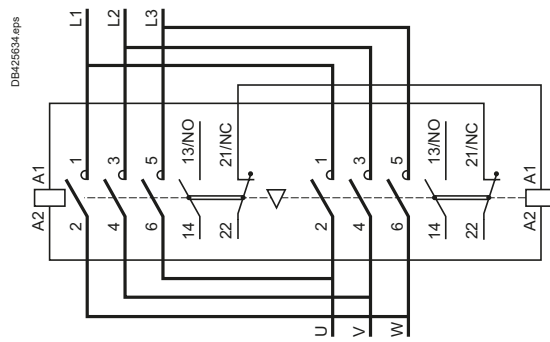
LC2D09...D80A Deca, Deca green contactors LC2D80...D150 Deca contactor

Horizontally mounted



LAD9R1V D, Deca green contactors

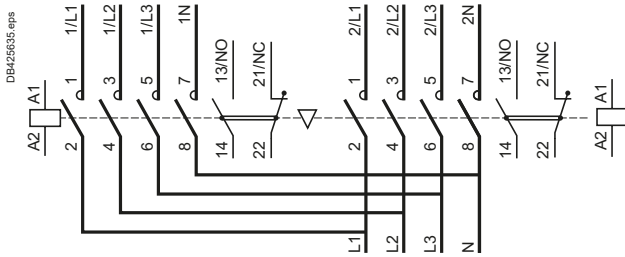
With integral electrical interlocking



#### Changeover contactor pairs Deca contactors

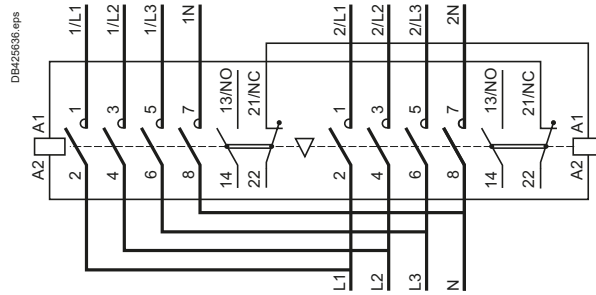
LC2DT20...DT40

Horizontally mounted



LADT9R1V

With integral electrical interlocking



Ref.



Contactors

# TeSys Control

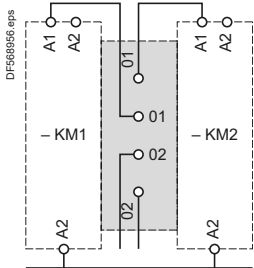
## Deca green, Deca Reversing and changeover contactors

### Schemes

#### Electrical interlocking of Deca, Deca green reversing contactors fitted with:

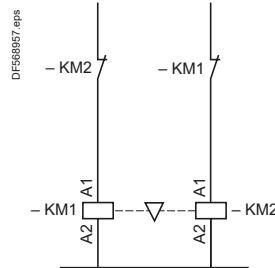
**Mechanical interlock with integral electrical contacts**

LA9D4002, LA9D8002 and LA9D11502

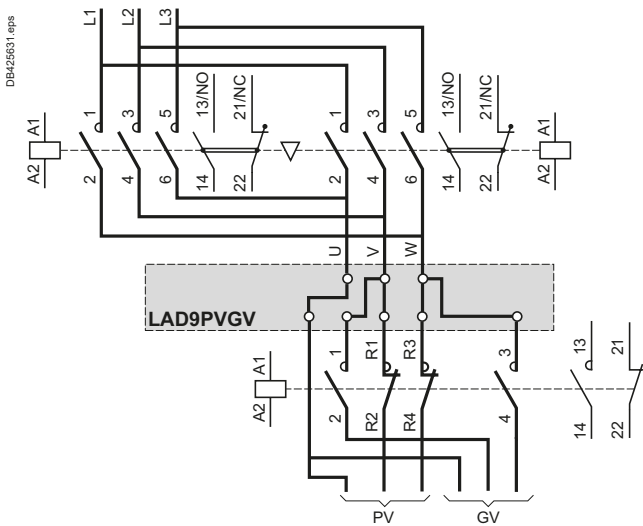


**Mechanical interlock without integral electrical contacts**

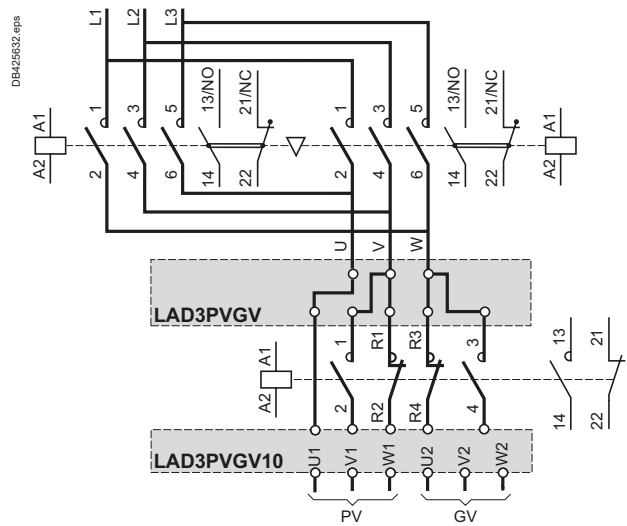
LAD9V2, LAD4CM, LA9D50978 and LA9D80978



#### Low speed - High speed cabling kit, screw clamp terminals for LC1D09... D38 contactors (Deca, Deca green)



#### Low speed - High speed cabling kit, spring terminals for LC1D09... D38 contactors (Deca)



Ref.



Contactors

# TeSys Control

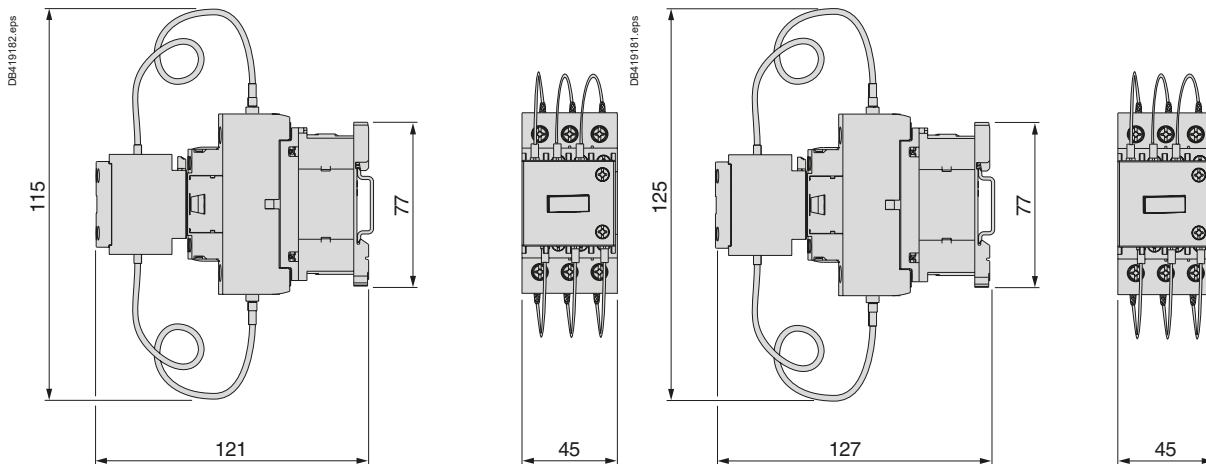
## Deca Contactors for 3-phase capacitor bank switching

### Dimensions and scheme

#### Dimensions

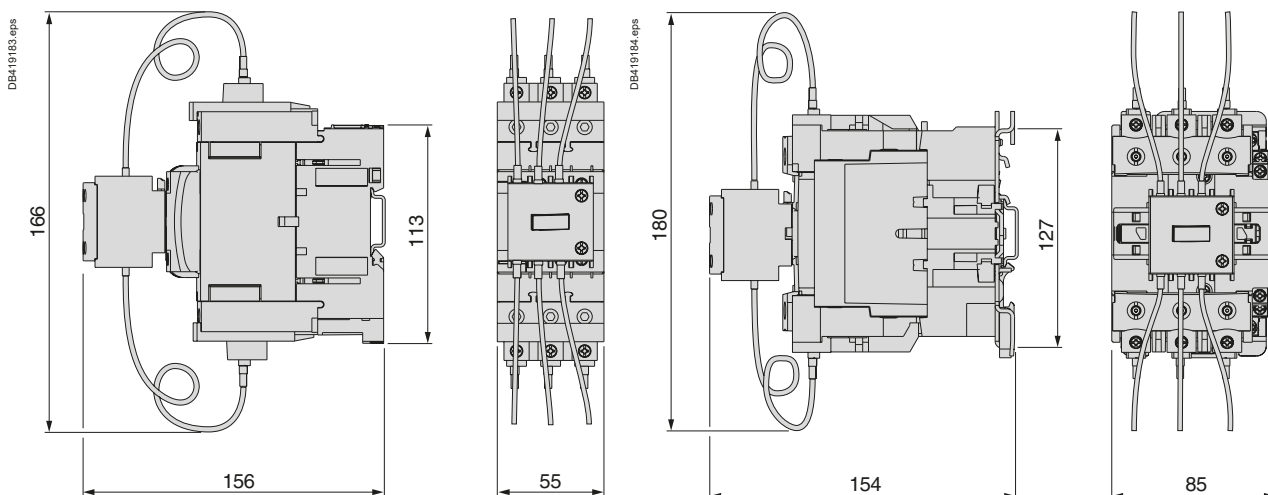
##### LC1DFK

##### LC1DGK, DLK, DMK



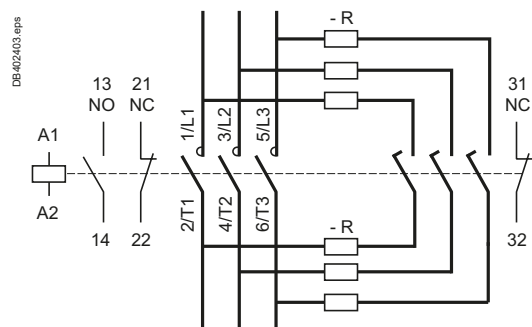
##### LC1DPK, DTK

##### LC1DWK



#### Scheme

##### LC1D•K



R = Pre-wired resistor connections.

Ref.

Contactors

# TeSys Control Modular Contactors

## Characteristics



GC25

### Modular contactors are designed for use in modular panels and enclosures.

These contactors feature:

#### ■ Easy installation:

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten, captive, pozidrive screw terminals.

#### ■ Compact size:

All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

#### ■ User safety:

- use of materials conforming to strictest fire safety standards
- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

## Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.

This standard is specific to "Electromagnetic contactors for domestic and similar use".

It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public".

Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

## Applications

Modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 100 A.

### Power switching

These contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:

- lighting
- heating
- ventilation
- motorised shutters or gates.

Ref.



Contactors

# TeSys Control

## Modular Contactors

### Characteristics

Environment				GC16	GC25	GC40	GC63	GC100
<b>Contactor type</b>								
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500					
	Conforming to VDE 0110	V	500					
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure					
Conforming to standards			IEC 61095 and IEC 60947-5-1 for auxiliary contacts					
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact (IP 20 open, IP 40 in enclosure)					
Ambient air temperature around the device	Storage	°C	-40...+70					
	Operation	°C	-5...+50 (0.85...1.1 Uc)					
Maximum operating altitude	Without derating	m	3000					
Operating positions	Without derating		±30° in relation to normal vertical mounting plane					
Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27	Contactor open		10 gn					
	Contactor closed		15 gn					
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactor open		2 gn					
	Contactor closed		3 gn					
Flame resistance			Conforming to IEC 61095					

Pole characteristics								
Number of poles			2, 3 or 4					
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63	100	
	In AC-7b (motor control)	A	5	8.5	15	25	–	
Contactor rating	40 °C	A	16	25	40	63	100	
	50 °C	A	14	22	36	57	87	
	60 °C <sup>(1)</sup>	A	13	20	32	50	80	
Rated operational voltage (Ue)	Up to	V	250 two-pole contactors, 415 three and four-pole contactors					
Frequency limits	Of the operating current	Hz	400					
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63	100	
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200	–	
Permissible short time rating no current flowing for preceding 15 minutes with q ≤ 40 °C	For 10 s	A	128	200	320	504	800	
	For 30 s	A	40	62	100	157	250	
Short-circuit protection by fuse or circuit breaker U ≤ 440 V	gl fuse	A	16	25	40	63	100	
	Circuit breaker I <sup>2t</sup> 230 V (at 3 kA rms prospective) 400 V	A <sup>2s</sup>	5000	10000	16000	18000	–	
		A <sup>2s</sup>	9000	14000	17500	20000	–	
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000	30000	
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2	1	
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8	10	
Maximum cabling c.s.a.	Flexible cable without cable end	1 conductor	mm <sup>2</sup>	6	6	25	25	35
		2 conductors	mm <sup>2</sup>	4	4	16	16	–
	Flexible cable with cable end	1 conductor	mm <sup>2</sup>	6	6	16	16	35
		2 conductors	mm <sup>2</sup>	1.5	1.5	4	4	–
	Solid cable without cable end	1 conductor	mm <sup>2</sup>	6	6	25	25	35
		2 conductors	mm <sup>2</sup>	4	4	6	6	10
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5	3.5	

(1) Ventilation 1/2 module must be fitted.

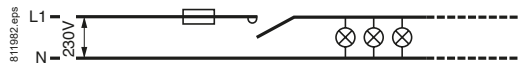
Control circuit characteristics				GC16, GC25 single or 2-pole	GC16, GC25 3 or 4-pole GC40, GC63 2-pole	GC40, GC63 3 or 4-pole GC100 2-pole	GC100 4-pole
Rated control circuit voltage (Uc)	50 or 60 Hz		<b>V</b>	12...240 V, for other voltages, please consult your Regional Sales Office			
Control voltage limits ( $\theta \leq 50\text{ }^\circ\text{C}$ )	50 Hz coils	Operational		0.85...1.1 Uc			
		Drop-out		0.2...0.75 Uc			
Average coil consumption at 20 °C and at Uc	~ 50 Hz	Inrush	<b>VA</b>	15	34	53	106
		Sealed	<b>VA</b>	3.8	4.6	6.5	13
Maximum heat dissipation	50/60 Hz		<b>W</b>	1.3	1.6	2.1	4.2
Operating time	Closing "C"		<b>ms</b>	10...30			
	Opening "O"		<b>ms</b>	10...25			
Mechanical durability	In operating cycles			10 <sup>6</sup>			
Maximum operating rate at ambient temperature $\leq 50\text{ }^\circ\text{C}$	In operating cycles per hour			300			
Maximum cabling c.s.a.	Flexible cable without cable end	1 or 2 conductors	<b>mm<sup>2</sup></b>	2.5			
		1 conductor	<b>mm<sup>2</sup></b>	2.5			
	Flexible cable with cable end	2 conductors	<b>mm<sup>2</sup></b>	1.5			
		Solid cable without cable end	1 or 2 conductors	<b>mm<sup>2</sup></b>	1.5		
Tightening torque			<b>N.m</b>	0.8			
Instantaneous auxiliary contact characteristics							
Rated operational voltage (Ue)	Up to		<b>V</b>	250			
Rated insulation voltage (Ui)	Conforming to IEC 60947-5		<b>V</b>	500			
		Conforming to VDE 0110	<b>V</b>	500			
Conventional thermal current (Ith)	For ambient $\theta \leq 50\text{ }^\circ\text{C}$		<b>A</b>	5			
Mechanical durability	Operating cycles			10 <sup>6</sup>			
Maximum cabling c.s.a.	Flexible or solid conductor		<b>mm<sup>2</sup></b>	2.5			
Tightening torque			<b>N.m</b>	0.8			

Ref.

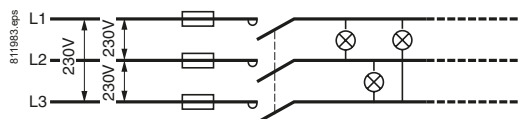


**Lighting** (Maximum number of lamps depending on the power of each unit) Introduction of installations according to type of supply

■ Single-phase circuit, 230 V

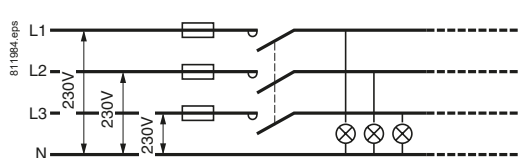


■ 3-phase circuit, 230 V



The maximum number of lamps which can be operated per phase is equal to the number of lamps in the "single phase 230 V" table divided by  $\sqrt{3}$ .

■ 3-phase circuit, 400 V (with neutral)



The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the "single-phase 230 V" table.

**Contactor rating for a single-phase 230 V circuit (single-pole)**

**Fluorescent lamps with starter**

Single fitting	Non corrected					With parallel correction					Contactor rating	
	P (W)	I <sub>B</sub> (A)	C (μF)	Maximum number of lamps		P (W)	I <sub>B</sub> (A)	C (μF)	Maximum number of lamps			
Twin fitting	20	0.39	-	22	30	20	0.19	5	15	20	16 A	
	40	0.43	-	20	28	40	0.29	5	15	20	25 A	
	50	0.70	-	13	17	58	0.46	7	10	15	40 A	
	80	0.80	-	10	15	80	0.57	7	10	14	63 A	
	110	1.2	-	7	10	110	0.79	16	5	7		
Twin fitting	2 x 18	0.44	-	2 x 18	2 x 16	2 x 18	0.26	3.5	30	17	16 A	
	2 x 36	0.82	-	2 x 36	2 x 11	2 x 36	0.48	4.5	17	10	9	6
	2 x 58	1.34	-	2 x 58	2 x 7	2 x 58	0.78	7	9	6	10	25 A
	2 x 80	1.64	-	2 x 80	2 x 5	2 x 80	0.96	9	8	6	10	40 A
	2 x 140	2.2	-	2 x 140	2 x 4	2 x 140	1.3	18	6	16	63 A	

**High pressure mercury vapour lamps**

	Non corrected						With parallel correction						Contactor rating
P (W)	I <sub>B</sub> (A)	C (μF)	Maximum number of lamps				P (W)	I <sub>B</sub> (A)	C (μF)	Maximum number of lamps			
50	0.6	-	15	20	15	10	50	0.35	7	10	9	4	16 A
80	0.8	-	10	15	10	8	80	0.50	8	10	9	4	25 A
125	1.15	-	8	10	8	4	125	0.7	10	18	25	40	40 A
250	2.15	-	4	8	6	2	250	1.5	18	25	40	60	63 A
400	3.25	-	2	6	4	1	400	2.4	4	4	2	-	
700	5.4	-	1	4	2		700	4	5.7	5	3		

I<sub>B</sub>: value of current drawn by each lamp at its rated voltage.

C: unit capacitance for each lamp.

I<sub>B</sub> and C correspond to values normally quoted by lamp manufacturers

**Contactor rating for a single-phase 230 V circuit  
(single-pole) (continued)**

**Low pressure sodium vapour lamps**

	Non corrected						With parallel correction						Contactor rating
P (W)	18	35	55	90	135	180	18	35	55	90	135	180	–
$I_B$ (A)	0.35	1.4	1.4	2.1	3.1	3.1	0.35	0.6	0.6	0.9	0.9	0.9	–
C (µF)	–	–	–	–	–	–	5	20	20	26	45	40	–
Maximum number of lamps	18	4	5	3	2	2	14	3	3	2	1	1	<b>16 A</b>
	34	9	9	6	4	4	21	5	5	4	2	2	<b>25 A</b>
	57	14	14	9	6	6	40	10	10	8	4	5	<b>40 A</b>
	91	24	24	19	10	10	60	15	15	11	6	7	<b>63 A</b>

**High pressure sodium vapour lamps**

	Non corrected					With parallel correction					Contactor rating
P (W)	70	150	250	400	1000	70	150	250	400	1000	–
$I_B$ (A)	1	1.8	3	4.4	10.3	0.6	0.7	1.5	2.5	6	–
C (µF)	–	–	–	–	–	12	20	32	45	100	–
Maximum number of lamps	8	4	2	1	–	6	6	2	2	1	<b>16 A</b>
	12	7	4	3	1	9	9	3	4	2	<b>25 A</b>
	20	13	8	5	2	18	18	6	8	4	<b>40 A</b>
	32	18	11	8	3	25	25	9	12	6	<b>63 A</b>

**Metal iodine or halogen vapour lamps**

	Non corrected						With parallel correction						Contactor rating	
P (W)	35	70	150	250	400	1000	39	70	150	250	400	1000	2000	–
$I_B$ (A)	0.3	0.5	1	1.5	2.5	6	0.3	0.5	1	1.5	2.5	6	5.5	–
C (µF)	–	–	–	–	–	–	6	12	20	32	45	85	60	–

Maximum number of lamps	27	16	8	5	3	1	12	6	4	3	2	–	1	<b>16 A</b>
	40	24	12	8	5	2	18	9	6	4	3	1	2	<b>25 A</b>
	68	42	20	14	8	4	31	16	10	7	5	3	3	<b>40 A</b>
	106	64	32	21	13	5	50	25	15	10	7	4	5	<b>63 A</b>

**Incandescent and halogen lamps**

										Contactor rating
P (W)	60	75	100	150	200	300	500	1000	–	
$I_B$ (A)	0.26	0.32	0.44	0.65	0.87	1.3	2.17	4.4	–	
Maximum number of lamps	30	25	19	12	10	7	4	2	<b>16 A</b>	
	45	38	28	18	14	10	6	3	<b>25 A</b>	
	85	70	50	35	26	18	10	6	<b>40 A</b>	
	125	100	73	50	37	25	15	8	<b>63 A</b>	

**Halogen lamps used with transformer**

					Contactor rating
P (W)	60	80	105	150	–
$I_B$ (A)	0.26	0.35	0.45	0.65	–
Maximum number of lamps	9	8	6	4	<b>16 A</b>
	14	12	9	6	<b>25 A</b>
	27	23	18	13	<b>40 A</b>
	40	35	27	19	<b>63 A</b>

$I_B$ : value of current drawn by each lamp at its rated voltage.

C: unit capacitance for each lamp.

$I_B$  and C correspond to values normally quoted by lamp manufacturers

Ref.

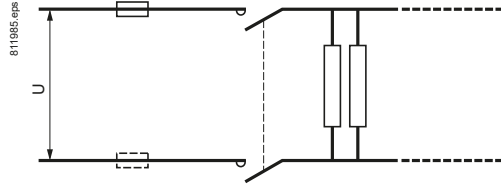


Contactors

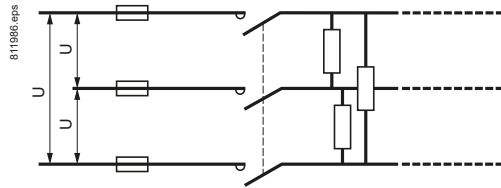


**Heating (AC-7a)**

**Single-phase, 2-pole switching**



**3-phase switching**



Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 I<sub>n</sub> at the moment of switch-on.

**Contactor selection according to power and required electrical life**

Electrical durability (in operating cycles)	Maximum power (kW)					Contactor rating
	100 x 10 <sup>3</sup>	150 x 10 <sup>3</sup>	200 x 10 <sup>3</sup>	500 x 10 <sup>3</sup>	10 <sup>6</sup>	
Single-phase switching 230 V (2-pole)	3.5	3	2.2	1	0.8	<b>16 A</b>
	5.4	4.6	3.5	1.6	1.2	<b>25 A</b>
	8.6	7.4	5.6	2.6	1.9	<b>40 A</b>
	13.6	11.6	8.8	4	3	<b>63 A</b>
	21.6	18.4	14	6.4	4.8	<b>100 A</b>
3-phase switching 400 V (3-pole)	10	9	6.5	3.2	2.2	<b>16 A</b>
	16	14	10	5	3.5	<b>25 A</b>
	26	22	17	7.5	6	<b>40 A</b>
	41	35	26.5	12	9	<b>63 A</b>
	64.8	55.2	42	19.2	14.4	<b>100 A</b>

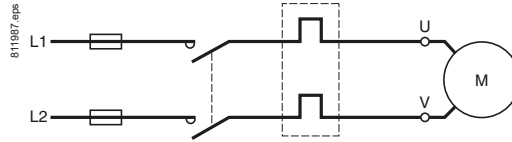
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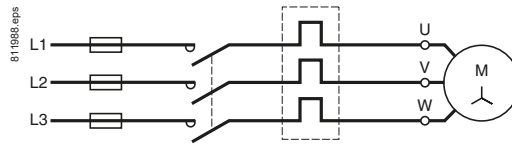
Contactors

#### Motor control (AC-7b)

##### Single-phase circuit, 230 V



##### 3-phase circuit, 400 V



#### Contactor selection according to maximum power in kW

230 V single-phase capacitor motor (2-pole)	400 V 3-phase motor	Contactor rating (Ith)
0.55	2.2	16 A
1.1	4	25 A
2.2	7.5	40 A
4	11	63 A

Ref.



Contactors

# TeSys Control Modular Contactors

## Dimensions

### Dimensions

#### Contactors

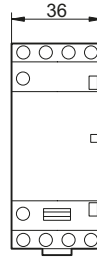
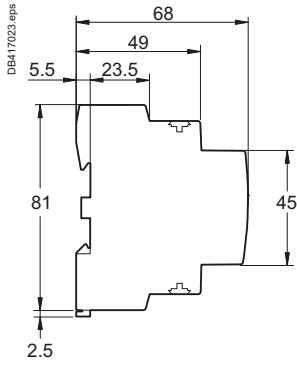
##### Common side view

**GC1610, 1611, 1620**  
**GC2502, 2510, 2511, 2520**

1 module

**GC1622, 1640**  
**GC2504, 2522, 2530, 2540**

2 modules



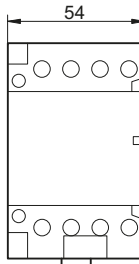
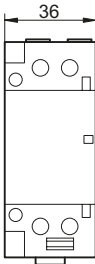
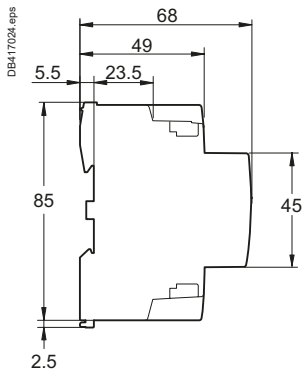
##### Common side view

**GC4002, 4011, 4020**  
**GC6302, 6311, 6320**

2 modules

**GC4004, 4022, 4030, 4040**  
**GC6304, 6322, 6330, 6340**

3 modules



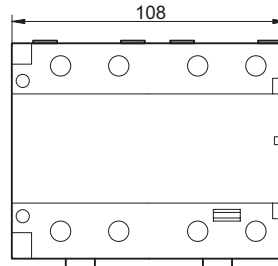
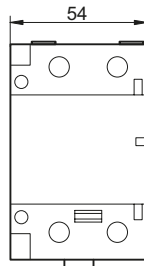
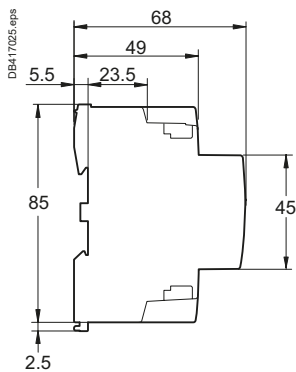
##### Common side view

**GC10020**

3 modules

**GC10040**

6 modules



Ref.



Contactors

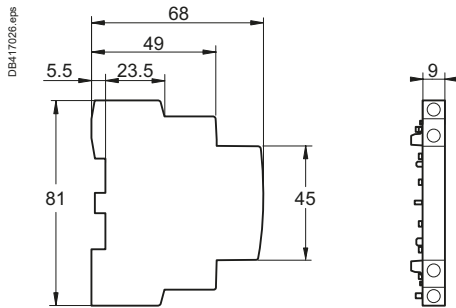
# TeSys Control Modular Contactors

## Dimensions and mounting

### Dimensions

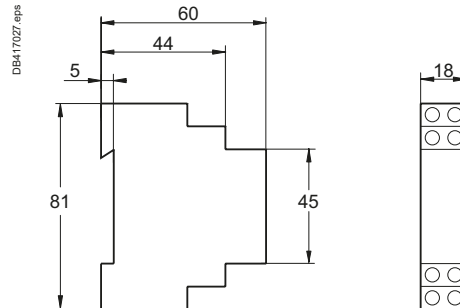
#### Auxiliary contacts

GAC0511, 0531 and 0521



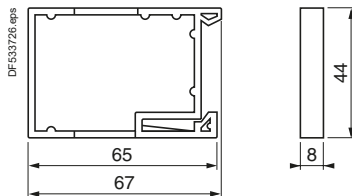
#### Coil suppression blocks

GAP21 and 23



#### Clip-on ventilation 1/2 module

GAC5



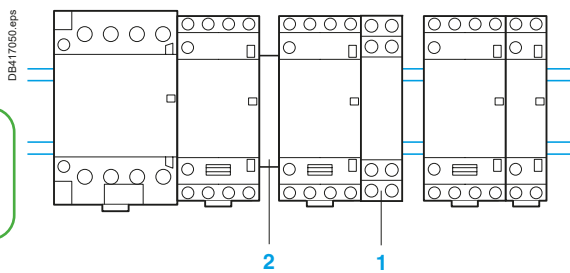
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### Mounting

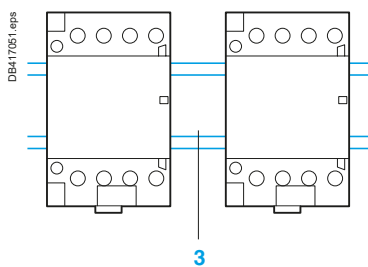
#### Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP21 or 23) across the coil terminals y 250 V. When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module **2** must be fitted every 2 contactors.



Contactors

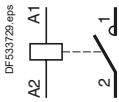
It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space **3** equal to one module, or by 2 ventilation 1/2 modules (GAC 5).



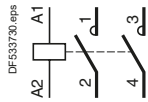
#### Schemes

##### Contactors

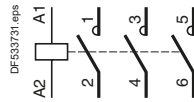
###### GC●●10



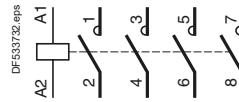
###### GC●●20



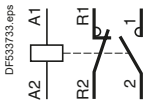
###### GC●●30



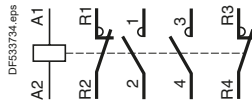
###### GC●●40



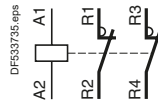
###### GC●●11



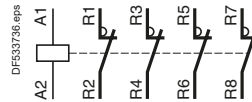
###### GC●●22



###### GC●●02

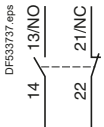


###### GC●●04

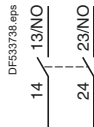


##### Auxiliary contacts

###### GAC0521



###### GAC0531



###### GAC0511



# TeSys Control

## Modular "Dual tariff" contactors

### Characteristics



GY25

**Modular "dual tariff" contactors are designed for use in modular panels and enclosures.**

These contactors feature:

■ **Easy installation:**

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**

All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety:**

- use of materials conforming to strictest fire safety standards
- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

"Dual tariff" contactors are designed for use with Electricity Supply Authority dual tariffs.

They have a 4-position selector switch on the front panel:

<b>"Stop" (O)</b>	For switching off the load, e.g. for prolonged periods of absence.
<b>"Off peak" Automatic start (A)</b>	The contactor switches automatically during "off peak" hours as set by the Supply Authority remote control and thus supplies the load, (washing machine, dishwasher, convector heater, water heater) during this period, at an economy rate to the user.
<b>"Peak time" Manual start (I)</b>	In this position, the contactor supplies the load to cater for additional requirements for hot water, heating, etc., but at the standard rate. The contactor returns automatically to the "off-peak" position at the start of the "off-peak" period.
<b>"Peak time" Manual override with lock</b>	Facility for setting the contactor to continuous manual operation, ignoring the automation system and the Supply Authority control; setting and locking is achieved by means of a tool, with manual return to the "AUTO" position.

### Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.

This standard is specific to "Electromagnetic contactors for domestic and similar use".

It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public". Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

"Dual tariff" modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 63 A.

Modular contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:

- lighting,
- heating, ventilation,
- motorised shutters or gates.

Ref.



Contactors

# TeSys Control

## Modular "Dual tariff" contactors

### Characteristics

Environment						
Type			GY16	GY25	GY40	GY63
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500			
	Conforming to VDE 0110	V	500			
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure			
Conforming to standards			IEC 61095 and IEC 60947-5-1 for auxiliary contacts			
Product certifications			NF-USE, VDE, CEBEC, ÖVE			
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 20 open, IP 40 in enclosure			
Ambient air temperature around the device	Storage	°C	-40...+70			
	Operation	°C	-5...+50 (0.85...1.1 Uc)			
Maximum operating altitude	Without derating	m	3000			
Operating positions	Without derating		±30° in relation to normal vertical mounting plane			
Shock resistance 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27	Contactors open		10 gn			
	Contactors closed		15 gn			
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactors open		2 gn			
	Contactors closed		3 gn			
Flame resistance			Conforming to IEC 61095			

Pole characteristics							
Number of poles			2, 3 or 4				
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63	
	In AC-7b (motor control)	A	5	8.5	15	25	
Contactor rating	40 °C		16	25	40	63	
	50 °C		14	22	36	57	
	60 °C <sup>(1)</sup>		13	20	32	50	
Rated operational voltage (Ue)	Up to	V	250 - 2-pole contactors, 415 - 3 and 4-pole contactors				
Frequency limits	Of the operating current	Hz	400				
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63	
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200	
Short time rating with no current flow for the previous 15 minutes with θ ≤ 40 °C	For 10 s	A	128	200	320	504	
	For 30 s	A	40	62	100	157	
Short-circuit protection by fuse or circuit breaker U ≤ 440 V	gI fuse	A	16	25	40	63	
	Circuit breaker I <sup>2</sup> t (at 3 kA rms prospective)	230V	A <sup>2</sup> s	5000	10000	16000	18000
		400V	A <sup>2</sup> s	9000	14000	17500	20000
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000	
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2	
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8	
Maximum cabling c.s.a.	Flexible cable without cable end	1 conductor	mm <sup>2</sup>	6	6	25	25
		2 conductors	mm <sup>2</sup>	4	4	16	16
	Flexible cable with cable end	1 conductor	mm <sup>2</sup>	6	6	16	16
		2 conductors	mm <sup>2</sup>	1.5	1.5	4	4
	Solid cable without cable end	1 conductor	mm <sup>2</sup>	6	6	25	25
		2 conductors	mm <sup>2</sup>	4	4	6	6
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5	

(1) Ventilation 1/2 module must be fitted.

References:  
page B8/52

Dimensions and schemes:  
pages B8/121 and B8/122



# TeSys Control

## Modular "Dual tariff" contactors

### Characteristics

Control circuit characteristics					
Type			GY16, GY25 single or 2-pole	GY16, GY25 3 or 4-pole GY40, GY63 2-pole	GY40, GY63 3 or 4-pole
Rated control circuit voltage (Uc)	50 or 60 Hz	V	12...240 V, for other voltages, please consult your Regional Sales Office		
Control voltage limits ( $\theta \leq 50$ °C)					
50 Hz coils	Operational		0.85...1.1 Uc		
	Drop-out		0.2...0.75 Uc		
Average consumption at 20 °C and at Uc					
~ 50 Hz	Inrush	VA	15	34	53
	Sealed	VA	3.8	4.6	6.5
Heat dissipation	50/60 Hz	W	1.3	1.6	2.1
Operating time					
	Closing "C"	ms	10 ... 30		
	Opening "O"	ms	10 ... 25		
Mechanical durability	In operating cycles		10 <sup>6</sup>		
Maximum operating rate at ambient temperature $\leq 50$ °C	In operating cycles per hour		300		
Maximum cabling c.s.a.					
Flexible cable without cable end	1 or 2 conductors	mm <sup>2</sup>	2.5		
	1 conductor	mm <sup>2</sup>	2.5		
Flexible cable with cable end	2 conductors	mm <sup>2</sup>	1.5		
	1 or 2 conductors	mm <sup>2</sup>	1.5		
Solid cable without cable end	1 or 2 conductors	mm <sup>2</sup>	1.5		
Tightening torque		N.m	0.8		
Instantaneous auxiliary contact characteristics					
Rated operational voltage (Ue)	Up to	V	250		
Rated insulation voltage (Ui)					
	Conforming to IEC 60947-5	V	500		
	Conforming to VDE 0110	V	500		
Conventional thermal current (Ith)	For ambient $\theta \leq 50$ °C	A	5		
Mechanical durability	In operating cycles		10 <sup>6</sup>		
Maximum cabling c.s.a.	Flexible or solid conductor	mm <sup>2</sup>	2.5		
Tightening torque		N.m	0.8		

Ref.

Contactors



# TeSys Control

## Modular "Dual tariff" contactors

### Dimensions

#### Dimensions

##### "Dual tariff" contactors

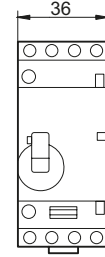
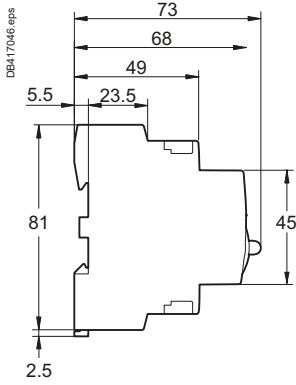
###### Common side view

**GY1620  
GY2520**

1 module

**GY2530, 2540**

2 modules



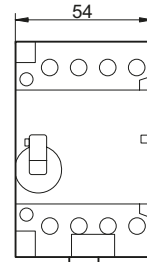
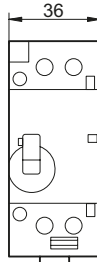
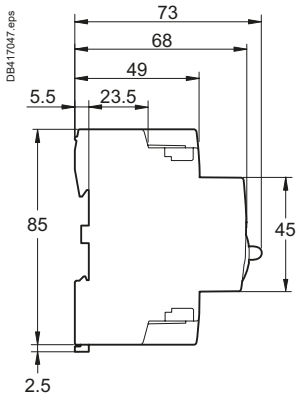
###### Common side view

**GY4020  
GY6320**

2 modules

**GY4030, 4040  
GY6330, 6340**

3 modules

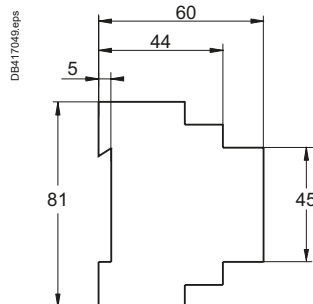
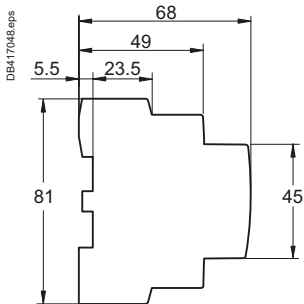


##### Auxiliary contacts

**GAC0511, 0531 and 0521**

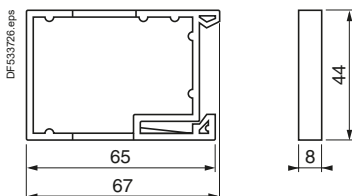
##### Coil suppression block

**GAP21 and 23**



##### Clip-on ventilation 1/2 module

**GAC5**



References:  
page B8/52

Characteristics:  
pages B8/118 to B8/120

Ref.



Contactors

# TeSys Control

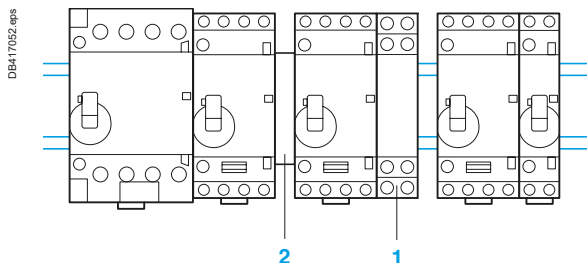
## Modular “Dual tariff” contactors

### Mounting and schemes

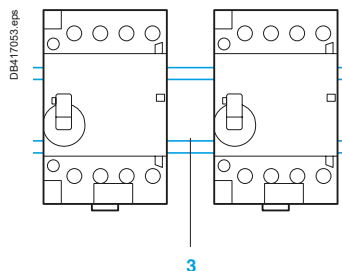
#### Mounting

##### Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP 21 or 23) across the coil terminals  $\leq 250$  V. When several contactors which operate at the same time are mounted side by side, a GAC5 ventilation 1/2 module **2** must be fitted every 2 contactors.



It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module **3** or by 2 ventilation 1/2 modules GAC5.



Ref.



#### Schemes

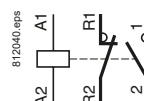
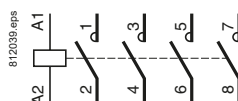
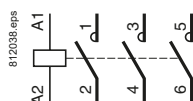
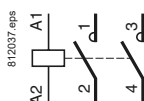
##### Contactors

**GY●●20**

**GY●●30**

**GY●●40**

**GY●●11**

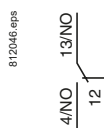
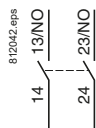


##### Auxiliary contacts

**GAC0521**

**GAC0531**

**GAC0511**



Contactors

# TeSys Control

## Modular Impulse relay

### Characteristics



GF1611M7

**Modular impulse relays are designed for use in modular enclosures.**

They feature:

■ **Easy installation:**

- quick clip-on fixing and locking onto 35 mm omega rail
- easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**

Units have a common depth of 60 mm and width of 18 mm.

■ **User safety:**

- live parts protected against direct finger contact
- completely safe operation
- state indication on front panel.

### Standards

This range of modular impulse relays has been designed taking into account the requirements of international standard IEC 60669-2.

This standard is specific to "Impulse relays".

Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

### Functions

Modular impulse relays are designed for opening and closing of circuits which are remotely controlled by impulses. The position is mechanically maintained.

These impulse relays are used in lighting circuits when there are more than two switching points.

### Power switching

Modular impulse relays have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific lighting supply is required.

Ref.



Contactors

# TeSys Control

## Modular Impulse relay

### Characteristics

Environment							
Rated insulation voltage (Ui)	Conforming to IEC 60947-1-5	V	400				
	Conforming to VDE 0110	V	400				
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure				
Conforming to standards			IEC 60669-1 and 60669-2				
Product certifications			NF-USE, CEBC, ASE, KEMA, N, S, D, FI, VDE				
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP 20 open, IP 40 in enclosure				
Ambient air temperature around the device	Storage	°C	-40...+80				
	Operation	°C	-20...+50				
Maximum operating altitude	Without derating	m	2000				
Operating positions	Without derating		±90° in relation to normal vertical mounting plane				
Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27	Impulse relay open		Please consult your Regional Sales Office				
	Impulse relay closed		Please consult your Regional Sales Office				
Vibration resistance 5...300 Hz Conforming to IEC/EN 60068-2-6	Impulse relay open		4 gn				
	Impulse relay closed		4 gn				
Pole characteristics							
Number of poles			1 or 2				
Rated operational current (Ie) (Ue ≤ 250 V)	In AC-7a (heating)	A	16				
Rated operational voltage		V	250				
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16				
Permissible short time rating no current flowing for preceding 15 minutes with θ ≤ 40 °C	For 1 s	A	320				
	For 10 s	A	96				
	For 30 s	A	48				
Short-circuit protection by fuse or circuit breaker	gl fuse	A	16				
	Circuit breaker I <sup>2</sup> t (at 3 kA rms prospective)	A <sup>2</sup> s	5000				
Average impedance per pole	At Ith and 50 Hz	mΩ	4				
Power dissipated per pole		W	1				
Maximum cabling c.s.a.	Flexible cable without cable end	1 conductor	mm <sup>2</sup>	Min.	0.5	Max.	6
		2 conductors	mm <sup>2</sup>	0.5	4		
	Flexible cable with cable end	1 conductor	mm <sup>2</sup>	0.5	6		
		2 conductors	mm <sup>2</sup>	0.5	4		
	Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.5	6		
		2 conductors	mm <sup>2</sup>	0.5	4		
Tightening torque	Power circuit connections	N.m	0.8				

Ref.



Contactors

# TeSys Control

## Modular Impulse relay

### Characteristics

Control circuit characteristics			
Rated control circuit voltage (Uc)		<b>V</b>	12...240 V, for other voltages, please consult your Regional Sales Office
Control voltage limits ( $\theta < 50\text{ }^{\circ}\text{C}$ )	Operating threshold, dual frequency 50/60 Hz	<b>V</b>	0.85...1.1 Uc
Average consumption at 20 °C and at Uc	Inrush at 50 Hz	<b>VA</b>	19
Operating time	Closing "C"	<b>ms</b>	70
	Opening "O"	<b>ms</b>	70
Minimum impulse time		<b>ms</b>	70
Mechanical durability			10 <sup>6</sup> operating cycles
Electrical durability	AC-21		200000 operating cycles
	AC-22		100000 operating cycles
Maximum operating rate	Operating cycles per hour		900
Maximum cabling c.s.a.	Flexible cable without cable end	1 or 2 conductors	<b>mm<sup>2</sup></b> 2.5
	Flexible cable with cable end	1 conductor	<b>mm<sup>2</sup></b> 2.5
		2 conductors	<b>mm<sup>2</sup></b> 1.5
	Solid cable without cable end	1 or 2 conductors	<b>mm<sup>2</sup></b> 1.5
Tightening torque		<b>N.m</b>	0.8

Ref.



Contactors

### Lighting circuits

#### Fluorescent lamps with starter

Single fitting	Non corrected			With parallel correction		
	18	36	58	18	36	58
Power in W	18	36	58	18	36	58
Number of lamps	70	35	21	50	25	16

Twin fitting	With series correction		
	2 x 18	2 x 36	2 x 58
Power in W	2 x 18	2 x 36	2 x 58
Number of lamps	56	28	17

#### Incandescent lamps: filament lamps

Power in W	40	60	75	100	200
Number of lamps	40	25	20	16	8

#### Incandescent lamps: halogen lamps

Power in W	300	500	1000	1500
Number of lamps	5	3	1	1

#### Incandescent lamps: very low voltage halogen lamps

Power in W	20	50	75	100
Number of lamps	70	28	19	4

#### Low pressure sodium vapour lamps

	Non corrected			
	Power in W	55	90	135
Number of lamps	24	15	10	7

#### High pressure sodium vapour lamps

	Non corrected		
	Power in W	250	400
Number of lamps	5	3	1

### Heating circuits

#### Single-phase 230 V, 2-pole

Power in kW	3.6
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Ref.



Contactors

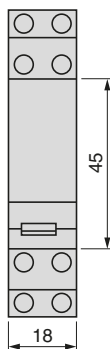
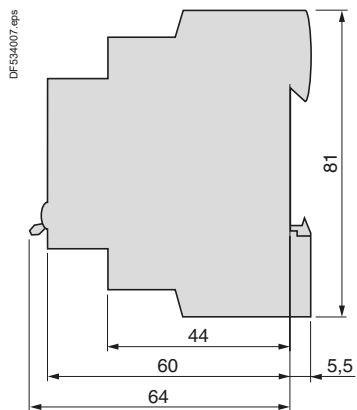
# TeSys Control

## Modular Impulse relay

### Dimensions and schemes

#### Dimensions

GF1610, GF1611, GF1620

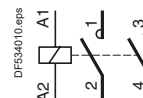
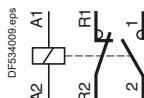
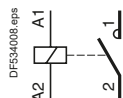


#### Schemes

GF1610

GF1611

GF1620



Ref.



Contactors

### Test conditions according to IEC utilization categories

Contactor characteristics are established following tests and utilization categories whose are conforming IEC 60947-4-1 and 5-1 standards.

Contactors													
		Electrical durability: making and breaking conditions						Occasional duty: making and breaking conditions					
a.c. supply													
Typical applications	Utilisation category	Making			Breaking			Making			Breaking		
		I	U	cos φ	I	U	cos φ	I	U	cos φ	I	U	cos φ
Resistors, non inductive or slightly inductive loads	AC-1	1e	Ue	0.95	1e	Ue	0.95	1.5 1e	1.05 Ue	0.8	1.5 1e	1.05 Ue	0.8
Motors													
Slip ring motors: starting, breaking.	AC-2	2.5 1e	Ue	0.65	2.5 1e	Ue	0.65	4 1e	1.05 Ue	0.65	4 1e	1.05 Ue	0.65
Squirrel cage motors: starting, breaking whilst motor running.	AC-3	1e ≤ <sup>(1)</sup>	Ue	0.65	1 1e	0.17 Ue	0.65	10 1e	1.05 Ue	0.45	8 1e	1.05 Ue	0.45
		1e > <sup>(2)</sup>	Ue	0.35	1 1e	0.17 Ue	0.35	10 1e	1.05 Ue	0.35	8 1e	1.05 Ue	0.35
Squirrel cage motors: starting, reversing, inching	AC-4	1e ≤ <sup>(1)</sup>	Ue	0.65	6 1e	Ue	0.65	12 1e	1.05 Ue	0.45	10 1e	1.05 Ue	0.45
		1e > <sup>(2)</sup>	Ue	0.35	6 1e	Ue	0.35	12 1e	1.05 Ue	0.35	10 1e	1.05 Ue	0.35
d.c. supply													
Typical applications	Utilisation category	Making			Breaking			Making			Breaking		
		I	U	L/R (ms)	I	U	L/R (ms)	I	U	L/R (ms)	I	U	L/R (ms)
Resistors, non inductive or slightly inductive loads	DC-1	1e	Ue	1	1e	Ue	1	1.5 1e	1.05 Ue	1	1.5 1e	1.05 Ue	1
Shunt wound motors: starting, reversing, inching	DC-3	2.5 1e	Ue	2	2.5 1e	Ue	2	4 1e	1.05 Ue	2.5	4 1e	1.05 Ue	2.5
Series wound motors: starting, reversing, inching	DC-5	2.5 1e	Ue	7.5	2.5 1e	Ue	7.5	4 1e	1.05 Ue	15	4 1e	1.05 Ue	15
Control relays and auxiliary contacts													
		Electrical durability: making and breaking conditions						Occasional duty: making and breaking conditions					
a.c. supply													
Typical applications	Utilisation category	Making			Breaking			Making			Breaking		
		I	U	cos φ	I	U	cos φ	I	U	cos φ	I	U	cos φ
Electromagnets													
≤ 72 VA	AC-14	-	-	-	-	-	-	6 1e	1.1 Ue	0.7	6 1e	1.1 Ue	0.7
> 72 VA	AC-15	10 1e	Ue	0.7	1e	Ue	0.4	10 1e	1.1 Ue	0.3	10 1e	1.1 Ue	0.3
d.c. supply													
Typical applications	Utilisation category	Making			Breaking			Making			Breaking		
		I	U	L/R (ms)	I	U	L/R (ms)	I	U	L/R (ms)	I	U	L/R (ms)
Electromagnets	DC-13	1e	Ue	6 P <sup>(3)</sup>	1e	Ue	6 P <sup>(3)</sup>	1.1 1e	1.1 Ue	6 P <sup>(3)</sup>	1.1 1e	1.1 Ue	6 P <sup>(3)</sup>

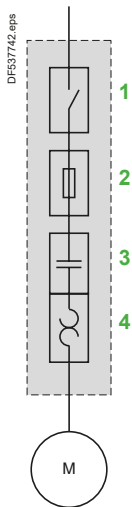
<sup>(1)</sup> 1e ≤ 17 A for electrical durability, 1e ≤ 100 A for occasional duty.

<sup>(2)</sup> 1e > 17 A for electrical durability, 1e > 100 A for occasional duty.

<sup>(3)</sup> The value 6 P (in watts) is based on practical observations and is considered to represent the majority of d.c. magnetic loads up to the maximum limit of P = 50 W i.e. 6 P = 300 ms = L/R.

Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.





- 1 Motor Disconnect (Disconnect switch)
- 2 Motor Branch Circuit Protection (Short-circuit protection)
- 3 Motor Controller (Contactor)
- 4 Motor Overload Protection (Thermal overload relay)

## Starters for the North American market

In recent years, the North American market has started to harmonise UL, CSA and ANCE standards, as well as the industrial installation codes provided by national regulations (NEC for the United States, CEC for Canada and MEC for Mexico). <sup>(1)</sup> Major improvements, carried out by the Canena <sup>(2)</sup> are aimed at harmonising product requirements based on IEC <sup>(3)</sup> standards. However, the North American codes use specific terminology for defining the functions of a starter. These functions can be fulfilled by standard IEC products, accompanied by appropriate certifications.

## Combination Starters

Combination Starters are the most common type of packaged motor starter. They are called "Combination" because of their structure and their combined functions. The figure opposite shows the four combined functions that constitute a complete motor starter circuit, defined as a "Motor branch circuit" by the NEC (US National Electric Code) in article 430. Standard UL508 currently gives different types of combination starter that meet the requirements of a "Motor branch circuit".

**Type E**, called "**self-protected combination starter**", covers all these functions and can be controlled manually (thermal-magnetic circuit breaker) or remotely (starter-controller). Type E starters withstand faults within their declared nominal rating without sustaining damage, after which they can be put back into service. In addition, they can withstand more severe short-circuit and durability performance tests without welding or excessive wear of the contact tips.

**Type F**, called "**Combination motor starter**", consists of a type E manual starter (thermal-magnetic circuit breaker) combined with a contactor. These starters are evaluated by means of basic short-circuit tests, but are not considered as "self-protected".

For this combination, the type E starter must be marked "Combination Motor Controller when used with ...", followed by the reference of the load side contactor.

<sup>(1)</sup> **UL**: Underwriters Laboratories, **CSA**: Canadian Standards Association, **ACNE**: Association of Standardization and Certification, **NEC**: National Electric Code, **CEC**: Canadian Electrical Code, **MEC**: Mexican Electrical Code.  
<sup>(2)</sup> **Canena**: Council for Harmonization of Electrotechnical Standardization of North America.  
<sup>(3)</sup> **IEC**: International Electrotechnical Commission.

## Control panels

To help users properly coordinate their motor control equipment with their distribution system in the event of a fault, article 409 of the 2005 NEC requires panel builders to list the short-circuit withstand rating of their motor control panels. According to standard UL508A, manufacturers must use the short-circuit withstand value of the lowest rated device as the nominal withstand rating of the panel, unless the devices have been tested together for a higher coordinated rating. The minimum “**short-circuit current rating**” (SCCR), on motor control components for horsepower ratings of 50 hp or below is 5000 A.

Using a **type E** or **type F** combination starter eliminates the coordination problems of using individual components for the “motor branch circuit protection”, “motor controller” and “motor overload protection” functions.

The panel builder uses the declared short-circuit current rating for the combination starter. This value is generally higher than 5000 A.

This makes it easier to list the short-circuit current ratings and to check the compatibility of a UL508A motor control panel within a given distribution system.

## Group protection

Article 430.53 of the NEC allows a single short-circuit protection device to be used for more than one motor circuit if the components used are marked and listed for such use.

Components suitable for use in group protection, known as “**motor group installations**”, can be marked in one of the following two ways:

### Case n° 1

The contactor and the motor overload relay are both listed as suitable for group installation.

An inverse time circuit breaker can be used as the short-circuit protection device if it is also listed as suitable for group installation.

The panel builder must therefore make sure that the short-circuit protection device selected (fuses or inverse time circuit breaker) does not exceed the value allowed by article 430.40 for the smallest overload relay used in the circuit.

Once these conditions have been met, the panel builder can reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one third of the size of the upstream circuit conductor supplying the protection device.

The panel builder must limit the length of the motor starter conductor (connecting the short-circuit protection device to the motor contactor/overload relay) to a maximum of 7.6 m (25 feet).

### Case n° 2

The motor contactor and overload relay are listed as suitable for “**tap conductor protection**” in group installations.

This category allows the panel designer to reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one tenth of the size of the upstream circuit conductor supplying the protection device.

The designer must limit the length of this conductor to a maximum of 3.05 m (10 feet).

In both cases, the supply circuits must not be less than 125 % of the connected motor FLA (Full Load Amps) rating.

For panel builders, using **type F** combination starters in group installations simplifies group motor considerations.

Each starter is a fully coordinated motor branch circuit.

The panel builder follows the same NEC requirements for sizing the supply conductors as those required for single motor branch circuits.

The size of the supply conductors can be reduced in accordance with the specifications of article 430.28.

This allows the same flexibility in conductor sizing as that offered in article 430.53 (D), without a requirement to check the short-circuit protection rating marked on the components and the overload relay limit.

A UL508A panel does not need a short-circuit protection device when each motor starter installed is a **type F**.

The upstream short-circuit protection device supplying the starter protects the panel. The panel builder only has to consider the panel/enclosure disconnect requirements specified by the NEC or local codes.

## Introduction

B9/4

## TeSys Giga High power contactors

Type of product	Range		Pages
TeSys Giga High power contactors Advanced version - 3 and 4-poles	3-pole from 115 to 800 A – AC-3 3-pole and 4-pole from 250 to 1050 A – AC-1		B9/10
TeSys Giga High power contactors Standard version - 3 and 4-poles	3-pole from 115 to 800 A – AC-3 3-pole and 4-pole from 250 to 1050 A – AC-1		B9/12
Auxiliary modules, Accessories, Retrofit kits for TeSys Giga High power contactors			B9/14
Spare parts for TeSys Giga High power contactors			B9/20

## Technical Data for Designers

B9/23

# On-line tools to configure your motor starters

## EcoStruxure™ Motor Control Configurator



Scan or click  
on the QR code

### Build your starter configuration

- Build your motor starter configuration with different solutions
- Complete offer base suited for different countries.

### Enhanced customer's journey

- Easy selection, replacing complex paper catalogs
- Covert into Bill of Materials (BoM) by adding the products to the cart.

### Answers to customer needs

- Option to save and re-work your configurations
- Direct access to products documentation in one place
- Possibility with unique configurations ID and share.

## Product Selector for TeSys Giga



Scan or click  
on the QR code

### Offer selection

- Easy selection of **TeSys** Giga Contactor or Overload Relays
- Intuitive tool to configure the devices to suit your needs
- Helps to select the right devices for your application.

### Configure your motor starter components

- Options to select auxiliaries and accessories
- Configure reversers and changeover contactors with ease
- Get the extensive bill of material, export it in standard format (PDF, XLS), or drop it into the product cart
- Access to technical information and documentations for every item.

## EcoStruxure Motor Management Design



Scan or click  
on the QR code

### Electrical design calculations for high-power motors

Easily perform basic calculations related to transformer size, short-circuit current and voltage drop, comparing direct-on-line, star-delta, soft-starter, and variable speed drive. Verify starting feasibility from mechanical standpoint and ensure power quality objectives are met, for power factor or harmonic levels. Check energy saving potential of using a variable speed drive for centrifugal pumps and fans.

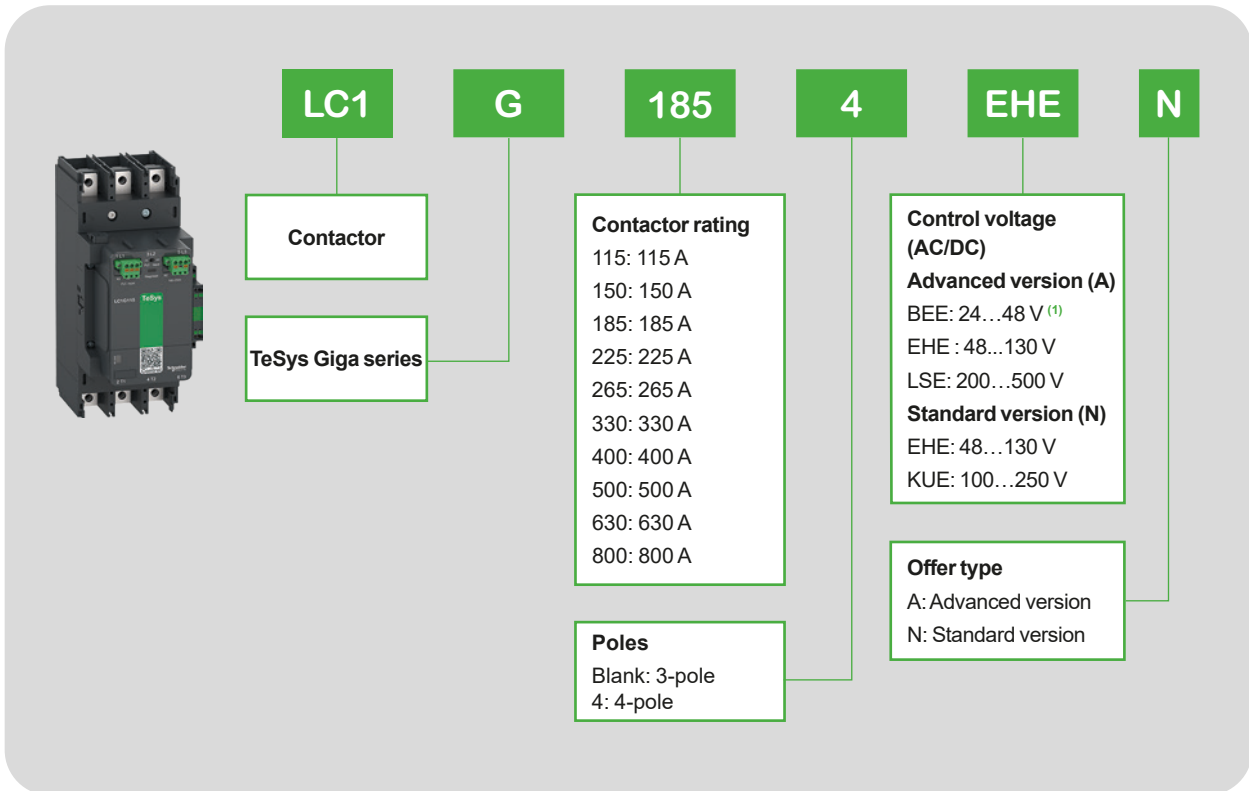
### Offer selection and report

Select among latest compatible offers to build a complete motor management solution: circuit breakers, contactors, MCC panels, drives, protection relays, power factor capacitors, active filters, power quality monitoring and services.

Get a summary report with calculations and recommended offers.

# Product references – coding principle

## > TeSys Giga High power contactors



### Example:

LC1G400LSEA TeSys Giga Contactor Advanced version 400 A, 3-pole, 200...500 V AC/DC coil, with PLC control.

LC1G1854EHEN TeSys Giga Contactor Standard version 185 A, 4-pole, 48...130 V AC/DC coil, without PLC control.

<sup>(1)</sup> 24...48 V AC/DC control voltage option is available for LC1G115...LC1G500 ratings.

## > Quality and Performance as high priority

### TeSys Giga A new Generation series with digital innovation

Over more than 4 decades, the TeSys F range of contactors has built a high reputation for performance, reliability, and quality. The TeSys F range set the industrial standard for high power contactors with an installed base of millions of products. TeSys F contactors were the first choice of many OEMs, control panel builders and industrial users.

But industry requirements have evolved to demand process performance monitoring through data networks and online expert services.

TeSys Giga is Schneider Electric's new range of contactors that answer these evolving needs. TeSys Giga High power contactors support the evolution of processes and offer new services to reduce non-production time to a minimum. Replacing TeSys F Contactors, TeSys Giga High power contactors address a wide range of demanding applications with built-in advanced features and functionalities.



### Futuristic ready...

TeSys Giga High power contactors are designed to work with components and accessories with advanced performance. The characteristics of robustness and longevity are maintained, both in the connectors and in the switching.

Continuous local and remote monitoring of contact wear optimizes predictive maintenance by allowing you to replace contacts only when necessary, facilitated by diagnostic visual indicator.

Every customer will benefit from the innovative design and feature, including the compact size, wideband electronic coils, embedded auxiliary contact blocks, ergonomic design, or flexibility in connections.

## > Applications



AC-3/AC-3e utilization category



AC-1 utilization category

- TeSys Giga High power contactors provide robust control solutions for AC-3/AC-3e applications up to 800 A and AC-1 applications up to 1050 A.
- TeSys Giga High power contactors can be part of a direct-on-line motor starter, reversing motor starter or a star-delta motor starter and power switching application.
- TeSys Giga High power contactors provide contact wear diagnostic and wideband AC/DC control.
- Suitable for type 2 coordination as per IEC60947-4-1.

## > Right choice for a wide range of demanding applications



High power  
contactors

TeSys Giga High power contactors' unique design meets the common requirements of demanding high power applications:

- Conform to multi standards to suit global needs
- Long life expectancy in harsh environments
- Suitable for high efficiency motors
- Very good resistance to vibrations
- High uptime thanks to predictive maintenance
- Optimized installation and maintainability.

## > Intelligent design for greater advantages



- Interlock location, with knock-out cover
- On/Off switch for PLC input
- Push-in type control terminals enabling quick wiring and assembly
- Diagnosis LED for contact wear & voltage abnormality
- Built-in 1 NO + 1 NC auxiliary contact block
- Unique QR code providing quick access to complete product data
- Mechanical indicator for contactor open and closed status



### Higher flexibility

TeSys Giga High power contactors can be mounted in different orientation without derating, providing high flexibility of your panel design.

Control wiring, auxiliary contacts and control module are accessible from the front.

High power contactors



### Contact wear diagnostic and predictive maintenance

Contact wear is monitored by a dedicated module and shown in the front panel through LED, therefore the, predictive maintenance can be planned for replacing the complete set of switching modules, thus avoiding break-down maintenance. Switching modules <sup>(1)</sup> can be replaced quickly and easily thanks to their Plug and Play design.

<sup>(1)</sup> Refer to page B9/21 for details on switching modules.



## > Key features

### Advanced contactor control

- The electronic control module provides wideband AC/DC coil control voltage, from 24 V to 500 V, allowing quick adaptation of existing industrial processes as well as new projects.
- The low power consumption of the coils could lead to significant savings on automation equipment. It's now possible to use interface relays with a lower rating, resulting in lower heat emission in the panel.
- The low power consumption of the coils also takes up less space in the panel and simplifies the diagrams by connecting these coils directly to the output cards of the PLCs.

### Simplified wiring

- The pole pitch of the power terminals allows direct mounting and connection to TeSys Giga Electronic Overload Relays. Standardization of panel mounting and assembly reduces costs and assembly time.
- Push-in connection for control terminals provides flexibility, ease of connections, and reduced assembly and installation time.

### Enhanced durability

- Durability is a top priority. TeSys Giga High power contactors are designed to offer uncompromising robustness and maintenance accessibility to site technicians. The duration of production down-time is reduced, resulting in improved profitability on your investment.

### Advanced diagnostic features

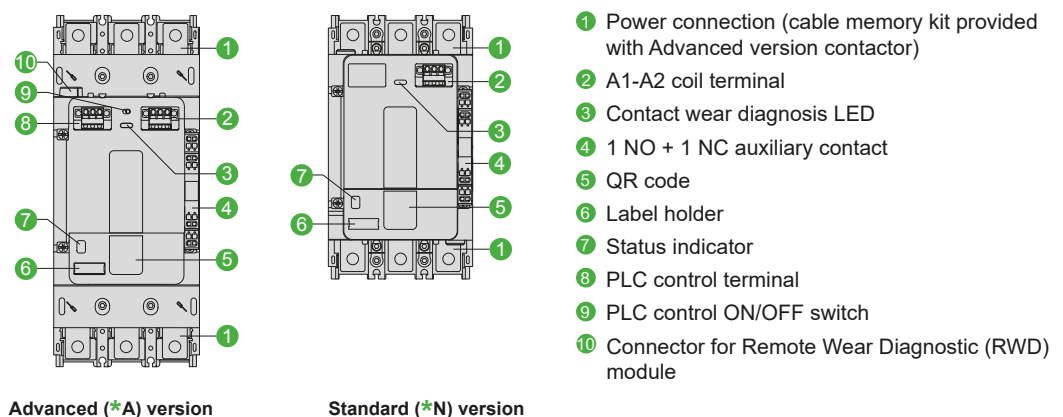
- On-board diagnostics is a new feature in our latest generation of high power contactors. Counting the number of operations as well as monitoring duration of use and pole condition provides numerous benefits for the customer and improves reliability and maintenance planning.

### Compact size

- Compact size provides easy access to power connections for connecting cables and busbars.

### Easy maintenance

- The poles are designed as replaceable switching modules, so the performance of a used contactor can be fully restored. The modular design allows a quick and long-lasting replacement.
- Coils are accessible from the front and maintained with very low down times.



\*: contactor references finishing by A or by N.

High power contactors

# TeSys Control

## Giga High power contactors

### Introduction

A comprehensive range of TeSys Giga High power contactors that are available in 'Advanced' and 'Standard' versions, in 3 sizes, covering several ratings.  
A common range of auxiliary contacts and accessories, enabling high flexibility and simplicity.

## > TeSys Giga High power contactors – Advanced version



115...225 A



265...500 A



630...800 A

#### Power & control

- 3 or 4 power poles
- 115 to 800 A (AC-3)
- 250 to 1050 A (AC-1)
- Embedded 1 NO + 1 NC auxiliary contacts
- Push-in type terminals for coils & control

#### Remote control

- 24-48 V, 48-130 V, 200-500 V AC/DC coils
- Low consumption coils
- Wide voltage range coils (direct coil control)
- Digital control input (PLC output digital coil control)
- Embedded surge suppressor

#### Diagnostic

- Embedded wear diagnostic
- Embedded control voltages diagnostic
- Self diagnosis function
- Local alarm signaling (LED)
- Remote wear diagnostic signaling kit (accessory)

#### Mounting

- 'Cable memory' adapter enables maintenance without removing power cables and busbar connections.

#### Standards and Certifications

- Multiple standards
- International certifications

## > TeSys Giga High power contactors – Standard version



115...225 A



265...500 A



630...800 A

#### Power & control

- 3 or 4 power poles
- 115 to 800 A (AC-3)
- 250 to 1050 A (AC-1)
- Embedded 1 NO + 1 NC auxiliary contacts
- Push-in type terminals for coils & control

#### Remote control

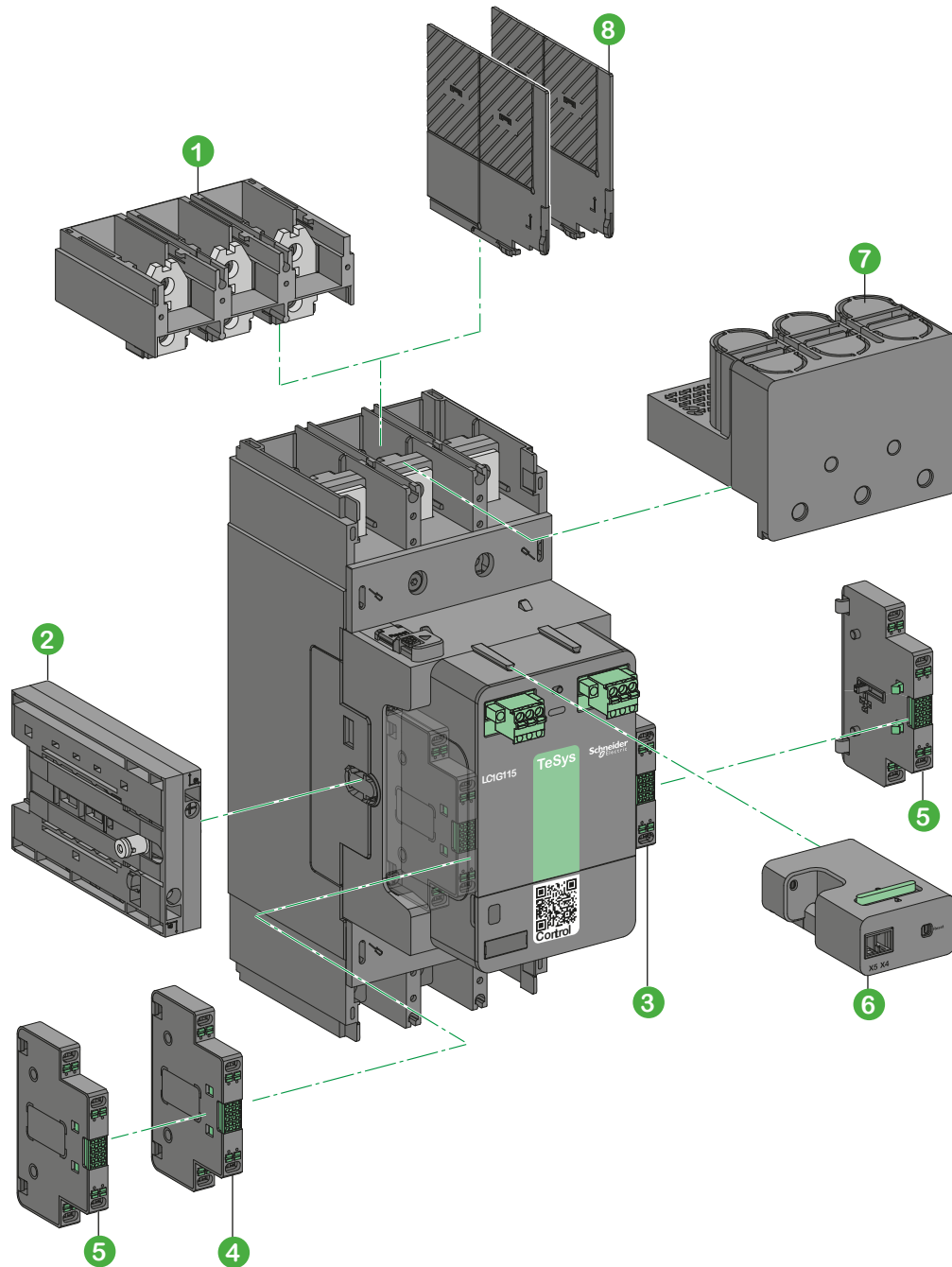
- 48-130 V, 100-250 V AC/DC coils
- Wide voltage range coils (direct coil control)
- Embedded surge-suppressor

#### Diagnostic

- Embedded wear diagnostic
- Embedded control voltages diagnostic
- Self diagnosis function
- Local alarm signaling (LED)

#### Certifications

- Multiple standards
- International certifications



- ① Cable memory kit **LA9G3102**, is always supplied along with Advanced version, and it's an optional accessory for Standard version.
- ② Mechanical interlock **LA9G970**, can be installed on either side of the contactor.
- ③ Auxiliary contact module **LAG8N113P** (1 NO + 1 NC) supplied with LC1G contactor.
- ④ Auxiliary contact modules **LAG8N113P / LAG8N203P**, can be installed on the contactor lateral faces <sup>(1)</sup>
- ⑤ Auxiliary contact modules **LAG8N113 / LAG8N203**, can be installed on either side as 2<sup>nd</sup> set of contacts.
- ⑥ Remote Wear Diagnostic (RWD) Module **LA9GRD01 / LA9GRD10**, can be installed and used only in Advanced version.
- ⑦ IP 20 terminal shroud **LA9G3701**.
- ⑧ Phase separators **LA9G3801**, please refer to pages B9/14 to B9/18 for complete details of available accessories.

**Note:** a maximum of 2 auxiliary contact modules can be mounted on each side of the contactor.  
 (1) Does not increase the contactor dimensions when fitted on both sides.

# TeSys Control

Giga High power contactors – Advanced – 3-pole and 4-pole

Product references

## TeSys Giga 3-pole Advanced contactors – For motor control (115 to 800 A)

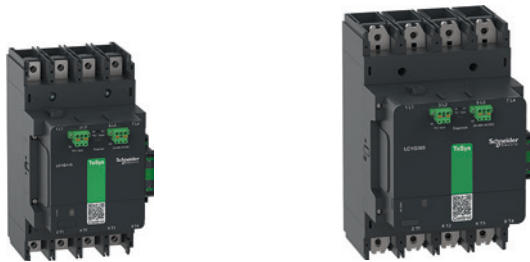


Motor ratings (kW)  $\theta \leq 60^\circ\text{C}$

IEC																				
AC-3							AC-3e <sup>(1)</sup>							AC-4						
230 V	400 V	415 V	440 V	500 V	690 V	1000 V	230 V	400 V	415 V	440 V	500 V	690 V	1000 V	230 V	400 V	415 V	440 V	500 V	690 V	1000 V
kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
30	55	55	75	75	75	-	30	55	55	75	75	75	-	30	55	55	65	65	75	-
37	75	75	90	90	90	75	37	75	75	90	90	90	75	37	75	75	80	90	90	75
55	90	90	110	110	110	75	55	90	90	110	110	110	75	55	90	90	100	110	110	75
55	110	110	132	132	160	132	55	110	110	132	132	160	132	55	110	110	129	132	132	110
75	132	132	160	160	200	160	75	132	132	160	160	200	160	75	132	132	150	160	160	160
90	160	160	200	200	220	185	90	160	160	185	200	220	185	90	160	160	185	200	220	185
110	200	200	250	250	315	220	110	200	200	250	250	315	220	110	200	200	220	250	315	220
160	250	250	315	355	355	335	147	250	250	280	315	355	335	150	250	250	295	295	355	280
200	335	375	400	400	500	450	180	315	335	355	375	500	450	180	315	335	355	375	450	355
250	450	450	450	500	560	450	200	335	355	375	425	560	450	200	375	355	375	400	475	400



## TeSys Giga 3-pole and 4-pole Advanced contactors for load control only (non motor) – (250 to 1050 A)



High power contactors

IEC	General purpose continuous current (A)	Reference					
		Advanced version contactors					
		AC/DC coil voltage					
	UL	3-pole			4-pole		
		24...48 V	48...130 V	200...500 V	24...48 V	48...130 V	200...500 V
AC-1							
250	210	LC1G115BEEA	LC1G115EHEA	LC1G115LSEA	LC1G1154BEEA	LC1G1154EHEA	LC1G1154LSEA
275	230	LC1G150BEEA	LC1G150EHEA	LC1G150LSEA	LC1G1504BEEA	LC1G1504EHEA	LC1G1504LSEA
305	250	LC1G185BEEA	LC1G185EHEA	LC1G185LSEA	LC1G1854BEEA	LC1G1854EHEA	LC1G1854LSEA
330	290	LC1G225BEEA	LC1G225EHEA	LC1G225LSEA	LC1G2254BEEA	LC1G2254EHEA	LC1G2254LSEA
385	340	LC1G265BEEA	LC1G265EHEA	LC1G265LSEA	LC1G2654BEEA	LC1G2654EHEA	LC1G2654LSEA
440	390	LC1G330BEEA	LC1G330EHEA	LC1G330LSEA	LC1G3304BEEA	LC1G3304EHEA	LC1G3304LSEA
550	490	LC1G400BEEA	LC1G400EHEA	LC1G400LSEA	LC1G4004BEEA	LC1G4004EHEA	LC1G4004LSEA
700	630	LC1G500BEEA	LC1G500EHEA	LC1G500LSEA	LC1G5004BEEA	LC1G5004EHEA	LC1G5004LSEA
1050	850	-	LC1G630EHEA	LC1G630LSEA	-	LC1G6304EHEA	LC1G6304LSEA
1050	900	-	LC1G800EHEA	LC1G800LSEA	-	LC1G8004EHEA	LC1G8004LSEA

(1) Switching of IE3/IE4 high efficiency squirrel-cage motors.

Coordination tables:  
pages A5/7 to A5/42

Characteristics:  
pages B9/25 to B9/29

Dimensions:  
pages B9/30 to B9/32

Diagrams:  
page B9/34

# TeSys Control

## Giga High power contactors – Advanced – 3-pole and 4-pole

### Product references

Motor ratings (HP) UL- 3phase				Reference Advanced version contactors AC/DC coil voltage 3-pole		
200/208 V	230/240 V	460/480 V	575/600 V	24-48 V	48-130 V	200-500 V
30	40	75	100	LC1G115BEEA	LC1G115EHEA	LC1G115LSEA
40	50	100	125	LC1G150BEEA	LC1G150EHEA	LC1G150LSEA
50	60	125	150	LC1G185BEEA	LC1G185EHEA	LC1G185LSEA
60	75	150	150	LC1G225BEEA	LC1G225EHEA	LC1G225LSEA
75	100	200	200	LC1G265BEEA	LC1G265EHEA	LC1G265LSEA
100	125	250	300	LC1G330BEEA	LC1G330EHEA	LC1G330LSEA
125	150	300	400	LC1G400BEEA	LC1G400EHEA	LC1G400LSEA
150	200	400	450	LC1G500BEEA	LC1G500EHEA	LC1G500LSEA
250	300	600	700	-	LC1G630EHEA	LC1G630LSEA
300	350	700	800	-	LC1G800EHEA	LC1G800LSEA

COORD.



High power  
contactors

# TeSys Control

Giga High power contactors – Standard – 3-pole and 4-pole

Product references

## TeSys Giga 3-pole Standard contactors – For motor control – (115 to 800 A)

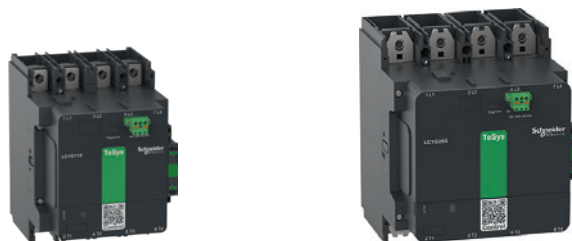


Motor ratings (kW)  $\theta \leq 60^\circ\text{C}$

IEC																				
AC-3							AC-3e <sup>(1)</sup>							AC-4						
230 V	400 V	415 V	440 V	500 V	690 V	1000 V	230 V	400 V	415 V	440 V	500 V	690 V	1000 V	230 V	400 V	415 V	440 V	500 V	690 V	1000 V
kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
30	55	55	75	75	75	-	30	55	55	75	75	75	-	30	55	55	65	65	75	-
37	75	75	90	90	90	75	37	75	75	90	90	90	75	37	75	75	80	90	90	75
55	90	90	110	110	110	75	55	90	90	110	110	110	75	55	90	90	100	110	110	75
55	110	110	132	132	160	132	55	110	110	132	132	160	132	55	110	110	129	132	132	110
75	132	132	160	160	200	160	75	132	132	160	160	200	160	75	132	132	150	160	160	160
90	160	160	200	200	220	185	90	160	160	185	200	220	185	90	160	160	185	200	220	185
110	200	200	250	250	315	220	110	200	200	250	250	315	220	110	200	200	220	250	315	220
160	250	250	315	355	355	335	147	250	250	280	315	355	335	150	250	250	295	295	355	280
200	335	375	400	400	500	450	180	315	335	355	375	500	450	180	315	335	355	375	450	355
250	450	450	450	500	560	450	200	335	355	375	425	560	450	200	375	355	375	400	475	400



## TeSys Giga 3-pole and 4-pole Standard contactors for load control only (non motor) – (250 to 1050 A)



Maximum current (A) ( $\theta \leq 40^\circ\text{C}$ )	General purpose continuous current (A)	Reference			
		Standard version contactors			
		AC/DC coil voltage		4-pole	
IEC	UL	3-pole	3-pole	48...130 V	100...250 V
AC-1					
250	210	LC1G115EHEN	LC1G115KUEN	LC1G1154EHEN	LC1G1154KUEN
275	230	LC1G150EHEN	LC1G150KUEN	LC1G1504EHEN	LC1G1504KUEN
305	250	LC1G185EHEN	LC1G185KUEN	LC1G1854EHEN	LC1G1854KUEN
330	290	LC1G225EHEN	LC1G225KUEN	LC1G2254EHEN	LC1G2254KUEN
385	340	LC1G265EHEN	LC1G265KUEN	LC1G2654EHEN	LC1G2654KUEN
440	390	LC1G330EHEN	LC1G330KUEN	LC1G3304EHEN	LC1G3304KUEN
550	490	LC1G400EHEN	LC1G400KUEN	LC1G4004EHEN	LC1G4004KUEN
700	630	LC1G500EHEN	LC1G500KUEN	LC1G5004EHEN	LC1G5004KUEN
1050	850	LC1G630EHEN	LC1G630KUEN	LC1G6304EHEN	LC1G6304KUEN
1050	900	LC1G800EHEN	LC1G800KUEN	LC1G8004EHEN	LC1G8004KUEN

High power contactors

(1) Switching of IE3/IE4 high efficiency squirrel-cage motors.

Coordination tables:  
pages A5/7 to A5/42

Characteristics:  
pages B9/25 to B9/29

Dimensions:  
pages B9/30 to B9/32

Diagrams:  
page B9/34

# TeSys Control

## Giga High power contactors – Standard – 3-pole and 4-pole

### Product references

Motor ratings (HP) UL- 3phase				Reference Standard version contactors AC/DC coil voltage 3-pole	
200/208 V	230/240 V	460/480 V	575/600 V	48-130 V	100-250 V
30	40	75	100	LC1G115EHEN	LC1G115KUEN
40	50	100	125	LC1G150EHEN	LC1G150KUEN
50	60	125	150	LC1G185EHEN	LC1G185KUEN
60	75	150	150	LC1G225EHEN	LC1G225KUEN
75	100	200	200	LC1G265EHEN	LC1G265KUEN
100	125	250	300	LC1G330EHEN	LC1G330KUEN
125	150	300	400	LC1G400EHEN	LC1G400KUEN
150	200	400	450	LC1G500EHEN	LC1G500KUEN
250	300	600	700	LC1G630EHEN	LC1G630KUEN
300	350	700	800	LC1G800EHEN	LC1G800KUEN

COORD.



High power  
contactors

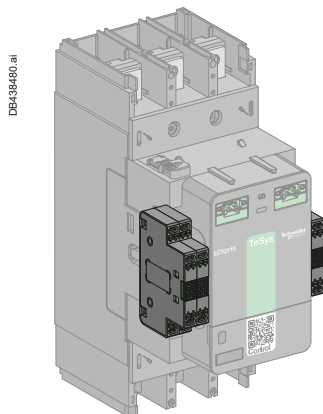
# TeSys Control

## Giga High power contactors – Auxiliary contact modules

### Product references



LAG8N113



Side mounting –  
maximum 2 per side

### Auxiliary contact modules

Auxiliary contacts give an indication of the contactor status. They can be used for remote visual signaling, alarming, electrical locking, relay activation, etc...

Each contactor is equipped with 1 NO + 1 NC auxiliary contact block as standard.

■ Mechanically linked mirror contacts

The NC contact of the auxiliary contact block is mirror contact in conformity to IEC 60947-4-1 and it is mechanically linked to reliably represent the state of the main power contacts and wherever auxiliary contact state reliability is essential. The main power contacts and the NC of the auxiliary contact can't be closed at the same time.

Types of connections:

■ Push-in type.

### Wide contactor compatibility

TeSys Giga auxiliary contact module is compatible with the whole range of TeSys Giga High power contactors .

Each TeSys Giga Contactor can be equipped with up to 4 auxiliary contact modules.

### Electrical characteristics

Characteristics	
Rated thermal current (A)	10
Minimum load	1 mA at 17 V DC
Contact reliability	Failure rate <10 <sup>-8</sup>

### Operational power of contacts conforming to IEC 60947-5-1 - Electrical durability

#### category AC-15

Operating cycles	V	24	48	115	230	400	500
1 million	VA	60	120	280	560	800	500
2 million	VA	24	48	115	230	400	250
3 million	VA	16	32	80	160	280	150

#### category DC-13

Operating cycles	V	24	48	125	250	440
0.5 million	W	100	100	105	110	88
1 million	W	48	72	54	54	55
2 million	W	24	36	38	38	39
3 million	W	16	24	25	25	33

### Connector characteristics

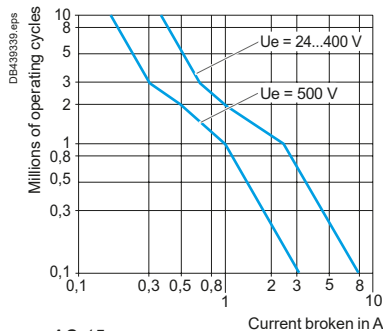
Push-in connection - Dual input			Min/max c.s.a.
Flexible cable per input	1 conductor with cable end	mm <sup>2</sup>	0.75...2.5
	2 conductors with Dual Sleeve	mm <sup>2</sup>	0.75...2.5
	Stripping length	mm	10
Solid cable per input	1 conductor	mm <sup>2</sup>	0.75...2.5
	Stripping length	mm	12

### Auxiliary contact modules

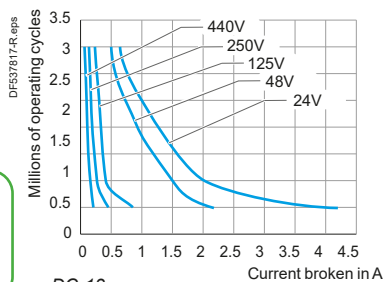
Description	Terminal type	Position	Type of contacts	Sold in lots of	Reference
Auxiliary contact module	Push-in	1 <sup>st</sup> left or right	1 NO + 1 NC	1	LAG8N113P <sup>(1)</sup>
			2 NO	1	LAG8N203P
		2 <sup>nd</sup> left or right	1 NO + 1 NC	1	LAG8N113
			2 NO	1	LAG8N203

<sup>(1)</sup> Always supplied with TeSys Giga LC1G contactors, fitted to the right side lateral face.

COORD.



AC-15



DC-13

High power contactors



## Power terminals

### ‘Cable Memory’ connection blocks

Cables or busbars can be connected to the contactor by means of the optional cable memory connection blocks. When the contactor is removed for maintenance, the cables or busbars remain connected to these connection blocks, making reinstallation faster and easier.



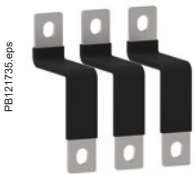
LA9G3101

Cable memory <sup>(1)</sup>				
Description	Compatible with contactors	Quantity Set of	Reference	
'Cable memory' for 3-pole contactors – for holding cables in place	LC1G115...LC1G225	2	LA9G3101	
	LC1G265...LC1G500	2	LA9G3102	
	LC1G630...LC1G800	2	LA9G3103	
'Cable memory' for 4-pole contactors – for holding cables in place	LC1G115...LC1G225	2	LA9G4101	
	LC1G265...LC1G500	2	LA9G4102	
	LC1G630...LC1G800	2	LA9G4103	

(1) 'Cable memory' connection blocks are always supplied with Advanced contactor version.

### Flexible terminal extensions

Flexible connecting bars to connect TeSys Giga High power contactors with MCCBs mounted in the same plane and orientation. These bars can be used along with Advanced or Standard version contactors. They help to get a quick and easy connection between contactor and MCCB with saving in installation time.



LA9G3111

'Flexible terminal extensions' for MCCBs				
Description	Compatible with contactors	To connect with NSX/NS MCCBs	Quantity Set of	Reference
Flexible terminal extensions 3-pole	LC1G115...LC1G225	NSX100...NSX250	3	LA9G3111
	LC1G265...LC1G500	NSX400...NSX630	3	LA9G3112
	LC1G630...LC1G800	NS800...NS1250	3	LA9G3113
Flexible terminal extensions 4-pole	LC1G115...LC1G225	NSX100...NSX250	4	LA9G4111
	LC1G265...LC1G500	NSX400...NSX630	4	LA9G4112
	LC1G630...LC1G800	NS800...NS1250	4	LA9G4113

### Straight terminal extensions



LA9G3601

Description	Suitable for	Compatible with contactors	Quantity Set of	Reference
Straight terminal extension	3P	LC1G115...LC1G225	3	LA9G3601
		LC1G265...LC1G500	3	LA9G3602
		LC1G630...LC1G800	3	LA9G3603
	4P	LC1G115...LC1G225	4	LA9G4601
		LC1G265...LC1G500	4	LA9G4602
		LC1G630...LC1G800	4	LA9G4603

### Right angled terminal extensions



LA9G3682

Description	Suitable for	Compatible with contactors	Quantity Set of	Reference
Right angled side terminal extension	3P	LC1G115...LC1G225	3	LA9G3661
		LC1G265...LC1G500	3	LA9G3662
		LC1G630...LC1G800	3	LA9G3663
Right angled large terminal extension	3P	LC1G115...LC1G225	3	LA9G3671
		LC1G265...LC1G500	3	LA9G3672
		LC1G630...LC1G800	3	LA9G3673
Right angled rear terminal extension	3P	LC1G115...LC1G225	3	LA9G3681
		LC1G265...LC1G500	3	LA9G3682
		LC1G630...LC1G800	3	LA9G3683

### Edgewise terminal extensions



LA9G3631

Description	Suitable for	Compatible with contactors	Quantity Set of	Reference
Edgewise terminal extension	3P	LC1G115...LC1G225	3	LA9G3631
		LC1G265...LC1G500	3	LA9G3632
		LC1G630...LC1G800	3	LA9G3633
	4P	LC1G115...LC1G225	4	LA9G4631
		LC1G265...LC1G500	4	LA9G4632
		LC1G630...LC1G800	4	LA9G4633



LA9G3611



LA9G3613



LA9G4711

## Power terminals

### Spreader kits

Description	Suitable for	Compatible with contactors	Increase of Pole pitch	Quantity Set of	Reference
Spreader kits	3P	LC1G115...LC1G225	35 to 45 mm	3	LA9G3611
		LC1G265...LC1G500	45 to 70 mm	3	LA9G3612
	4P	LC1G115...LC1G225	35 to 45 mm	4	LA9G4611
		LC1G265...LC1G500	45 to 70 mm	4	LA9G4612

### Terminal extensions for larger power connections

Description	Suitable for	Compatible with contactors	Power connection size	Quantity Set of	Reference
Terminal connections	3P	LC1G400...LC1G500	50 mm width	3	LA9G3613
		LC1G630...LC1G800	80 mm width	3	LA9G3614
	4P	LC1G400...LC1G500	50 mm width	4	LA9G4613
		LC1G630...LC1G800	80 mm width	4	LA9G4614

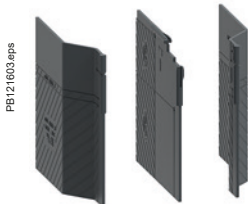
### Spreader kits suitable for box type connectors

Description	Suitable for	Compatible with contactors	Increase of Pole pitch	Suitable for box connectors	Quantity Set of	Reference
Spreader kits for box connectors	3P	LC1G115...LC1G225	35 to 45 mm	DZ2 FJ1/FH1 & AL400	3	LA9G3711
		LC1G265...LC1G500	45 to 70 mm	DZ2 FJ1/FK1 & AL400/AL600	3	LA9G3712
		LC1G630...LC1G800	70 to 80 mm	DZ2 FL1/FK1 & Type S/AL600	3	LA9G3714
	4P	LC1G115...LC1G225	35 to 45 mm	DZ2 FJ1/FH1 & AL400	4	LA9G4711
		LC1G265...LC1G500	45 to 70 mm	DZ2 FJ1/FK1 & AL400/AL600	4	LA9G4712
		LC1G630...LC1G800	70 to 80 mm	DZ2 FL1/FK1 & Type S/AL600	4	LA9G4714

# TeSys Control

## Giga High power contactors – Power wiring accessories

### Product references



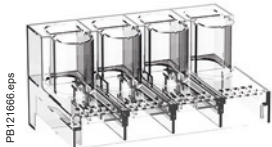
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LA9G4803

### Power terminal accessories

#### Phase separators

Description	Suitable for	Compatible with contactors	Quantity Set of	Reference
Phase separators <sup>(1)</sup>	3P	LC1G115...LC1G800	2	LA9G3801
	4P	LC1G115...LC1G800	3	LA9G4801
	3P – with 50/80 mm spreaders	LC1G400...LC1G800	2	LA9G3803 <sup>(2)</sup>
	4P – with 50/80 mm spreaders	LC1G400...LC1G800	3	LA9G4803 <sup>(3)</sup>



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LA9G4701

#### Terminal shrouds

Description	Compatible with contactors	Quantity Set of	Reference	
			3P	4P
IP 20 Terminal shrouds <sup>(1)</sup>	LC1G115...LC1G225	1	LA9G3701	LA9G4701
	LC1G265...LC1G500	1	LA9G3702	LA9G4702
	LC1G630...LC1G800	1	LA9G3703	LA9G4703



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LA9G4707

#### IP20 Lug cover for connection kits <sup>(4)</sup>

Lug covers are used along with IP 20 terminal shrouds and star-delta, reverser and changeover connection kit assemblies to improve insulation of the coupling bars and achieve IP 20 for the complete assembly.

#### IP20 Lug cover for connection kits

Description	Suitable for	Compatible with contactors	Quantity Set of	Reference
IP 20 Lug cover	3P	LC1G115...LC1G800 <sup>(4)</sup>	6	LA9G3707
	4P	LC1G115...LC1G800 <sup>(4)</sup>	8	LA9G4707

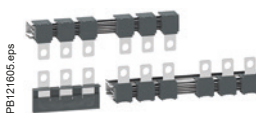


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LV429252

#### Lugs for cable set

Description	Compatible with contactors	Cable section	Reference	
			Set of 3 for 3P	Set of 4 for 4P
Lugs for cable	LC1G115...LC1G225	120 mm <sup>2</sup>	LV429252	LV429256
	LC1G115...LC1G225	150 mm <sup>2</sup>	LV429253	LV429257
	LC1G115...LC1G225	185 mm <sup>2</sup>	LV429254	LV429258
	LC1G265...LC1G500	240 mm <sup>2</sup>	LV432500	LV432501
	LC1G265...LC1G500	300 mm <sup>2</sup>	LV432502	LV432503

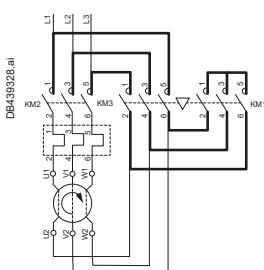


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LA9GQQ330

#### Star-Delta (Wye-Delta) connection kits <sup>(5)</sup>

Description	Suitable for	Compatible for Line (KM2) and Delta (KM3) contactor	+ Star contactor (KM1)	Reference
Connection kit: bars for Line-Delta-Star contactor assembly	3P	LC1G115...LC1G225	LC1G115...LC1G225	LA9GQQ330
		LC1G265...LC1G500	LC1G115...LC1G225	LA9GSQ330
		LC1G265...LC1G500	LC1G265...LC1G500	LA9GSS330
		LC1G630...LC1G800	LC1G265...LC1G500	LA9GTS330
	with cable memory kit	3P	LC1G630...LC1G800	LC1G630...LC1G800
LC1G265...LC1G500			LC1G115...LC1G225	LA9GSQ331
		LC1G630...LC1G800	LC1G265...LC1G500	LA9GTS331



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LA9G970

#### Mechanical interlock

Description	Suitable for	Compatible with contactors		Reference
		Contactor 1	Contactor 2	
Mechanical interlock between contactors <sup>(6)</sup>	3P and 4P	LC1G115...225	LC1G115...225	LA9G970
		LC1G265...500	LC1G265...500	LA9G970
		LC1G265...500	LC1G115...225	LA9G971
	3P	LC1G630...800	LC1G265...500	LA9G972
		LC1G630...800	LC1G630...800	LA9G973

**Note:** RE17RMMWS timer to be used for Star-Delta starter application.

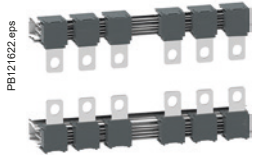
- (1) Either phase separators or terminal shrouds can only be mounted. Phase separators or terminal shrouds are mandatory for operational voltage,  $U_e \geq 690$  V.
- (2) To be used with LA9G3613 and LA9G3614.
- (3) To be used with LA9G4613 and LA9G4614.
- (4) 2 sets of IP20 lug covers are needed for assemblies with LC1G630 and LC1G800 contactors.
- (5) UL listed.
- (6) Maximum 3 auxiliary contacts can be installed between 2 contactors with mechanical interlock kit.

High power contactors

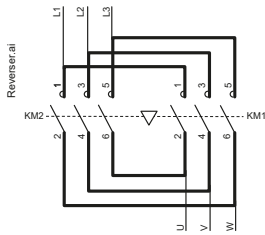
# TeSys Control

## Giga High power contactors – Power wiring accessories

### Product references



LA9G3760

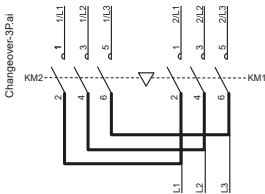


#### Reverser connection kits

Description	Suitable for	Compatible with contactors	Reference
Connection kit: bars for reverser contactor assembly	3P	LC1G115...LC1G225	LA9G3760
		LC1G265...LC1G500	LA9G3761
		LC1G630...LC1G800	LA9G3762

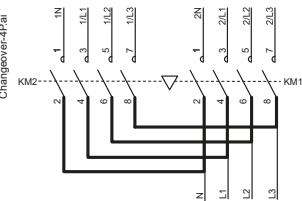


LA9G3750



#### Changeover connection kits

Description	Suitable for	Compatible with contactors	Reference
Connection kit: bars for changeover contactor assembly	3P	LC1G115...LC1G225	LA9G3750
		LC1G265...LC1G500	LA9G3751
		LC1G630...LC1G800	LA9G3752
	4P	LC1G115...LC1G225	LA9G4750
		LC1G265...LC1G500	LA9G4751
		LC1G630...LC1G800	LA9G4752



#### Modular timer relay for star-delta starters

- 8 A, 1 CO, multifunction with spring terminals, 12...240 V AC/DC
- 17.5 mm width same size as a 1-pole circuit breaker
- Covers 0.1 s to 100 h timing
- Transparent cover to protect settings from being tampered
- Multi functional gives flexibility in maintenance

#### Modular timer relay for star-delta starters

Description	Suitable for	Compatible with contactors	Reference
Harmony, Modular timing relay	3P	LC1G115...LC1G800	RE17RMMWS



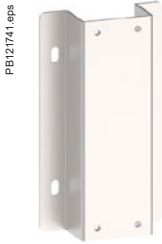
RE17RMMWS

High power contactors

# TeSys Control

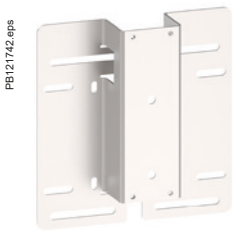
## Giga High power contactors – Mounting accessories

### Product references



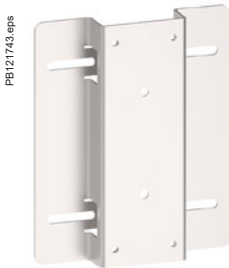
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LA9GRFB1



PB121742.eps

LA9GRFB2

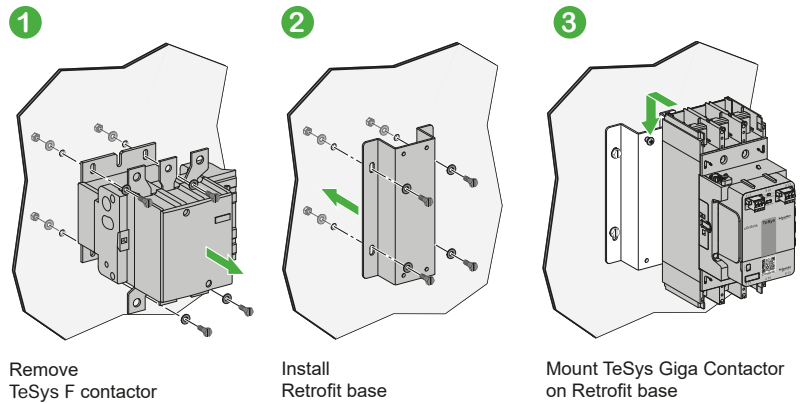


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LA9GRFB3

### Retrofit bases

- Suitable for 3 pole contactors
- Retrofit bases to replace similar ratings of TeSys F contactors with TeSys Giga High power contactors
- Enables quick and simple replacement in the existing installation
- 3 references to cover ranges from LC1F115 to F800



TeSys Giga retrofit bases are designed for integrating new TeSys Giga High power contactors into installations using TeSys F contactors. The retrofit bases help reduce replacement and reinstallation time when you upgrade your system with the new range of contactors. The bases come in two frame sizes.



#### Retrofit bases

Description		Reference
Accessory used to replace	LC1F115-225 replaced by LC1G115-225	LA9GRFB1
TeSys F contactors	LC1F265-500 replaced by LC1G265-500	LA9GRFB2
	LC1F630-800 replaced by LC1G630-800	LA9GRFB3

High power contactors



LX1G3QLSEA

## Control module

**Wide band electronic control**  
**24 V...500 V 50/60 Hz or DC control input**  
**Advanced and standard versions**  
**Accessible from the front for easy and quick replacement**

The control module is needed for the operation of the contactor. It performs the following functions:

- proper functioning of contactor based on the input control voltage
- monitoring and diagnostics of the pole condition
- generation of signaling commands.

The range of control modules is organized:

- per contactor size and for each rating,
- per control voltage range.

Each module has connectors for connecting:

- the coil control A1, A2 circuit & PLC output control (advanced version)
- pole status and diagnostic signaling circuits.



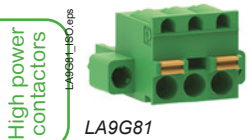
Control module replacement on a 3-pole contactor

Control modules					
Description	For contactors	References per voltage range (V AC/DC)	References per voltage range		
			24 - 48	48 - 130	200 - 500
Control modules for Advanced contactors	3-pole	LC1G115...LC1G225	LX1G3QBEEA	LX1G3QEHEA	LX1G3QLSEA
		LC1G265...LC1G330	LX1G3RBEEA	LX1G3REHEA	LX1G3RLSEA
		LC1G400...LC1G500	LX1G3SBEEA	LX1G3SEHEA	LX1G3SLSEA
		LC1G630...LC1G800	-	LX1G3TEHEA	LX1G3TLSEA
Control modules for Advanced contactors	4-pole	LC1G115...LC1G225	LX1G4QBEEA	LX1G4QEHEA	LX1G4QLSEA
		LC1G265...LC1G330	LX1G4RBEEA	LX1G4REHEA	LX1G4RLSEA
		LC1G400...LC1G500	LX1G4SBEEA	LX1G4SEHEA	LX1G4SLSEA
		LC1G630...LC1G800	-	LX1G4TEHEA	LX1G4TLSEA
Control modules for Standard contactors	3-pole	LC1G115...LC1G225	LX1G3QEHEN	LX1G3QKUEN	
		LC1G265...LC1G330	LX1G3REHEN	LX1G3RKUEN	
		LC1G400...LC1G500	LX1G3SEHEN	LX1G3SKUEN	
		LC1G630...LC1G800	LX1G3TEHEN	LX1G3TKUEN	
	4-pole	LC1G115...LC1G225	LX1G4QEHEN	LX1G4QKUEN	
		LC1G265...LC1G330	LX1G4REHEN	LX1G4RKUEN	
		LC1G400...LC1G500	LX1G4SEHEN	LX1G4SKUEN	
		LC1G630...LC1G800	LX1G4TEHEN	LX1G4TKUEN	

Connector for control module		
Description		Reference
Push-in terminal connector for control module		LA9G81

Remote wear diagnostic (RWD) module	
Description	Reference
Remote wear diagnostic module for TeSys Giga Contactor - 1 NO	LA9GRD10 <sup>(1)</sup>
Remote wear diagnostic module for TeSys Giga Contactor - 1 NC	LA9GRD01 <sup>(1)</sup>

<sup>(1)</sup> Remote Wear Diagnostic (RWD) Module, can be installed and used only in Advanced version.



LA9G81



LA9GRD10

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Switching module kits

## Replaceable switching modules

- Innovative contact switching modules for TeSys Giga High power contactors
- Replace worn-out poles with a new switching module in minutes, without having to disassemble the whole product
- No special tools are needed for the replacement.

### TeSys Giga - Switching modules for TeSys Giga High power contactors , Advanced and Standard versions

Description	For contactors	Quantity Set of	Reference
3 or 4 switching module kits	3-pole	LC1G115...LC1G225	LA9G3QA
		LC1G265...LC1G330	LA9G3RA
		LC1G400...LC1G500	LA9G3SA
		LC1G630...LC1G800	LA9G3TA
	4-pole	LC1G115...LC1G225	LA9G4QA
		LC1G265...LC1G330	LA9G4RA
		LC1G400...LC1G500	LA9G4SA
		LC1G630...LC1G800	LA9G4TA

**Note:** In the event of replacement, replace all switching modules. After replacement, change the position of RESET button on the control module from A to B or B to A.

# TeSys Control

## Giga High power contactors

### Product references

LA9G3101	LA9G3TA	LA9GTT330	LC1G265BEEA	LC1G800LSEA
LA9G3102	LA9G4101	LAG8N113	LC1G265EHEA	LV429252
LA9G3103	LA9G4102	LAG8N113P	LC1G265EHEN	LV429253
LA9G3111	LA9G4103	LAG8N203	LC1G265KUEN	LV429254
LA9G3112	LA9G4111	LAG8N203P	LC1G265LSEA	LV429256
LA9G3113	LA9G4112	LC1G1154BEEA	LC1G3304BEEA	LV429257
LA9G3601	LA9G4113	LC1G1154EHEA	LC1G3304EHEA	LV429258
LA9G3602	LA9G4601	LC1G1154EHEN	LC1G3304EHEN	LV432500
LA9G3603	LA9G4602	LC1G1154KUEN	LC1G3304KUEN	LV432501
LA9G3611	LA9G4603	LC1G1154LSEA	LC1G3304LSEA	LV432502
LA9G3612	LA9G4611	LC1G115BEEA	LC1G330BEEA	LV432503
LA9G3613	LA9G4612	LC1G115EHEA	LC1G330EHEA	LX1G3QBEEA
LA9G3614	LA9G4613	LC1G115EHEN	LC1G330EHEN	LX1G3QEHEA
LA9G3631	LA9G4614	LC1G115KUEN	LC1G330KUEN	LX1G3QEHEN
LA9G3632	LA9G4631	LC1G115LSEA	LC1G330LSEA	LX1G3QKUEN
LA9G3633	LA9G4632	LC1G1504BEEA	LC1G4004BEEA	LX1G3QLSEA
LA9G3650	LA9G4633	LC1G1504EHEA	LC1G4004EHEA	LX1G3RBEEA
LA9G3651	LA9G4701	LC1G1504EHEN	LC1G4004EHEN	LX1G3REHEA
LA9G3652	LA9G4702	LC1G1504KUEN	LC1G4004KUEN	LX1G3REHEN
LA9G3653	LA9G4703	LC1G1504LSEA	LC1G4004LSEA	LX1G3RKUEN
LA9G3661	LA9G4707	LC1G150BEEA	LC1G400BEEA	LX1G3RLSEA
LA9G3662	LA9G4711	LC1G150EHEA	LC1G400EHEA	LX1G3SBEEA
LA9G3663	LA9G4712	LC1G150EHEN	LC1G400EHEN	LX1G3SEHEA
LA9G3671	LA9G4714	LC1G150KUEN	LC1G400KUEN	LX1G3SEHEN
LA9G3672	LA9G4750	LC1G150LSEA	LC1G400LSEA	LX1G3SKUEN
LA9G3673	LA9G4751	LC1G1854BEEA	LC1G5004BEEA	LX1G3SLSEA
LA9G3681	LA9G4752	LC1G1854EHEA	LC1G5004EHEA	LX1G3TEHEA
LA9G3682	LA9G4801	LC1G1854EHEN	LC1G5004EHEN	LX1G3TEHEN
LA9G3683	LA9G4803	LC1G1854KUEN	LC1G5004KUEN	LX1G3TKUEN
LA9G3701	LA9G4QA	LC1G1854LSEA	LC1G5004LSEA	LX1G3TLSEA
LA9G3702	LA9G4RA	LC1G185BEEA	LC1G500BEEA	LX1G4QBEEA
LA9G3703	LA9G4SA	LC1G185EHEA	LC1G500EHEA	LX1G4QEHEA
LA9G3704	LA9G4TA	LC1G185EHEN	LC1G500EHEN	LX1G4QEHEN
LA9G3705	LA9G81	LC1G185KUEN	LC1G500KUEN	LX1G4QKUEN
LA9G3706	LA9G82	LC1G185LSEA	LC1G500LSEA	LX1G4QLSEA
LA9G3707	LA9G970	LC1G2254BEEA	LC1G6304EHEA	LX1G4RBEEA
LA9G3711	LA9G971	LC1G2254EHEA	LC1G6304EHEN	LX1G4REHEA
LA9G3712	LA9G972	LC1G2254EHEN	LC1G6304KUEN	LX1G4REHEN
LA9G3714	LA9G973	LC1G2254KUEN	LC1G6304LSEA	LX1G4RKUEN
LA9G3750	LA9GQQ330	LC1G2254LSEA	LC1G630EHEA	LX1G4RLSEA
LA9G3751	LA9GRD01	LC1G225BEEA	LC1G630EHEN	LX1G4SBEEA
LA9G3752	LA9GRD10	LC1G225EHEA	LC1G630KUEN	LX1G4SEHEA
LA9G3760	LA9GRFB1	LC1G225EHEN	LC1G630LSEA	LX1G4SEHEN
LA9G3761	LA9GRFB2	LC1G225KUEN	LC1G8004EHEA	LX1G4SKUEN
LA9G3762	LA9GRFB3	LC1G225LSEA	LC1G8004EHEN	LX1G4SLSEA
LA9G3801	LA9GSQ330	LC1G2654BEEA	LC1G8004KUEN	LX1G4TEHEA
LA9G3803	LA9GSQ331	LC1G2654EHEA	LC1G8004LSEA	LX1G4TEHEN
LA9G3QA	LA9GSS330	LC1G2654EHEN	LC1G800EHEA	LX1G4TKUEN
LA9G3RA	LA9GTS330	LC1G2654KUEN	LC1G800EHEN	LX1G4TLSEA
LA9G3SA	LA9GTS331	LC1G2654LSEA	LC1G800KUEN	

This document is current. Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.



## Technical Data for Designers

### Contents

TeSys Giga High power contactors:

- > Characteristics ..... B9/25 to B9/29
- > Dimensions ..... B9/30 to B9/33
- > Diagrams ..... B9/34

High power  
contactors

# TeSys Control

## Giga High power contactors

### Characteristics

Environment						
Contactor type			LC1G115... 225	LC1G265... 500	LC1G630... 800	
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1. Over-voltage category III, degree of pollution: 3		V	1000	1000	1000
Rated impulse withstand voltage (Uimp)	Coil not connected to the power circuit		kV	8	8	8
Conforming to standards				IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, JIS C 8201-4-1, GB/T 14048.4, IEC 60721-3-3 3C3		
Product certifications				CB scheme, CCC, cULus, UKCA, EAC, EU-RO-MR by DNV		
Electromagnetic compatibility				IEC 60947-4-1		
Immunity				Following IEC 60947-4-1 Table 16		
Emission				Environment A according to IEC 60947-4-1		
Immunity to radiated electromagnetic interference				20V/m according to IEC/EN 61000-4-3		
Voltage sag immunity (in complete product as well)				Conforming to SEMI-F47		
Degree of protection	Conforming to IEC 60529 / VDE 0106			IP2x with terminal shrouds LA9G37●●/ LA9G47●●		
Climatic withstand				According to IACS E10		
Ambient air temperature around the device	Storage		°C	-60...+80		
	Operation		°C	-25...+60		
	Permissible at Uc		°C	-40...+70		
Net weight	Standard	3P	kg	3.6	7.5	14.2
		4P	kg	4.4	8.2	18
	Advanced	3P	kg	4.1	8.2	17.3
		4P	kg	5.1	8.7	22
Maximum operating altitude	Without derating		m	3000		
Operating positions	Without derating					
	With derating <sup>(1)</sup>					
Shock resistance 1/2 sine wave = 11 ms Conforming to IEC 60068-2-7	Contactor open			10 gn	10 gn	10 gn
	Contactor closed			15 gn	15 gn	15 gn
Vibration resistance 5...300 Hz Conforming to IEC 60068-2-6	Contactor open			2 gn	2 gn	2 gn
	Contactor closed			4 gn	4 gn	4 gn

<sup>(1)</sup> For derating details, please contact technical support.

# TeSys Control

## Giga High power contactors

### Characteristics

#### Pole characteristics

Contactor type		LC1G115	LC1G150	LC1G185	LC1G225	
Number of poles		3 or 4	3 or 4	3 or 4	3 or 4	
Rated operational current (Ie)	Ue ≤ 400 V 3P In AC-3 / AC-3e, θ ≤ 60 °C	A 115 / 115	150 / 145	185 / 177	225 / 209	
	Ue ≤ 1000 V 3P & 4P In AC-1, θ ≤ 40 °C	A 250	275	305	330	
Rated operational voltage (Ue)	Up to	V 1000 <sup>(1)</sup>	1000	1000	1000	
Rated frequency (f) <sup>(2)</sup>		Hz 50 / 60	50 / 60	50 / 60	50 / 60	
Frequency operating limits	With derating <sup>(3)</sup>	Hz 16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	
Conventional thermal current	θ ≤ 40 °C	A 250	275	305	330	
Rated making capacity	I rms conforming to IEC 60947-4-1	A	Making current: 10 x I in AC-3 or 12 x I in AC-4 Making current: 13 x I in AC-3e			
Rated breaking capacity	I rms conforming to IEC 60947-4-1	A	Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4 Making and breaking current: 8.5 x I in AC-3e			
Maximum permissible current No current flowing for previous 60 minutes, at θ ≤ 40 °C	For 10 s	A 1100	1200	1500	1800	
	For 30 s	A 640	700	920	1000	
	For 1 min	A 520	600	740	850	
	For 3 min	A 400	450	500	560	
	For 10 min	A 320	350	400	440	
Short-circuit protection by fuses	Fuses for motor: type aM - Ue ≤ 440 V	A 125	160	200	250	
	Fuses for motor: type aM - Ue ≤ 690 V	A 125	160	160	200	
	Fuses for general application: type gG - Ue ≤ 690 V	A 315	315	315	400	
Average impedance per pole	At Ith and 50 Hz	mΩ 0.18	0.18	0.17	0.15	
Power dissipation per pole for the above operational currents	AC-3 / AC-3e	W 3	5	6	8	
	AC-1	W 10	10	20	20	
Connection	Maximum c.s.a.					
	Bar	Number of bars	2	2	2	2
		Bar	mm 25 x 6	25 x 6	25 x 6	25 x 6
		Cable with lug	mm <sup>2</sup> 185	185	185	185
		Cable with connector	mm <sup>2</sup> 185	185	185	185
		Bolt diameter	mm Ø8.5	Ø8.5	Ø8.5	Ø8.5
Tightening torque	Power circuit connections	N.m 18	18	18	18	

(1) Ue ≤ 1000 V for AC-1 / Ue ≤ 690 V for AC-3 / AC-3e / AC-4.

(2) Please consult your technical support team for application with frequencies other than 50/60 Hz.

(3) For derating details, please contact technical support.

COORD.

Ref.



High power contactors

# TeSys Control

## Giga High power contactors

### Characteristics

Pole characteristics					
LC1G265	LC1G330	LC1G400	LC1G500	LC1G630	LC1G800
3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
265 / 255	330 / 294	400 / 391	500 / 437	630 / 555	800 / 587
385	440	550	700	1050	1050
1000	1000	1000	1000	1000	1000
50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400	16 <sup>2/3</sup> ...400
385	440	550	700	1050	1050
Making current: 10 x I in AC-3 or 12 x I in AC-4					
Making current: 13 x I in AC-3e					
Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4					
Making and breaking current: 8.5 x I in AC-3e					
2200	2650	3600	4000	5050	5500
1230	1800	2400	2800	4400	4600
950	1300	1700	2200	3400	3600
620	900	1200	1500	2200	2600
480	750	1000	1200	1600	1700
315	400	500	500	630	800
250	250	315	400	500	630
400	500	630	800	1250	1250
0.144	0.144	0.1	0.08	0.065	0.065
11	16	16	20	26	42
20	30	30	40	70	70
Maximum c.s.a.					
2	2	2	2	2	2
32 x 10	32 x 10	32 x 10	32 x 10	52 x 20	52 x 20
240	2 x 150	2 x 185	2 x 240	-	-
240	-	-	-	-	-
Ø10.6	Ø10.6	Ø10.6	Ø10.6	Ø13	Ø13
35	35	35	35	58	58

COORD.

Ref.







High power contactors

# TeSys Control

## Giga High power contactors

### Characteristics

TeSys Giga High power contactors - Advanced version - Control circuit characteristics with AC/DC coils						LC1G115...225	LC1G265...330	LC1G400...500	LC1G630...800
Contactor type					V	24...48 AC/DC, 48...130 AC/DC, 200...500 AC/DC <sup>(1)</sup>			
Control voltage limits (θ ≤ 60 °C)	AC input (50/60 Hz) /DC input	Operation	Inrush			0.8 Uc Min...1.1 Uc Max			
			Drop-out			0.1 Uc Max...0.45 Uc Min			
Inputs compatibility PLC digital output 24 V DC Type 3 IEC61131-2			Off-state		V DC	0...5			
			On-state		V DC	11...30			
Average consumption at 20 °C and at Uc (3 and 4-pole contactors)	24...48 V AC/DC coil (BEE)	Inrush	50/60 Hz coil	VA	290	540	490	-	
			DC	W	220	380	350	-	
		Sealed	50/60 Hz coil	VA	10	17.9	17.9	-	
			DC	W	5.7	6.4	6	-	
	48...130 V AC/DC coil (EHE)	Inrush	50/60 Hz coil	VA	260	430	450	560	
			DC	W	190	360	360	440	
		Sealed	50/60 Hz coil	VA	8.9	11.7	11.7	12	
			DC	W	5	9	8.3	8.8	
	200...500 V AC/DC coil (LSE)	Inrush	50/60 Hz coil	VA	295	530	535	670	
			DC	W	215	300	300	390	
		Sealed	50/60 Hz coil	VA	13	16.1	15.4	17	
			DC	W	8	9	8.6	11	
Heat dissipation					W	4...5	5...6	5...6	5...6
Operating time	Closing "C"			ms	40...70	40...70	40...70	40...70	
	Opening "O"			ms	15...50	15...50	15...50	15...50	
Mechanical durability at Uc			In millions of operating cycles (max)		8	8	8	5	
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		AC-1		300	300	300	300	
			AC-3		500	500	500	500	
			AC-4		150	150	60	60	
Coil control and PLC input connection (Push-in type)					Min/max c.s.a.				
Flexible cable	1 conductor with cable end		mm <sup>2</sup>		0.25...2.5	0.25...2.5	0.25...2.5	0.25...2.5	
	2 conductors with Dual Sleeve		mm <sup>2</sup>		0.5...1	0.5...1	0.5...1	0.5...1	
Solid cable	1 conductor		mm <sup>2</sup>		0.2...2.5	0.2...2.5	0.2...2.5	0.2...2.5	
	Stripping length		mm		12	12	12	12	

(1) 24...48 V AC/DC control voltage option is available for LC1G115...LC1G500 ratings.

COORD.

Ref.







High power  
contactors

# TeSys Control

## Giga High power contactors

### Characteristics

TeSys Giga High power contactors - Standard version control circuit characteristics with AC/DC coils					LC1G115...225	LC1G265...330	LC1G400...500	LC1G630...800
Contactors type				<b>V</b>	48...130 AC/DC, 100...250 AC/DC			
Rated control circuit voltage (Uc)	Operation				0.8 Uc Min...1.1 Uc Max <sup>(1)</sup>			
	Drop-out				0.1 Uc Max...0.45 Uc Min			
Average consumption at 20 °C and at Uc (3 and 4-pole contactors)	48...130 V AC/DC coil (EHE)	Inrush	50/60 Hz coil	<b>VA</b>	640	780	965	990
			DC	<b>W</b>	445	695	760	790
		Sealed	50/60 Hz coil	<b>VA</b>	18.7	17.6	17.6	18.7
			DC	<b>W</b>	7.8	7.8	7.8	9.5
	100...250 V AC/DC coil (KUE)	Inrush	50/60 Hz coil	<b>VA</b>	540	700	750	800
			DC	<b>W</b>	380	645	660	680
		Sealed	50/60 Hz coil	<b>VA</b>	12.4	15	15.5	15
			DC	<b>W</b>	7.8	9.1	9.3	9.5
Heat dissipation				<b>W</b>	5...6	6...7	6...7	6...7
Operating time	Closing "C"			<b>ms</b>	40...70	40...70	40...70	40...70
	Opening "O"			<b>ms</b>	15...50	15...50	15...50	15...50
Mechanical durability at Uc	In millions of operating cycles (max)				8	8	8	5
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour	AC-1			300	300	300	300
		AC-3			500	500	500	500
		AC-4			150	150	60	60
Coil control connection (Push-in type)					Min/max c.s.a.			
Flexible cable	1 conductor with cable end		<b>mm<sup>2</sup></b> 		0.25...2.5	0.25...2.5	0.25...2.5	0.25...2.5
	2 conductors with Dual Sleeve		<b>mm<sup>2</sup></b> 		0.5...1	0.5...1	0.5...1	0.5...1
Solid cable	1 conductor		<b>mm<sup>2</sup></b> 		0.2...2.5	0.2...2.5	0.2...2.5	0.2...2.5
	Stripping length		<b>mm</b> 		12	12	12	12

(1) 0.7 Uc Min for 110 V DC input (with KUE coil).

COORD.

Ref.



High power contactors

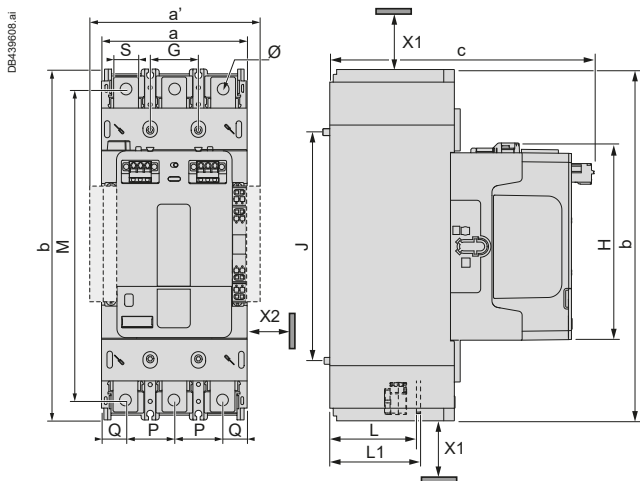
# TeSys Control

## Giga High power contactors

### Dimensions

#### Advanced LC1G115...225 TeSys Giga High power contactors

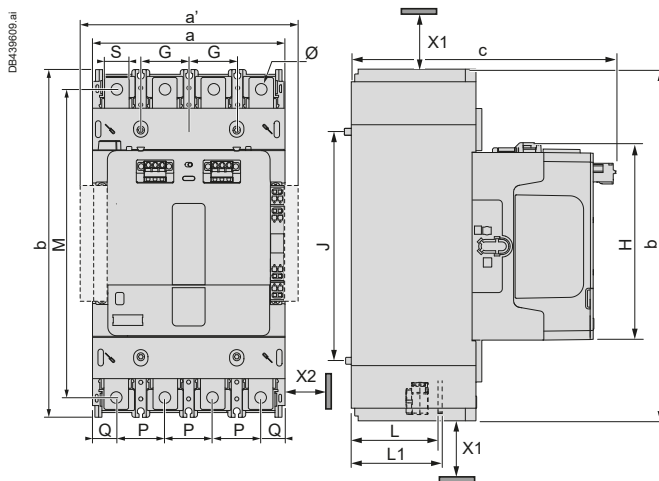
3-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
107.7	254.7	192.9	35	166	225.7	144.1	63.9	66.9	35	18.9	18	8.5

4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
142.7	254.7	192.9	35	166	225.7	144.1	63.9	66.9	35	18.9	18	8.5

X1 (mm) = Minimum electrical clearance.

LC1G115...800, up to 1000 V: 40 mm

X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

LC1G115...800: 5 mm.

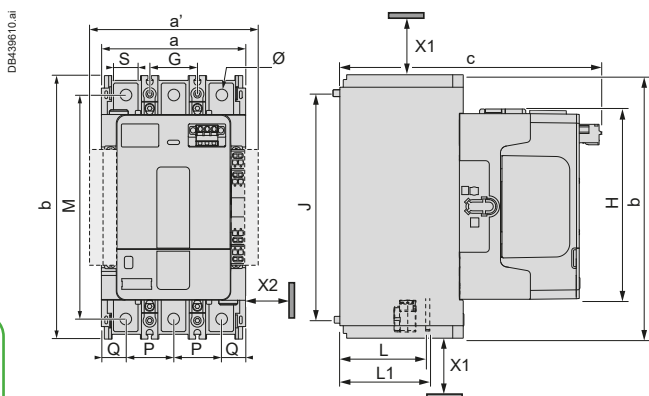
a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

Ref.



#### Standard LC1G115...225 TeSys Giga High power contactors

3-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
107.7	193	192.9	35	166	164.1	139.4	66.9	69.9	35	18.9	18	8.5

X1 (mm) = Minimum electrical clearance.

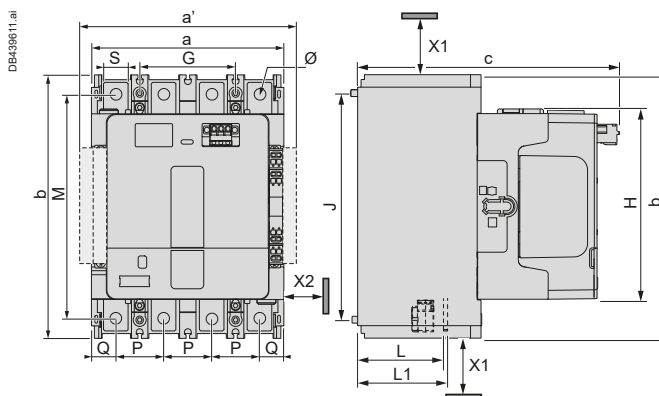
LC1G115...800, up to 1000 V: 40 mm

X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

LC1G115...800: 5 mm.

a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
142.7	193	192.9	35	166	164.1	139.4	66.9	69.9	35	18.9	18	8.5

High power contactors



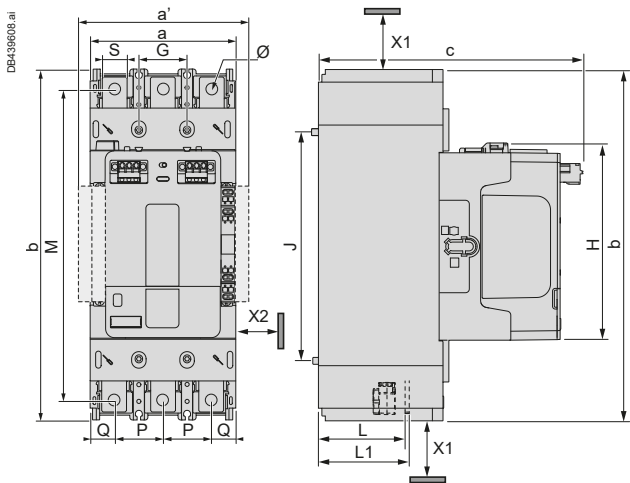
# TeSys Control

## Giga High power contactors

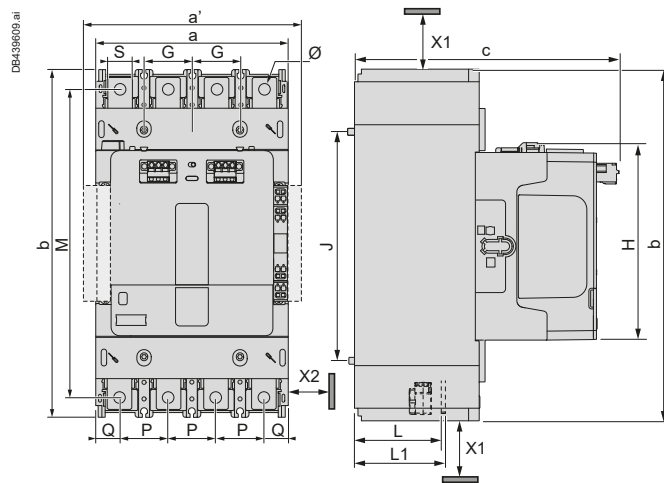
### Dimensions

#### Advanced LC1G265...500 TeSys Giga High power contactors

3-pole



4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
140	290	225.5	45	187	261.6	166.7	72.8	78.8	45	25	30	10.6

All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
185	290	225.5	45	187	261.6	166.7	72.8	78.8	45	25	30	10.6

X1 (mm) = Minimum electrical clearance.

LC1G115...800, up to 1000 V: 40 mm.

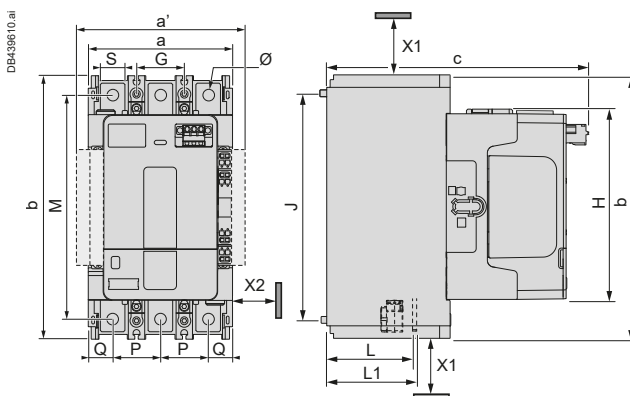
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

LC1G115...800: 5 mm.

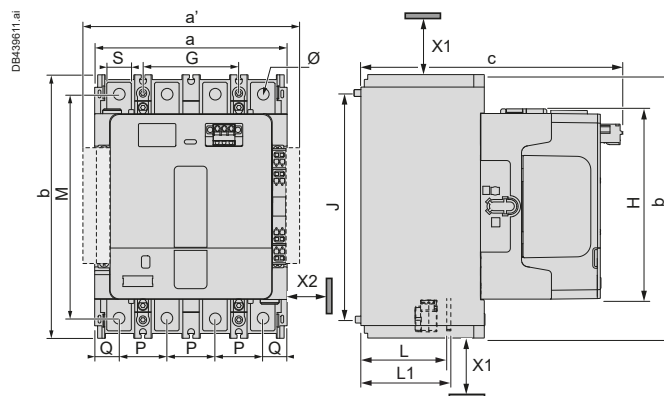
a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

#### Standard LC1G265...500 TeSys Giga High power contactors

3-pole



4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1
140	225	225.5	45	187	197	161.8	78.8	LC1G265-330: 81.8
								LC1G400: 82.8
								LC1G500: 83.8

P	Q	S	Ø
45	25	30	10.6

All dimensions are in mm.

a	b	c	G	J	M	H	L	L1
185	225	225.5	45	187	197	161.8	78.8	LC1G265-330: 81.8
								LC1G400: 82.8
								LC1G500: 83.8

P	Q	S	Ø
45	25	30	10.6

X1 (mm) = Minimum electrical clearance.

LC1G115...800, up to 1000 V: 40 mm.

X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

LC1G115...800: 5 mm.

a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

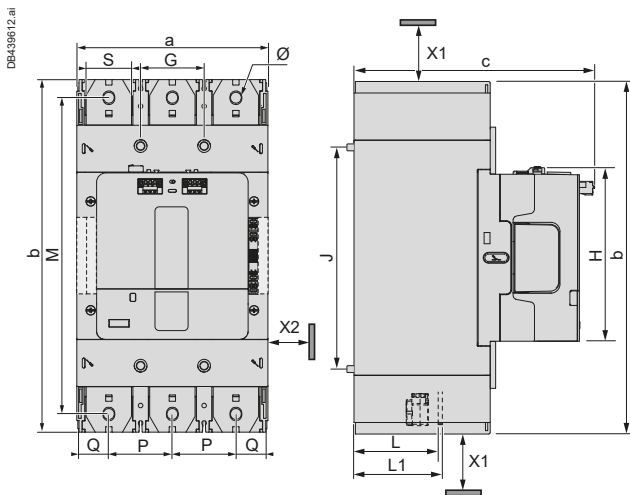
# TeSys Control

## Giga High power contactors

### Dimensions

#### Advanced LC1G630...800 TeSys Giga High power contactors

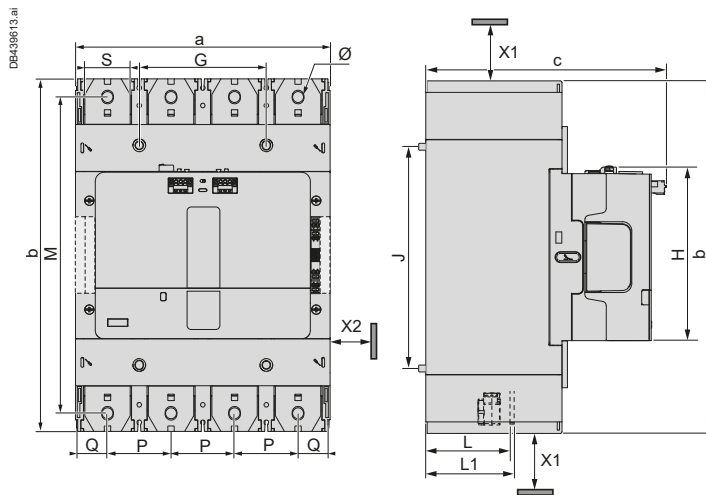
3-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
210.6	388.5	265.6	70	242	348.5	192.1	99	107	70	35.3	48	13

4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
280.6	388.5	265.6	70	242	348.5	192.1	99	107	70	35.3	48	13

X1 (mm) = Minimum electrical clearance.

LC1G115...800, up to 1000 V: 40 mm.

X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

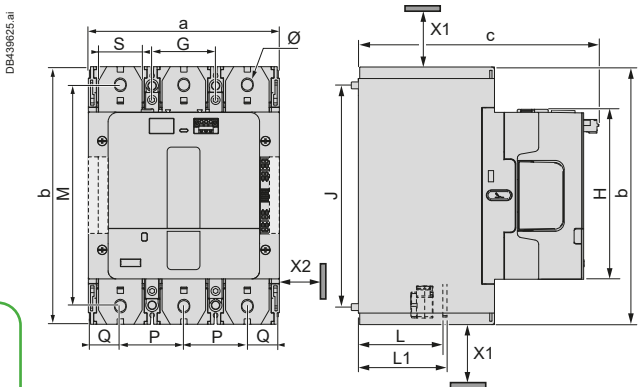
LC1G115...800: 5 mm.

Ref.



#### Standard LC1G630...800 TeSys Giga High power contactors

3-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
210.6	284	265.6	70	242	244	187.4	107	113	70	35.3	48	13

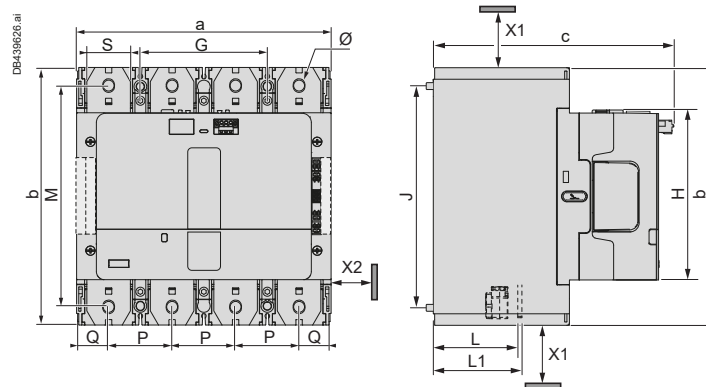
X1 (mm) = Minimum electrical clearance.

LC1G115...800, up to 1000 V: 40 mm.

X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.

LC1G115...800: 5 mm.

4-pole



All dimensions are in mm.

a	b	c	G	J	M	H	L	L1	P	Q	S	Ø
280.6	284	265.6	70	242	244	187.4	107	113	70	35.3	48	13

High power contactors

# TeSys Control

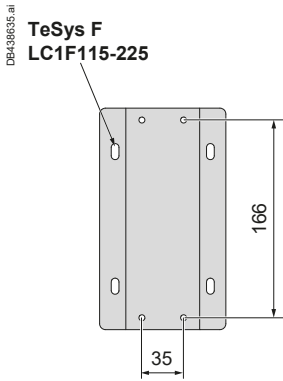
## Retrofit base plates to replace TeSys F contactors

### Dimensions/mounting

#### Dimensions

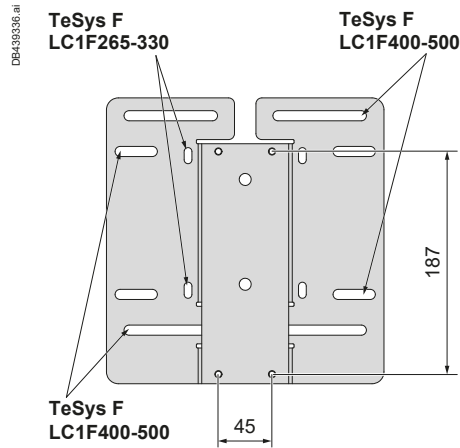
##### LA9GRBF1

For replacement of F115-225



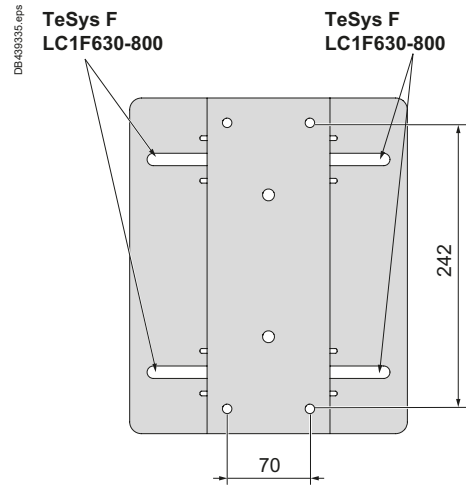
##### LA9GRBF2

For replacement of F265-500



##### LA9GRBF3

For replacement of F630 and F800



**Note:** All dimensions are in mm.

Ref.

High power  
contactors

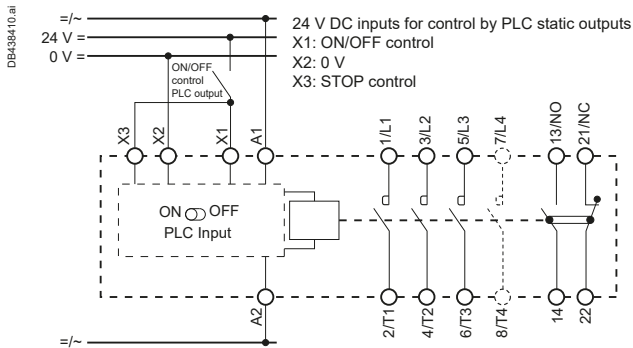
# TeSys Control

## Giga High power contactors

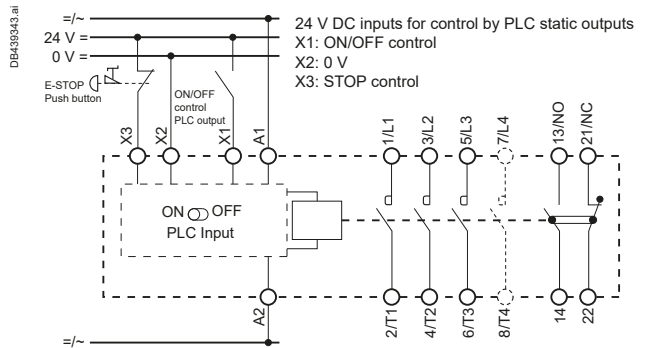
### Diagrams

#### TeSys Giga High power contactors

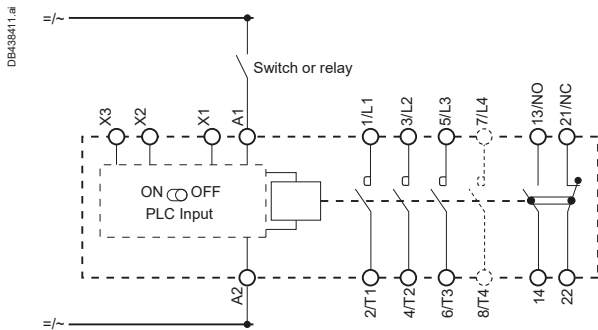
##### Advanced version - ON/OFF control by PLC



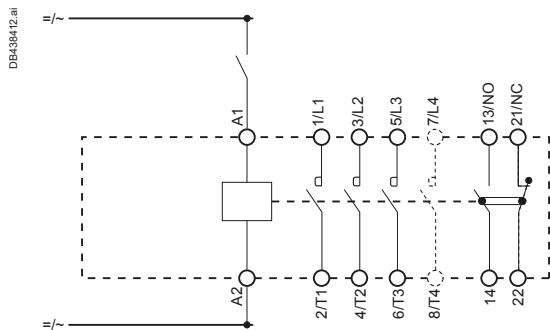
##### Advanced version - ON/OFF control by PLC in safety application



##### Advanced version - Control by switch



##### Standard version



#### Add-on blocks

##### Instantaneous auxiliary contacts

1 N/O + 1 N/C	2 N/O	1 N/O + 1 N/C	2 N/O
<b>LAG8N113P</b> mirror contacts	<b>LAG8N203P</b>	<b>LAG8N113</b> mirror contacts	<b>LAG8N203</b>

(1) Terminal numbers in brackets refer to blocks when mounted upside down, on left-hand side of contactor.



TeSys F, FG, CR1F, V Contactors		
Type of product	Range	Pages
TeSys F Contactors for AC-3 applications	780 and 1000 A	 B10/2
TeSys F Contactors for AC-1 applications	From 1200 A to 2600 A	 B10/3
TeSys FG Shockproof contactors (to be discontinued)	From 150 to 630 A - AC-3	 B10/4
TeSys CR1F Magnetic latching contactors	From 150 to 630 A - AC-3	 B10/5
TeSys F Auxiliary contact blocks, accessories, spare parts, delayed opening devices		B10/6
TeSys F Coils		B10/11
Accessories, coils for shockproof and magnetic latching contactors TeSys FG (to be discontinued), TeSys CR1F		B10/15
TeSys V Vacuum contactors – 1500 V	From 160 to 610 A - AC-3 From 160 to 630 A - AC-1	 B10/22

# TeSys Control

## F High power contactors

### Product references



LC1F780



LC1F1000



### 3-pole contactors - Motors 780 to 1000 A / 440 V Category AC-3 - a.c. or d.c. coils

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Rated operational current in AC-3	Basic reference, to be completed by adding the voltage code <sup>(1)</sup>	Weight
220 V	380 V	660 V			440 V up to		A	Screw fixing, cabling	kg
kW	kW	kW	kW	kW	kW				
220	400	425	425	450	475	450	780	LC1F780●●	39.500
315	560	630	670	-	-	-	1000	LC1F1000●●	31.000

*Note:* auxiliary contact blocks, modules and accessories: see pages B10/6 to B10/15.

*(1) Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.*

Volts ~	24	48	110	115	120	208	220	230	240	380	400	415	440
<b>LC1F1250</b>													
40...400 Hz (coil LX1)	-	E7	F7	FE7	G7	L7	M7	P7	U7	Q7	V7	N7	R7
<b>LC1F780</b>													
40...400 Hz (coil LX1)	-	-	F7	FE7	F7	L7	M7	P7	U7	Q7	V7	N7	R7
<b>LC1F1000, F1400, F1700, F2100, F2600</b>													
40...400 Hz (coil LX1F)	-	-	F7	-	G7	-	M7	P7	U7	Q7	V7	N7	R7
Volts ∴	24	48	110	125	220	230	250	400	440				
<b>LC1F1250</b>													
(coil LX4F)	-	ED	FD	GD	MD	-	UD	-	RD				
<b>LC1F780, LC1F1000, F1400, F1700, F2100, F2600</b>													
(coil LX4F)	-	-	FD	GD	MD	-	UD	-	RD				
Volts ~ / ∴	100...250												
<b>LC1SF1200, LC1F1250, F2600</b>													
(coil LXE + ECM LA4EM)	KUE												

# TeSys Control

## F High power contactors

### Product references

PB107573.eps



LC1F1250

PB107575.eps




LC1F1700...2100

PB114811.eps



LC1F2600

### 3 or 4-pole contactors - Loads 1200 to 2600 A / 440 V Category AC-1 - a.c. or d.c. coils

Maximum current in AC-1 ( $\theta \leq 40^\circ\text{C}$ )	Number of poles 	Basic reference, to be completed by adding the voltage code <sup>(1)</sup> Screw fixing, cabling	Weight
A			kg
1200	3	LC1SF1200KUE	13.400
1260	3	LC1F1250●●	19.000
1400	3	LC1F1400●●	29.000
1600	3	LC1F780●●	39.500
	4	LC1F7804●●	48.000
1700	3	LC1F1700●●	30.000
2100 <sup>(2)</sup>	3	LC1F2100●●	31.000
2600 <sup>(3)</sup>	3	LC1F2600●●	36.000

**Note:** auxiliary contact blocks, modules and accessories: see pages B10/6 to B10/15.

<sup>(1)</sup> Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.

<sup>(2)</sup> With set of right-angled connectors LA9F2100 (see page B10/9).

<sup>(3)</sup> With set of right-angled connectors LA9F2600 (see page B10/9).



# TeSys Control

## FG High power shockproof contactors (to be discontinued)

### Product references



LC1FG150



LC1FG185



LC1FG265

**Important notice: LC1FG range is planned for discontinuation without replacement. Before ordering, please consult your regional sales office for availability.**

### 3-pole shockproof contactors - Motors 150 to 630 A / 440 V AC-3, loads 250 to 1000 A / 440 V / AC-1 - a.c. coil

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Rated operational current in cat. AC-3, 440 V/AC-1 up to	Basic reference, to be completed by adding the voltage code <sup>(1)</sup> Screw fixing, cabling <sup>(2)</sup>	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V			
kW	kW	kW	kW	kW	kW	kW	A		kg
40	75	80	80	90	100	65	150/250	LC1FG150●●	3.430
55	90	100	100	110	110	100	185/275	LC1FG185●●	4.650
75	132	140	140	160	160	147	265/350	LC1FG265●●	7.440
110	200	220	250	257	280	185	400/500	LC1FG400●●	9.100
147	250	280	295	355	335	335	500/700	LC1FG500●●	11.350
200	335	375	400	400	450	450	630/1000	LC1FG630●●	18.600

**Note:** these contactors have instantaneous auxiliary contact blocks with 2 N/O contacts, 1 N/C contact and one coil maintaining contact.

**(1) Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.**

**(2) Power terminals can, if required, be protected against direct finger contact by the addition of shrouds, to be ordered separately.**



High power contactors



# TeSys Control

## CR1F High power magnetic latching contactors

### Product references



CR1F1854



CR1F500

### 3, 4 pole - Motors 150 to 630 A / 440 V / AC-3, loads 250 to 1000 A / 440 V AC-1 - a.c. or d.c. coils

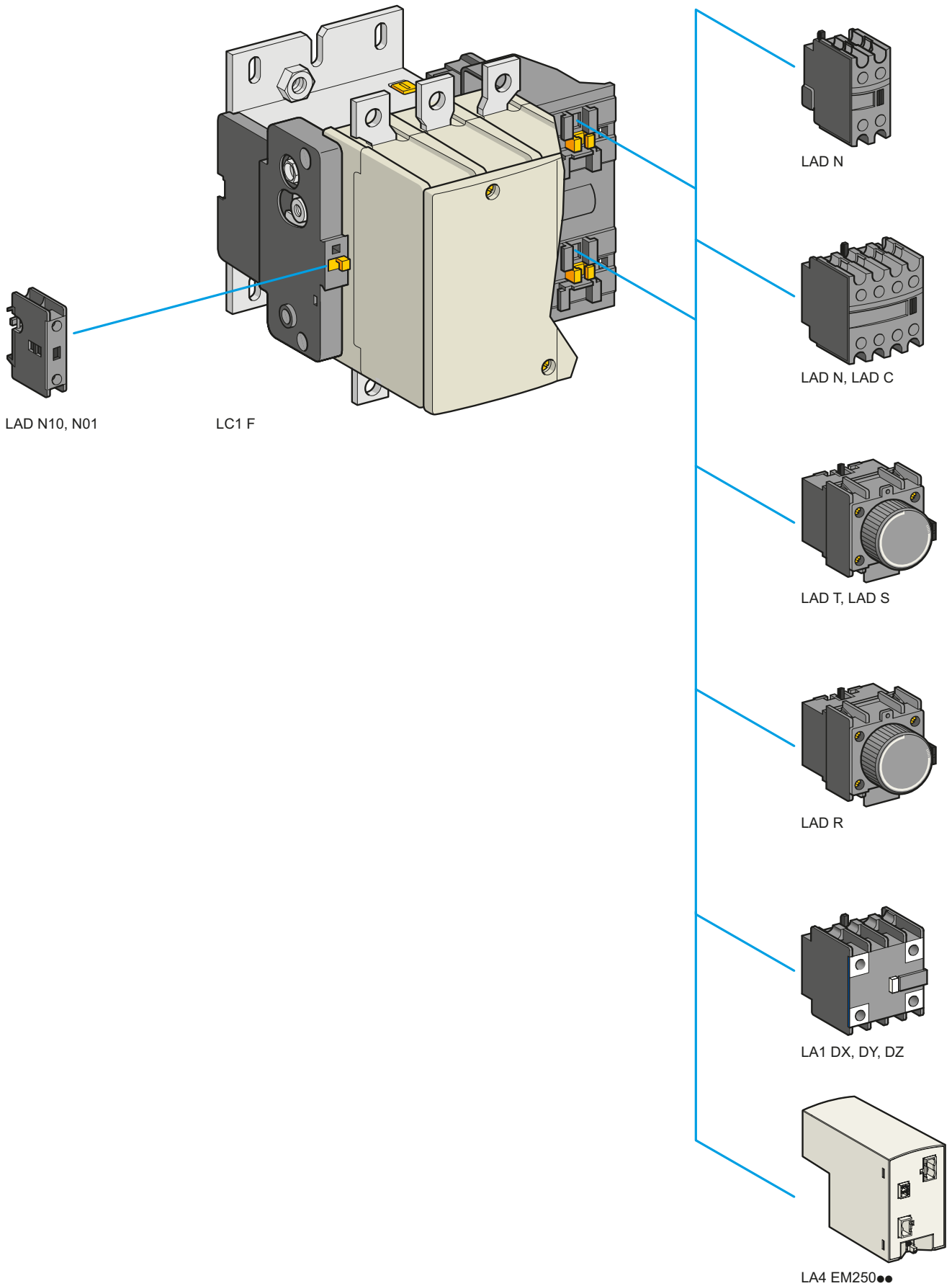
Maximum thermal current in category AC-1 40 °C	Rated operational current in category AC-3 (440 V max)	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code <sup>(1)</sup>	Weight
A	A					kg
250	150	3	—	—	CR1F150●●	3.500
		4	—	—	CR1F1504●●	3.800
275	185	3	—	—	CR1F185●●	4.600
		4	—	—	CR1F1854●●	5.400
350	265	3	—	—	CR1F265●●	7.400
		4	—	—	CR1F2654●●	8.500
500	400	3	—	—	CR1F400●●	9.100
		4	—	—	CR1F4004●●	10.200
700	500	3	—	—	CR1F500●●	11.300
		4	—	—	CR1F5004●●	12.900
1000	630	3	—	—	CR1F630●●	18.600
		4	—	—	CR1F6304●●	21.500

**Note:** accessories, replacement parts and spare coils, see pages B10/19 to B10/21.

**(1)** Standard control circuit voltages: see page B10/20. Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.







High power contactors



High power contactors

#### Instantaneous auxiliary contact blocks

##### For use in normal operating environments

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Composition				Reference
						
1	1	-	-	1	-	LADN10
		-	-	-	1	LADN01
2	2	-	-	1	1	LADN11
		-	-	2	-	LADN20
		-	-	-	2	LADN02
4	2	-	-	2	2	LADN22
		-	-	1	3	LADN13
		-	-	4	-	LADN40
		-	-	-	4	LADN04
		-	-	3	1	LADN31
		-	-	2	2 <sup>(1)</sup>	LADC22

##### With terminal referencing conforming to EN 50012





2	2	-	-	1	1	LADN11P
		-	-	1	1	LADN11G
4	2	-	-	2	2	LADN22P
		-	-	2	2	LADN22G

#### Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure 6 to the end of the references selected above. Example: LADN11 becomes LADN116.

#### Instantaneous auxiliary contact blocks with dust and damp protected contacts

##### Recommended for use in particularly harsh industrial environments

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Composition				Reference
						
2	2	2	-	-	-	LA1DX20
		2	2 <sup>(2)</sup>	-	-	LA1DY20
4	2	2	-	2	-	LA1DZ40
		2	-	1	1	LA1DZ31

#### Time delay auxiliary contact blocks

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Time delay		Reference
		Type	Range s	
1 N/O +	2	On-delay	0,3 <sup>(3)</sup>	LADT0
			1...30	LADT2
		Off-delay	10...180	LADT4
			1...30 <sup>(4)</sup>	LADS2
1 N/C	2	Off-delay	0,3 <sup>(3)</sup>	LADR0
			1...30	LADR2
			10...180	LADR4

(1) Including 1 N/O + 1 N/C make before break.

(2) Device fitted with 4 earth screen continuity terminals.

(3) With extended scale from 0.1 to 0.6 s.

(4) With switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.



PB11612.eps



LA9D09981

PB11603.eps



LA4F...



### Suppressor blocks <sup>(1)</sup>

#### RC circuits (resistor-capacitor)

- Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5 % total harmonic distortion.
- Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max.
- Slight increase in drop-out time (1.1 to 1.3 times the normal time).

Mounting	Uc		Reference
Clip-on mounting on all ratings and all a.c. coils.	~	24...48 V	LA4FRCE
		50...110 V	LA4FRCP
		127...240 V	LA4FRCP
		265...415 V	LA4FRCV
Suppressor block bracket			LA9D09981

#### Varistors (peak limiting)

- Protection provided by limiting the transient voltage to 2 Uc max.
- Maximum reduction of transient voltage peaks.

Clip-on mounting on all ratings and all coils.	~ or ---	24...48 V	LA4FVE
		50...110 V	LA4FVF
		127...240 V	LA4FVP
		265...415 V	LA4FVV

#### Diodes

- No overvoltage or oscillating frequencies.
- Increase in drop-out time (3 to 4 times the normal time).
- Polarised component.

Clip-on mounting on all ratings and all d.c. coils.	---	24...48 V	LA4FDE
		55...110 V	LA4FDF
		280...440 V	LA4FDV

#### Bidirectional peak limiting diodes (transil)

- Protection provided by limiting the transient voltage to between 2 and 2.5 times Uc max.
- Maximum reduction of transient voltage peaks.

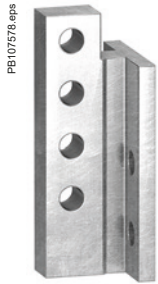
Clip-on mounting on all ratings and all coils.	~ or ---	24...48 V	LA4FTE
		50...110 V	LA4FTF
		127...240 V	LA4FTP
		265...415 V	LA4FTV

<sup>(1)</sup> Order 2 x LA4F... for F780, F1000, F1400, F1700, F2100 & F2600 contactors and connect one suppressor block across each coil.

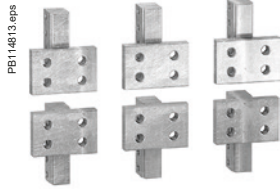
# TeSys Control

## F High power contactors - Connection accessories

### Product references



LA9F2100 (set of 6)



LA9F2600 (set of 6)

### Right-angled connectors

#### For contactors or thermal overload relays

For use with Contactors	With connector plates		Set of 6 connectors	
	Width	Type	Set reference	Weight kg
LC1F1000, F1400, F1700, F2100	60 mm	Rear	LA9F2100	9.550
LC1F2600	100 mm	Rear	LA9F2600	4.380



High power  
contactors

# TeSys Control

## F High power contactors - Accessories

### Product references



PB121430.eps

LA9F801

Phase separators		
For use on 3-pole contactors	No. of barriers per set	Set reference
LC1F1400, F1700 F2100 and F2600	4	LA9F801



PB121429.eps

LA4EM250FK

Electronic Control Module (ECM) <sup>(1)</sup>		
For use on 3 and 4-pole contactors	With coil reference	ECM reference
LC1SF1200	LXEFK250	LA4EM250FK
LC1F1250	LXEFL250	LA4EM250FL
LC1F2600	LXEFL2502	LA4EM250FL2

<sup>(1)</sup> ECM enables wider coil operating voltage for the F range of contactors.

**Note:** Refer to page number B10/31 for detailed technical information.

Sets of contacts				
Per pole: 2 fixed contacts, 1 moving contact, 2 deflectors, 1 back-plate, clamping screws and washers.				
For contactor	Type	Replacement for	Reference	Weight kg
3-pole	LC1F780	1 pole	LA5F780801 <sup>(1)</sup>	4.700
		3 poles	LA5F780803	13.200
4-pole	LC1F7804	1 pole	LA5F780801 <sup>(1)</sup>	4.700
		4 poles	LA5F780804	17.300

<sup>(1)</sup> Comprising 2 identical items per pole.

High power  
contactors



#### Control Panel Technical Guide:

Description and product reference of all mounting kits and wiring accessories for D, K, F - Star Delta, reverser, low-high speed control motor starters and changeover applications.

> Ref. Document: CPTG011\_EN



> Click on QR code  
to download



LXEFK250

### Coils for a.c./ d.c. wide band control voltage

Operates on AC or DC voltage inputs.  
 Low sealed consumption.  
 High tolerance to inrush voltage drops.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Voltage code	Reference
	Inrush	Sealed		
V	Ω	Ω		
<b>For contactor LC1SF1200</b>				
100...250	8	8	KUE	LXEFK250

#### Specifications

Average consumption at 20 °C; 50 Hz/ 60 Hz; cos φ = 0.5-0.6:

- inrush: 550 VA max
- sealed: 8 VA max.

Heat dissipation: 5.5 W max.

Operating time at Uc: closing = 40...80 ms, opening = 6...54 ms.

Operating cycles/hour (θ ≤ 55 °C): 1200.

Embedded PLC input according IEC 61131-2 type 2:

- Off state: 0...5 V DC
- On state: 11...30 V DC.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Voltage code	Reference
	Inrush	Sealed		
V	Ω	Ω		
<b>For contactor LC1F1250</b>				
100...250	4.78	4.78	KUE	LXEFL250

#### Specifications

Average consumption at 20 °C; 50 Hz/ 60 Hz; cos φ = 0.5-0.6:

- inrush: 680 VA max
- sealed: 10 VA max.

Heat dissipation: 5.5 W max.

Operating time at Uc: closing = 40...80 ms, opening = 6...54 ms.

Operating cycles/hour (θ ≤ 55 °C): 1200.

Embedded PLC input according IEC 61131-2 type 2:

- Off state: 0...5 V DC
- On state: 11...30 V DC.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Voltage code	Reference
	Inrush	Sealed		
V	Ω	Ω		
<b>For contactor LC1F2600</b>				
100...250	2.27	2.27	KUE	LXEFL2502

#### Specifications

Average consumption at 20 °C; 50 Hz/ 60 Hz; cos φ = 0.5-0.6:

- inrush: 2400 VA max
- sealed: 24.5 VA max.

Heat dissipation: 5.5 W max.

Operating time at Uc: closing = 54...88 ms, opening = 20...28 ms.

Operating cycles/hour (θ ≤ 55 °C): 600.

Embedded PLC input according IEC 61131-2 type 2:

- Off state: 0...5 V DC
- On state: 11...30 V DC.

# TeSys Control

## F High power contactors - Coils

### Product references

PB121423.eps



LX1FK●●●

PB121424.eps



LX1FL●●●

### Coils for a.c., 40...400 Hz control voltage

Low sealed consumption.

Operate on networks with harmonic numbers  $\leq 7$ .

Control circuit voltage Uc	Average resistance at 20 °C $\pm 10\%$		Inductance of closed circuit H	Voltage code	Reference	Weight kg
	Inrush $\Omega$	Sealed $\Omega$				
<b>For contactor LC1SF1200</b>						
220	35.5	915	4.55	M7	LX1FK220	1.150
230	35.5	915	4.55	P7	LX1FK220	1.150

#### Specifications

Average consumption at 20 °C for 50 or 60 Hz,  $\cos \varphi = 0.9$ :

- inrush: 1050...1150 VA,
- sealed: 16...20 VA.

Operating cycles/hour ( $\theta \leq 55\text{ °C}$ ):  $\leq 2400$ .

Heat dissipation: 18 W.

Operating time at U<sub>c</sub>: closing = 40...75 ms, opening = 100...170 ms.

#### For contactor LC1F1250

110/120	6.45	165	1.85	F7	LX1FL110	1.500
115	6.45	165	1.85	FE7	LX1FL110	1.500
200/208	20.5	605	2.65	L7	LX1FL200	1.500
220	25.5	730	3.35	M7	LX1FL220	1.500
230	25.5	730	3.35	P7	LX1FL220	1.500
240	25.5	730	3.35	U7	LX1FL220	1.500
265/277	31	900	4.1	W7	LX1FL260	1.500
380	78	2360	10.5	Q7	LX1FL380	1.500
400	78	2360	10.5	V7	LX1FL380	1.500
415	96	2960	13	N7	LX1FL415	1.500
440	96	2960	13	R7	LX1FL415	1.500

#### Specifications

Average consumption at 20 °C for 50 or 60 Hz,  $\cos \varphi = 0.9$ :

- inrush: 1500...1730 VA,
- sealed: 20...25 VA.

Operating cycles/hour ( $\theta \leq 55\text{ °C}$ ): 1200.

Heat dissipation: 20 W.

Operating time at U<sub>c</sub>: closing = 40...80 ms, opening = 100...200 ms.



PB112321.eps



LX1F●●●

PB114221.eps



LX1FK●●●

PB121421.eps



LX1FL●●●

## Coils for a.c., 40...400 Hz control voltage

Low sealed consumption.

Operate on networks with harmonic numbers  $\leq 7$ .

Control circuit voltage $U_c$	Average resistance at 20 °C $\pm 10$ %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	$\Omega$	$\Omega$	H			kg
<b>For contactor LC1F780</b>						
110/120	4.95 <sup>(2)</sup>	230 <sup>(2)</sup>	0.21	F7	LX1FX110 <sup>(1)</sup>	3.000
115	4.95 <sup>(2)</sup>	230 <sup>(2)</sup>	0.21	FE7	LX1FX110 <sup>(1)</sup>	3.000
220	19.5 <sup>(2)</sup>	920 <sup>(2)</sup>	0.82	M7	LX1FX220 <sup>(1)</sup>	3.000
230	19.5 <sup>(2)</sup>	920 <sup>(2)</sup>	0.82	P7	LX1FX220 <sup>(1)</sup>	3.000
240	19.5 <sup>(2)</sup>	920 <sup>(2)</sup>	0.82	U7	LX1FX220 <sup>(1)</sup>	3.000
265/277	29.8 <sup>(2)</sup>	1330 <sup>(2)</sup>	1.25	W7	LX1FX280 <sup>(1)</sup>	3.000
415/480	74.3 <sup>(2)</sup>	3340 <sup>(2)</sup>	2.8	N7	LX1FX415 <sup>(1)</sup>	3.000
440	74.3 <sup>(2)</sup>	3340 <sup>(2)</sup>	2.8	R7	LX1FX415 <sup>(1)</sup>	3.000

### Specifications

Average consumption at 20 °C for 50 or 60 Hz,  $\cos \varphi = 0.9$ :

■ inrush: 1900...2300 VA, sealed: 44...55 VA.

Operating cycles/hour ( $\theta \leq 55$  °C): 600.

Heat dissipation: 2 x 22 W.

Operating time at  $U_c$ : closing = 40...80 ms, opening = 130...230 ms.

Control circuit voltage $U_c$	Average resistance at 20 °C $\pm 10$ %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	$\Omega$	$\Omega$	H			kg
<b>For contactor LC1F1000</b>						
110	4.718	98.4	0.63	F7	LX1FK055 <sup>(3)</sup>	1.150
<b>For contactors LC1F1400, LC1F1700 and LC1F2100</b>						
120	5.92	106	0.72	G7	LX1FK070 <sup>(3)</sup>	1.150
<b>For contactors LC1F1000, LC1F1400, LC1F1700 and LC1F2100</b>						
220	9.55	260	1.25	M7	LX1FK110 <sup>(3)</sup>	1.150
230	9.55	260	1.25	P7	LX1FK110 <sup>(3)</sup>	1.150
277	16.5	420	2.25	W7	LX1FK140 <sup>(3)</sup>	1.150
415	35.5	915	4.55	N7	LX1FK220 <sup>(3)</sup>	1.150
440	35.5	915	4.55	R7	LX1FK220 <sup>(3)</sup>	1.150
500	44.5	1160	5.75	S7	LX1FK240 <sup>(3)</sup>	1.150

### Specifications

Average consumption at 20 °C for 50 or 60 Hz,  $\cos \varphi = 0.9$ :

■ inrush: 1600...2400 VA, sealed: 29...37 VA.

Operating cycles/hour ( $\theta \leq 55$  °C): 600.

Heat dissipation: 2 x 18 W.

Operating time at  $U_c$ : closing = 40...75 ms, opening = 100...170 ms.

Control circuit voltage $U_c$	Average resistance at 20 °C $\pm 10$ %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	$\Omega$	$\Omega$	H			kg
<b>For contactors LC1F2600</b>						
110	2.05	41	0.18	F7	LX1FL065 <sup>(3)</sup>	1.150
120	2.05	41	0.18	G7	LX1FL065 <sup>(3)</sup>	1.150
220	6.45	165	0.76	M7	LX1FL110 <sup>(3)</sup>	1.150
230	6.45	165	0.76	P7	LX1FL110 <sup>(3)</sup>	1.150
277	10.2	317	1.45	W7	LX1FL140 <sup>(3)</sup>	1.150
380	20.5	605	2.65	Q7	LX1FL200 <sup>(3)</sup>	1.150
400	20.5	605	2.65	V7	LX1FL200 <sup>(3)</sup>	1.150
415	25.5	730	3.35	N7	LX1FL220 <sup>(3)</sup>	1.150
440	25.5	730	3.35	R7	LX1FL220 <sup>(3)</sup>	1.150
500	30.8	901	4.13	S7	LX1FL260 <sup>(3)</sup>	1.150

### Specifications

Average consumption at 20 °C for 50 or 60 Hz,  $\cos \varphi = 0.9$ :

■ inrush: 2200...2700 VA, sealed: 37.4...50.6 VA.

Operating cycles/hour ( $\theta \leq 55$  °C): 600.

Heat dissipation: 2 x 25 W.

Operating time at  $U_c$ : closing = 40...80 ms, opening = 100...200 ms.

- (1) Reference of set of 2 identical coils, to be connected in series.  
 (2) Value for the 2 coils in series.  
 (3) Order 2 coils and connect them in series.

High power contactors

# TeSys Control

## F High power contactors - Coils

### Product references

PB1122B\_40.eps



LX4FK●●●

#### LX4FK specifications

Average consumption:  
 ■ inrush: 990...1220 W,  
 ■ sealed: 4.54...8 W.  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): 2400.  
 Operating time at  $U_c$ : closing = 50...60 ms,  
 opening = 45...60 ms.

#### LXE specifications

Average consumption:  
 ■ inrush 50/60 Hz: 280...730 VA rms  
 DC: 270...680 W,  
 ■ sealed: 50/60 Hz: 4.5...10 VA rms  
 DC: 2.5...5.5 W.  
 Heat Dissipation: 2.5...5.5 W  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): < 2400.  
 Operating time at  $U_c$ : closing = 40...80 ms,  
 opening = 6...54 ms.  
 Embedded PLC input according IEC 61131-2 type 2:  
 ■ Off state: 0...5 V DC  
 ■ On state: 11...30 V DC.

#### LX4FL specifications

Average consumption:  
 ■ inrush: 1420...1920 W,  
 ■ sealed: 6.5...12.5 W.  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): 1200.  
 Operating time at  $U_c$ : closing = 60...70 ms,  
 opening = 40...50 ms.

#### LX4FX specifications

Average consumption:  
 ■ inrush: 1960...2420 W  
 ■ sealed: 42...52 W.  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): 600.  
 Operating time at  $U_c$ : closing = 70...80 ms,  
 opening = 100...130 ms.

#### LX4FK specifications with LC1F1000,1400,1700, 2100

Average consumption:  
 ■ inrush: 2000...2200 W,  
 ■ sealed: 8...10 W.  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): 600.  
 Operating time at  $U_c$ : closing = 50...60 ms,  
 opening = 45...60 ms.

#### LX4FL specifications with LC1F2600

Average consumption:  
 ■ inrush: 2130...2880 W  
 ■ sealed: 13...25 W.  
 Operating cycles/hour ( $\theta \leq 55^\circ\text{C}$ ): 600.  
 Operating time at  $U_c$ : closing = 60...70 ms,  
 opening = 40...50 ms.

## Coils for d.c. control voltage

Low sealed consumption.

Control circuit voltage $U_c$	Average resistance at $20^\circ\text{C} \pm 10\%$		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	$\Omega$	$\Omega$	H			kg
<b>For contactor LC1SF1200</b>						
110	11.5	2450	280	FD	<b>LX4FK110</b>	1.080
220	44	8150	1080	MD	<b>LX4FK220</b>	1.080

#### For contactor LC1F1250 <sup>(1)</sup>

##### For contactors LC1F115 and LC1F150

100...380 ---

##### For contactor LC1SF1200

100...250 ~	8	—	—	KUE	<b>LXEFK250</b>	1.100
110 and 220 ---						

##### For contactor LC1F1250

100...250 ~	4.78	—	—	KUE	<b>LXEFL250</b>	1.100
100...380 ---						

#### For contactor LC1F1250

110	8.1	1680	180	FD	<b>LX4FL110</b>	1.450
220	31	5160	650	MD	<b>LX4FL220</b>	1.450

#### For contactor LC1F780

110	6.1 <sup>(3)</sup>	280 <sup>(3)</sup>	0.26	FD	<b>LX4FX110</b> <sup>(2)</sup>	3.000
125	7.7 <sup>(3)</sup>	410 <sup>(3)</sup>	0.33	GD	<b>LX4FX125</b> <sup>(2)</sup>	3.000
250	29.8 <sup>(3)</sup>	1330 <sup>(3)</sup>	1.25	UD	<b>LX4FX250</b> <sup>(2)</sup>	3.000
440	92 <sup>(3)</sup>	4180 <sup>(3)</sup>	3.5	RD	<b>LX4FX440</b> <sup>(2)</sup>	3.000

#### For contactors LC1F1000, LC1F1400, LC1F1700 and LC1F2100

125	3.73	916	122	GD	<b>LX4FK065</b> <sup>(4)</sup>	1.080
220	11.5	2450	280	MD	<b>LX4FK110</b> <sup>(4)</sup>	1.080
440	44	8150	1080	RD	<b>LX4FK220</b> <sup>(4)</sup>	1.080

#### For contactor LC1F2600

110	2.05	481	64	FD	<b>LX4FL055</b> <sup>(4)</sup>	1.080
125	2.53	603	80	GD	<b>LX4FL065</b> <sup>(4)</sup>	1.080
220	11.5	2450	280	MD	<b>LX4FL110</b> <sup>(4)</sup>	1.080
250	15	2930	400	UD	<b>LX4FL125</b> <sup>(4)</sup>	1.080
440	44	8150	1080	RD	<b>LX4FL220</b> <sup>(4)</sup>	1.080

<sup>(1)</sup> LXE coil to be used along with suitable Electronic Control Module (ECM) Ref. **LA4EM●●●●●**.

For details, please refer to page B10/10.

<sup>(2)</sup> Reference of set of 2 identical coils, to be connected in series.

<sup>(3)</sup> Value for the 2 coils in series.

<sup>(4)</sup> Order 2 coils and connect them in series.

High power contactors



LADN●●



LADT●

## Auxiliary contact blocks for LC1FG 3-pole shockproof contactors

### Instantaneous auxiliary contact blocks

For use in normal operating environments

Number of contacts	Max. number of blocks per contactor Clip-on mounting	Composition 	Reference	
1	1	- - 1 -	LADN10	(1)
		- - - 1	LADN01	(1)
4	1	- - 2 2	LADN22	(1)
		- - 4 -	LADN40	(1)
		- - - 4	LADN04	(1)
		- - 3 1	LADN31	(1)

### Time delay auxiliary contact blocks

Number of contacts	Max. number of blocks per contactor Clip-on mounting	Time delay		Reference	
		Type	Range		
s					
1 N/O + 1 N/C	1	On-delay	0...3 (2)	LADT0	
			1...30	LADT2	(1)
		Off-delay	10...180	LADT4	
			1...30 (3)	LADS2	
1 N/O + 1 N/C	1	Off-delay	0...3 (2)	LADR0	
			1...30	LADR2	(1)
			10...180	LADR4	

(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.

(2) With extended scale from 0.1 to 0.6 s.

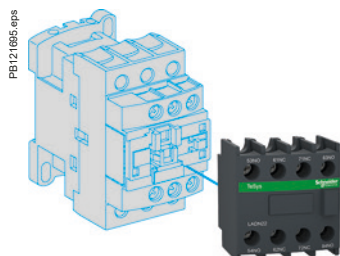
(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.



# TeSys Control

## F Magnetic latching High power contactors - Accessories

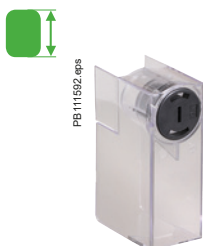
### Product references



LADN



LA9F103



LA9F70●

### Accessories for contactors CR1F

Description	Number of contacts or shrouds	For use on	Reference
Instantaneous auxiliary contacts	(1)	CR1F	LADN●●, LADX●●, LADY●●, LADZ●● (1)
Time delay auxiliary contacts	(1)	CR1F	LADT●, LADS●, LADR● (1)
Contact blocks with protected terminals for 3-pole contactors (for mounting on contactors with closed arc chamber)	Set of 2 blocks	CR1F150 and CR1F185	LA9F103
Power terminal protection shrouds	Set of 6 shrouds for 3-pole contactors	CR1F150 and CR1F185	LA9F702
		CR1F265 to CR1F500 CR1F630	LA9F703 LA9F704
	Set of 8 shrouds for 4-pole contactors	CR1F1504 and CR1F1854	LA9F707
		CR1F2654 to CR1F5004 CR1F6304	LA9F708 LA9F709

Description	Application	Reference
Mechanical interlock and power connections	For assembly of reversing contactors and changeover contactor pairs	See pages B10/17 and B10/18

(1) For maximum number per contactor and complete reference, see page B10/7.

High power contactors



#### Control Panel Technical Guide:

Description and product reference of all mounting kits and wiring accessories for D, K, F - Star Delta, reverser, low-high speed control motor starters and changeover applications.

> Ref. Document: CPTG011\_EN



> Click on QR code to download

Dimensions:  
pages B10/66 to B10/69

B10/16

Life Is On

Schneider Electric

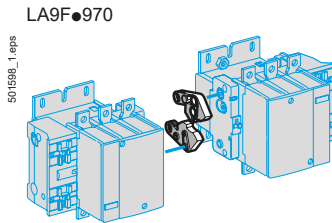
## Reversing and changeover assemblies with CR1F magnetic latching contactors

### Horizontally mounted

#### Mechanical interlocks

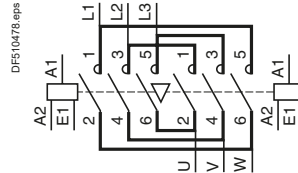
Reversers assembled using 2 contactors of identical rating, type:

- CR1F150
- CR1F185
- CR1F265
- CR1F400
- CR1F500
- CR1F630

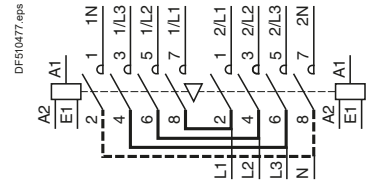


#### Sets of power connections

Reversing contactors  
LA9F●976



3 or 4-pole changeover contactor pairs  
LA9F●977 or LA9F●982



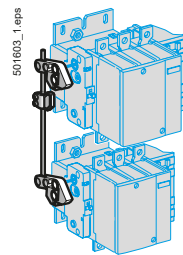
### Vertically mounted

#### Mechanical interlocks

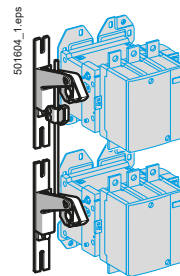
Reversers assembled using 2 contactors of identical rating, type:

- CR1F150
- CR1F185
- CR1F265
- CR1F400
- CR1F500
- CR1F630

LA9FF4F Assembly A  
LA9FG4G



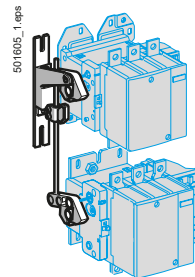
LA9FH4H Assembly C  
LA9FJ4J  
LA9FL4L



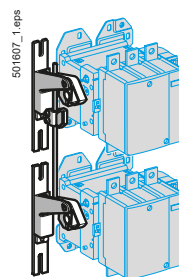
Reversers assembled using 2 contactors of different ratings, type:

- CR1F150
- CR1F185
- CR1F265
- CR1F400
- CR1F500
- CR1F630

LA9FH4F Assembly B  
LA9FJ4F  
LA9FH4G  
LA9FJ4G  
LA9FL4G

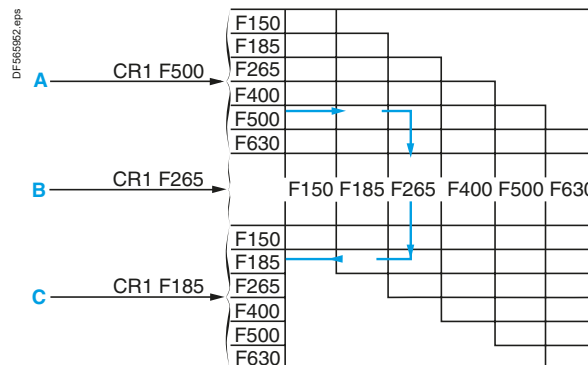
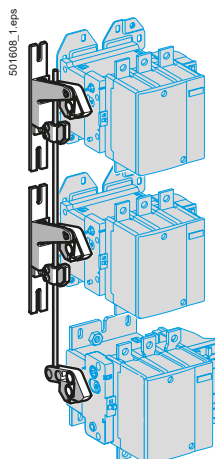


LA9FJ4H Assembly C  
LA9FK4H  
LA9FL4H  
LA9FK4J  
LA9FL4J



Reversers assembled using 3 contactors of identical or different ratings

LA9F●4●4●



**Warning:** the contactor ratings must be in decreasing size from top to bottom.

High power contactors

Reversing and changeover assemblies with CR1F magnetic latching contactors.

#### Reversers assembled using 2 contactors of identical rating

Contactor type	Set of power connections		Mechanical interlock	
	3-pole Reference	Weight kg	Kit reference	Weight kg
<b>For assembly of 3-pole reversing contactors for motor control <sup>(1)</sup></b>				
<b>Horizontally mounted</b>				
CR1F150	LA9FF976	0.600	LA9FF970	0.060
CR1F185	LA9FG976	0.780	LA9FG970	0.060
CR1F265	LA9FH976	1.500	LA9FJ970	0.140
CR1F400	LA9FJ976	2.100	LA9FJ970	0.140
CR1F500	LA9FK976	2.350	LA9FJ970	0.140
CR1F630	LA9FL976	3.800	LA9FL970	0.150
<b>Vertically mounted</b>				
CR1F150	<sup>(2)</sup>	–	LA9FF4F	0.345
CR1F185	<sup>(2)</sup>	–	LA9FG4G	0.350
CR1F265	<sup>(2)</sup>	–	LA9FH4H	1.060
CR1F400	<sup>(2)</sup>	–	LA9FJ4J	1.200
CR1F630	<sup>(2)</sup>	–	LA9FL4L	1.220

#### For assembly of 4-pole changeover contactor pairs

<b>Horizontally mounted</b>				
CR1F2654	LA9FH982	1.200	LA9FJ970	0.140
CR1F4004	LA9FJ982	1.800	LA9FJ970	0.140
CR1F5004	LA9FK982	2.300	LA9FJ970	0.140
<b>Vertically mounted</b>				
CR1F1504	<sup>(2)</sup>	–	LA9FF4F	0.345
CR1F1854	<sup>(2)</sup>	–	LA9FG4G	0.350
CR1F2654	<sup>(2)</sup>	–	LA9FH4H	1.060
CR1F4004	<sup>(2)</sup>	–	LA9FJ4J	1.200
CR1F6304	<sup>(2)</sup>	–	LA9FL4L	1.220

#### Reversers assembled using 2 contactors of different ratings

Contactor type	Set of power connections		Mechanical interlock	
	At bottom	At top	Kit reference	Weight kg
<b>For assembly of 3 or 4-pole changeover contactor pairs</b>				
<b>Vertically mounted <sup>(3)</sup></b>				
CR1F150 or F1504	CR1F265 or F2654		LA9FH4F	0.870
	CR1F400 or F4004		LA9FJ4F	0.930
CR1F185 or F1854	CR1F265 or F2654		LA9FH4G	0.860
	CR1F400 or F4004		LA9FJ4G	0.940
	CR1F630 or F6304		LA9FL4G	0.950
CR1F265 or F2654	CR1F400 or F4004		LA9FJ4H	1.130
	CR1F500 or F5004		LA9FK4H	1.130
	CR1F630 or F6304		LA9FL4H	1.140
CR1F400 or F4004	CR1F500 or F5004		LA9FK4J	1.200
	CR1F630 or F6304		LA9FL4J	1.210

#### For assembly of 3 or 4-pole reversing contactors <sup>(4)</sup>

Using 3 contactors (vertically mounted) of identical or different ratings		Mechanical interlock Kit reference <sup>(5)</sup>
The contactor ratings must be in decreasing size from top to bottom.		LA9F●4●4●

Contactors	CR1F150	CR1F185	CR1F265	CR1F400	CR1F500	CR1F630
Code	F	G	H	J	K	L

**Example:** mechanical interlock for reversing contactor made up of 3 different contactors: CR1F500 top, CR1F265 middle and CR1F185 bottom: **LA9FK4H4G**.

- (1) A 3-pole reversing contactor for motor control can be converted into a 3-pole changeover contactor pair by removing the upper connecting links.
- (2) All power connections are to be made by the customer.
- (3) With identical or different number of poles. Power connections to be made by the customer.
- (4) Closing of one of the 3 contactors prevents closing of the other 2 contactors.
- (5) Complete the reference by replacing the first dot with the code for the upper contactor, the second dot with the code for the middle contactor and the third dot with the code for the bottom contactor.

# TeSys Control

## F Magnetic latching High power contactors - Spare parts

### Product references

PB121414.eps



LA5FG431

References				
Description	For contactor		Reference	Weight kg
Complete sets of contacts for 3 or 4 poles <sup>(1)</sup>	3-pole	CR1F150	<b>LA5FF431</b>	0.270
		CR1F185	<b>LA5FG431</b>	0.350
		CR1F265	<b>LA5FH431</b>	0.660
		CR1F400	<b>LA5F400803</b>	0.660
		CR1F500	<b>LA5F500803</b>	0.660
		CR1F630	<b>LA5F630803</b>	0.660
	4-pole	CR1F1504	<b>LA5FF441</b>	0.360
		CR1F1854	<b>LA5FG441</b>	0.465
		CR1F2654	<b>LA5FH441</b>	0.880
		CR1F4004	<b>LA5F400804</b>	0.465
		CR1F5004	<b>LA5F500804</b>	0.465
		CR1F6304	<b>LA5F630804</b>	0.465

<sup>(1)</sup> Set containing the following (per pole): 2 fixed contacts, 1 moving contact, 2 deflectors, 1 back-plate, clamping screws and washers.

High power contactors

# TeSys Control

## F Magnetic latching High power contactors - Coils

### Product references

PB121413.eps



LX0FH007

PB121412.eps



LX0FK007

Standard coils for a.c. or d.c. control voltage						
Usual voltages		Resistance of winding at $\theta = 20\text{ }^{\circ}\text{C}$		Reference	Voltage code	Weight
50...400 Hz or ---	50 Hz, 60 Hz	Latching	Unlatching			
V	V	$\Omega$	$\Omega$			kg
<b>For contactors CR1F150</b>						
48	–	1.98	230.8	LX0FF005	E7	0.440
127	–	11.61	1788	LX0FF007	G7	0.440
–	415	139.50	16 717	LX0FF011	N7	0.440
<b>For contactors CR1F185</b>						
48	–	1.42	220	LX0FG005	E7	0.560
208	–	21.30	3169	LX0FG020	L7	0.560
–	415	102.30	14 305	LX0FG011	N7	0.560
<b>For contactors CR1F265</b>						
48	–	1.34	183.4	LX0FH005	E7	0.780
127	–	8.56	1325	LX0FH007	G7	0.780
208	–	20.20	2654	LX0FH020	L7	0.780
–	380/400	78.39	11 803	LX0FH010	Q7	0.780
–	415	102.9	15 006	LX0FH011	N7	0.780
<b>For contactors CR1F400</b>						
208	–	24.40	2643	LX0FJ020	L7	1.120
–	380/400	94.80	9380	LX0FJ010	Q7	1.120
–	415	121.10	11 763	LX0FJ011	N7	1.120
<b>For contactors CR1F500</b>						
48	–	1.57	166	LX0FK005	E7	1.220
127	–	9.56	1159	LX0FK007	G7	1.220
208	–	23.60	2981	LX0FK020	L7	1.220
–	415	112.06	13 256	LX0FK011	N7	1.220
<b>For contactors CR1F630</b>						
48	–	0.87	204	LX0FL005	E7	1.460
127	–	6.45	1830	LX0FL007	G7	1.460
208	–	20.20	2961	LX0FL020	L7	1.460
–	415	77.97	13 003	LX0FL011	N7	1.460

High power contactors



# TeSys Control

## F Magnetic latching High power contactors - Coils

### Product references

PB12/143.eps



LX0FG●●●

#### Special coils for a.c. or d.c. control voltage

Coils with two windings with common point, allowing the use of two separate power sources for latching and unlatching.

Coil voltages at 50 Hz, 60 Hz, 400 Hz or ---		Resistance of winding at $\theta = 20\text{ }^{\circ}\text{C}$		Reference	Voltage code	Weight
Latching	Unlatching	Latching	Unlatching			
V	V	$\Omega$	$\Omega$			kg

##### For contactors CR1F150

220	24	29.5	39.5	LX0FF224	MB7	0.440
-----	----	------	------	----------	-----	-------

##### For contactors CR1F185

220	24	26.5	19	LX0FG224	MB7	0.560
-----	----	------	----	----------	-----	-------

##### For contactors CR1F265

220	24	26	29.5	LX0FH224	MB7	0.780
-----	----	----	------	----------	-----	-------

##### For contactors CR1F400

220	24	30	23	LX0FJ224	MB7	1.120
-----	----	----	----	----------	-----	-------

##### For contactors CR1F500

220	24	29	26	LX0FK224	MB7	1.220
-----	----	----	----	----------	-----	-------

##### For contactors CR1F630

220	24	26	41	LX0FL224	MB7	1.460
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#### Coils with low inrush consumption for d.c. control voltage

Usual voltages ---	Resistance of winding at $\theta = 20\text{ }^{\circ}\text{C}$		Reference	Voltage code	Weight
	Latching	Unlatching			
V	$\Omega$	$\Omega$			kg

##### For contactors CR1F150

48	4.56	140.56	LX0FF055	EZ7	0.440
----	------	--------	----------	-----	-------

220	89.85	3342.51	LX0FF058	MZ7	0.440
-----	-------	---------	----------	-----	-------

##### For contactors CR1F185

48	5.19	106.54	LX0FG055	EZ7	0.570
----	------	--------	----------	-----	-------

127	32.75	732.64	LX0FG057	GZ7	0.570
-----	-------	--------	----------	-----	-------

##### For contactors CR1F265

110	25	364.61	LX0FH056	FZ7	0.800
-----	----	--------	----------	-----	-------

220	97.89	1344.46	LX0FH058	MZ7	0.800
-----	-------	---------	----------	-----	-------

##### For contactors CR1F400

127	31.86	221.20	LX0FJ057	GZ7	1.150
-----	-------	--------	----------	-----	-------

220	98.19	648.79	LX0FJ058	MZ7	1.150
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##### For contactors CR1F630

48	3.94	59.17	LX0FL055	EZ7	1.500
----	------	-------	----------	-----	-------

110	19.36	365.33	LX0FL056	FZ7	1.500
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High power contactors


# TeSys Control

## V High power vacuum contactors

### Product references



LC1V320

Vacuum contactors - Motors 160 to 610 A / 400 V - a.c. coils											
Standard power ratings 50/60 Hz in category AC-3					Rated operational current le		Instan- taneous auxiliary contacts		Control circuit voltage (50/60 Hz)	Basic reference <sup>(1)</sup>	Weight
230 V	400 V	525 V	690 V	1000 V	AC-3 400 V up to	AC-1					
kW	kW	kW	kW	kW	A	A					
45	75	110	150	200	160	160	2	1	<sup>(1)</sup>	LC1V160●●	3.800
90	160	220	280	400	320	320	1	1	<sup>(1)</sup>	LC1V320●●	10.500
160	300	400	560	800	610	630	1	1	<sup>(1)</sup>	LC1V610●●	13.000

### Reversing vacuum contactors

The reversing contactor range comprises :

- for 160 A rating, a kit with set of power connections allowing assembly of the starter
- for 320 and 610 A ratings, a complete starter, ready for use.

<sup>(1)</sup> Basic reference; add code indicating control circuit voltage.

Standard control circuit voltages:

Volts 50/60 Hz	110...120	220...240	380...415	440...480	550...600
Item	FE7	P7	V7	R7	X7

Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.



High power  
contactors

# TeSys Control

## V High power contactors - Contact blocks and a.c. coils

### Product references

PB12/1408.eps



LA1VN11

Instantaneous auxiliary contact blocks <sup>(1)</sup>				
Number of contacts	Maximum number of blocks per contactor	Auxiliary contacts		Reference
2	4			LA1VN11
			–	LA1VN20
				LA1VN11X <sup>(2)</sup>

PB12/1409.eps



LX1V320●●

50/60 Hz coils		
Rated voltage	Voltage code	Reference
V		
<b>For contactors LC1V160</b>		
380...415	V7	LX1V160V7
440...480	R7	LX1V160R7
550...600	X7	LX1V160X7
<b>For contactors LC1V320</b>		
440...480	R7	LX1V320R7
<b>For contactors LC1V610</b>		
220...240	P7	LX1V610P7
380...415	V7	LX1V610V7
440...480	R7	LX1V610R7

**(1) LC1V160:** auxiliary contact blocks mounted at the top of the contactor, with no change to the overall dimensions.

**LC1V320 or LC1V610:** 2 auxiliary contact blocks mounted on the RH and LH side of the contactor, with no change to the overall dimensions.

**(2) For LC1V160:** 1 N/C contact for the coil + 1 N/O contact.

# TeSys Control

## F High power contactors

### Product references

CR1F150F7	LA4EM250FL	LA9F705	LA9FL4J	LC1FG500N7
CR1F150M7	LA4FDE	LA9F706	LA9FL4L	LC1SF1200KUE
CR1F150U7	LA4FDF	LA9F707	LA9FL970	LC1SF1200M7
CR1F185F7	LA4FRCE	LA9F708	LA9FL976	LC1SF1200P7
CR1F185G7	LA4FRCF	LA9F709	LA9FL980	LC1V160FE7
CR1F185M7	LA4FRCP	LA9F801	LA9FX990M	LC1V160P7
CR1F185Q7	LA4FRCV	LA9F980	LA9FX991F	LC1V160P7SC
CR1F185U7	LA4FTE	LA9FF4F	LA9FX991Q	LC1V320FE7
CR1F2654F7	LA4FTF	LA9FF601	LC1D115004L6	LC1V320P7
CR1F265F7	LA4FTP	LA9FF970	LC1F1250	LC1V610FE7
CR1F265G7	LA4FVE	LA9FF976	LC1F1250F7	LC1V610P7
CR1F265GD31S003	LA4FVF	LA9FF981	LC1F1250KUE	LX1D8FE7
CR1F265M7	LA4FVP	LA9FG4F4F	LC1F1250M7	LX1D8L7
CR1F265U7	LA4FVV	LA9FG4G	LC1F1250MD	LX1D8N7
CR1F4004MZ7	LA5D11550	LA9FG601	LC1F1250P7	LX1D8R7
CR1F400F7	LA5F400802	LA9FG610	LC1F1250Y	LX1D8V7
CR1F400FZ7	LA5F400803	LA9FG970	LC1F1400	LX1FK220
CR1F400M7	LA5F400804	LA9FG976	LC1F1400MD	LX1FL110
CR1F400Q7	LA5F500803	LA9FG979	LC1F1400P7	LX1FL200
CR1F500F7	LA5F500804	LA9FG980	LC1F1700	LX1FL220
CR1F500GD31S003	LA5F630803	LA9FH4F	LC1F1700F7	LX1FL2206
CR1F500M7	LA5F630804	LA9FH4G	LC1F1700M7	LX1FL260
CR1F500Q7	LA5F780801	LA9FH4H	LC1F1700MD	LX1FL380
CR1F630F7	LA5F780803	LA9FH4H4F	LC1F1700P7	LX1FL415
CR1F630M7	LA5F780804	LA9FH4H4H	LC1F2100	LX1FX110
CR1F630MZ7	LA5F800803	LA9FH601	LC1F2100F7	LX1FX220
DR5TE4S	LA5FF431	LA9FH602	LC1F2100LD	LX1FX415
DR5TE4U	LA5FF441	LA9FH610	LC1F2100LDBR	LX1V610P7
DR5TF4V	LA5FG431	LA9FH976	LC1F2100M7	LX4D8MD
DZ2FF1	LA5FG441	LA9FH982	LC1F2100MD	LX4FK110
DZ2FF6	LA5FH431	LA9FJ4G	LC1F2100P7	LX4FK220
DZ2FG1	LA5FH441	LA9FJ4H	LC1F2100V7	LX4FL110
DZ2FG6	LA5FJ431	LA9FJ4J	LC1F2600	LX4FL125
DZ2FJ1	LA5FK431	LA9FJ4J4J	LC1F2600MD	LX4FL220
DZ2FJ6	LA5FL431	LA9FJ610	LC1F2600P7	LX4FX110
DZ2FK1	LA9D11517	LA9FJ970	LC1F780	LXEFF250
DZ2FK6	LA9D115604	LA9FJ974	LC1F7804	LXEFG250
DZ2FL1	LA9D115692	LA9FJ976	LC1F7804F7	LXEFH250
DZ2FL2	LA9D11570	LA9FJ980	LC1F7804M7	LXEFJ250
DZ2FL3	LA9D115704	LA9FJ982	LC1F7804MD	LXEFK250
DZ2FL6	LA9D730	LA9FK4H	LC1F7804P7	LXEFL250
DZ2FR1	LA9F103	LA9FK4J	LC1F780F7	
DZ2FX1	LA9F2100	LA9FK4K	LC1F780FE7	
DZ2FX6	LA9F2600	LA9FK4K4K	LC1F780G7	
LA1VN11	LA9F701	LA9FK976	LC1F780M7	
LA1VN11X	LA9F702	LA9FK982	LC1F780P7	
LA1VN20	LA9F703	LA9FL4G	LC1F780Q7	
LA4EM250FK	LA9F704	LA9FL4H	LC1FG265R7	

## Technical Data for Designers

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- > dimensions ..... B10/32 to B10/35
- > schemes ..... B10/36 and B10/37

#### FG shockproof contactors:

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and schemes ..... B10/54 and B10/55

#### CR1F magnetic latching contactors:

- > characteristics ..... B10/56 to B10/65
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#### V vacuum contactors:

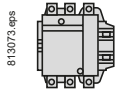
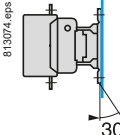
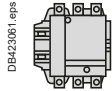
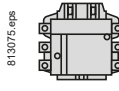
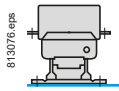
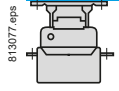
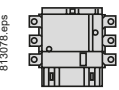
- > characteristics ..... B10/70 and B10/71
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# TeSys Control

## F High power contactors

### Characteristics

#### Environment

Contactor type		LC1F780	
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1. Overvoltage category III, degree of pollution: 3	V	1000
Rated impulse withstand voltage (Uimp)	Coil not connected to the power circuit	kV	8
Conforming to standards			IEC/EN 60947-1, IEC/EN 60947-4-1, JIS C 8201-4-1 (except for LC1F1000 & LC1SF1200)
Product certifications			UL, CSA, CCC, CB certification, EAC, ABS, BV, DNV-GL, LRoS, RINA, RMRoS
Degree of protection	Conforming to IEC 60529		IP 20 front face with shrouds LA9F
Climatic withstand			According to IACS E10
Ambient air temperature around the device	Storage	°C	-60...+80
	Operation	°C	-5...+55
	Permissible at Uc	°C	-40...+70
Maximum operating altitude	Without derating	m	3000
Operating positions	Without derating		  
			 <p>(not to be used for LC1F780, F1000, F1400, F1700, F2100 and F2600)</p>
	With derating		 <p>Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1.</p>  <p>Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1.</p> <p>In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured.</p>
Not to be used			
Shock resistance <sup>(1)</sup> 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27	Contactor open		5 gn
	Contactor closed <sup>(2)</sup>		15 gn
Vibration resistance <sup>(1)</sup> 5...300 Hz Conforming to IEC/EN 60068-2-6	Contactor open		2.5 gn
	Contactor closed		5.5 gn

<sup>(1)</sup> In the least favourable direction, without change of contact state (coil at Uc). Where higher resistance to mechanical shock is required, select shock-proof contactors. Please consult your Regional Sales Office.

<sup>(2)</sup> 12 gn for F780-F1250 contactors when used with Electronic control module (LA4EM) & LXE coils.

Ref.



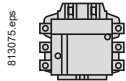
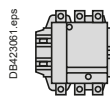
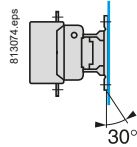
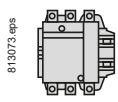
High power contactors

# TeSys Control

## F High power contactors

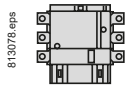
### Characteristics

LC1F1000	LC1SF1200	LC1F1250	LC1F1400	LC1F1700	LC1F2100	LC1F2600
1000	1000	1000	1000	1000	1000	1000
8	8	8	8	8	8	8
IEC/EN 60947-1, IEC/EN 60947-4-1, JIS C 8201-4-1 (except for LC1F1000 & LC1SF1200)						
CB, CSA, CCC	CB, CCC	CB, CSA, CCC, UL				
-	-	-				
-60...+80						
-5...+40	-5...+60	-5...+40				
-40...+60	-40...+70	-40...+60				
3000						



(not to be used for LC1F780, F1000, F1400, F1700, F2100 and F2600)

Not to be used	Possible positions with derating (see corresponding paragraph on left, same line)	Not to be used				
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6 gn	6 gn	6 gn	6 gn	6 gn	6 gn	6 gn
15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn
2 gn	2 gn	2 gn	2 gn	2 gn	2 gn	2 gn
4 gn	4 gn <sup>(3)</sup>	4 gn	4 gn	4 gn	4 gn	4 gn

<sup>(3)</sup> Vibration resistance 5...30 Hz, when used with Electronic Control Module (ECM).

High power contactors

# TeSys Control

## F High power contactors

### Characteristics

#### Pole characteristics

Contactors type			LC1F780	LC1F1000	LC1SF1200	LC1F1250	LC1F1400	LC1F1700	LC1F2100	LC1F2600
Number of poles			3 or 4	3	3	3	3	3	3	3
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 55 °C	<b>A</b>	780	1000	-	-	-	-	-	-
	In AC-1, θ ≤ 40 °C	<b>A</b>	1600	1250	1200	1260	1400	1700	2100 <sup>(2)</sup>	2600 <sup>(4)</sup>
Rated operational voltage (Ue)	Up to	<b>V</b>	1000	440	690	690	1000	1000	1000 <sup>(5)</sup>	1000
Frequency limits	Of the operational current <sup>(1)</sup>	<b>Hz</b>	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200	16 <sup>2/3</sup> ...200
Conventional thermal current	θ ≤ 40 °C	<b>A</b>	1600	1250	1200	1260	1400	1700	2100 <sup>(2)</sup>	2600 <sup>(4)</sup>
Rated making capacity	I rms conforming to IEC 60947-4-1	<b>A</b>	Making current: 10 x I in AC-3 or 12 x I in AC-4	10 x I in AC-3	Making current: 1.5 x I in AC-1					
Rated breaking capacity	I rms conforming to IEC 60947-4-1	<b>A</b>	Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4	8 x I in AC-3	Making and breaking current: 1.5 x I in AC-1					
Maximum permissible current No current flowing for previous 60 minutes, at θ ≤ 40 °C	For 10 s	<b>A</b>	6250	10000	8000	8000	8000	10000	10000	12000
	For 30 s	<b>A</b>	5600	7500	5200	5200	6000	7500	7500	9000
	For 1 min	<b>A</b>	4600	5500	4000	4000	4500	5500	5500	7000
	For 3 min	<b>A</b>	3000	4200	3000	3000	4000	4200	4200	6000
	For 10 min	<b>A</b>	2200	3000	2000	2000	2600	3000	3000	4000
Short-circuit protection by fuses U ≤ 440 V	Motor circuit (type aM)	<b>A</b>	800	1000	-	-	-	-	-	-
	With thermal overload relay (type gG)	<b>A</b>	1000	1000	-	-	-	-	-	-
	gG fuses	<b>A</b>	2 x 800 <sup>(3)</sup>	1000	1400	1400	2 x 800 <sup>(3)</sup>	2 x 800 <sup>(3)</sup>	2 x 1000 <sup>(3)</sup>	2 x 1250 <sup>(3)</sup>
Average impedance per pole	At Ith and 50 Hz	<b>mΩ</b>	0.10	0.12	0.10	0.12	0.10	0.10	0.10	0.10
Power dissipation per pole for the above operational currents	AC-3	<b>W</b>	60	100	-	-	-	-	-	-
	AC-1	<b>W</b>	250	120	120	120	150	200	200	250
Connection										
Bar	Number of bars		2	3	2	2	2	3	4	3
	Bar	<b>mm</b>	100 x 5	100 x 5	50x8	100 x 5	100 x 5	100 x 5	100 x 5	100 x 10
Cable with lug		<b>mm<sup>2</sup></b>	-	-	-	-	-	-	-	-
Cable with connector		<b>mm<sup>2</sup></b>	-	-	-	-	-	-	-	-
Bolt diameter		<b>mm</b>	2 x Ø12	4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2100)	3 x Ø12	3 x Ø12	4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2100)			4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2600)
Tightening torque	Power circuit connections	<b>N.m</b>	58	58 (35 with set of right-angled connectors LA9F2100)	58	58	58 (35 with set of right-angled connectors LA9F2100)			58 (35 with set of right-angled connectors LA9F2600)

- (1) Sine wave without interference. Above these values, contactors can be used only for AC-1 application.  
(2) With set of right-angled connectors LA9F2100 (see page B10/9).  
(3) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.  
(4) θ ≤ 60 °C with set of right-angled connectors LA9F2600 (see page B10/9).  
(5) Ue = 1000 V, with set of right angled connectors LA9F2100 (see page B10/9).





# TeSys Control

## F High power contactors

### Characteristics

a.c. control circuit characteristics with LX1 coil											
Contactor type			LC1 F780 <sup>(1)</sup>	LC1 F1000 <sup>(1)</sup>	LC1 SF1200	LC1 F1250	LC1 F1400 <sup>(1)</sup>	LC1 F1700	LC1 F2100 <sup>(1)</sup>	LC1 F2600 <sup>(1)</sup>	
Rated control circuit voltage (Uc)	V		110...500	110...500	220...230	110...600	110...500	110...500	110...500	110...500	
Control voltage limits ( $\theta \leq 55^\circ\text{C}$ )	40...400 Hz coils	Operation	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	
		Drop-out	0.2...0.4 Uc	0.3...0.5 Uc	0.25...0.5 Uc	0.25...0.5 Uc	0.3...0.5 Uc	0.3...0.5 Uc	0.3...0.5 Uc	0.3...0.5 Uc	
Average consumption at 20 °C and at Uc	Inrush	40...400 Hz coil	VA	1900...2300	1600...2400	1050...1150	1500...1730	1600...2400	1600...2400	2200...2700	
		Cos $\phi$		0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	Sealed	40...400 Hz coil	VA	44...55	29...37	16...20	20...25	29...37	29...37	29...37	37.4...50.6
		Cos $\phi$		0.9	0.9	0.9	0.9	0.9	0.9	0.9	
Heat dissipation	W		2 x 22	2 x 18	18	20	2 x 18	2 x 18	2 x 18	2 x 25	
Operating time <sup>(2)</sup>	Closing "C"	ms	40...80	40...75	40...75	40...80	40...75	40...75	40...75	40...80	
	Opening "O"	ms	130...230	100...170	100...170	100...200	100...170	100...170	100...170	100...200	
Mechanical durability at Uc	In millions of operating cycles		5	0.5	10	1	0.5	0.5	0.5	0.5	
Maximum operating rate at ambient temperature $\leq 55^\circ\text{C}$	In operating cycles per hour		600	600	2400	1200	600	600	600	600	
Connection			Min/max c.s.a.								
Flexible cable without cable end	1 or 2 conductors	mm <sup>2</sup>	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
		mm <sup>2</sup>	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	
	2 conductors	mm <sup>2</sup>	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
Solid cable without cable end	1 or 2 conductors	mm <sup>2</sup>	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
Tightening torque	N.m		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Mechanical latching	Mechanical latch blocks LA6DK must not be fitted on LC1F contactors. For similar type of operation, use magnetic latching contactors CR1F. See pages B10/16 to B10/21.										

(1) Equipped with 2 coils.

(2) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.



# TeSys Control

## F High power contactors

### Characteristics

#### d.c. control circuit characteristics with LX4 coil

Contactor type		LC1 F780	LC1 F1000	LC1 SF1200 <sup>(1)</sup>	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100	LC1F 2600
Rated control circuit voltage (Uc) <sup>---</sup>	<b>V</b>	110...440	110...440	48...440	48...250	110...440	110...440	110...440	110...440
Control voltage limits (θ ≤ 55 °C)	Operation	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc
	Drop-out	0.2...0.4 Uc	0.2...0.35 Uc	0.2...0.35 Uc	0.2...0.35 Uc	0.2...0.35 Uc	0.2...0.35 Uc	0.2...0.35 Uc	0.2...0.35 Uc
Average consumption at 20 °C and at Uc	Inrush	<b>W</b> 1960...2420	<b>W</b> 2000...2200	<b>W</b> 990...1220	<b>W</b> 1420...1920	<b>W</b> 2000...2200	<b>W</b> 2000...2200	<b>W</b> 2000...2200	<b>W</b> 2130...2880
	Sealed	<b>W</b> 42...52	<b>W</b> 8...10	<b>W</b> 4.54...8	<b>W</b> 6.5...12.5	<b>W</b> 8...10	<b>W</b> 8...10	<b>W</b> 8...10	<b>W</b> 13...25
Average operating time at Uc <sup>(2)</sup>	Closing "C"	<b>ms</b> 70...80	<b>ms</b> 50...60	<b>ms</b> 50...60	<b>ms</b> 60...70	<b>ms</b> 50...60	<b>ms</b> 50...60	<b>ms</b> 50...60	<b>ms</b> 60...70
	Opening "O"	<b>ms</b> 100...130	<b>ms</b> 45...60	<b>ms</b> 45...60	<b>ms</b> 40...50	<b>ms</b> 45...60	<b>ms</b> 45...60	<b>ms</b> 45...60	<b>ms</b> 40...50
<i>Note: the arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.</i>									
Mechanical durability at Uc	In millions of operating cycles	5	0.5	1	1	0.5	0.5	0.5	0.5
Maximum operating rate at ambient temperature ≤ 55 °C	In operating cycles per hour	600	600	1200	1200	600	600	600	600
Cabling		Min/max c.s.a.							
Flexible cable without cable end	1 conductor	<b>mm<sup>2</sup></b> 1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	2 conductors	<b>mm<sup>2</sup></b> 1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Flexible cable with cable end	1 conductor	<b>mm<sup>2</sup></b> 1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	2 conductors	<b>mm<sup>2</sup></b> 1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
Solid cable without cable end	1 conductor	<b>mm<sup>2</sup></b> 1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	2 conductors	<b>mm<sup>2</sup></b> 1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Tightening torque		<b>N.m</b> 1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Mechanical latching	Mechanical latch blocks LA6DK must not be fitted on LC1F contactors. For similar type of operation, use magnetic latching contactors CR1F. See pages B10/16 to B10/21.								

(1) LC1SF1200KUE, LC1SF1200MD are available.

(2) The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

Ref.



High power contactors

# TeSys Control

## F High power contactors

### Characteristics

a.c. or d.c. control circuit characteristics with LXE coil <sup>(1)</sup>						
Contactor type			LC1SF1200 <sup>(3)</sup>	LC1F1250 <sup>(4)</sup>	LC1F2600 <sup>(5)</sup>	
ECM <sup>(2)</sup> reference			LA4EM250FK	LA4EM250FL	LA4EM250FL2	
Coil reference			LXEFK250	LXEFL250	LXEFL2502	
Rated control circuit voltage (Uc)	50/60 Hz	V	100...250			
	≡	V	100...380		100...250	
Control voltage limits (< 55 °C) 50/60 Hz	Operation	V	85...275			
		V	< 60		< 65	
	Drop-out	V	85...418			
		V	< 45		< 51	
Average consumption at 20 °C and at Uc	Inrush	50/60 Hz	VA rms	360...550	460...730	1100...2300
			Cos φ	0.5...0.6		
		≡	W	410...500	500...680	1300...2400
	Sealed	50/60 Hz	VA	5.0...8.0	7...10	21.1...24.5
			Cos φ	0.5...0.6		
		≡		2.7...5.0	4.0...5.5	14...18
Embedded PLC <sup>(6)</sup> input according IEC 61131-2 type 2	Off state	V DC	0...5			
	On state		11...30			
Heat dissipation		W	2.2...5.5		16...20	
Operating time	Closing "C"	ms	40...80		54...88	
	Opening "O"	ms	6...54		20...28	
Mechanical durability at Uc	In millions of operating cycles		1		0.5	
Maximum operating rate at ambient temperature ≤ 55 °C	In operating cycles per hour		1200		600	
Connection <sup>(7)</sup>	Flexible cable without cable end	1 conductor		0.2/2.5		
	Flexible cable with cable end	1 conductor		0.25/2.5		
	Solid cable without cable end	1 conductor		0.2/2.5		
Tightening torque		N.m	0.6			

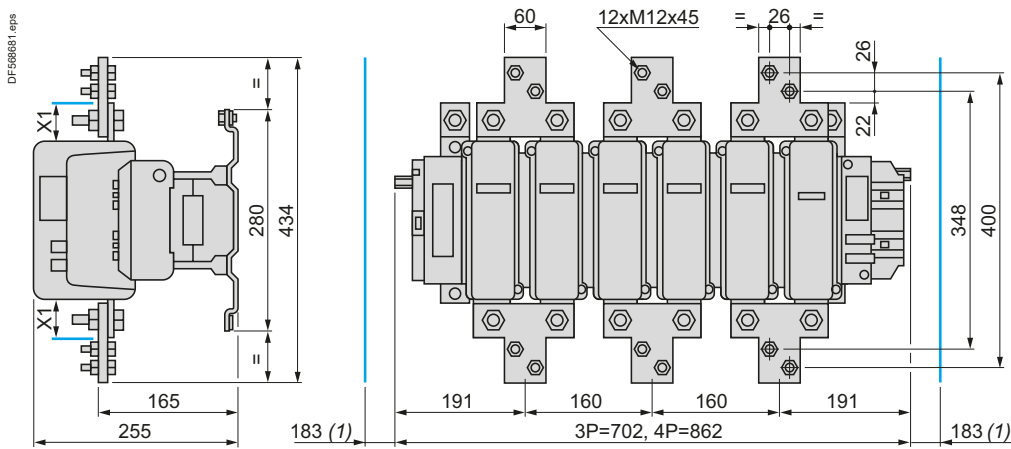
- (1) LXE coil shall be always used along with Electronic Control Module (ECM) LA4EM250●●.
- (2) Electronic Control Module enables wider coil operating voltage for the F range of contactors. ECM LA4EM250●● shall be always used along with suitable type of LXE●●250 coils.
- (3) LC1SF1200KUE is supplied with LA4EM250FK & LXEFK250.
- (4) LC1F1250KUE is supplied with LA4EM250FL & LXEFL250.
- (5) LC1F2600KUE is supplied with LA4EM250FL2 & LXEFL2502.
- (6) PLC control connectors shall be provided by customer (Type MC 1.5/2-ST-3.81).
- (7) Connection input is made to Electronic control module (ECM).

# TeSys Control

## F High power contactors

### Dimensions

#### LC1F780

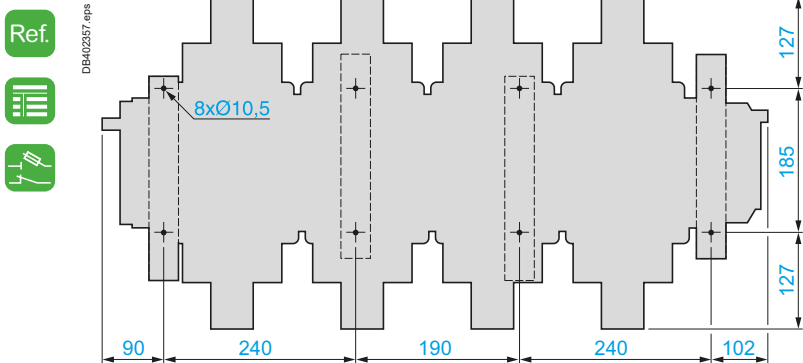


X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

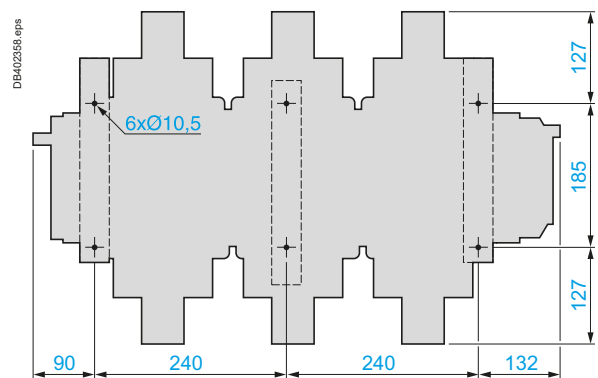
Voltage	200...500 V	690...1000 V
X1 (mm)	30	35

(1) Minimum distance required for coil removal.

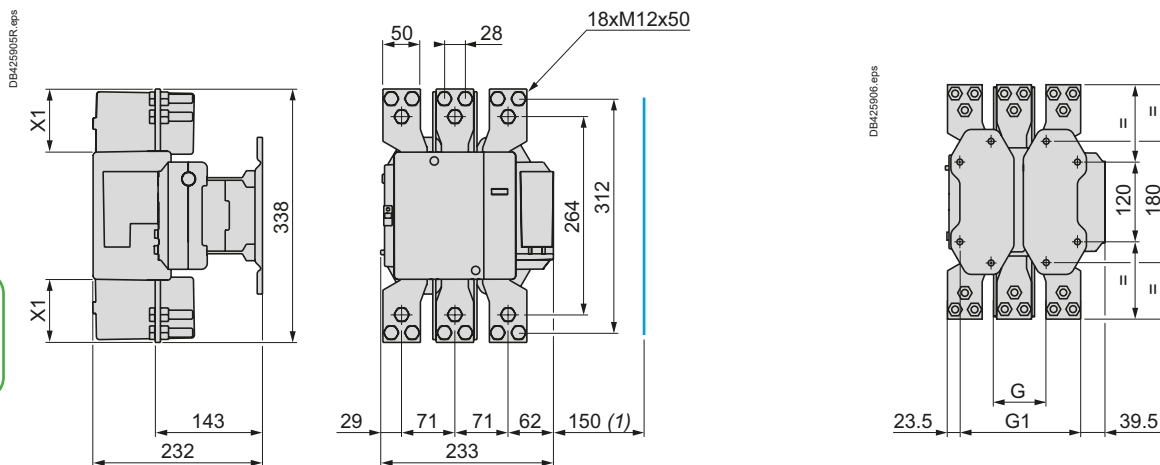
#### Fixing centres of LC1F7804



#### Fixing centres of LC1F780



#### LC1SF1200



(1) Minimum distance required for coil removal.

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

Voltage	200...500 V	≤ 690 V
X1 (mm)	20	30

G (2)	Gmin	Gmax	G1 (2)	Gmin	Gmax
80	66	120	170	156	210

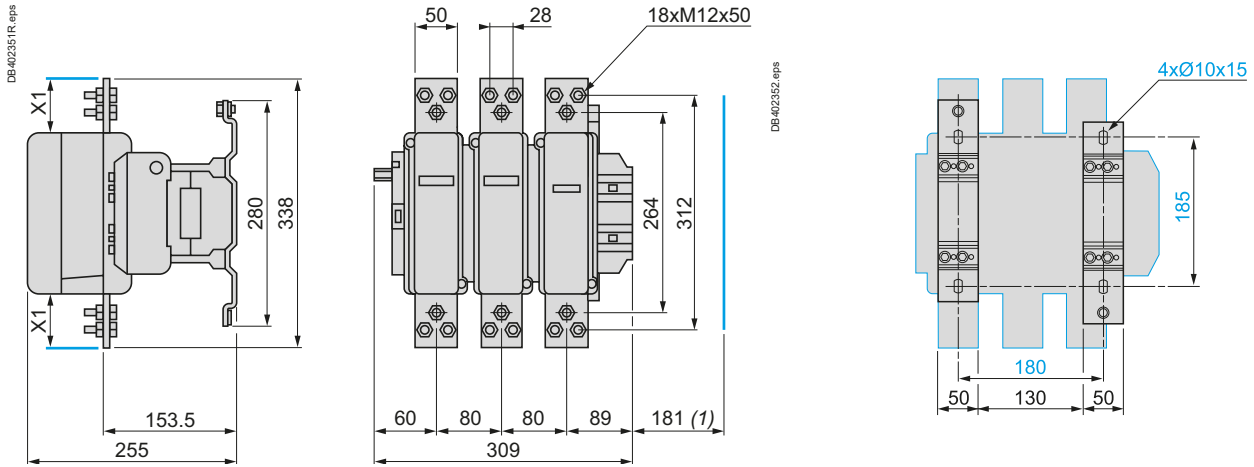
(2) Factory setting.

# TeSys Control

## F High power contactors

### Dimensions

#### LC1F1250

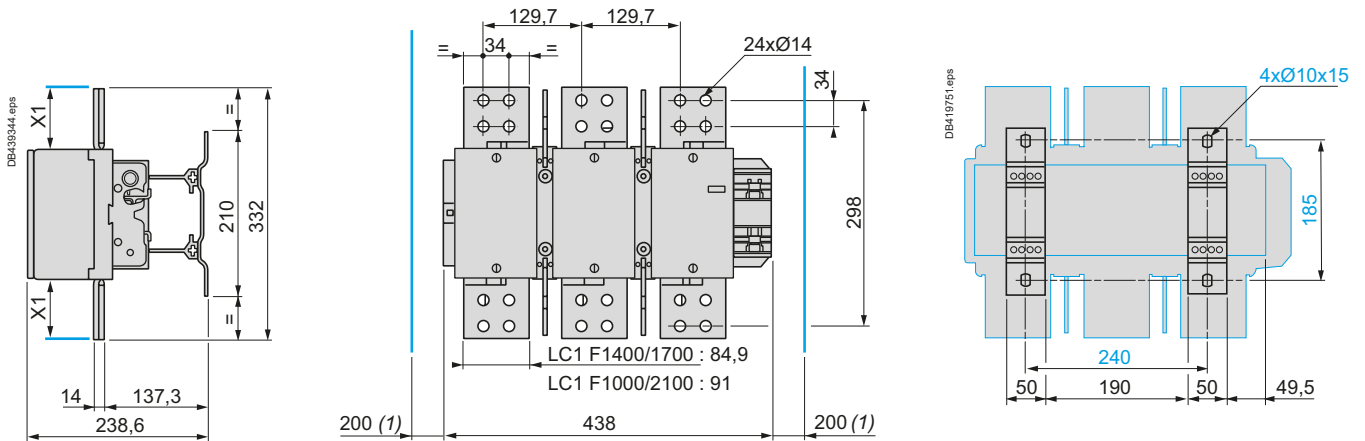


(1) Minimum distance required for coil removal.

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

<b>Voltage</b>	<b>200...500 V</b>	<b>690...1000 V</b>
<b>X1 (mm)</b>	20	30

#### LC1F1000, LC1F1400, LC1F1700 and LC1F2100

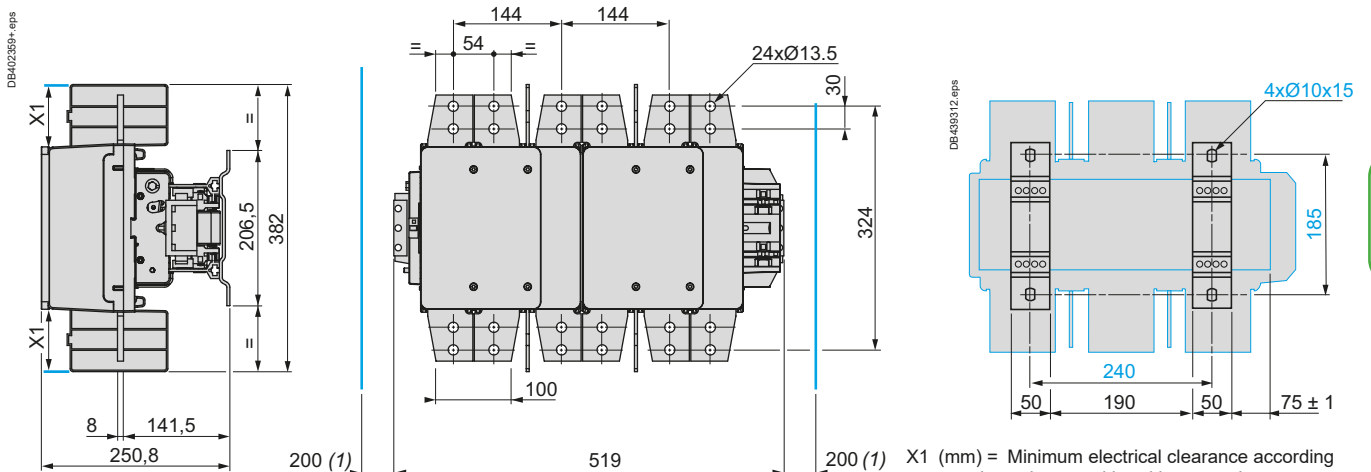


(1) Minimum distance required for coil removal.

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

<b>Voltage</b>	<b>200...500 V</b>	<b>690...1000 V</b>
<b>X1 (mm)</b>	90	100

#### LC1F2600



(1) Minimum distance required for coil removal.

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

<b>Voltage</b>	<b>200...500 V</b>	<b>690...1000 V</b>
<b>X1 (mm)</b>	90	100

References:  
pages B10/2 and B10/3

Characteristics:  
pages B10/26 to B10/30

Schemes:  
page B10/37



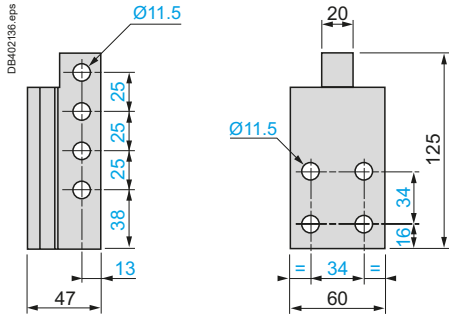
High power contactors

# TeSys Control

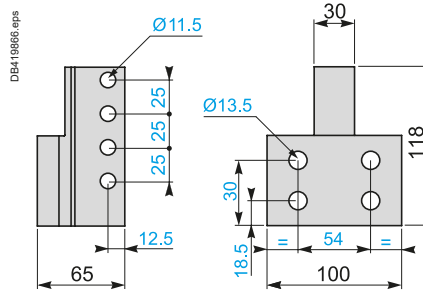
## F High power contactors - Accessories

### Dimensions

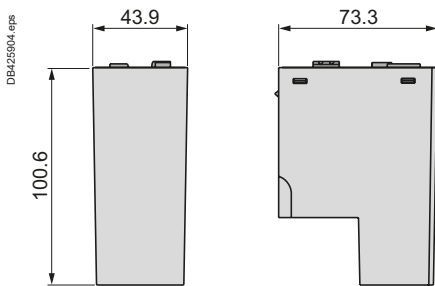
#### Right-angled connectors LA9F2100 (set of 6) for rear connection



#### Right-angled connectors LA9F2600 (set of 6) for rear connection



#### Electronic Control Module for LXE●●250 coils / LXE●●2502 coils LA4EM250●● / LA4EM250●●2



Ref.

High power contactors

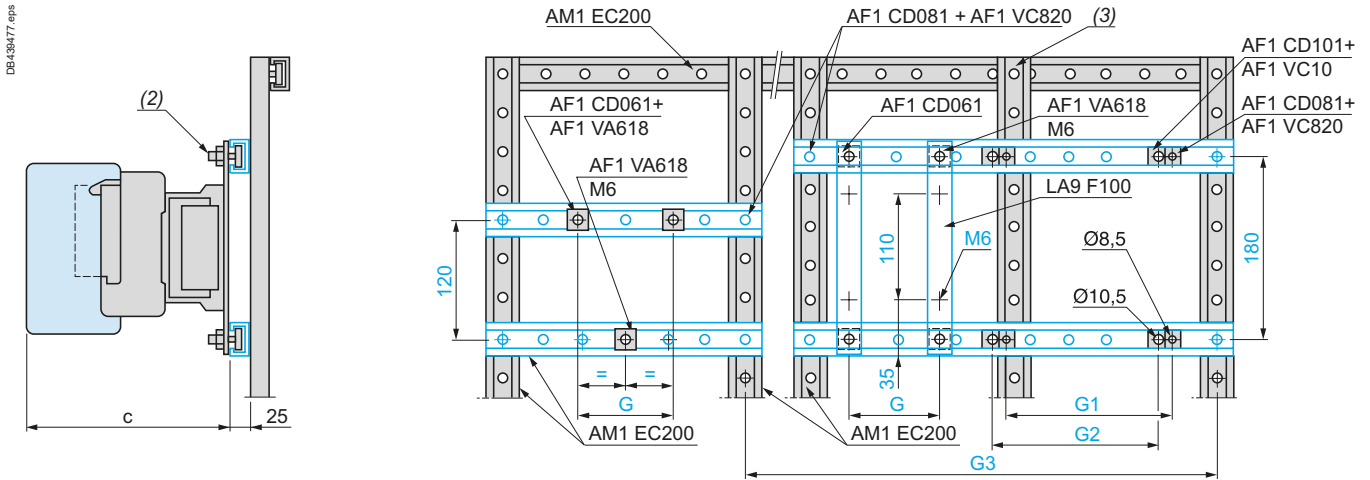
# TeSys Control

## F High power contactors

### Mounting

#### LC1F780

##### On 2 notched rails AM1EC●●●



LC1		F780
c <sup>(1)</sup>	3P	255
	4P	255
G (M6)	3P	—
	4P	—
G1 (Ø 8.5)	3P	—
	4P	—
G2 (Ø 10.5)	3P	See page B10/32
	4P	See page B10/32

(1) See X1 (minimum electrical clearance) page B10/32.

(2) AF1CD●●● and AF1VA●●●.

(3) This AM1EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).

Ref.



High power  
contactors

# TeSys Control

## F High power contactors

### Schemes

#### Contactors

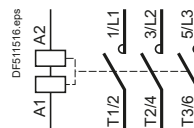
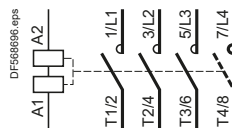
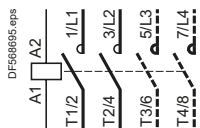
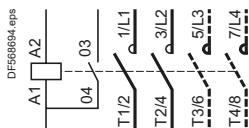
##### 3 and 4-pole contactors

LC1F1250 (coil LX1F ~)

LC1F1250 (coil LX4F ~)

LC1F780 ~ or ~

LC1F1000  
LC1F1400 ~ or ~, LC1F1700 ~ or ~  
LC1F2100 ~ or ~, LC1F2600 ~ or ~



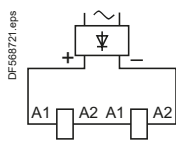
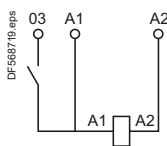
#### Coils

##### Standard ~ coils

LX1FK●●●/ LX1FL●●●

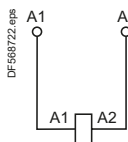
LX1FX

Rectifier supplied and fixed on the contactor



##### Standard ~ coils

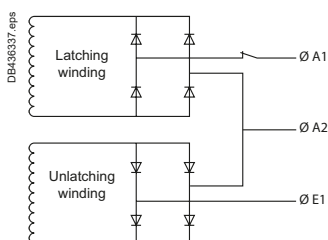
LX4FK, FL, FX (1)



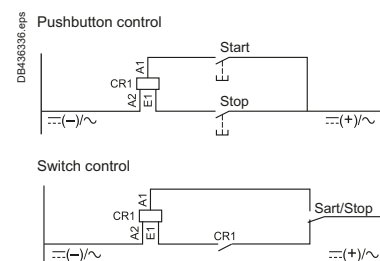
(1) 2 coils in series.

#### Specific wiring diagrams for CR1F contactors

##### Internal latching/unlatching diagram

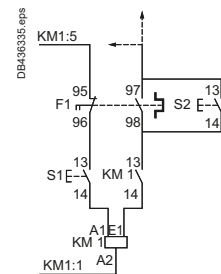
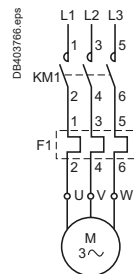


##### Control diagrams



Warning: terminal A2 is common to both windings in all cases.

#### Contactors CR1F with thermal overload relay



Ref.



High power contactors



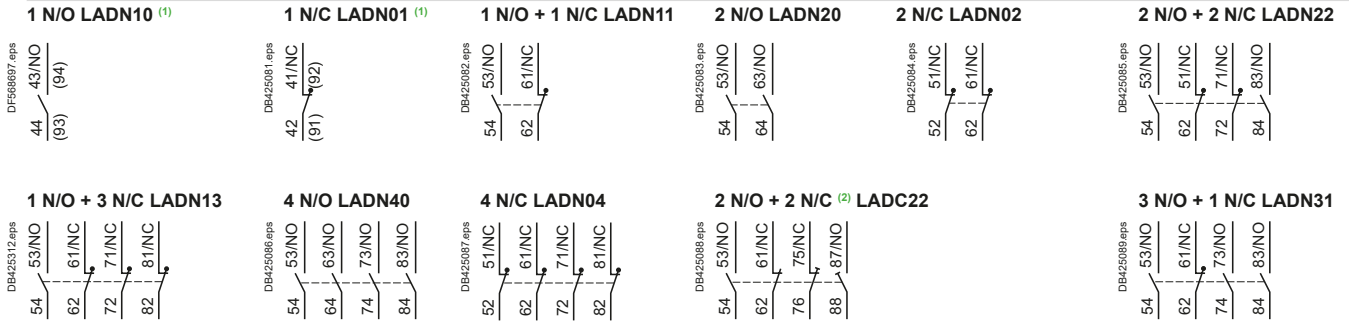
# TeSys Control

## F High power contactors

### Schemes

#### Add-on blocks

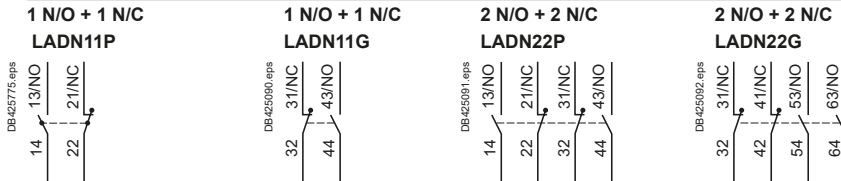
##### Instantaneous auxiliary contacts



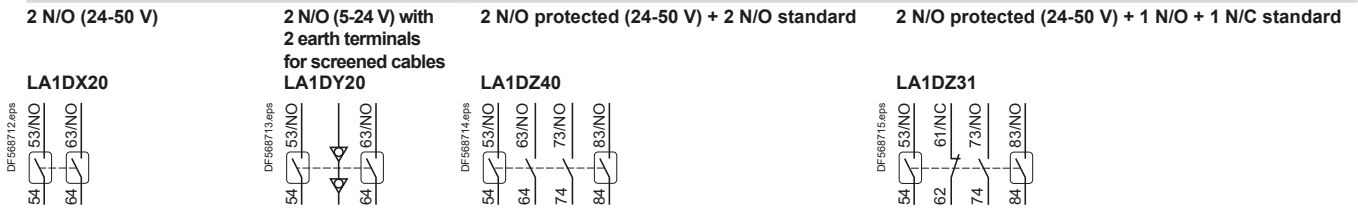
<sup>(1)</sup> Items in brackets: See "D contactors".

<sup>(2)</sup> 1 N/O + 1 N/C make before break.

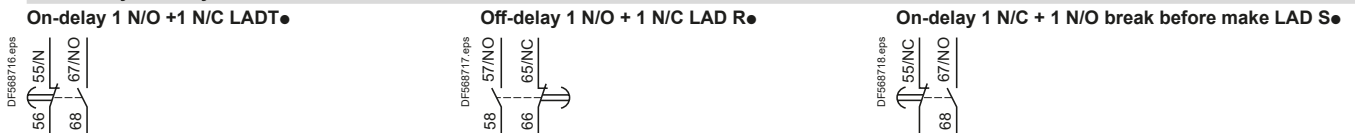
##### Instantaneous auxiliary contacts with terminal referencing conforming to standard EN 50012 (References: pages B10/6 and B10/7)



##### Dust and damp protected instantaneous auxiliary contacts



##### Time delay auxiliary contacts



# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics



LC1FG150



LC1FG265

Ref.



### Shockproof contactor specificity

In an environment subject to severe mechanical shocks, unwanted closing of a contactor's poles and the serious consequences of this, is not permissible.

Shockproof contactors **LC1FG150** to **FG630** are equipped with an auxiliary electromechanical device which ensures that the contactor is mechanically locked in the "open" position when it's main electromagnet is not energised.

If the contactor is subjected to mechanical impact, from back to front or from front to back, accidental closing of the poles is then impossible.

In addition, accidental opening of the poles (when the contactor is in the "on" position), is virtually impossible due to the significant pull-in force characteristic of these contactors.

### Applications

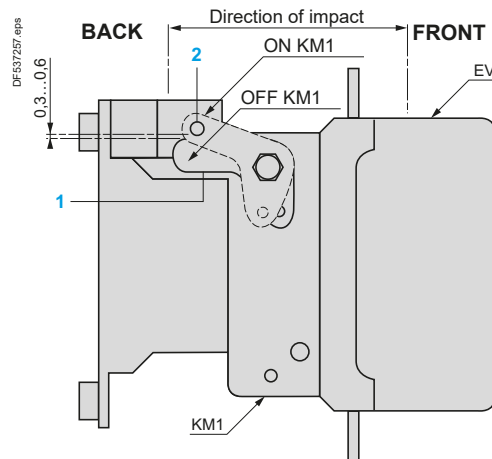
- **Marine:** on-board equipment, windlasses, capstans, winches, etc...
- **Military equipment:** land, sea, launching silos.
- **Heavy mechanical handling systems:** travelling cranes, cranes, gantries.
- **Conveying and handling:** lifts, hoists, conveyors.
- **Equipment for power stations.**
- **Distribution boards.**

High power  
contactors

### Description of shockproof device

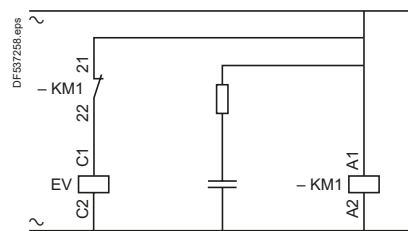
Shockproof contactors **LC1FG●●●** are equipped with:

- a lever **1** that is rotated by the core of the contactor's electromagnet.
- an auxiliary electromagnet (EV) for the locking function.
- an RC circuit (Resistor-Capacitor) to limit overvoltage.



### Operation

- In the 'off' position (contactor open and not energised) the core **2** of the electromagnet (EV) locks the lever **1** and therefore the contactor.
  - The coils (KM1) and (EV) are energised simultaneously, the core **2** releases the lever **1** and allows the contactor to close.
  - De-energisation of the locking electromagnet (EV) is achieved by an auxiliary contact within the contactor.
- The core **2** rests freely in lever **1**.
- On de-energisation of coil KM1, the moving contact drops out. Core **2**, under spring pressure, once again locks lever **1**.



Ref.



High power contactors

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

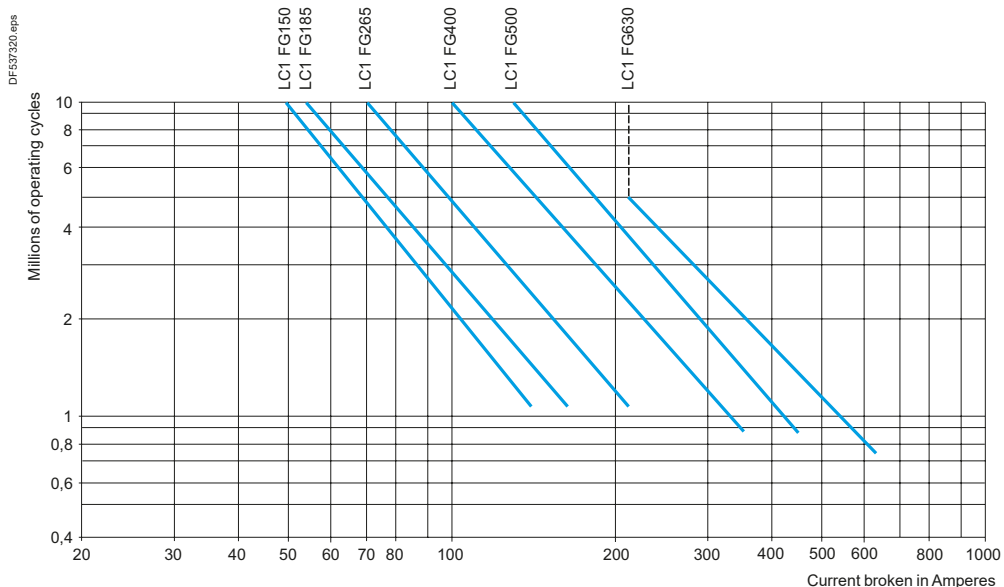
### Characteristics - Durability (AC)

Use in category AC-3 ( $U_e \leq 440$ V)								
Operational current and power ( $\theta \leq 55$ °C)								
Contactors			LC1FG150	LC1FG185	LC1FG265	LC1FG400	LC1FG500	LC1FG630
Operational current		A	150	185	265	400	500	630
Operational power Standard power ratings of motors)	220/230 V	kW	40	55	75	110	147	200
		hp	54	75	100	150	200	270
	380/400 V	kW	75	90	132	200	250	335
		hp	100	185	180	270	340	450
	415 V	kW	80	100	140	220	280	375
		hp	110	136	180	300	380	500
	440 V	kW	80	100	140	250	295	400
		hp	110	136	190	340	400	545
	500 V	kW	90	110	160	257	355	400
		hp	125	150	220	350	480	545
	660/690 V	kW	100	110	160	280	335	450
		hp	136	150	220	380	450	600
	1000 V	kW	65	100	147	185	335	450
		hp	85	136	200	250	450	610

Maximum operating rate (operating cycles/hour) <sup>(1)</sup>								
On-load factor	Operational power		LC1FG150	LC1FG185	LC1FG265	LC1FG400	LC1FG500	LC1FG630
$\leq 85$ %	P		750	750	750	500	500	500
$\leq 85$ %	0.5 P		2000	2000	2000	1200	1200	1200
$\leq 25$ %	P		1200	1200	1200	1200	1200	1200

(1) Depending on the operational power and the on-load factor ( $\theta \leq 55$  °C).

### Electrical durability in utilisation category AC-3 ( $U_e \leq 440$ V)



Control of 3-phase asynchronous squirrel cage motors with breaking whilst running. The current broken ( $I_e$ ) in category AC-3 is equal to the rated operational current of the motor.

#### Example:

Asynchronous motor with  $P = 55$  kW -  $U_e = 380$  V -  $I_e = 105$  A

4 million operating cycles required.

The above selection curves show the contactor rating needed: **LC1FG265**.



# TeSys Control

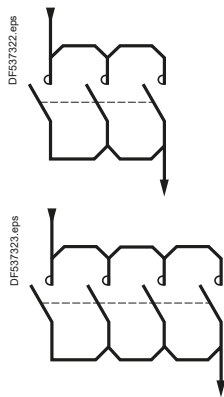
## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics - Durability (AC)

Use in category AC-1 ( $U_e \leq 440$ V)									
Contactors				LC1FG150	LC1FG185	LC1FG265	LC1FG400	LC1FG500	LC1FG630
Connection	Cable	C.s.a.	mm <sup>2</sup>	120	150	240	–	–	–
	Bar	Number		–	–	–	2	2	2
		C.s.a.	mm	–	–	–	30 x 5	40 x 5	60 x 5
Maximum operating rate in operating cycles/hour				600	600	600	600	600	600
Operational current AC-1		$\leq 40$ °C	A	250	270	350	500	700	1000
		$\leq 55$ °C	A	220	240	300	430	580	850
		$\leq 70$ °C <sup>(1)</sup>	A	170	180	250	340	500	700

(1) Only for operation with coil supplied at  $U_c$ .

### Increase in operational current by parallel connection of poles



Apply the following multiplying factors to the current values given above.

The factors take into account the often unbalanced current distribution between the 2 poles:

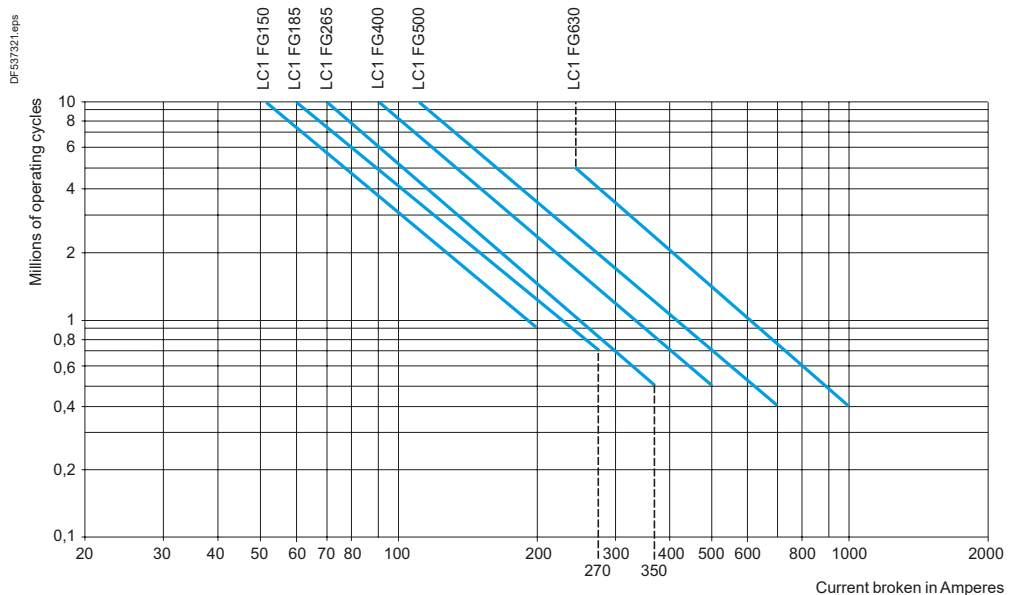
- 2 poles in parallel:  $K = 1.6$
- 3 poles in parallel:  $K = 2.25$
- 4 poles in parallel:  $K = 2.8$ .

Recommended connection scheme to equalise the currents in each pole (see opposite).

Ref.



### Electrical durability in utilisation category AC-1 ( $U_e \leq 440$ V)



#### Example:

Control of resistive circuits ( $\cos \varphi \geq 0.95$ ).

The current broken ( $I_c$ ) in category AC-1 is equal to the current ( $I_e$ ) normally drawn by the load.

$U_e = 220$  V -  $I_c = I_e = 300$  A -  $\theta = 40$  °C.

1 million operating cycles required.

The above selection curves show the contactor rating needed: **LC1FG400**.

High power contactors

Thermal limits in utilisation categories AC-2/AC-4							
Contactors		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
Thermal limit zone	Operating cycles/hour <sup>(1)</sup> and on-load factor	Maximum current broken according to the duty requirements (thermal limit, ambient temperature ≤ 55 °C)					
A	From 150 and 15 % to 300 and 10 %	310	380	560	780	1100	1400
B	From 150 and 20 % to 600 and 10 %	280	350	500	700	950	1250
C	From 150 and 30 % to 1200 and 10 %	240	300	400	600	750	950
D	From 150 and 55 % to 2400 and 10 %	190	240	320	450	600	720
E	From 150 and 85 % to 3600 and 10 %	145	170	230	350	500	660

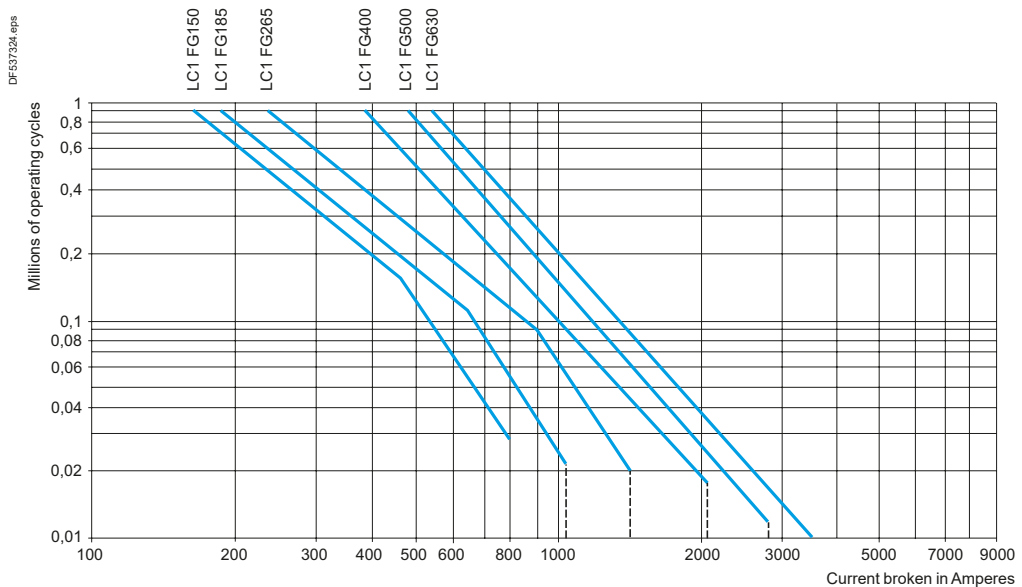
(1) Do not exceed the maximum limit for the mechanical operating cycles.

#### Counter current braking (plugging)

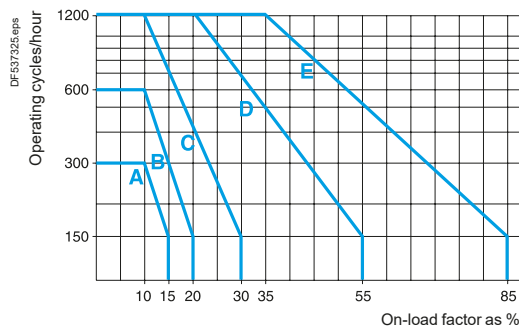
The current varies from the maximum plug-braking current to the rated motor current. The current made must be compatible with the making and breaking capacities of the contactor.

In most cases, breaking occurs at a current value close to the locked rotor current and contactor selection can therefore be made using the criteria for utilisation categories AC-2 and AC-4.

#### Electrical durability in utilisation categories AC-2/AC-4 (U<sub>e</sub> ≤ 440 V)



#### Example: Contactor selection



For an on-load factor of 10 % at 400 operating cycles per hour, the curve on the left indicates zone B. If the current broken is 600 A, the above table leads to selection of an **LC1FG400** contactor. Referring to the electrical durability curves, it can be seen that the contactor will be able to perform 350 000 operating cycles. Where a higher value of electrical durability is required, 1 million operating cycles for example, an **LC1FG630** contactor would be recommended.

Ref.



High power contactors

#### Switching 3-phase capacitors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 I<sub>n</sub>) at high frequencies (1 to 15 kHz).

The contactors are used for direct switching. The values of peak current at switch-on must not exceed the values indicated below.

An inductor or an early break resistor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. This must be done when switching multiple step capacitor banks.

Inductance values are determined according to the selected operating temperature: please refer to our "Motor starter solutions - Control and protection components" catalogue.

In addition, in accordance with standards IEC 60070, NF C 54 100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in table below take this overload into account.

Short-circuit protection is normally provided by g1 fuses rated at 1.3 to 1.6 I<sub>n</sub>.

#### Maximum operational power of contactors

Maximum operating rate: 120 operating cycles/hour.

Electrical durability at maximum load: 100 000 operations.

With choke inductors connected, where necessary.

Operational power at 50/60 Hz						Maximum peak current	Contactor to be used
θ ≤ 40 °C			θ ≤ 55 °C				
220 V	400 V	600 V	220 V	400 V	600 V	A	
240 V	440 V	660 V	240 V	440 V	660 V		
kvar	kvar	kvar	kvar	kvar	kvar		
60	100	135	40	85	90	3200	<b>LC1FG150</b>
70	125	160	50	100	100	3500	<b>LC1FG185</b>
90	160	225	75	125	125	5000	<b>LC1FG265</b>
125	220	300	100	160	200	8000	<b>LC1FG400</b>
180	300	400	125	220	300	10 000	<b>LC1FG500</b>
250	400	600	190	350	500	12 000	<b>LC1FG630</b>

#### Switching the primaries of 3-phase transformers (LV/LV)

When a transformer is switched on, there is generally an initial current surge which can reach 20 to 40 times the rated current for the power ratings shown below.

This current reaches its peak value almost instantaneously and then decreases in a largely exponential manner, quickly dropping back down to its steady state value.

#### Contactor selection

Operating rate less than 120 operating cycles/hour.

Maximum operational voltages: 690/1000 V 50/60 Hz <sup>(2)</sup>.

The value of the peak magnetising current must be lower than the values indicated below.

Maximum ambient temperature: 55 °C.

Contactor		LC1FG150	LC1FG185	LC1FG265	LC1FG400	LC1FG500	LC1FG630	
Maximum permissible current peak at switch-on	A	1700	2800	3500	5500	6800	9000	
Maximum operational power <sup>(1)</sup>	220 V	kVA	25	40	50	75	100	140
	380 V	kVA	50	75	90	130	170	225
	415/440 V	kVA	55	80	100	140	190	250
	500 V	kVA	65	95	110	170	225	280
	660 V	kVA	80	120	140	200	270	315
	1000 V	kVA	100	150	200	250	375	470

<sup>(1)</sup> Maximum operational power corresponding to a current peak at switch-on of 30 I<sub>n</sub>.

<sup>(2)</sup> Refer to page B10/48 and B10/49 for details on operational voltage.

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics (DC)

#### Use in category DC-1 (resistive loads; time constant L/R ≤ 1 ms)

Rated operational current I <sub>e</sub>							
Operational voltage (U <sub>e</sub> )	Number of poles to be wired in series	Contactors					
		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
V		A	A	A	A	A	A
24	1	160	220	300	400	600	850
	2	160	220	300	400	600	850
	3	160	220	300	400	600	850
	4	160	220	300	400	600	850
48/75	1	160	220	300	400	600	850
	2	160	220	300	400	600	850
	3	160	220	300	400	600	850
	4	160	220	300	400	600	850
125	1	–	–	–	–	–	–
	2	130	170	300	400	550	850
	3	130	170	300	400	600	850
	4	130	170	300	400	600	850
225	1	–	–	–	–	–	–
	2	100	150	250	350	450	700
	3	130	170	300	400	600	850
	4	130	170	300	400	600	850
300	3	100	150	250	350	450	700
	4	130	170	300	400	600	850
460	4	100	150	250	350	450	700

#### Use in category DC-2 to DC-5 (inductive loads; time constant L/R ≤ 15 ms)

Rated operational current I <sub>e</sub>							
Operational voltage (U <sub>e</sub> )	Number of poles to be wired in series	Contactors					
		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
V		A	A	A	A	A	A
24	1	140	180	280	350	550	850
	2	140	180	280	350	550	850
	3	140	180	280	350	550	850
	4	140	180	280	350	550	850
48/75	1	140	180	280	350	550	850
	2	140	180	280	350	550	850
	3	140	180	280	350	550	850
	4	140	180	280	350	550	850
125	1	–	–	–	–	–	–
	2	100	140	250	350	550	850
	3	120	160	280	350	550	850
	4	120	160	280	350	550	850
225	1	–	–	–	–	–	–
	2	80	100	200	280	450	700
	3	100	140	250	350	550	850
	4	120	160	280	350	550	850
300	3	80	100	200	280	450	700
	4	120	160	280	350	550	850
460	4	80	100	200	280	450	700

Ref.

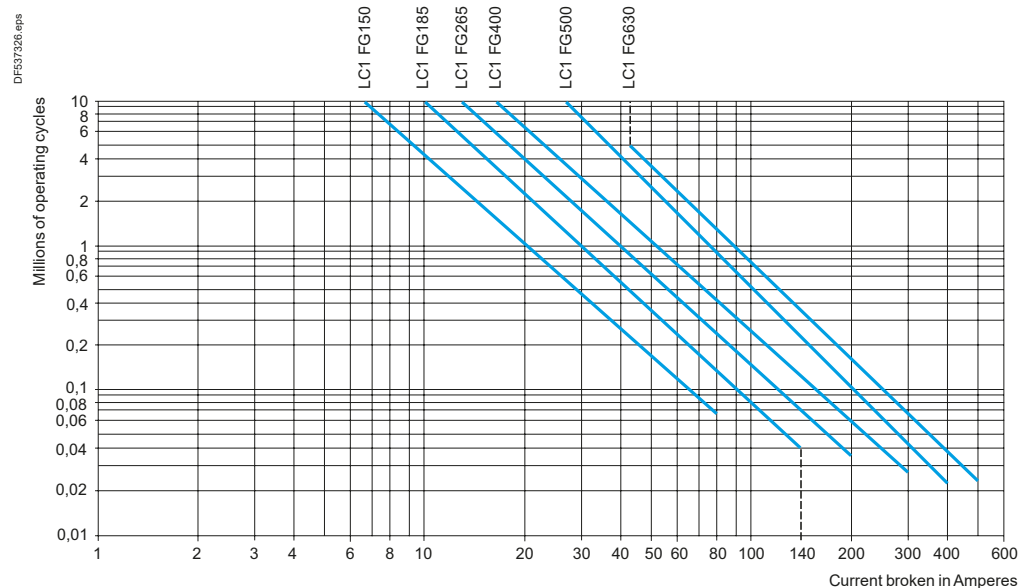


High power contactors



#### Electrical durability

##### Utilisation categories DC-1 to DC-5



#### Determining the electrical durability

The electrical durability can be read directly from the curve above, having previously calculated the power broken  $P_c$ . The following table gives, for each utilisation category, the value of  $P_c$  according to the operational current  $I_e$  and the operational voltage  $U_e$ .

Utilisation categories	$P_c$ (Power broken)
<b>DC-1</b> Non-inductive loads	$P_c = U_e \times I_e$
<b>DC-2</b> Shunt motors, breaking whilst running	$P_c = 0.1 U_e \times I_e$
<b>DC-3</b> Shunt motors, reversing	$P_c = U_e \times 2.5 I_e$
<b>DC-4</b> Series wound motors, breaking whilst running	$P_c = 0.3 U_e \times I_e$
<b>DC-5</b> Series wound motors, reversing	$P_c = U_e \times 2.5 I_e$
<b>Counter current braking (plugging)</b>	$P_c = 1.5 U_e \times 1.5 I_e$

#### Example:

Series wound motor, breaking whilst motor running, category DC-4.

$P = 50 \text{ kW}$ ,  $U_e = 200 \text{ V}$ ,  $I_e = 250 \text{ A}$ .

Select contactor **LC1FG265** with 3 poles in series.

The power broken is:  $P_c = 0.3 U_e \times I_e = 0.3 \times 200 \times 250 = 15 \text{ kW}$ .

The electrical durability read from the curve is 8 million operating cycles.

#### Maximum operating rate

The following operating rate used at  $I_e$  must not be exceeded: 120 operating cycles/hour.

#### Use of poles in parallel

The electrical durability is equal to the number of operating cycles performed by a pole, multiplied by the number of poles in parallel, multiplied by a coefficient of 0.70.

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics

Environment			LC1FG150	LC1FG185
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	1000	
Rated impulse withstand voltage (Uimp)	Coil not connected to the power circuit	kV	8	
Conforming to standards			IEC/EN 60947-4-1	
Product certifications			N.A.T.O.	
Degree of protection	Conforming to IEC 60529		IP 20 front face with shrouds LA9F	
Ambient air temperature around the device	Storage	°C	-60...+80	
	Operation	°C	-5...+55	
	Permissible at Uc <sup>(1)</sup>	°C	-40...+70	
Maximum operating altitude	Without derating	m	3000	
Operating positions	Without derating			
	With derating <sup>(3)</sup>			
Not to be used				
Shock resistance <sup>(2)</sup> Conforming to IEC/EN 60068-2-27			12 g, 50 ms on the three axes: X, Y, Z	
			15 g, 11 ms on the three axes: X, Y, Z	

<sup>(1)</sup> In these conditions, it is recommended that coils LX9F be used for contactor sizes FG150 to FG265.

<sup>(2)</sup> In the least favourable direction, without change of contact state (coil at Uc).

<sup>(3)</sup> Horizontal fixing:

- the operational current AC-1 is equivalent to 80 % of the value indicated in the catalogue
- breaking and making capacities not guaranteed
- mechanical and electrical durabilities not guaranteed.

#### Derating of pull-in and drop-out voltage

Contactors LC1		FG150	FG185	FG265	FG400	FG500	FG630
Fixing A	Pull-in	75 %	75 %	75 %	80 %	80 %	80 %
	Drop-out	105 %	105 %	105 %	110 %	110 %	110 %
Fixing B	Pull-in	115 %	115 %	115 %	120 %	120 %	120 %
	Drop-out	90 %	90 %	90 %	95 %	95 %	95 %



# TeSys Control

FG Shockproof high power 3-pole contactors (to be discontinued)

## Characteristics

LC1FG265	LC1FG400	LC1FG500	LC1FG630
1000			
8			
IEC/EN 60947-4-1			
N.A.T.O.			
IP 20 front face with shrouds LA9F			
-60...+80			
-5...+55			
-40...+70			
3000			
<p><b>A</b></p> <p><b>B</b></p>			
12 g, 50 ms on the three axes: X, Y, Z			
15 g, 11 ms on the three axes: X, Y, Z			

High power contactors

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics

Pole characteristics				LC1FG150	LC1FG185
Contactor type					
Number of poles				3	3
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 70 °C	<b>A</b>	150/150	185/180	
	In AC-1, θ ≤ 55 °C	<b>A</b>	220/170	240/180	
Rated operational voltage (Ue)	Up to	<b>V</b>	690	690	
Frequency limits	Of the operational current <sup>(1)</sup>	<b>Hz</b>	25 to 200	25 to 200	
Conventional thermal current	θ ≤ 40	<b>°C</b>	250	275	
Rated making capacity	I rms conforming to IEC 60947-4-1	<b>A</b>	Making current: 10 x I in AC-3		
Rated breaking capacity	I rms conforming to IEC 60947-4-1	<b>A</b>	Making and breaking current: 8 x I in cat. AC-3		
Permissible short time rating No current flowing for preceding 60 minutes with θ ≤ 40 °C	For 1.5 or 10 s	<b>A</b>	1200	1500	
	For 30 s	<b>A</b>	700	920	
	For 1 mn	<b>A</b>	600	740	
	For 3 mn	<b>A</b>	450	500	
	For 10 mn	<b>A</b>	350	400	
Fuse protection against short-circuits (U ≤ 440 V)	Motor circuit (type aM)	<b>A</b>	160	200	
	With thermal overload relay (type gG)	<b>A</b>	200	315	
	gG fuses	<b>A</b>	250	315	
Average impedance per pole	At Ith and 50 Hz	<b>mΩ</b>	0.35	0.33	
Power dissipation per pole for the above operational currents	AC-3	<b>W</b>	8	12	
	AC-1	<b>W</b>	22	25	
Cabling Minimum c.s.a.	Bar	No. of bars	2	2	
		Bar	<b>mm</b>	25 x 3	25 x 3
	Cable with lug	<b>mm<sup>2</sup></b>	120	150	
	Cable with connector	<b>mm<sup>2</sup></b>	120	150	
	Bolt diameter	<b>mm</b>	Ø8	Ø8	
	Tightening torque	Power circuit connections	<b>N.m</b>	18	18

(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.

(2) Ue ≤ 690 V in AC-3; Ue ≤ 1000 V in AC-1.

Ref.



High power  
contactors

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics

LC1FG265	LC1FG400	LC1FG500	LC1FG630
3	3	3	3
265/250	400/340	500/500	630/630
300/250	430/340	580/500	850/700
1000 <sup>(2)</sup>	1000	1000 <sup>(2)</sup>	1000
25 to 200	25 to 200	25 to 200	25 to 200
350	500	700	1000
Making current: 10 x I in AC-3			
Making and breaking current: 8 x I in AC-3			
2200	3600	4200	5050
1230	2400	3200	4400
950	1700	2400	3400
620	1200	1500	2200
480	1000	1200	1600
315	400	500	630
500	630	800	800
400	500	800	1000
0.3	0.26	0.18	0.12
21	42	45	48
37	65	88	120
2	2	2	2
32 x 4	30 x 5	40 x 5	60 x 5
240	2 x 150	2 x 240	–
240	–	–	–
Ø10	Ø10	Ø10	Ø12
35	35	35	58

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics

a.c. control circuit characteristics with LX1 coil						
Contactor type				LC1FG150	LC1FG185	
Rated control circuit voltage (Uc)	50 or 60 Hz		V	48...440		
Control voltage limits (θ ≤ 55 °C)	40...400 Hz coils	Operation		0.85...1.1 Uc		
		Drop-out		0.20...0.55 Uc		
Average consumption at 20 °C and at Uc	~ 50 Hz	Inrush	40...400 Hz coil	VA	690...855	950...1180
				Cos φ	0.9	0.9
	Sealed	40...400 Hz coil	VA	6.6...8.1	8.9...10.9	
			Cos φ	0.9	0.9	
Heat dissipation			W	5.9...7.2	8...9.8	
Operating time <sup>(1)</sup>	Closing "C"		ms	35	35	
		Opening "O"	ms	130	130	
Mechanical durability at Uc	In millions of operating cycles			10	10	
Maximum operating rate at ambient temperature ≤ 55 °C	In operating cycles per hour			2400	2400	
Cabling Min/max c.s.a.	Flexible cable without cable end	1 or 2 conductors	mm <sup>2</sup>	1/4	1/4	
		1 conductor	mm <sup>2</sup>	1/4	1/4	
	Flexible cable with cable end	2 conductors	mm <sup>2</sup>	1/2.5	1/2.5	
		1 or 2 conductors	mm <sup>2</sup>	1/4	1/4	
Tightening torque			N.m	1.2	1.2	

Ref.



Characteristics of the locking electromagnet (shockproof device)					
Contactor type				LC1FG150	LC1FG185
Control circuit voltage	40...400 Hz		V	48...440	48...440
Inrush consumption			VA	100	100
Maximum energisation time at Uc			ms	20	20
Maximum operating rate	In operating cycles per hour			2400	2400
Mechanical durability at Uc	In millions of operating cycles			1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>

(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.  
The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

High power contactors

# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Characteristics

LC1FG265	LC1FG400	LC1FG500	LC1FG630
48...440	110...440	110...440	110...440
0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc	0.85...1.1 Uc
0.35...0.55 Uc	0.3...0.5 Uc	0.3...0.5 Uc	0.25...0.5 Uc
650	1075	1100	1650
0.9	0.9	0.9	0.9
10	15	18	22
0.9	0.9	0.9	0.9
8	14	18	20
40...65	40...75	40...75	40...80
100...170	100...170	100...170	100...200
10	10	10	10
2400	2400	2400	1200
1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4
1/2.5	1/2.5	1/2.5	1/2.5
1/4	1/4	1/4	1/4
1.2	1.2	1.2	1.2

LC1FG265	LC1FG400	LC1FG500	LC1FG630
48...440	110...440	110...440	110...440
100	100	100	100
20	20	20	20
2400	2400	2400	1200
1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>

# TeSys Control

Contact blocks for FG contactors (to be discontinued)

## Characteristics

Environment				
Contact block type		LADN	LADT and LADS	LADR
Conforming to standards		IEC 60947-5-1, EN 60947-5-1		
Product certifications		UL, CSA		
Degree of protection	Conforming to IEC 60529	Protection against direct finger contact IP2X		
Ambient air temperature around the device	Storage	°C	-60...+80	
	Operation	°C	-5...+60	
	Permissible for operation at U <sub>c</sub>	°C	-40...+70	
Maximum operating altitude	Without derating	m	3000	
Cabling	Phillips n° 2 and Ø6 mm. Flexible or solid cable with or without cable end	mm <sup>2</sup>	Min: 1 x 1; max: 2 x 2.5	

Ref.



High power contactors



# TeSys Control

## Contact blocks for FG contactors (to be discontinued)

### Characteristics

Instantaneous and time delay contact characteristics																				
Contact block type			LADN		LADT and LADS			LADR												
Number of contacts			1 or 4		2			2												
Rated operational voltage Up to (U <sub>e</sub> )			V		660															
Rated insulation voltage (U <sub>i</sub> )			Conforming to IEC 60947-5-1		V					690										
			Conforming to UL, CSA		V					600										
Conventional thermal current (I <sub>th</sub> )			For ambient temperature ≤ 60 °C		A					10										
Frequency of the operational current			Hz		25...400															
Minimum switching capacity			U min		V					17										
			I min		mA					5										
Short-circuit protection			Conforming to IEC 60947-5-1 and VDE 0660, gG fuse		A					10										
Rated making capacity			Conforming to IEC 60947-5-1, I rms		A					~ 140; --- 250										
Short-time rating			Permissible for		1 s		A			100										
					500 ms		A			120										
					100 ms		A			140										
Insulation resistance			MΩ		> 10															
Non-overlap time			Guaranteed between N/C and N/O contacts		ms					1.5 (on energisation and on de-energisation)										
Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face			Ambient air temperature for operation		°C		-			-40...+70		-40...+70								
			Repeat accuracy				-			±2 %		±2 %								
			Drift up to 0.5 million operating cycles				-			+15 %		+15 %								
			Drift depending on ambient air temperature				-			0.25 % per °C		0.25 % per °C								
Mechanical durability			In millions of operating cycles		30		5			5										
Rated operational power of contacts Conforming to IEC 60947-5-1			V		24		48		110/127		220/230		380/400		440		600			
			1 million operating cycles		VA		150		300		400		480		500		500		500	
			3 million operating cycles		VA		80		170		250		290		320		320		320	
			10 million operating cycles		VA		30		65		90		120		130		130		130	
			Occasional making capacity		VA		1200		2600		7000		13 000		15 000		13 000		9000	

Ref.



High power contactors

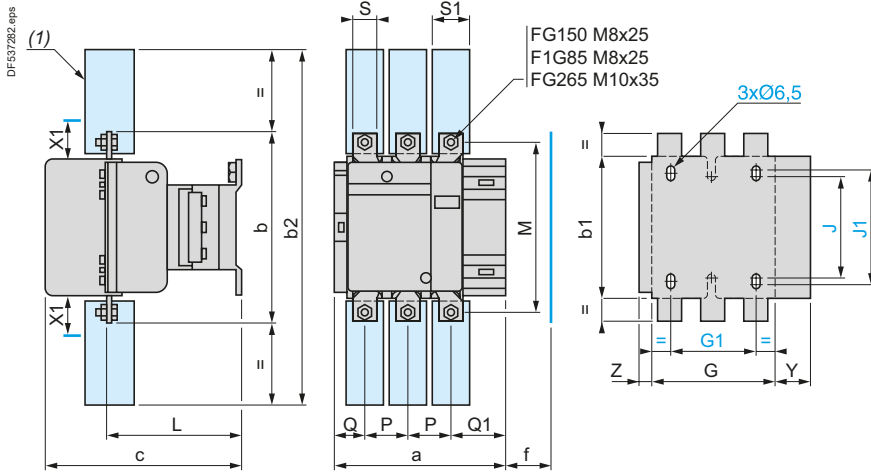
# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Dimensions

#### Dimensions

##### LC1FG150, FG185 and FG265



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

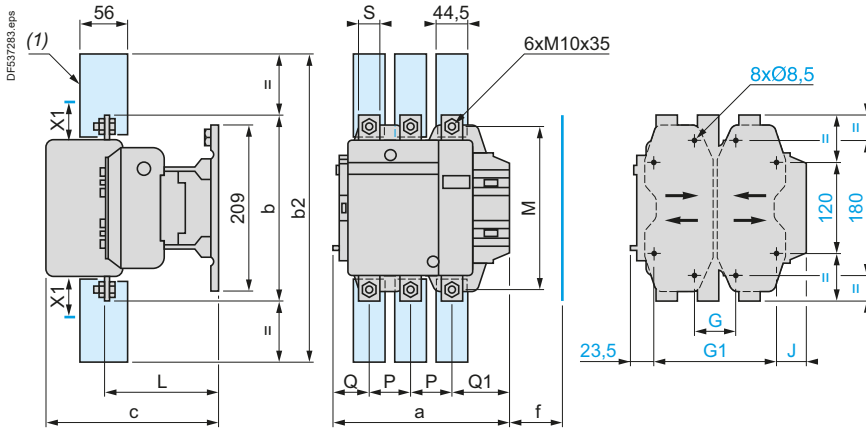
LC1	200...500 V	600...1000 V
FG150	10	15
FG185	10	15
FG265	10	15

(1) Power terminal protection shroud (see page B10/10).

LC1	a	b	b1	b2	c	f	G	G1	J	J1	L	M	P	Q	Q1	S	S1	Y	Z
FG150	181	170	137	301	180	131	106	80	106	120	116	150	40	26	57.5	20	34	44	13.5
FG185	183.5	174	137	305	190	130	111	80	106	120	122.5	154	40	29	59.5	20	34	44	13.5
FG265	217.5	203	145	375	222	147	142	96	106	120	150	178	48	39	66.5	25	44.5	38	21.5

f = minimum distance required for coil removal.

##### LC1FG400 and FG500



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200...500 V	600...1000 V
FG400	15	20
FG500	15	20

(1) Power terminal protection shroud (see page B10/10).

LC1	a	b	b2	c	f	G	G supplied	G min.	G max.	G1 supplied	G1 min.	G1 max.	J	L	M	P	Q	Q1	S
FG400	237	206	375	234	146	80		66	102	223	156	192	19.5	160	181	48	75	74	25
FG500	257	238	400	247	150	80		66	120	223	156	210	39.5	181	208	55	78	77	30

f = minimum distance required for coil removal.

Ref.



High power contactors

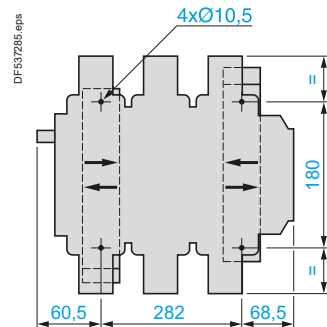
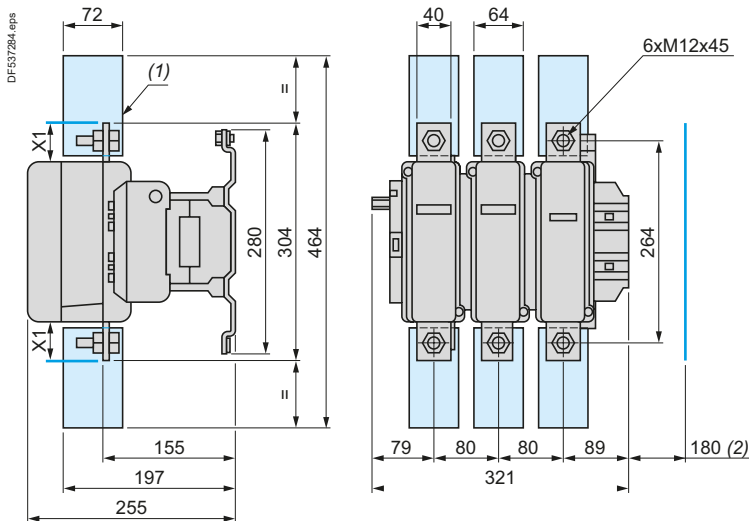
# TeSys Control

## FG Shockproof high power 3-pole contactors (to be discontinued)

### Dimensions and schemes

#### Dimensions

##### LC1FG630



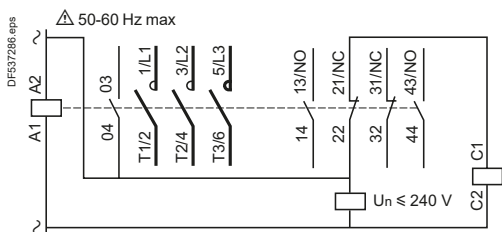
X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200...500 V	690...1000 V
FG630	20	30

- (1) Power terminal protection shroud (see page B10/10).
- (2) Minimum distance required for coil removal.

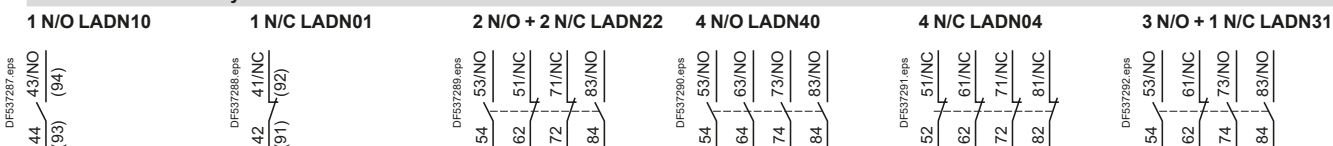
#### Schemes

##### Contactors LC1-FG150 to FG630



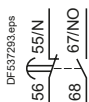
#### Add-on blocks

##### Instantaneous auxiliary contacts

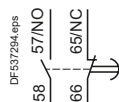


##### Time delay auxiliary contacts

##### On-delay 1 N/O + 1 N/C LADT●

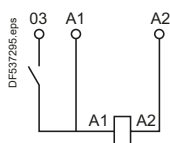


##### Off-delay 1 N/O + 1 N/C LADR●



#### Coils ~

##### LX1FH, FJ, FK and FL



References: pages B10/4, B10/16 and B10/17  
 Characteristics: pages B10/38 to B10/53

PB 106370.eps



CR1F500

Ref.



High power contactors

### Magnetic latching contactors

Magnetic latching contactors of both block and bar mounted types are fitted with a special electromagnet which enables them to remain in the "On" position when the coil is no longer energised.

#### Applications

The special properties of magnetic latching contactors make them suitable for a large number of applications.

#### Properties

- Retention of the sequence memory in automatic control equipment in the event of loss of control voltage.
- Energy saving, since the source of supply to the coil does not need to supply current when the contactor is latched in the closed state.
- Change of state from "Closed" to "Open" by current signal through the coil.
- Unaffected by mains interference.
- Utilisation of contactors beyond their breaking capacity, as operations are performed off-load.
- Contactors are silent in the latched position.

#### Applications

- Refineries, power stations, excitation circuits.
  - Contactors remaining in the closed state for long periods.
- Examples: refineries, power supplies, low voltage distribution.
- Selective opening control.
  - No unwanted opening and closing of the main power poles.
  - Current carrying at voltages up to 1000 Volts.

### Operation of the electromagnet

#### CR1F block contactors

CR1F magnetic latching contactors are fitted with a double coil with 3 terminals comprising a latching winding and an unlatching winding. The 2 windings have a common point which can necessitate special wiring precautions when the latching supply is separate from the unlatching supply.

The power supplies may be a.c. or d.c. For d.c. operation, the polarities indicated must be complied with.

Operating precautions:

- the 2 windings must not be supplied simultaneously
- a winding must not be supplied continuously
- supply to the coils must be via pulsed contacts.

Manual opening:

if the control voltage is not present, the contactor can be unlatched manually.

Latching is obtained by direct supply of the coil in one direction of current flow.

Unlatching is obtained by a reverse current, adjusted by resistors.

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics - Squirrel cage motor

CR1F selection - Squirrel cage motor Direct On Line starter																	
Continuous or intermittent duty up to 30 operating cycles/hour																	
Motor <sup>(1)</sup>												3-pole contactor	3-pole differential thermal overload relay		3 fuses Type		
220 V 230 V			380 V 400 V			415 V			440 V				<sup>(2)</sup>	Reference	Setting range	aM	BS-88
P	In		P	In		P	In		P	In		Reference					
kW	HP	A	kW	HP	A	kW	HP	A	kW	HP	A						
25	35	85	-	-	-	-	-	-	-	-	-	CR1F150	LR9F5367	60...100	100	125	
30	40	103	51	70	98	55	75	100	59	80	97	CR1F150	LR9F5369	90...150	100	160	
-	-	-	59	80	112	59	80	105	63	85	109	CR1F150	LR9F5369	90...150	125	160	
-	-	-	63	85	117	63	85	115	-	-	-	-	-	-	-	-	
37	50	126	75	100	138	75	100	135	75	100	125	CR1F150	LR9F5369	90...150	160	200	
40	54	134	-	-	-	-	-	-	80	110	131	-	-	-	-	-	
45	60	150	80	110	147	80	110	138	90	125	146	CR1F185	LR9F5369	90...150	160	200	
51	70	170	90	125	170	90	125	165	100	136	162	CR1F185	LR9F5371	132...220	200	250	
55	75	182	-	-	-	100	136	182	-	-	-	-	-	-	-	-	
59	80	195	100	138	188	110	150	200	110	150	178	CR1F265	LR9F5371	132...220	250	315	
63	85	203	110	150	205	-	-	-	129	175	209	-	-	-	-	-	
75	100	240	129	175	242	129	175	230	132	180	215	CR1F265	LR9F7375	200...330	250	315	
-	-	-	132	180	245	132	180	240	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	140	190	250	140	190	227	CR1F265	LR9F7375	200...330	315	400	
80	110	260	140	190	260	147	200	260	147	200	236	CR1F400	LR9F7375	200...330	315	400	
-	-	-	147	200	273	150	205	270	150	205	246	-	-	-	-	-	
-	-	-	150	205	280	160	220	280	160	220	256	-	-	-	-	-	
90	125	295	160	220	300	-	-	-	180	245	289	CR1F400	LR9F7375	200...330	315	400	
-	-	-	-	-	-	-	-	-	185	250	295	-	-	-	-	-	
100	136	325	180	245	333	180	245	320	200	270	321	CR1F400	LR9F7379	300...500	400	500	
110	150	356	185	250	342	185	250	325	220	300	353	-	-	-	-	-	
-	-	-	200	270	370	200	270	340	250	340	401	CR1F400	LR9F7379	300...500	400	500	
-	-	-	-	-	-	220	300	385	-	-	-	-	-	-	-	-	
129	175	420	220	300	408	-	-	-	257	350	412	CR1F500	LR9F7379	300...500	500	630	
132	180	425	250	340	460	250	340	425	280	380	450	CR1F500	LR9F7381	380...630	500	630	
140	190	450	-	-	-	257	350	450	-	-	-	-	-	-	-	-	
147	200	472	-	-	-	-	-	-	295	400	473	CR1F500	LR9F7381	380...630	500	630	
-	-	-	257	350	475	280	380	475	300	410	481	CR1F630	LR9F7381	380...630	500	630	
-	-	-	-	-	-	295	400	500	-	-	-	-	-	-	-	-	
150	205	483	280	380	510	300	410	510	315	430	505	CR1F630	LR9F7381	380...630	630	800	
160	220	520	295	400	546	315	430	535	335	450	518	-	-	-	-	-	
180	245	578	300	410	565	335	450	550	355	480	549	CR1F630	LR9F7381	380...630	630	800	
185	250	595	315	430	584	355	480	580	375	500	575	-	-	-	-	-	
200	270	626	335	450	620	375	500	610	400	454	611	CR1F630	LR9F7381	380...630	800	1000	
220	*	700	355	*	635	400	*	650	425	*	650	CR1BL33	-	500...800	800	1000	
-	-	-	375	*	670	425	*	690	445	*	680	-	-	-	-	-	
-	-	-	400	*	710	445	*	730	450	*	690	-	-	-	-	-	
-	-	-	-	-	-	450	*	740	475	*	730	-	-	-	-	-	
250	*	800	425	*	760	475	*	780	500	*	780	CR1BM33	-	500...800	800	1000	
257	*	826	445	*	790	500	*	820	530	*	825	CR1BM33	-	630...1000	1000	1250	
280	*	900	450	*	800	530	*	870	560	*	870	-	-	-	-	-	
295	*	948	475	*	850	560	*	920	600	*	920	-	-	-	-	-	
300	*	980	500	*	900	600	*	978	630	*	965	-	-	-	-	-	
315	*	990	530	*	950	-	-	-	-	-	-	-	-	-	-	-	

(1) The ratings are for standard 220/230 V, 380/400 V, 415 or 440 V motors. The overload relays should preferably be set to the motor full-load current shown on the motor rating plate. For other power ratings, select the overload relay with the appropriate range; the associated contactor and fuses must have ratings equal to or immediately greater than In.

(2) Reference to be completed, see page B10/47.

\* There are no standard power ratings for these motors.



# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics - AC

#### Rated operational current in AC-3 ( $\theta \leq 55^\circ\text{C}$ )

Contactor size		CR1F 150	CR1 F185	CR1F 265	CR1F 400	CR1 F500	CR1F 630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
440 V	A	150	185	265	400	500	630	750	1000	1500	1800
500 V	A	135	175	245	385	500	540	750	900	1200	1500
660/690 V	A	130	140	230	365	435	470	700	800	900	1100
1000 V	A	47	73	95	135	270	330	400	400	500	600

#### Rated operational power (standard motor power ratings)

220...240 V	<b>kW</b>	40	55	75	110	147	200	220	280	425	500
	<b>HP</b>	54	75	100	150	200	270	300	380	580	680
380...400 V	<b>kW</b>	75	90	132	200	250	335	400	500	750	900
	<b>HP</b>	100	185	180	270	340	450	545	680	1000	1220
415 V	<b>kW</b>	80	100	140	220	280	375	425	530	800	900
	<b>HP</b>	110	136	180	300	380	500	580	720	1100	1220
440 V	<b>kW</b>	80	100	140	250	295	400	450	560	800	900
	<b>HP</b>	110	136	190	340	400	545	610	760	1100	1220
500 V	<b>kW</b>	90	110	160	257	355	400	500	600	750	900
	<b>HP</b>	125	150	220	350	480	545	680	810	1000	1220
660/690 V	<b>kW</b>	100	110	160	280	335	450	560	670	750	900
	<b>HP</b>	–	–	–	–	–	610	760	910	1000	1220
1000 V	<b>kW</b>	65	100	147	185	335	450	530	530	670	750
	<b>HP</b>	–	136	200	250	–	610	720	720	910	1000

Maximum operating rate in operating cycles/hour, at rated operational power with an on-load factor = 85 %: 750 for CR1F150 to F265, 500 for CR1F400 to F630 and 120 for CR1 B.

Ref.



High power  
contactors

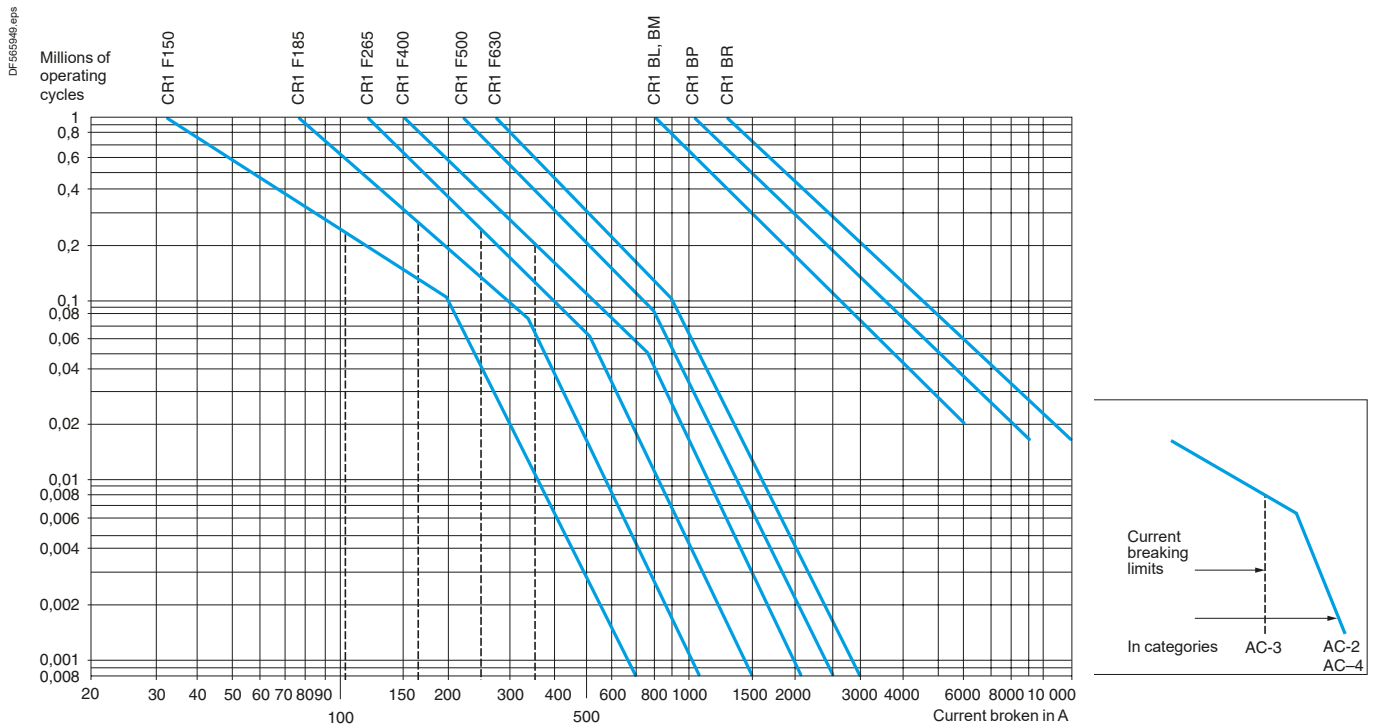
# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics - Durability (AC)

**Use in category AC-3** ( $U_e \leq 440 \text{ V}$ ) <sup>(1)</sup> ( $\theta \leq 55 \text{ °C}$ )

The current ( $I_c$ ) in AC-3 is equal to the rated operational current ( $I_e$ ) drawn by the motor.



#### Example:

Asynchronous motor with  $P = 50 \text{ kW}$ ,  $U_e = 380 \text{ V}$ ,  $I_e = 100 \text{ A}$ ,  $I_c = I_e = 100 \text{ A}$ , or asynchronous motor with  $P = 55 \text{ kW}$ ,  $U_e = 415 \text{ V}$ ,  $I_e = 100 \text{ A}$ ,  $I_c = I_e = 100 \text{ A}$ .  
600000 operating cycles required.

The above selection curves show the contactor rating needed, CR1F185.

<sup>(1)</sup> For 660 V, multiply the number of operating cycles by 0.8.

Ref.



High power contactors

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics - Durability (AC)

#### Maximum operational current (on-load factor $\geq 0.95$ )

Maximum operating rate: 120 operating cycles/hour

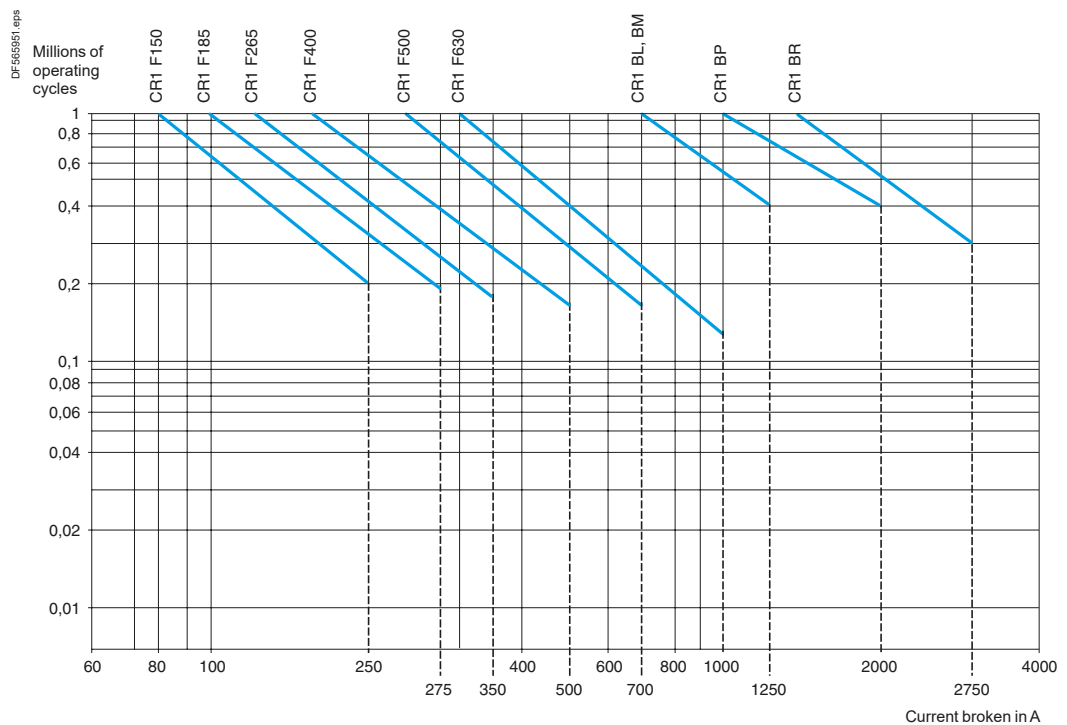
Contactor size		CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR	
Cable c.s.a.	mm <sup>2</sup>	120	150	185	-	-	-	-	-	-	-	
Number of bars		-	-	-	2	2	2	2	2	3	4	
Bar c.s.a.	mm	-	-	-	30 x 5	40 x 5	60 x 5	50 x 5	80 x 5	100 x 5	100 x 5	
Operational current in category AC-1 at ambient temperature	$\leq 40\text{ }^{\circ}\text{C}$	A	250	275	350	500	700	1000	800	1250	2000	2750
	$\leq 55\text{ }^{\circ}\text{C}$	A	250	275	300	430	580	850	700	1100	1750	2400
	$\leq 70\text{ }^{\circ}\text{C}$	A	170	180	250	340	500	700	600	900	1500	2000

#### Increase in operational current by parallel connection of poles

Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

#### Electrical durability (U<sub>e</sub> $\leq$ 440 V) <sup>(1)</sup>



#### Example:

U<sub>e</sub> = 220 V - I<sub>e</sub> = 200 A -  $\theta$  = 40 °C - I<sub>c</sub> = I<sub>e</sub> = 200 A

600000 operating cycles required.

The above selection curves show the contactor rating needed, CR1F400.

<sup>(1)</sup> For 660 V, multiply the number of operating cycles by 0.8.





### 3-phase transformer primaries switching

#### Operating conditions

Maximum ambient temperature: 55 °C.

Maximum operational voltage: 1000 V, 50...60 Hz.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:

- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, size of the windings, ...)
- the performance of the magnetic laminations used (residual induction and saturation inductance),
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The peak current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the "no-load" or "on-load" state of the transformer.

The peak magnetising current of the transformer must be lower than the values given in the tables below.

Contactor selection											
Maximum operating rate: 120 operating cycles/hour											
Contactor size		CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
Maximum permissible current peak at switch-on	<b>A</b>	1700	2800	3500	5500	6800	9000	18 000	18 000	24 000	30 000
Maximum operational power <sup>(1)</sup>	220...230 V	<b>kVA</b> 25	40	50	75	100	140	230	230	300	380
	380...400 V	<b>kVA</b> 50	75	90	130	170	225	400	400	530	660
	415...440 V	<b>kVA</b> 55	80	100	140	190	250	450	450	560	700
	500 V	<b>kVA</b> 65	95	110	170	225	280	480	480	600	750
	660 V	<b>kVA</b> 80	120	140	200	270	315	600	600	800	950
	1000 V	<b>kVA</b> 100	150	200	250	375	470	700	700	1000	1200

<sup>(1)</sup> Maximum operational power corresponding to a current peak at switch-on of 30 In.

Ref.



High power contactors

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics

Environment					
Contactor type			CR1F150	CR1F185	CR1F265
Rated insulation voltage (Ui)	Conforming to IEC 60158-1, BS 775, 60947-4	V	1000	1000	1000
Ambient air temperature around the device	Storage	°C	-60...+80		
	For operation at Uc	°C	-15...+70		
Maximum operating altitude	Without derating	m	3000		
Operating positions	Without derating		±5 ° in relation to normal vertical mounting plane		

Pole characteristics						
Number of poles			3 or 4	3 or 4	3 or 4	
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 40 °C	A	150	185	265	
	In AC-1, θ ≤ 40 °C	A	250	275	350	
	In AC-4, θ ≤ 40 °C	A	138	170	245	
Rated operational voltage (Ue)	Up to	V	1000	1000	1000	
Frequency limits (sine wave)	Of the operational current	Hz	25...200	25...200	25...200	
Rated making capacity	I rms	A	1700	2100	2940	
Rated breaking capacity	I rms	220...440 V	A	1500	1800	2450
		500 V	A	1200	1600	2200
		660/690 V	A	1100	1200	1700
		1000 V	A	450	600	800
Permissible short time rating from cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C	For 1 s	A	1200	1500	2200	
	For 5 s	A	1200	1500	2200	
	For 10 s	A	1200	1500	2200	
	For 30 s	A	700	920	1230	
	For 1 min	A	600	740	950	
	For 3 min	A	450	500	620	
	For 10 min	A	350	400	480	
Short-circuit protection by fuses θ ≤ 440 V	Motor circuit AC-3 (type aM)	A	160	200	315	
	AC-1 circuit (type gG, BS 88)	A	250	315	400	
Average impedance per pole	At Ith and 50 Hz	mΩ	0.45	0.36	0.32	
Power dissipated per pole for the above operational currents	AC-3	W	6	12	22	
	AC-1	W	18	26	39	
Connection	Number of conductors		1	1	1	
	Cable with lugs	mm <sup>2</sup>	120	150	240	
	Cable with connector	mm <sup>2</sup>	120	150	240	
	Number of bars		2	2	2	
	Bar c.s.a.	mm	25 x 3	25 x 3	32 x 4	
	Bolt diameter		Ø8	Ø8	Ø10	
	Tightening torque	N.m	18	18	35	

Ref.



High power contactors

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics

CR1F400	CR1F500	CR1F630	CR1BL	CR1BM	CR1BP	CR1BR
1000	1000	1000	1000	1000	1000	1000
-60...+80			-60...+80			
-15...+70			-15...+60			
3000			3000			
±5° in relation to normal vertical mounting plane			±5° in relation to normal vertical mounting plane			
3 or 4	3 or 4	3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4
400	500	630	750	1000	1500	1800
500	700	1000	800	1250	2000	2750
370	460	560	700	800	1250	1500
1000	1000	1000	1000	1000	1000	1000
25...200	25...200	25...200	50...60	50...60	50...60	50...60
4500	5000	6740	10 000	10 000	15 000	18 000
4000	5000	6300	10 000	10 000	15 000	18 000
3500	4500	5400	9000	9000	12 000	15 000
3000	3560	4600	8000	8000	9000	11 000
1200	2500	3200	4000	4000	5000	6000
3600	4200	5050	9600	9600	12 000	15 000
3600	4200	5050	9600	9600	12 000	15 000
3600	4200	5050	7000	8000	9600	12 000
2400	3200	4400	4800	5200	6400	8000
1700	2400	3400	3500	3800	5200	6300
1200	1500	2200	2100	2400	3600	4400
1000	1200	1600	1200	1800	2800	3600
400	500	630	800	1200	800 x 2 <sup>(1)</sup>	1000 x 2 <sup>(1)</sup>
500	800	1000	800	1200	1000 x 2 <sup>(1)</sup>	1200 x 2 <sup>(1)</sup>
0.28	0.18	0.12	0.18	0.18	0.13	0.09
45	45	48	88	180	290	360
70	88	120	115	280	520	680
2	2	–	–	–	–	–
150	240	–	–	–	–	–
–	–	–	–	–	–	–
2	2	2	2	2	3	4
30 x 5	40 x 5	60 x 5	50 x 5	80 x 5	100 x 5	100 x 10
Ø10	Ø10	Ø12	4 x Ø8	4 x Ø10	4 x Ø10	4 x Ø10
35	35	58	21	35	35	35

(1) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics

a.c. and d.c. control circuit characteristics				CR1F150	CR1F185	CR1F265	
<b>Contactor type</b>							
Rated control circuit voltage (Uc)	~ 50 or 60 Hz		V	48...415			
	~ 400 Hz		V	48...220			
	---		V	48...220			
	--- low consumption		V	48...220			
Control voltage limits ~ and ---	Latching			0.85...1.1 Uc			
	Unlatching			0.85...1.1 Uc			
Maximum operating rate at ambient temperature ≤ 40 °C	In operating cycles per hour			120			
Mechanical durability	In millions of operating cycles			1			
Average consumption 50/60 Hz	Latching	1-pole	VA	–	–	–	
		2-pole	VA	–	–	–	
		3-pole	VA	1100	1600	1650	
		4-pole	VA	100	1600	1650	
	Unlatching	1-pole	VA	–	–	–	
		2-pole	VA	–	–	–	
		3-pole	VA	7.3	8	9	
		4-pole	VA	7.3	8	9	
	400 Hz and ---	Latching	1-pole	VA	–	–	–
			2-pole	VA	–	–	–
			3-pole	VA	1260	1750	1800
			4-pole	VA	1260	1750	1800
		Unlatching	1-pole	VA	–	–	–
			2-pole	VA	–	–	–
			3-pole	VA	10	11	12
			4-pole	VA	10	11	12
--- low consumption	Latching	3/4-pole	W	500	500	500	
	Unlatching	3/4-pole	W	15	20	40	
Average operating time at Uc <sup>(1)</sup>	Latching		ms	35...40	35...40	45...50	
	Unlatching		ms	50...100	50...100	50...100	

(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.

Note: the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.

Auxiliary contact characteristics																																																													
<b>Type of contacts</b>			LADN for contactors CR1F																																																										
Conventional thermal current		A	10																																																										
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V	690																																																										
Connection	Flexible or solid conductor with or without cable end	mm <sup>2</sup>	1 x 1 min; 2 x 2.5 max																																																										
Operational power of contacts LADN for contactors CR1F			<table border="0"> <tr> <td></td> <td colspan="5"><b>a.c. supply</b></td> <td colspan="5"><b>d.c. supply</b></td> </tr> <tr> <td></td> <td colspan="10">Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).</td> </tr> <tr> <td></td> <td>V</td> <td>48</td> <td>115</td> <td>230</td> <td>400</td> <td>600</td> <td>V</td> <td>48</td> <td>125</td> <td>250</td> <td>440</td> </tr> <tr> <td>1 million operating cycles</td> <td>VA</td> <td>120</td> <td>280</td> <td>560</td> <td>960</td> <td>1440</td> <td>W</td> <td>90</td> <td>75</td> <td>68</td> <td>61</td> </tr> <tr> <td>Occasional making capacity</td> <td>VA</td> <td>2600</td> <td>7000</td> <td>13 000</td> <td>15 000</td> <td>9000</td> <td>W</td> <td>700</td> <td>400</td> <td>260</td> <td>220</td> </tr> </table>		<b>a.c. supply</b>					<b>d.c. supply</b>						Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).											V	48	115	230	400	600	V	48	125	250	440	1 million operating cycles	VA	120	280	560	960	1440	W	90	75	68	61	Occasional making capacity	VA	2600	7000	13 000	15 000	9000	W	700	400	260	220
	<b>a.c. supply</b>					<b>d.c. supply</b>																																																							
	Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).																																																												
	V	48	115	230	400	600	V	48	125	250	440																																																		
1 million operating cycles	VA	120	280	560	960	1440	W	90	75	68	61																																																		
Occasional making capacity	VA	2600	7000	13 000	15 000	9000	W	700	400	260	220																																																		

Ref.



High power contactors

# TeSys Control

## CR1F Magnetic latching high power contactors

### Characteristics

CR1F400	CR1F500	CR1F630	CR1BL	CR1BM	CR1BP	CR1BR
48...415			110...500			
48...220			110...500			
48...220			110...500			
48...220			–			
0.85...1.1 Uc			0.85...1.1 Uc			
0.85...1.1 Uc			0.85...1.1 Uc			
120			120			
1			1			
–	–	–	650	650	650	650
–	–	–	1100	1100	1100	1100
1450	1650	2100	1650	1650	1650	1650
1450	1650	2100	1850	1850	1850	1850
–	–	–	110	110	110	110
–	–	–	125	125	125	125
12	9.5	8	165	165	165	165
12	9.5	8	175	175	175	175
–	–	–	600	600	600	600
–	–	–	1000	1000	1000	1000
1600	1800	2300	1500	1500	1500	1500
1600	1800	2300	1700	1700	1700	1700
–	–	–	100	100	100	100
–	–	–	115	115	115	115
16	13	11	150	150	150	150
16	13	11	160	160	160	160
500	550	620	–	–	–	–
70	60	45	–	–	–	–
40...75	40...80	40...80	100...150	100...150	100...150	100...150
50...100	50...100	50...100	20...40	20...40	20...40	20...40

(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.

**Note:** the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.

LADN for contactors CR1F	ZC4GM for contactors CR1B
10	20
690	660
1 x 1 min; 2 x 2.5 max	2 min; 4 max

Operational power of contacts  
ZC4GM for contactors CR1 B

#### a.c. supply

Electrical durability (valid for up to 2400 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

V	110	220	380	415	500
	127			440	
<b>VA</b>	2000	4000	4000	4000	3500
<b>VA</b>	14000	23000	35000	45000	35000

#### d.c. supply

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

V	110	120	440	500
<b>W</b>	250	250	230	200
<b>W</b>	1600	800	400	360

1 million operating cycles

Occasional making capacity

# TeSys Control

## CR1F Magnetic latching high power contactors

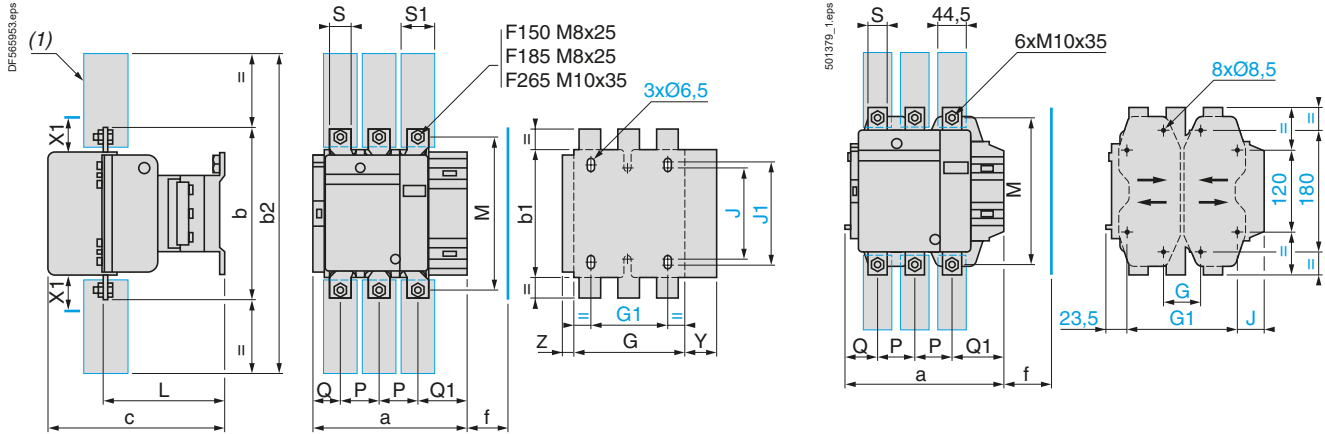
### Dimensions

#### CR1F150 to F500

Common side view

CR1F150, F185, F265

CR1F400, F500



CR1	F150		F185		F265	
	3P	4P	3P	4P	3P	4P
a	163.5	201.5	168.5	208.5	201.5	244.5
b	170	170	174	174	203	203
b1	137	137	137	137	145	145
b2	301	301	305	305	370	370
c	171	171	181	181	213	213
f	131	131	130	130	147	147
G	106	143	111	151	142	190
G1	80	80	80	80	96	96
J	106	106	106	106	106	106
J1	120	120	120	120	120	120
L	107	107	113.5	113.5	141	141
M	150	150	154	154	178	178
P	40	40	40	40	48	48
Q	26	26	29	29	39	34
Q1	57.5	55.5	59.5	59.5	66.5	66.5
S	20	20	20	20	25	25
S1	27	27	34	34	38	38
Y	44	44	38.5	30.5	30.5	21.5
Z	13.5	13.5	13.5	13.5	15.5	15.5

f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

CR1	F400		F500	
	3P	4P	3P	4P
a	213	261	233	288
b	206	206	238	238
b2	375	375	400	400
c	219	219	232	232
f	146	146	150	150
G supplied 80	80	80	140	140
G max.	102	150	120	175
G1 supplied 170	170	170	170	230
G1 min.	156	156	156	156
G1 max.	192	240	210	265
J	12	60	32	27
L	145	145	146	146
M	181	181	208	208
P	48	48	55	55
Q	43	43	47	47
Q1	74	74	77	77
S	25	25	30	30

f = minimum distance required for coil removal.

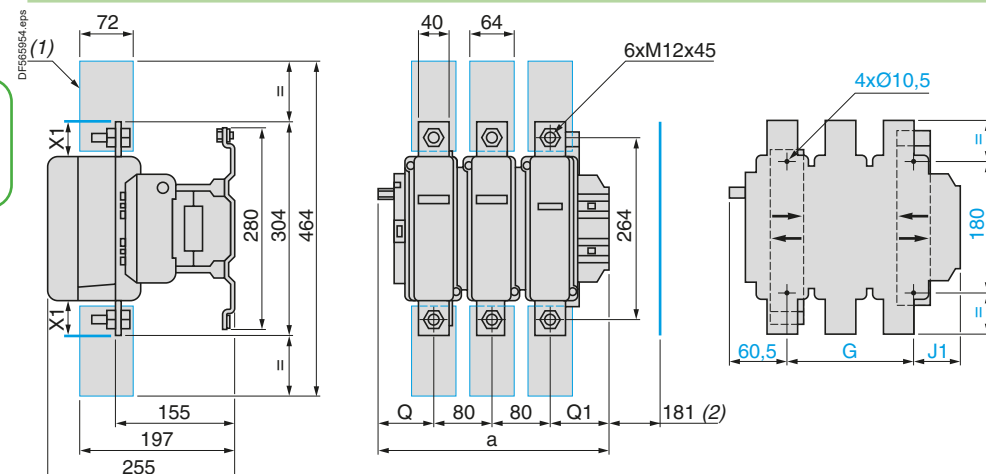
X1: Minimum electrical clearance according to operational voltage and breaking capacity.

Voltage in V	200...500	660...1000
CR1F150	10	15
CR1F185	10	15
CR1F265	10	15

Voltage in V	200...500	660...1000
CR1F400	15	20
CR1F500	15	20

(1) Power terminal protection shroud (see page B10/10).

#### CR1F630



CR1F630	3P	4P
a	309	389
G supplied	180	240
G min.	100	150
G max.	195	275
J1	61	81
Q	60	60
Q1	89	89

X1: Min. electrical clearance according to operational voltage and breaking capacity.

Voltage in V	X1
200...500	20
690...1000	30

(1) Power terminal protection shroud.  
(2) Minimum distance required for coil removal.

References: pages B10/5, B10/16 to B10/21 Characteristics: pages B10/56 to B10/65

# TeSys Control

## CR1F Magnetic latching high power contactors

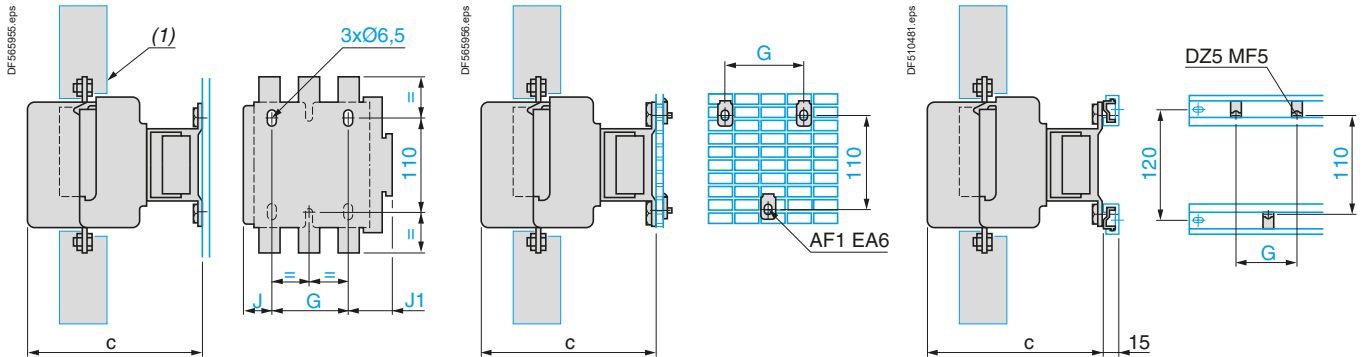
### Mounting

#### CR1F150...F265

Panel mounted

On pre-slotted mounting plate AM1PA, PB, PC

On rails DZ5MB on 120 mm centres



CR1	F150	F185	F265
c	3P 171	181	213
	4P 171	181	213
G	3P 80	80	96
	4P 80	80	96
J	3P 26.5	29	44.5
	4P 45	49	68.5
J1	3P 57	59.5	61.5
	4P 75.5	79.5	85.5

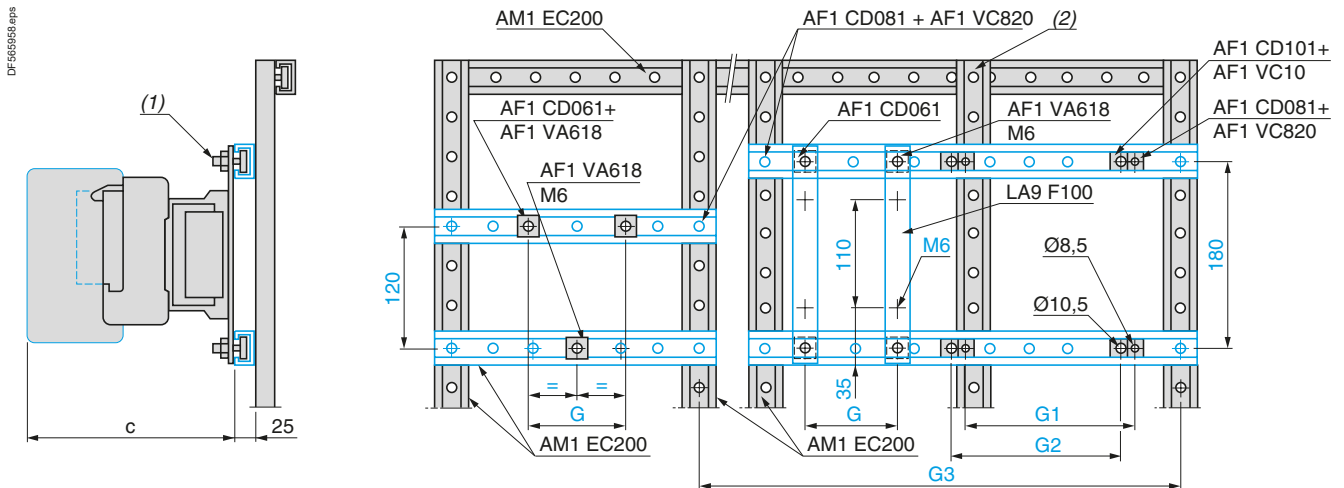
CR1	F150	F185	F265
c	3P 171	181	213
	4P 171	181	213
G	3P 80	80	96
	4P 80	80	96

CR1	F150	F185	F265
c	3P 171	181	213
	4P 171	181	213
G	3P 80	80	96
	4P 80	80	96

(1) Power terminal protection shroud (see page B10/10).

#### CR1F150...F650

On 2 notched uprights AM1EC●●●



CR1	F150	F185	F265	F400	F500	F630
c	3P 171	181	213	213	226	250
	4P 171	181	213	213	226	250
G (M6)	3P 80	80	96	-	-	-
	4P 80	80	96	-	-	-
G1 (Ø8,5)	3P -	-	-	80	80	-
	4P -	-	-	80	140	-
G2 (Ø10,5)	3P -	-	-	-	-	180
	4P -	-	-	-	-	240

(1) AF1CD●●● or AF1VA●●●.

(2) This AM1EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).

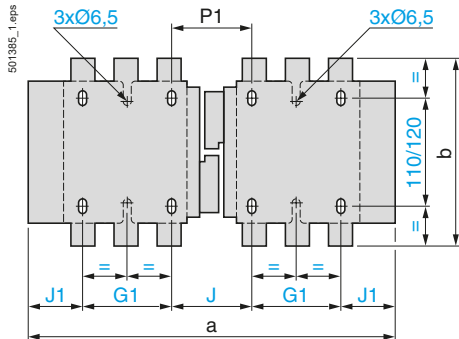
# TeSys Control

## CR1F Magnetic latching reversing contactors

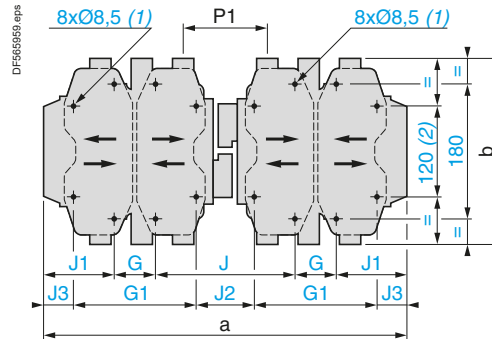
### Mounting

#### Reversing contactors 2 x CR1F150...F265

Horizontally mounted



#### Reversing contactors 2 x CR1F400...F630



2 x CR1	F150	F185	F265	
a	3P	345	357	425
	4P	422	437	521
b	3P	170	174	203
	4P	170	174	203
G1	3P	80	80	96
	4P	80	80	96
J	3P	71	78	109
	4P	111	118	157
J1	3P	57	59.5	61.5
	4P	75.5	79.5	85.5
P1	3P	71	78	100
	4P	71	78	100

2 x CR1	F400	F500	F630	
a	3P	446	485	636
	4P	542	595	796
b	3P	206	238	304
	4P	206	238	304
G	3P	80	80	180
	4P	80	140	240
G1	3P	170	170	—
	4P	170	230	—
J	3P	157	156	139
	4P	157	156	139
J1	3P	64.5	84.5	68.5
	4P	112.5	79.5	68.5
J2	3P	67	66	—
	4P	67	66	—
J3	3P	19.5	39.5	—
	4P	67.5	34.5	—
P1	3P	107	112	137
	4P	107	112	137

(1) Except F630: 4 x Ø 10.5.

(2) Except F630: 180.

Ref.



High power contactors



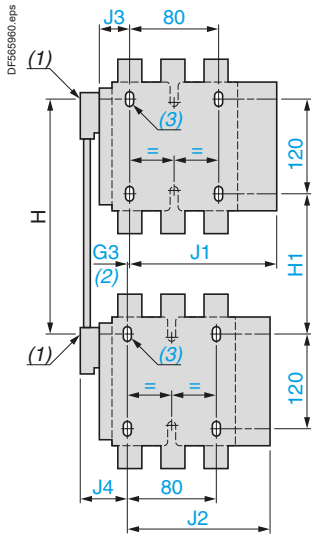
# TeSys Control

## CR1F Magnetic latching reversing contactors

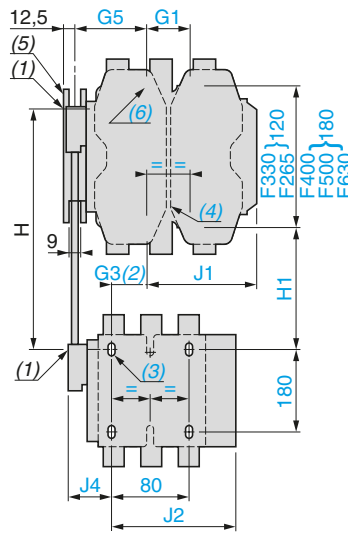
### Mounting

#### Reversing contactors

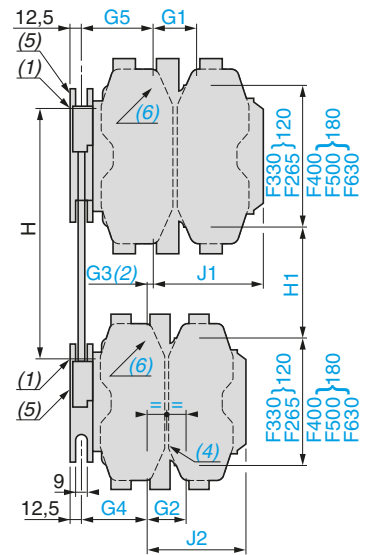
Vertically mounted with mechanical interlock **LA9F**...  
 2 contactors **CR1F** of identical or different ratings (CR1F150...F630), see page B10/49.  
 Assembly A



Assembly B



Assembly C



- (1) Mechanical interlock shaft.
- (2) For assembly of contactors of different ratings only.
- (3) 3 x Ø6.5 mm for CR1F150...F265.
- (4) 3 x Ø6.5 mm for CR1F265.
- (5) Mechanical interlock guide bracket.
- (6) 4 x Ø8.5 mm for CR1F400, F500 or 4 x Ø10.5 mm.

Assembly type LA9F	A			B								C									
	F4F	G4F	G4G	H4F	J4F	K4F	L4F	H4G	J4G	K4G	L4G	H4H	J4H	K4H	L4H	J4J	K4J	L4J	K4K	L4K	L4L
G1	3P	-	-	96	80	80	180	96	80	80	180	96	80	80	180	80	80	180	80	180	180
	4P	-	-	96	80	140	240	96	80	140	240	96	80	140	240	80	140	240	140	240	240
G2	3P	-	-	-	-	-	-	-	-	-	-	96	96	96	96	80	80	80	80	80	180
	4P	-	-	-	-	-	-	-	-	-	-	96	96	96	96	80	80	80	140	140	240
G3	3P	0	3	0	21	45	45	35	19	42	42	0	23	23	14	0	0	9 <sup>(7)</sup>	0	9 <sup>(7)</sup>	0
	4P	0	4	0	27	26	26	17	23	22	22	0	0	0	9 <sup>(7)</sup>	0	0	9 <sup>(7)</sup>	0	9 <sup>(7)</sup>	0
G4	3P	-	-	-	-	-	-	-	-	-	-	60	60	60	60	83	83	83	83	83	74
	4P	-	-	-	-	-	-	-	-	-	-	83	83	83	83	83	83	83	83	83	74
G5	3P	-	-	-	60	83	83	74	60	83	83	60	83	83	74	83	83	74	83	74	74
	4P	-	-	-	83	83	83	74	83	83	83	83	83	83	74	83	83	74	83	74	74
H	min.	200	210	220	240	250	270	310	250	250	270	250	260	280	330	260	280	325	300	345	380
	max.	310	300	310	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380
H1	min.	80	90	100	110	80	100	140	120	90	110	130	110	130	170	60	100	140	120	160	200
	max.	190	180	190	250	210	210	210	250	220	220	260	230	230	220	200	200	195	200	195	200
J1	3P	133	134	134	149.5	137	157	241	149.5	137	157	149.5	137	157	24	137	157	241	157	244	241
	4P	145	146	146	164.5	185	212	321	164.5	185	212	164.5	185	212	321	185	212	321	212	321	321
J2	3P	133	133	134	183	133	183	133	134	134	134	142.5	149.5	149.5	149.5	137	137	137	157	157	241
	4P	145	145	146	145	145	145	145	146	146	146	164.5	164.5	164.5	164.5	185	185	185	212	212	312
J3	3P	48.5	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4P	67	73	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J4	3P	48.5	54	53	48.5	48.5	48.5	48.5	53	53	53	-	-	-	-	-	-	-	-	-	-
	4P	67	69	73	67	67	67	67	73	73	73	-	-	-	-	-	-	-	-	-	-

(7) In this case, G4 is greater than G5.

# TeSys Control

## V Vacuum high power contactors

### Characteristics

Selection					
Contactor size		LC1V160	LC1V320	LC1V610	
<b>For utilisation category AC-3</b>					
Maximum operational current in AC-3	<b>A</b>	160	320	610	
Rated operational power P (standard power ratings of motors)	230 V <b>kW</b>	45	90	160	
	400 V <b>kW</b>	75	160	300	
	525 V <b>kW</b>	110	220	400	
	690 V <b>kW</b>	150	280	560	
	1000 V <b>kW</b>	200	400	800	
	1500 V <b>kW</b>	280	600	930	
<b>For 3-phase motors conforming to CSA standards</b>					
Rated operational power P (standard power ratings of 3-phase CSA motors)	200 V <b>hp</b>	50	100	150	
	240 V <b>hp</b>	60	125	200	
	380 V <b>hp</b>	100	200	300	
	480 V <b>hp</b>	125	250	400	
	600 V <b>hp</b>	150	300	500	
	800 V <b>hp</b>	200	400	700	
	1000 V <b>hp</b>	250	500	1000	
	1500 V <b>hp</b>	400	800	1300	
<b>For switching 3-phase capacitors</b>					
Rated operational power P	240 V <b>kVAR</b>	47	94	176	
	480 V <b>kVAR</b>	95	190	356	
	600 V <b>kVAR</b>	100	200	400	
	1500 V <b>kVAR</b>	250	500	1000	
<b>For switching the primaries of 3-phase transformers (LV/LV)</b>					
Rated operational power P	208 V <b>kVA</b>	20	41	81	
	240 V <b>kVA</b>	23	47	94	
	480 V <b>kVA</b>	47	94	188	
	600 V <b>kVA</b>	59	117	234	

### Environment characteristics

Contactor type				LC1V160	LC1V320	LC1V610
Shock resistance (1/2 sine wave = 11 ms) Conforming to IEC/EN 60068-2-27	Contacts closed			10 gn	10 gn	10 gn
	Contacts open			10 gn	10 gn	10 gn
Vibration resistance Conforming to IEC/EN 60068-2-6		10...500 Hz		2 gn	2 gn	2 gn
Operating altitude	Above sea level	Maximum	<b>m</b>	3600	3600	3600
	Below sea level	Minimum	<b>m</b>	2500	4500	4500
Ambient air temperature around the device	Storage		<b>°C</b>	-40...+80	-40...+80	-40...+80
	Operation 0.8... 1.1 Uc		<b>°C</b>	-5...+55	-5...+55	-5...+55
	Permissible for operation at Uc		<b>°C</b>	-10...+75	-10...+75	-10...+75
Degree of protection		Conforming to IEC 60529		IP 00	IP 00	IP 00
Operating position				Any	Any	Any
Cabling	Cable c.s.a.	<b>mm<sup>2</sup></b>		70	185	2 x 185
	Key for hex. screws	<b>mm</b>		Allen 4	20	20
	Tightening torque	<b>N.m</b>		14	39	39

### Control circuit characteristics

Rated insulation voltage (Ui)	To earth	<b>V</b>	2000	2000	2000
Consumption	Inrush	<b>VA</b>	300	600	1700
	Sealed	<b>VA</b>	30	20	28
Permissible control circuit voltage			0.8...1.1 Uc	0.8...1.1 Uc	0.8...1.1 Uc
Closing time <sup>(1)</sup>		<b>ms</b>	18...22	24...32	24...32
Opening time <sup>(1)</sup>		<b>ms</b>	95...115	95...115	95...115

(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.



# TeSys Control

## V Vacuum high power contactors

### Characteristics

Main pole characteristics					
Contactor type		LC1V160	LC1V320	LC1V610	
Rated insulation voltage (Ui)	V	1500	1500	1500	
Rated impulse withstand voltage (Uimp)	kV	8	8	8	
Conforming to standards		EN 60947-4-1 - IEC 60947-4-1			
Conventional rated thermal current (Ith)	A	160	320	630	
Rated operational current (Ie)	$\theta \leq 40$ °C AC-1	A	160	320	630
	$\theta \leq 55$ °C AC-3	A	160	320	610
	$\theta \leq 55$ °C AC-4	A	130	270	540
Electrical durability in millions of operating cycles (400 V at I max)	AC-1		1.2	1	1
	AC-3		1.6	1.5	1.5
	AC-4		0.18	0.15	0.12
Mechanical durability	In millions of operating cycles		5	2.5	2
Maximum operating rate in operating cycles per hour	Mechanical		1200	1200	1200
	AC-1		900	900	900
	AC-3		900	900	900
	AC-4		450	450	450
Maximum making capacity (I <sub>ms</sub> )	Ue = 1500 V To IEC 60947	A	1900	3800	7300
Maximum breaking capacity (I <sub>ms</sub> )	Ue = 1500 V To IEC 60947	A	1600	3200	6100
Maximum permissible current	For 1 s	A	2400	4500	9000
	For 2 s	A	2000	3750	7580
	For 10 s	A	1600	3200	6100
	For 30 s	A	960	1920	3600
Short-circuit protection at Ie in cat. AC-3 max.	aM fuse	A	160	400	630

Auxiliary contact characteristics			
Rated insulation voltage (Ui)	V		690
Conventional rated thermal current (Ith)	A		10
Rated operational current (Ie)	AC-15, 230 V	A	0.78
	AC-15, 400 V	A	0.45
	AC-15, 500 V	A	0.35
	DC-13, 24 V	A	1.1
	DC-13, 110 V	A	0.24
	DC-13, 220 V	A	0.12
Cabling	Cable c.s.a.	mm <sup>2</sup>	2.5
Short-circuit protection	gG fuse	A	10
Operating time <sup>(1)</sup> (at 100 % of U <sub>c</sub> )	"C"	ms	±5
	"O"	ms	±5

(1) Operating time in relation to the main contacts.

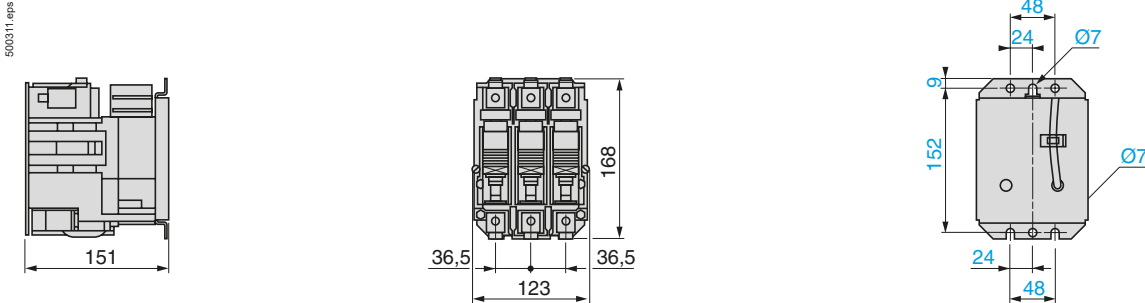
# TeSys Control

## V Vacuum high power contactors

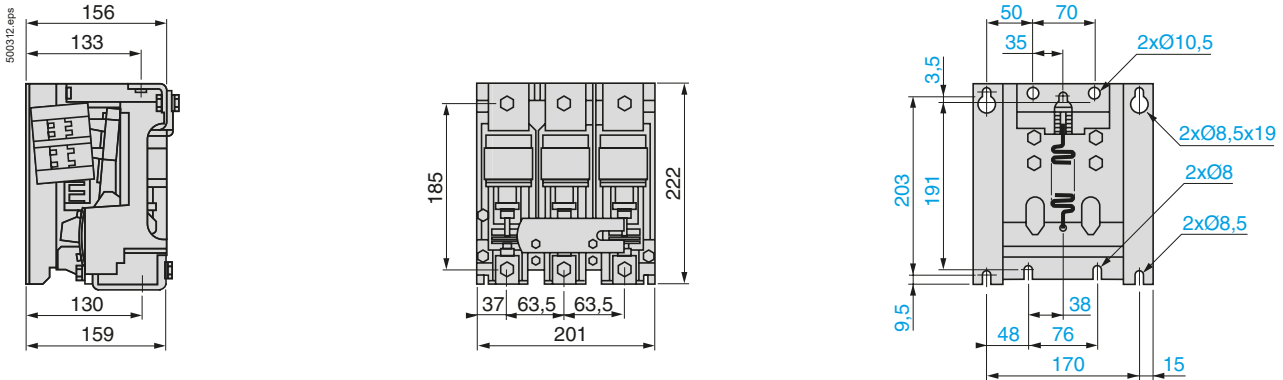
### Dimensions, mounting, schemes

#### Dimensions, mounting

##### LC1V160

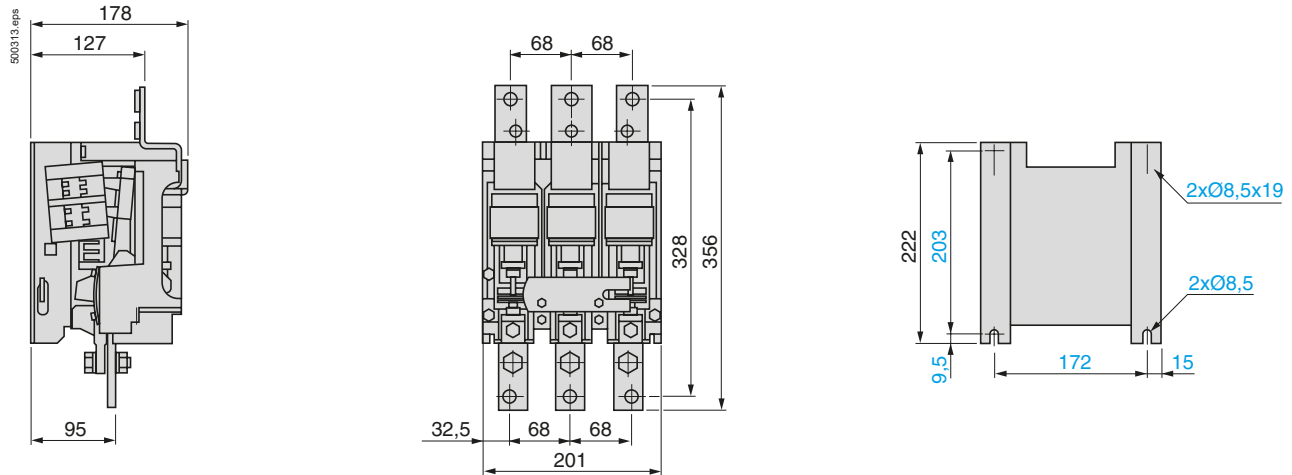


##### LC1V320



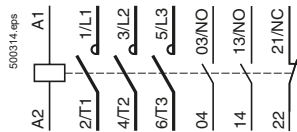
Ref.

##### LC1V610

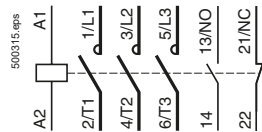


#### Schemes

##### LC1V160

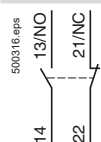


##### LC1V320, V610



#### Auxiliary contact blocks

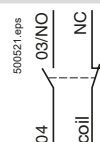
##### LA1VN11 1 N/O & 1 N/C



##### LA1VN20 2 N/O



##### LA1VN11X 1 N/O



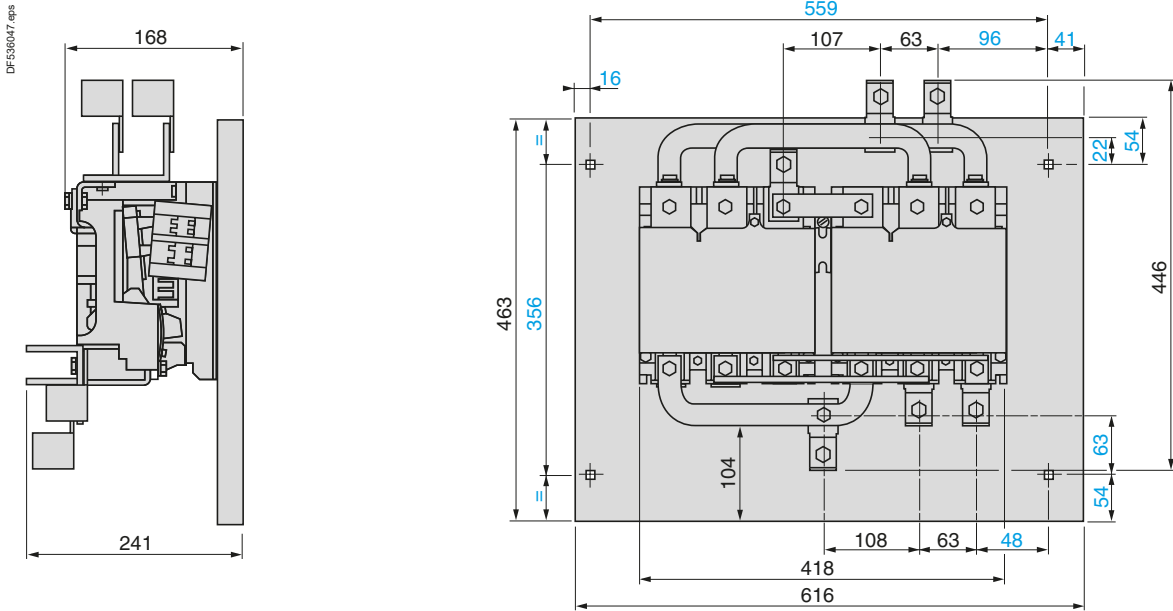
# TeSys Control

## V Vacuum high power reversing contactors

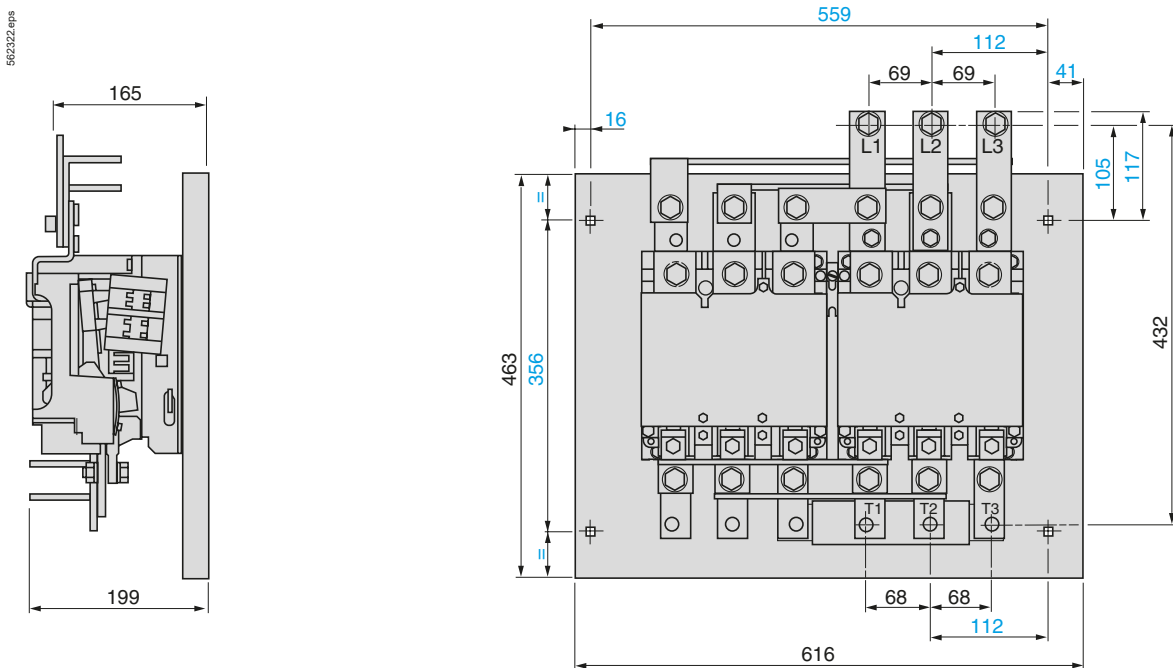
### Dimensions, mounting

#### Dimensions, mounting

##### LC2V320



##### LC2V610



Ref.



High power contactors

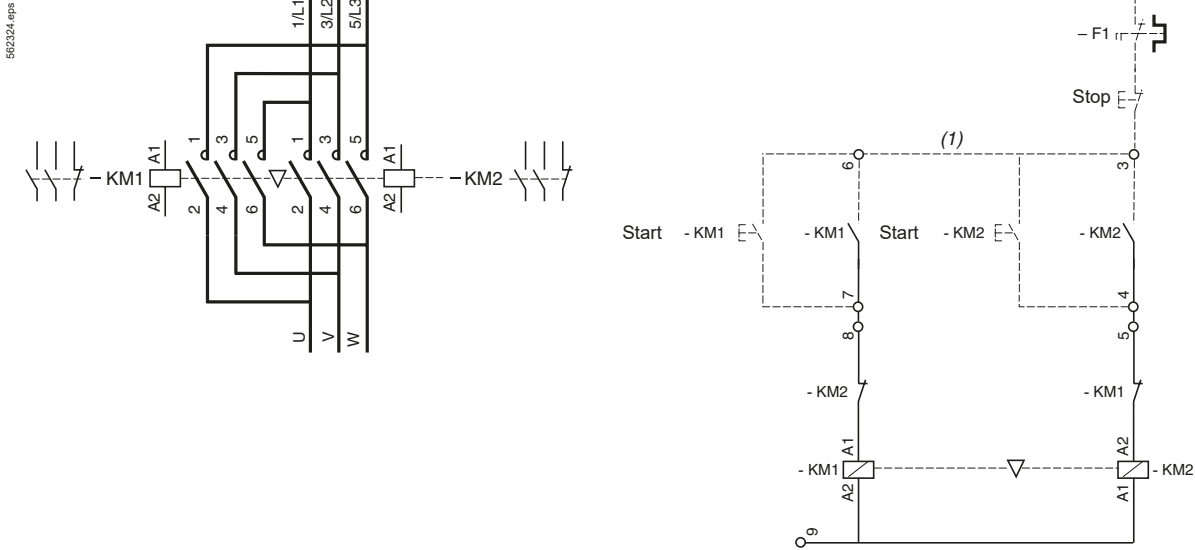
# TeSys Control

## V Vacuum high power reversing contactors

### Schemes

#### Schemes

#### LC2V320



Ref.

(1) Dotted line indicates wiring to be installed by the customer.



High power  
contactors

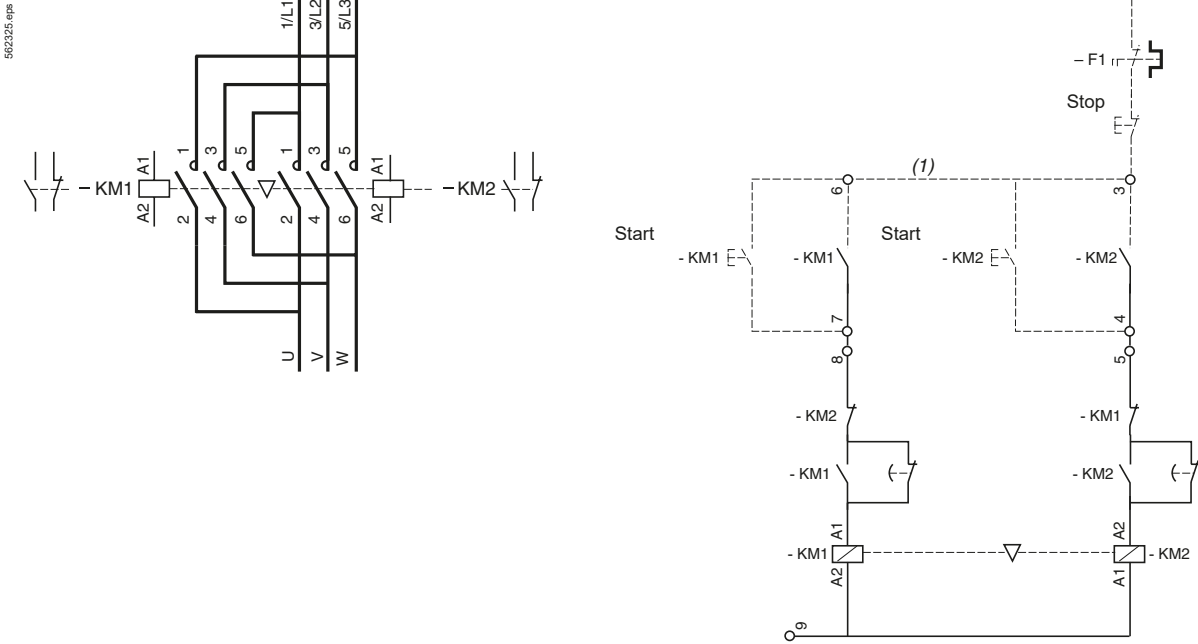
# TeSys Control

## V Vacuum high power reversing contactors

### Schemes

#### Schemes

#### LC2V610



(1) Dotted line indicates wiring to be installed by the customer.

Ref.



High power  
contactors



Thermal overload relays - For use with TeSys K contactors			
Type of product	Range		Pages
Adjustable thermal overload relays For motors TeSys LRK	From 0.16 to 16 A		B11/2
Adjustable thermal overload relays For unbalanced loads TeSys LRK	From 0.8 to 16 A		B11/3
Thermal overload relays Class 10 A - For use with TeSys Deca contactors			
TeSys Deca adjustable thermal overload relays For motors	From 0.16 to 140 A		B11/4
TeSys Deca adjustable thermal overload relays For unbalanced loads	From 0.16 to 140 A		B11/4
Thermal overload relays Class 20 - For use with TeSys Deca contactors			
TeSys Deca adjustable thermal overload relays For motors	From 0.63 to 80 A		B11/6
TeSys Deca adjustable thermal overload relays For unbalanced loads	From 0.63 to 32 A		B11/6
Electronic thermal overload relays - For use with TeSys Deca contactors			
TeSys Deca adjustable electronic overload relay, Multi-class, multi-scale	From 0.1 to 150 A		B11/10
Electronic overload relays - For use with TeSys Giga contactors			
TeSys LR9G electronic overload relays To protect against overload, phase imbalance, phase loss and ground fault	From 28 to 630 A		B11/11
Single pole magnetic over current relays			
TeSys RM1 Latching or non latching overload relays	From 1.15 to 630 A		B11/15
Thermistor-type protection units – For use detection of motor overheating			
TeSys LT3 Protection units and PTC probes, with or without fault memory	From 90 to 170 °C		B11/17
Electronic over current relays - For machine protection			
Predefined or adjustable starting times, Manual reset	From 1.5 to 34 A		B11/19
Automatic, electric or manual reset	From 0.5 to 50 A		B11/19

**3-pole thermal overload relays for TeSys K contactors**

These overload relays are designed for the protection of motors. They are compensated and phase failure sensitive. Resetting can either be manual or automatic.

Direct mounting: under the contactor for versions with screw clamp terminals only; pre-wired terminals, see pages B11/28 and B11/30.

Separate mounting: using terminal block LA7K0064 (see below).

On the front face of the overload relay:

- selection of reset mode: Manual (marked H) or Automatic (marked A),
- red pushbutton: Trip Test function,
- blue pushbutton: Stop and manual Reset,
- yellow trip flag indicator: overload relay tripped.

Protection by magnetic circuit breaker GV2LE, see pages coordination tables chapter A6.

**Class 10 A (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In)**

Relay setting range	Fuses to be used with selected relay			Reference
	Maximum rating Type			
	aM	gG	BS88	
<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	
0.11...0.16	0.25	0.5	–	LR2K0301
0.16...0.23	0.25	0.5	–	LR2K0302
0.23...0.36	0.5	1	–	LR2K0303
0.36...0.54	1	1.6	–	LR2K0304
0.54...0.8	1	2	–	LR2K0305
0.8...1.2	2	4	6	LR2K0306
1.2...1.8	2	6	6	LR2K0307
1.8...2.6	4	8	10	LR2K0308
2.6...3.7	4	10	16	LR2K0310
3.7...5.5	6	16	16	LR2K0312
5.5...8	8	20	20	LR2K0314
8...11.5	10	25	20	LR2K0316
10...14	16	32	25	LR2K0321
12...16	20	40	32	LR2K0322

**Overload relays for unbalanced loads**

**Class 10 A:** to order, replace the prefix LR2 by LR7 in the references selected from above (only applicable to overload relays LR2K0305 to LR2K0322).

Example: LR7K0308.

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LR2K0307



# TeSys Protect

## TeSys Protect accessory for LRK Thermal overload relays

### Product references



LA7K0064

Accessory for TeSys LRK Thermal overload relay		
Description	Type of connection	Reference
Terminal block for separate clip-on mounting of the overload relay on 35 mm rail	Screw clamp	LA7K0064

Overload relays

# TeSys Protect

## Deca Thermal overload relays

### Product references

#### 3-pole differential thermal overload relays for Deca contactors - Class 10A

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

Relay setting range (A)	Fuses to be used with selected relay			For use with contactor LC1	Reference	Weight kg
	aM (A)	gG (A)	BS88 (A)			
<b>Class 10 A <sup>(1)</sup> for connection by screw clamp terminals or connectors</b>						
0.10...0.16	0.25	2	–	D09...D38	<b>LRD01</b>	0.124
0.16...0.25	0.5	2	–	D09...D38	<b>LRD02</b>	0.124
0.25...0.40	1	2	–	D09...D38	<b>LRD03</b>	0.124
0.40...0.63	1	2	–	D09...D38	<b>LRD04</b>	0.124
0.63...1	2	4	–	D09...D38	<b>LRD05</b>	0.124
1...1.6	2	4	6	D09...D38	<b>LRD06</b>	0.124
1.6...2.5	4	6	10	D09...D38	<b>LRD07</b>	0.124
2.5...4	6	10	16	D09...D38	<b>LRD08</b>	0.124
4...6	8	16	16	D09...D38	<b>LRD10</b>	0.124
5.5...8	12	20	20	D09...D38	<b>LRD12</b>	0.124
7...10	12	20	20	D09...D38	<b>LRD14</b>	0.124
9...13	16	25	25	D12...D38	<b>LRD16</b>	0.124
12...18	20	35	32	D18...D38	<b>LRD21</b>	0.124
16...24	25	50	50	D25...D38	<b>LRD22</b>	0.124
23...32	40	63	63	D25...D38	<b>LRD32</b>	0.124
30...38	40	80	80	D32 and D38	<b>LRD35</b>	0.124
<b>Class 10 A <sup>(1)</sup> for connection by EverLink<sup>®</sup> BTR screw connectors <sup>(2)</sup></b>						
9...13	16	25	25	D40A...D65A	<b>LRD313</b>	0.375
12...18	20	32	35	D40A...D65A	<b>LRD318</b>	0.375
17...25	25	50	50	D40A...D65A	<b>LRD325</b>	0.375
23...32	40	63	63	D40A...D65A	<b>LRD332</b>	0.375
30...40	40	80	80	D40A...D65A	<b>LRD340</b>	0.375
37...50	63	100	100	D40A...D65A	<b>LRD350</b>	0.375
48...65	63	100	100	D50A and D65A	<b>LRD365</b>	0.375
62...80	80	125	125	D80A	<b>LRD380</b>	0.375
<b>Class 10 A <sup>(1)</sup> for connection by screw clamp terminals or connectors</b>						
17...25	25	50	50	D80 and D95	<b>LRD3322</b>	0.510
23...32	40	63	63	D80 and D95	<b>LRD3353</b>	0.510
30...40	40	100	80	D80 and D95	<b>LRD3355</b>	0.510
37...50	63	100	100	D80 and D95	<b>LRD3357</b>	0.510
48...65	63	100	100	D80 and D95	<b>LRD3359</b>	0.510
55...70	80	125	125	D80 and D95	<b>LRD3361</b>	0.510
63...80	80	125	125	D80 and D95	<b>LRD3363</b>	0.510
80...104	100	160	160	D80 and D95	<b>LRD3365</b>	0.510
80...104	125	200	160	D115 and D150	<b>LRD4365</b>	0.900
95...120	125	200	200	D115 and D150	<b>LRD4367</b>	0.900
110...140	160	250	200	D150	<b>LRD4369</b>	0.900
80...104	100	160	160	<sup>(3)</sup>	<b>LRD33656</b>	1.000
95...120	125	200	200	<sup>(3)</sup>	<b>LRD33676</b>	1.000
110...140	160	250	200	<sup>(3)</sup>	<b>LRD33696</b>	1.000

#### Class 10 A <sup>(1)</sup> for connection by lugs

Select the appropriate overload relay with screw clamp terminals or connectors from the table above and add one of the following suffixes:

- figure 6 for relays LRD01 to LRD35 and relays LRD313 to LRD380.
- A66 for relays LRD3322 to LRD3363.

Relays LRD43●● are suitable, as standard, for use with lug-clamps.

#### Thermal overload relays for use with unbalanced loads

##### Class 10 A <sup>(1)</sup> for connection by screw clamp terminals or lugs

In the references selected above, change the prefix LRD (except LRD43●●) to LR3D.

Example: LRD02 becomes LR3D02.

Example with EverLink<sup>®</sup> connectors: LRD340 becomes LR3D340.

Example with lugs: LRD3806 becomes LR3D3806.

- <sup>(1)</sup> Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_{Rt}$ : class 10 A: between 2 and 10 seconds.
- <sup>(2)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see page B8/42).
- <sup>(3)</sup> Independent mounting of the contactor.

Please check the availability of your variant in the index page B11/20. The SEARCH function of your viewer can be used.



LRD01



LRD33



LRD43



LRD306





LRD3

### 3-pole differential thermal overload relays for Deca contactors - Class 10 A

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

Relay setting range (A)	Fuses to be used with selected relay			For use with contactor LC1	Reference
	aM (A)	gG (A)	BS88 (A)		
<b>Classes 10 A <sup>(1)</sup> for connection by spring terminals (only for direct mounting beneath the contactor)</b>					
1...1.6	2	4	6	D09...D38	<b>LRD063</b>
1.6...2.5	4	6	10	D09...D38	<b>LRD073</b>
2.5...4	6	10	16	D09...D38	<b>LRD083</b>
4...6	8	16	16	D09...D38	<b>LRD103</b>
5.5...8	12	20	20	D09...D38	<b>LRD123</b>
7...10	12	20	20	D09...D38	<b>LRD143</b>
9...13	16	25	25	D12...D38	<b>LRD163</b>
12...18	20	35	32	D18...D38	<b>LRD213</b>
16...24	25	50	50	D25...D38	<b>LRD223</b>

### Class 10 A with connection by EverLink® BTR screw connectors <sup>(2)</sup> and control by spring terminals

23...32	40	63	63	D40A...D65A	<b>LRD3323</b>
37...50	63	100	100	D40A...D65A	<b>LRD3503</b>
48...65	63	100	100	D50A and D65A	<b>LRD3653</b>
62...80	80	125	125	D80A	<b>LRD3803</b>

### Thermal overload relays for use with unbalanced loads

#### Classes 10 A <sup>(1)</sup> for connection by BTR screw connectors <sup>(2)</sup> and control by spring terminals

In the references selected above, replace **LRD3** with **LR3D3**.  
 Example: **LRD3803** becomes **LR3D3803**.

### Thermal overload relays for use on 1000 V supplies

#### Classes 10 A <sup>(1)</sup> for connection by screw clamp terminals

For relays LRD06 to LRD35 only, for an operating voltage of 1000 V, and only for independent mounting, the reference becomes **LRD33●●A66**.  
 Order an **LA7D3064** terminal block separately, see page B11/9.

Standard relay	Relay for 1000 V network
LRD32	LRD3353A66

- <sup>(1)</sup> Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_r$ ; class 10 A: between 2 and 10 seconds.  
<sup>(2)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).

Please check the availability of your variant in the index page B11/20. The **SEARCH** function of your viewer can be used.

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LRD05L...LRD32L



PB123538.tif



LR2D35●●

### 3-pole differential thermal overload relays for Deca contactors - Class 20

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

Relay setting range (A)	Fuses to be used with selected relay			For use with contactor LC1	Reference
	aM (A)	gG (A)	BS88 (A)		
<b>Classes 20 <sup>(1)</sup> for connection by screw clamp terminals</b>					
0.63...1	2	4	-	D09...D38	<b>LRD05L</b>
1...1.6	2	4	6	D09...D38	<b>LRD06L</b>
1.6...2.5	4	6	10	D09...D38	<b>LRD07L</b>
2.5...4	6	10	16	D09...D38	<b>LRD08L</b>
4...6	8	16	16	D09...D38	<b>LRD10L</b>
5.5...8	12	20	20	D09...D38	<b>LRD12L</b>
7...10	12	20	20	D09...D38	<b>LRD14L</b>
9...13	16	25	25	D12...D38	<b>LRD16L</b>
12...18	20	35	32	D18...D38	<b>LRD21L</b>
17...24	25	50	50	D25...D38	<b>LRD22L</b>
23...32	40	63	63	D25...D38	<b>LRD32L</b>
<b>Class 20 <sup>(1)</sup> for connection by EverLink® BTR screw connectors <sup>(2)</sup></b>					
9...13	20	32	35	D40A...D65A	<b>LRD313L</b>
12...18	25	40	40	D40A...D65A	<b>LRD318L</b>
17...25	32	50	50	D40A...D65A	<b>LRD325L</b>
23...32	40	63	63	D40A...D65A	<b>LRD332L</b>
30...40	50	80	80	D40A...D65A	<b>LRD340L</b>
37...50	63	100	100	D40A...D65A	<b>LRD350L</b>
48...65	80	125	125	D50A and D65A	<b>LRD365L</b>
<b>Classes 20 <sup>(1)</sup> for connection by screw clamp terminals</b>					
17...25	32	50	50	D80 and D95	<b>LR2D3522</b>
23...32	40	63	63	D80 and D95	<b>LR2D3553</b>
30...40	40	100	80	D80 and D95	<b>LR2D3555</b>
37...50	63	100	100	D80 and D95	<b>LR2D3557</b>
48...65	80	125	100	D80 and D95	<b>LR2D3559</b>
55...70	100	125	125	D80 and D95	<b>LR2D3561</b>
63...80	100	160	125	D80 and D95	<b>LR2D3563</b>

#### Class 20 <sup>(1)</sup> for connection by lugs

For relays LRD05L to LRD32L and relays LRD313L to LRD365L, select the appropriate overload relay with screw clamp terminals or connectors from the table above and add the suffix **6**.

Example: **LRD05L** becomes **LRD05L6**.

### Thermal overload relays for use with unbalanced loads

#### Class 20 <sup>(1)</sup> for connection by screw clamp terminals or lugs

For relays LRD05L to LRD32L and relays LR2D3522 to LR2D3563, select the appropriate overload relay with screw clamp terminals or connectors from the table above and change the prefix LRD or LR2D to **LR3D**.

Example: **LRD05L** becomes **LR3D05L**.

<sup>(1)</sup> Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_R$ : class 20: between 6 and 20 seconds

<sup>(2)</sup> BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).

Please check the availability of your variant in the index page B11/20. The **SEARCH** function of your viewer can be used.

#### 3-pole differential thermal overload relays for Deca contactors - Class 20

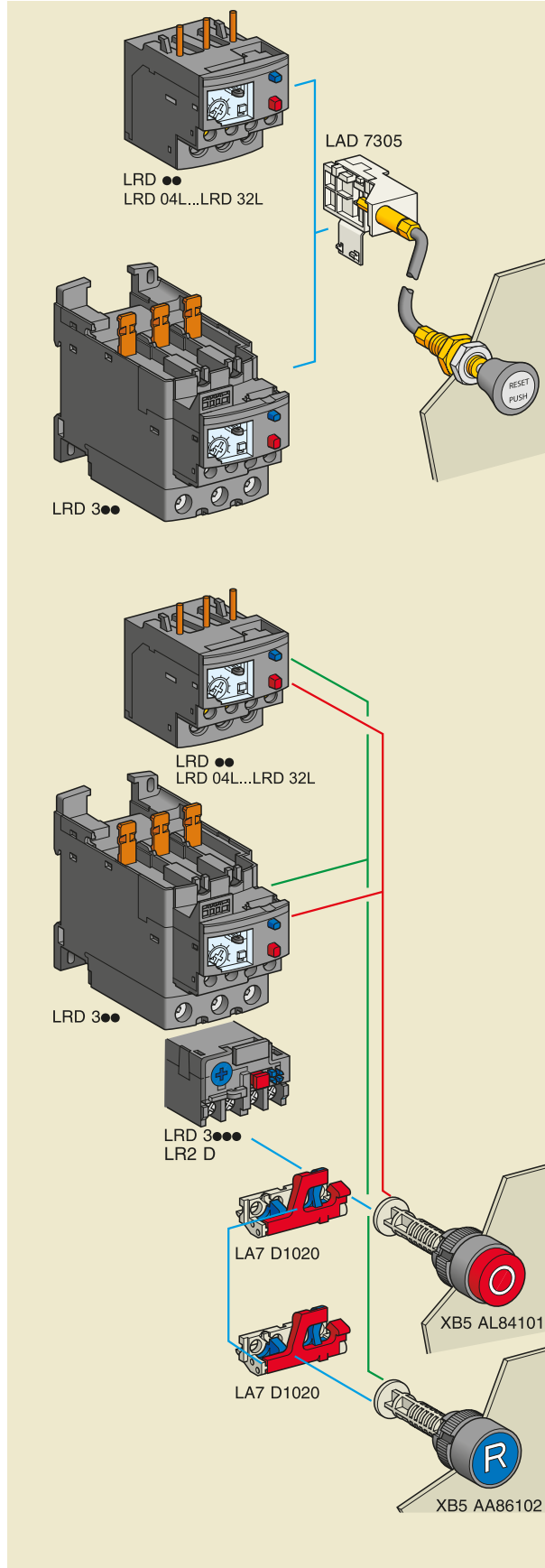
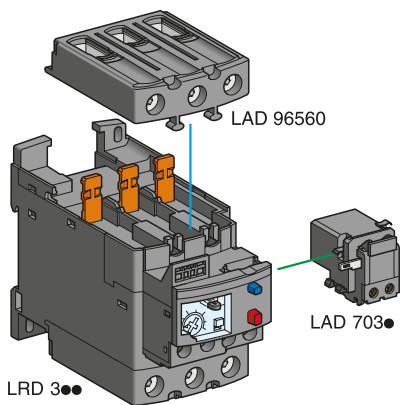
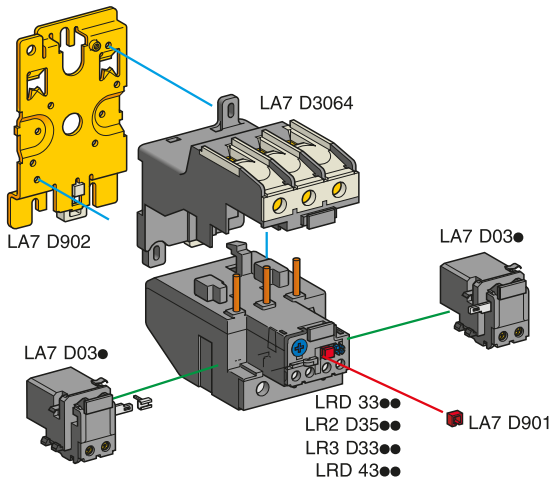
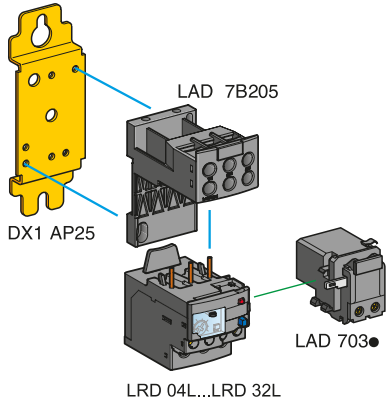
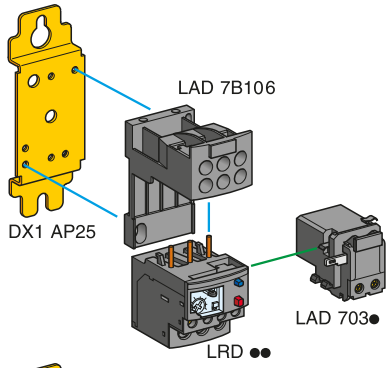
- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

Relay setting range (A)	Fuses to be used with selected relay			For mounting beneath contactor LC1	Reference
	aM (A)	gG (A)	BS88 (A)		
<b>Class 20 <sup>(1)</sup> with connection by EverLink<sup>®</sup> BTR screw connectors <sup>(2)</sup> and control by spring terminals</b>					
9...13	20	32	35	D40A...D65A	LRD313L3

(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_R$ :  
 class 10: between 4 and 10 seconds,  
 class 10 A: between 2 and 10 seconds,  
 class 20: between 6 and 20 seconds.

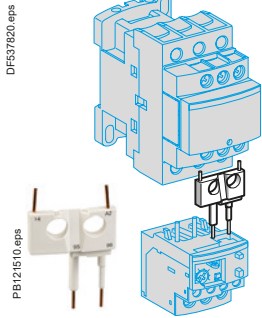
(2) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).



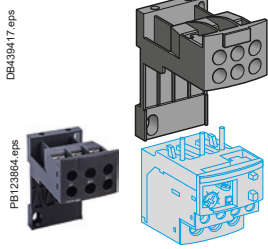


Overload relays

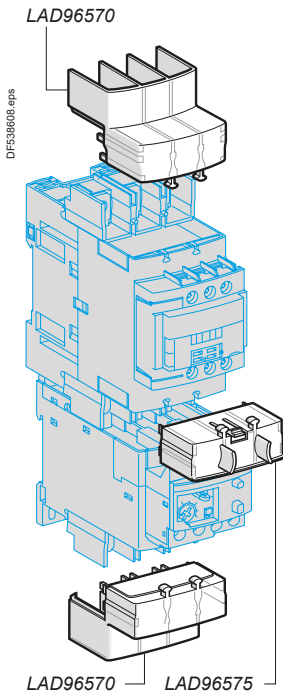




LAD7C●



LAD7B106



LAD96570 LAD96575



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### Separate components for relays

Description	For use with	Sold in lots of	Unit reference
Pre-wiring kit allowing direct connection of the N/C contact of relay LRD01...35 or LR3D02...D35 to the contactor	LC1D09...D18	10	LAD7C1 <sup>(1)</sup>
	LC1D25...D38	10	LAD7C2 <sup>(1)</sup>
Terminal block <sup>(2)</sup> for clip-on mounting on 35 mm rail (AM1DP200) or screw fixing; for fixing centres, see pages B11/35 to B11/37	LRD01...35 and LR3D02...D35	1	LAD7B106
	LRD05L...LRD32L, LR3D05L...LR3D32L	1	LAD7B205
	LRD33●●, LR3D33●●, LR2D35●●, LR3D35●●	1	LA7D3064 <sup>(3)</sup>
	LRD33●●, LR3D33●● and LR3D35●●	1	LAD96560
EverLink® terminal block for independent mounting	LRD33●●, LR3D33●● and LR3D35●●	5	LADALLEN4
Size 4 Allen key, insulated, 1000 V	LRD33●●, LR3D33●●, LR3D35●●	1	LA7D3058 <sup>(5)</sup>
Terminal block adapter for mounting a relay beneath an LC1D115 or D150 contactor	LRD01...35, LR3D02...D35, LRD05L...LRD32L, LR3D05L...LR3D32L	10	DX1AP25
Mounting plates <sup>(4)</sup> for screw fixing on 110 mm centres	LRD33●●●, LR3D33●●●, LR2D35●●●	1	LA7D902
	LRD33●●	100	LAD90
Marker holders, snap-in 8 x 18 mm	All relays except LRD01...35, LRD05L...32L, LR3D05L...D32L	100	LA7D903
	LR3D02...D35, LRD33●●, LRD33●●L and LR3D35●●	1	LA9D91
Bag of 400 blank legends (self-adhesive, 7 x 16 mm)	All relays	1	LA9D91
Remote Stop or electrical reset device <sup>(5)</sup>	LRD01...35, LR3D02...D35, LRD05L...32L, LR3D05L...D32L and LRD313...LRD380	1	LAD703● <sup>(6) (7)</sup>
Remote tripping or electrical reset device <sup>(5)</sup>	All relays except LRD01...35, LR9D01...32, LRD05L...32L, LR3D05L...D32L, LR3D02...D35, LR9D01...32, LRD33●●, LRD33●●L and LR3D35●●	1	LA7D03● <sup>(6)</sup>
Block of insulated terminals	LR9D	2	LA9F103 <sup>(7)</sup>
IP 20 cover for lug type terminals for independent mounting	LRD3256...3806	1	LAD96570
IP 20 cover for lug type terminals for mounting with contactor LC1D40A6...D65A6	LRD3256...3806	1	LAD96575
Terminal block for lug type terminals for independent mounting	LRD3256...3806	1	LAD96566

### Remote control

#### "Reset" function

Description	For use with	Sold in lots of	Unit reference
By flexible cable (length = 0.5 m)	LRD01...35, LR3D02...D35, LR3D05L...D32L and LRD313...LRD380, LRD05L...LRD32L	1	LAD7305 <sup>(8)</sup>
	All relays except LRD01...35, LR3D02...D35, LRD33●●, LRD05L...32L, LR3D05L...D32L, LRD33●●L, LR3D35●●, LR9D01	1	LA7D305

#### "Stop" and/or "Reset" functions

The terminal protection shroud must be removed and the following 3 products must be ordered separately:

Adapter for door mounting	LRD33●●, LR2D	1	LA7D1020	
Operating heads for spring return pushbutton	Stop	All relays	1	XB5AL84101
	Reset	All relays	1	XB5AA86102

- (1) These pre-wiring kits cannot be used with reversing contactors.
- (2) Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.
- (3) To order a terminal block for connection by lugs, the reference becomes LA7D30646.
- (4) Remember to order the terminal block corresponding to the type of relay.
- (5) The time for which the coil of remote tripping or electrical resetting device LA7D03 or LAD703 can remain energised depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time; maximum pulse duration 20 s with a rest time of 300 s. Minimum pulse time: 200 ms.
- (6) Reference to be completed by adding the code indicating the control circuit voltage.  
Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

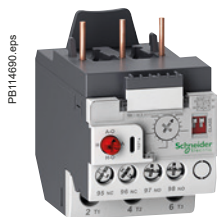
Volts	12	24	48	96	110	220/230	380/400	415/440
50/60 Hz	—	B	E	—	F	M	Q	N
Consumption, inrush and sealed: < 100 VA	—	J	B	E	DD	F	M	—
Consumption, inrush and sealed: < 100 W.	—	J	B	E	DD	F	M	—

- (7) Only one terminal block can be mounted below LR9D.
- (8) Not compatible with 3-pole relays fitted with spring terminals.

# TeSys Protect

## Deca Electronic thermal overload relays

### Product references



LR9D01 and LR9D32



LR9D5567



LAD7B205



LAD7B205 mounted on LR9D01



LR9D67

### Electronic thermal overload relays for Deca contactors

- for use with fuses or magnetic circuit breakers
- compensated relays, with relay trip indicator,
- for a.c.,
- for direct mounting on contactor or independent mounting <sup>(1)</sup>.

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference
	aM	gG		
A	A	A		
<b>Classes 5.10.20.30 <sup>(1)</sup> selectable for direct connection on Deca contactors or connection using connectors</b>				
0.1...0.5			D09...D38	LR9D01
0.4...2			D09...D38	LR9D02
1.6...8			D09...D38	LR9D08
6.4...32			D09...D38	LR9D32
<b>Classes 10 or 10 A <sup>(1)</sup> for connection using bars or connectors</b>				
60...100	100	160	D115...D150	LR9D5367
90...150	160	250	D115...D150	LR9D5369
<b>Classes 20 <sup>(1)</sup> for connection using bars or connectors</b>				
60...100	125	160	D115...D150	LR9D5567
90...150	200	250	D115...D150	LR9D5569

### Separate components for relays

Description	For use with	Sold in lots of	Unit reference
Terminal block <sup>(2)</sup> For clips-on mounting on 35 mm rails (AM1DP200) or screws fixing; for fixing centres, see pages B11/35 to B11/37	LR9D01, LR9D02, LR9D08, LR9D32	1	LAD7B205

### Electronic overload relays for balanced or unbalanced loads

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference
	aM	gG		
A	A	A		
<b>Classes 10 or 20 <sup>(1)</sup> selectable for direct connection using bars or connectors</b>				
60...100	100	160	D115...D150	LR9D67
90...150	160	250	D115...D150	LR9D69

<sup>(1)</sup> Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_{Rt}$ :  
class 5: between 0.5 and 5 seconds  
class 10: between 4 and 10 seconds  
class 10 A: between 2 and 10 seconds  
class 20: between 6 and 20 seconds  
class 30: between 9 and 30 seconds.

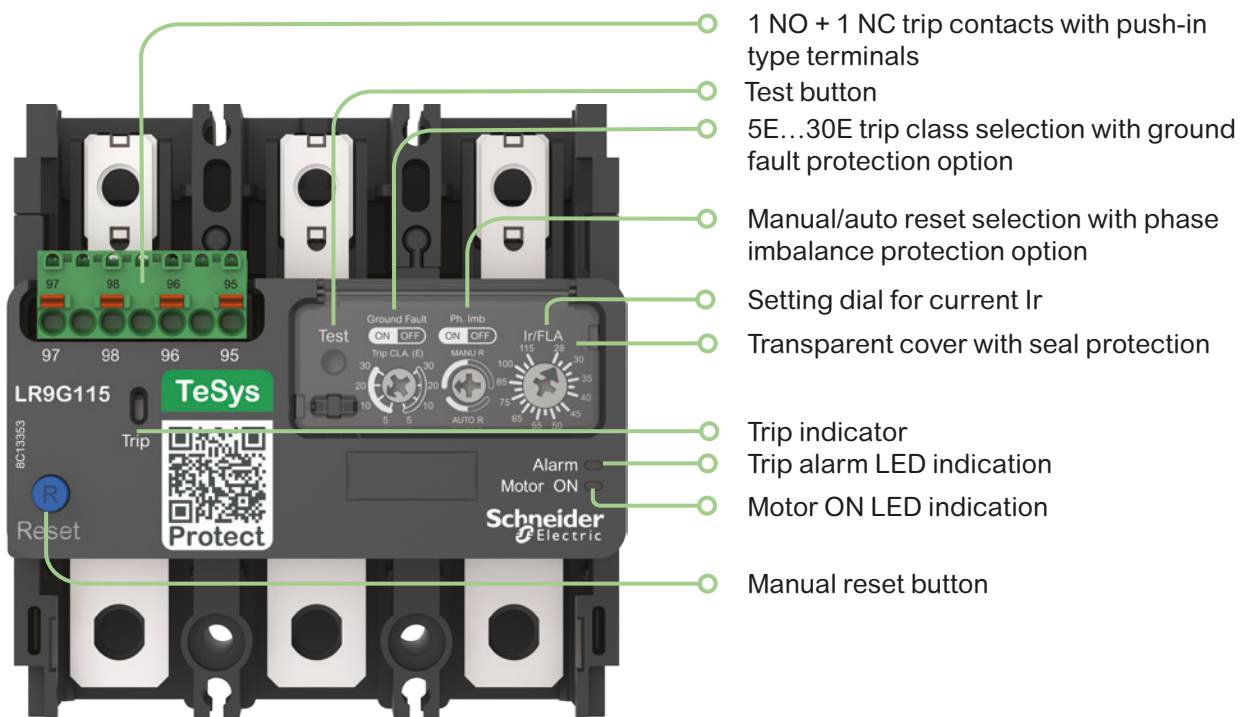
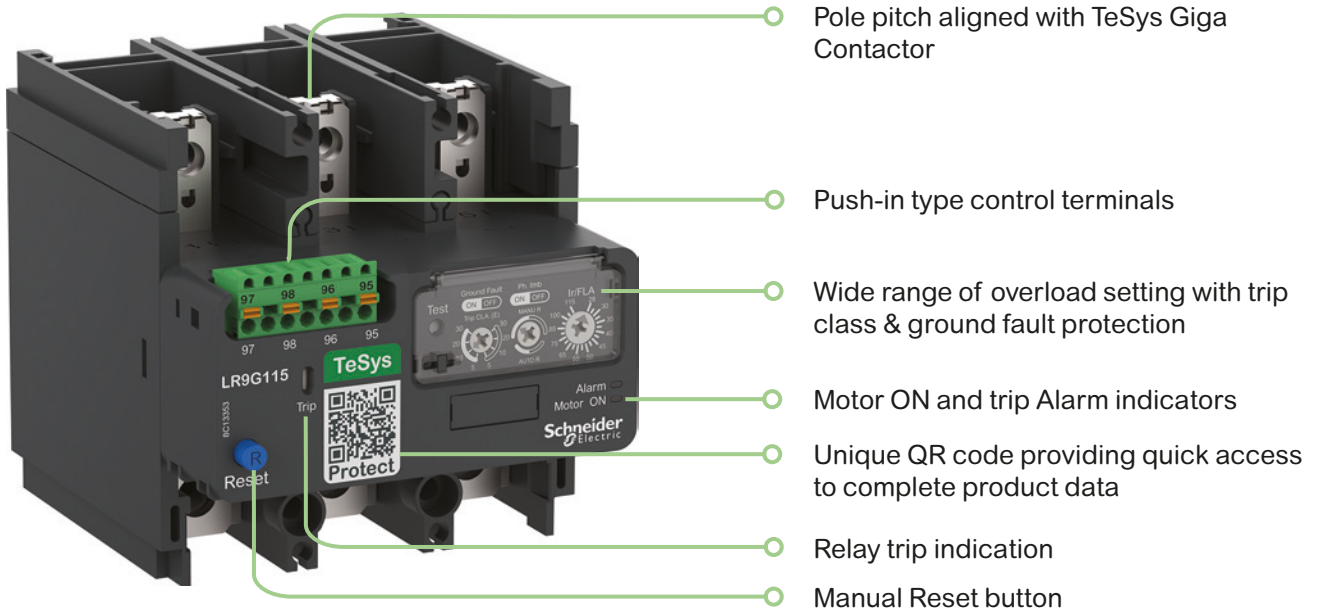
<sup>(2)</sup> Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.

# TeSys Protect

## Giga Electronic overload relays

### Introduction

## > Intelligent design for greater advantages



Overload relays

# TeSys Protect

## Giga Electronic overload relays

### Description

## > Perfect selection for your motor protection

#### Range

- A comprehensive range of TeSys Giga Electronic overload relays in 3 sizes
- Direct mounting of relay with contactors saving in panel space and installation time



28...115 A and 57...225 A



125...500 A



160...630 A

#### Overload relays

- Advanced electronic monitoring with high accuracy
- Thermal compensation for ambient temperatures up to 60 °C
- Wide range of current settings, 0.25...1 I<sub>r</sub> setting
- Direct and separately mountable to manage panel design
- Pole pitch alignment with contactors, enabling direct mounting
- Push-in terminals for quick and easy control wiring options
- 4 references covering the complete range means less inventory
- Manual and auto reset to suit your needs
- Multiple reset options: Manual, Automatic & Remote
- Protection against phase loss
- Selectable protection against imbalanced load
- Selectable protection against ground fault
- ON status and overload alarm signaling by LED
- TRIP indicator

#### Certifications

- Multiple standards
- International certifications

#### Trip class

- Selectable, from class 5E to class 30E to suit different application needs

## > Product references – coding principle



LR9

Electronic  
overload relay

G

TeSys Giga  
series

630

#### Protection settings

115: 28...115 A  
225: 57...225 A  
500: 125...500 A  
630: 160...630 A

# TeSys Protect

## Giga Electronic overload relays

### Product references



LR9G225



Direct mounting  
with TeSys Giga Contactor



LA9G3650



LA9G82



LA9G3704

### TeSys Giga Electronic overload relays

- Electronic overload relay
- Suitable for independent mounting or direct mounting with TeSys Giga contactors
- Ergonomic rotary switches for thermal and protection settings
- Trip class selection: 5E/10E/20E/30E
- Overload, phase imbalance, phase loss and ground fault protections
- Manual and auto reset options
- LED indicator for Motor ON and pre-trip alarm
- Thermal memory and compensation
- Push-in terminals for control connections

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1G	Reference
	aM /gG/aR	kA		
<b>A</b>	<b>A</b>			
<b>Class 5E...30E</b>				
28...115	125 aM	100	LC1G115...225	<b>LR9G115</b>
57...225	250 aM	100	LC1G115...225	<b>LR9G225</b>
125...500	630 aM	100	LC1G265...500	<b>LR9G500</b>
	630 gG	80		
	630 aR	25		
160...630	800 aR	100	LC1G630	<b>LR9G630</b>
	800 aR	80		
	800 aR	25		

### Overload relay accessories

#### Mounting and wiring accessories

Description	Reference
Mounting base for alignment of LR9G115-225 with LC1G115-225 <sup>(2)</sup>	<b>LA9G3650</b>
Mounting base for alignment of LR9G500 with LC1G265-330 <sup>(2)</sup>	<b>LA9G3651</b>
Mounting base for alignment of LR9G500 with LC1G400-500 <sup>(2)</sup>	<b>LA9G3652</b>
Mounting base for alignment of LR9G630 with LC1G630-800 <sup>(2)</sup>	<b>LA9G3653</b>
Push-in connection adapter	<b>LA9G82</b>

#### Front protection cover

Description	Compatible with contactors	Quantity	Reference
Front protection cover <sup>(3)</sup>	LR9G115 / LR9G225	1	<b>LA9G3704</b>
	LR9G500	1	<b>LA9G3705</b>
	LR9G630	1	<b>LA9G3706</b>

<sup>(2)</sup> Used for independent mounting of Overload Relay beneath contactor to align main power pole connections.

<sup>(3)</sup> Used to cover main power connection terminals between contactor and overload with direct mounting option.

# TeSys Protect

## Giga Electronic overload relays

### Product references



LAD703●

#### Remote Reset control device

Description	Quantity	Reference
Remote electrical reset device <sup>(1)</sup>	1	LAD703● <sup>(2)</sup>
Remote Reset function control by flexible cable (length = 0.5 m)	1	LAD7305

*(1) The time for which the coil of remote electrical reset device LAD703● can remain energised depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time. Maximum pulse duration of 20 s with rest time of 300 s. Minimum pulse time: 200 ms.*

*(2) Reference to be completed by adding the coil voltage code.*



LAD7305

#### Standard control circuit voltages

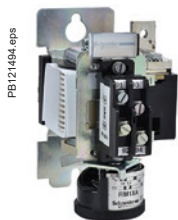
Volts	24	110	220/230
~ 50/60 Hz	B	F	M
Consumption, inrush and sealed: < 100 VA			
---	B	F	M
Consumption, inrush and sealed: < 100 W.			



# TeSys Protect

## RM1XA magnetic over current relays

### Product references



PG12/184.eps

RM1XA●●●

Single-pole, non-latching, over current relays				
With 1 C/O contact block				
	Recommended operating range (motor I <sub>n</sub> )	Setting range (trip current)	Maximum continuous current ~ or ☰	Reference
<b>A</b>		<b>A</b>	<b>A</b>	
~ or ☰	0.7...1.15	1.25...4	1.6	<b>RM1XA001</b>
	3...4.6	5...16	6.3	<b>RM1XA006</b>
	7.3...11.5	12.5...40	16	<b>RM1XA016</b>
	18.1...29	32...100	40	<b>RM1XA040</b>
	46.1...72	80...250	100	<b>RM1XA100</b>
	73...115	125...400	160	<b>RM1XA160</b>
	146...230	250...800	315	<b>RM1XA315</b>
	231...360	400 ...1250	500	<b>RM1XA500</b>



Overload relays

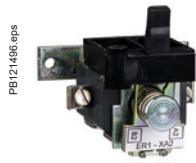
# TeSys Protect

## RM1X magnetic over current relays

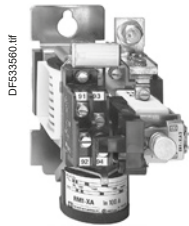
### Product references



RM1XA3151



ER1XA2M



ER1XA2●  
mounted on  
RM1XA3151

#### Single-pole, latching, manual reset, over current relays

##### With 1 C/O contact block

Recommended operating range (motor In)	Setting range (trip current)	Maximum continuous current ~ or ---	Reference
A	A	A	RM1XA3151
146...230	250...800	315	

##### Accessories (to be ordered separately)

Description	Reference
Electrical reset <sup>(1)</sup> (consumption: inrush, sealed: 500 VA, 220 V 50 Hz coil) (fitted to the relay together with a latching contact block)	ER1XA2M

<sup>(1)</sup> The impulse duration must not exceed 2 seconds within 10 minute intervals.





# TeSys Protect

## LT3 Thermal protection units

### Product references



PB121498.eps

LT3SE00M



PB121499.eps

LT3SA00M



PB121500.eps

LT3SM00M

### Protection units

- to be used with PTC thermistor probes
- with thermistor short-circuit detection
- The contact changes state when a rapid rise in temperature above the nominal probe rating is detected.

#### With automatic reset

Connection	Voltage		Output contact	Reference	
Cage connectors	~ 50/60 Hz	115 V	N/C	LT3SE00F	
		230 V	N/C	LT3SE00M	
		---	24 V	N/C	LT3SE00BD

#### Units with automatic reset and front signalling by LED's (Power-Fault)

Connection	Voltage		Output contact	Reference
Cage connectors	~ 50/60 Hz	115/230 V	N/C + N/O	LT3SA00M
		---	24/48 V	N/C + N/O
	~ 50/60 Hz	24...230 V	2 C/O	LT3SA00MW
	or ---			

#### Manual reset, on front: Test/Reset pushbutton Power + Fault LED's

Connection	Voltage		Output contact	Reference	
Cage connectors	~ 50/60 Hz	400 V	N/C + N/O	LT3SM00V	
		24/48 V	N/C + N/O	LT3SM00E	
		115/230 V	N/C + N/O	LT3SM00M	
		---	24/48 V	N/C + N/O	LT3SM00ED
	~ 50/60 Hz	24...230 V	2 C/O	LT3SM00MW	
	or ---				



Overload relays

# TeSys Protect

## PTC<sup>(1)</sup> thermistor probes for LT3 thermal protection units

### Product references



DA1TT●●●



Triple probe to be inserted into equipment



DA1TS●●●



Probe to be screwed on equipment casing

#### PTC thermistor probes

Description	Nominal Operating Temperature (NOT) °C	Colour	Sold in lots of	Unit reference
Integrated triple probes	90	Green/green	10	DA1TT090
	110	Brown/brown	10	DA1TT110
	120	Grey/grey	10	DA1TT120
	130	Blue/blue	10	DA1TT130
	140	White/blue	10	DA1TT140
	150	Black/black	10	DA1TT150
	160	Blue/red	10	DA1TT160
	170	White/green	10	DA1TT170
Surface probes	60	White/grey	10	DA1TS060
	70	White/brown	10	DA1TS070
	80	White/white	10	DA1TS080
	90	Green/green	10	DA1TS090
	100	Red/red	10	DA1TS100

#### Accessories (to be ordered separately)

##### Mounting accessories

Description	Applicationi	Sold in lots of	Unit reference
Adapter	For fixing on C rail DZ5 MB	10	RHZ66

##### Marking accessories

Clip-in markers (maximum of 5 per unit)	Strips of 10 identical numbers (0 to 9)	25	AB1R● <sup>(2)</sup>
	Strips of 10 identical capital letters (A to Z)	25	AB1G● <sup>(2)</sup>

(1) PTC: Positive Temperature Coefficient.

(2) When ordering, replace the ● in the reference with the number or letter required.

# TeSys Protect

## LR97, LT47 Electronic over current relays

### Product references

PB11974.eps



LR97D07●●

PB11927.eps



LT4730●●●●

#### LR97D electronic over current relays

Relay setting range	Usable range <sup>(1)</sup>	For use with contactor <sup>(2)</sup>	Relay supply voltage	Reference <sup>(3)</sup>
<b>A</b>				
0.3...1.5	0.3...1.3	LC1 D09...D38	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LR97D015M7 LR97D015F7 LR97D015B LR97D015E
1.2...7	1.2...6	LC1 D09...D38	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LR97D07M7 LR97D07F7 LR97D07B LR97D07E
5...25	5...21	LC1 D09...D38	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LR97D25M7 LR97D25F7 LR97D25B LR97D25E
20...38	20...34	LC1 D25...D38	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LR97D38M7 LR97D38F7 LR97D38B LR97D38E

#### LT47 electronic over current relays

Relay setting range	Usable range <sup>(1)</sup>	Relay supply voltage	Reference
<b>A</b>			
<b>LT47 relay with manual/electric reset</b>			
0.5...6	0.5...5	~ 200...240 V ~ 100...120 V ~/~ 24 V	LT4706M7S LT4706F7S LT4706BS
3...30	3...25	~ 200...240 V ~ 100...120 V ~/~ 24 V	LT4730M7S LT4730F7S LT4730BS
5...60	5...50	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LT4760M7S LT4760F7S LT4760BS LT4760ES
<b>LT47 relay with automatic reset</b>			
0.5...6	0.5...5	~ 200...240 V ~/~ 24 V	LT4706M7A LT4706BA
3...30	3...25	~ 200...240 V ~ 100...120 V ~/~ 24 V ~/~ 48 V	LT4730M7A LT4730F7A LT4730BA LT4730EA
5...60	5...50	~ 200...240 V ~/~ 24 V	LT4760M7A LT4760BA

#### Accessories (to be ordered separately)

Description	For use with	Sold in lots of	Unit reference
Pre-wiring kits allowing connection of the LR97D relay N/C contact directly to the contactor	LC1 D09...D18	10	LAD7C1
	LC1 D25...D38	10	LAD7C2
Terminal block for clip-on mounting on 35 mm rail (AM1 DP200)	LR97D	1	LAD7B106

(1) To allow adjustment of the tripping sensitivity, see adjustment method (page B11/56).

(2) Please see chapter B8.

(3) If a pre-wiring kit is used, it is no longer possible to electrically wire signalling of tripped status.




Overload relays

# TeSys Protect

## Thermal and electronic overload relays

### Product references

DA1TT090	LR3D03	LR7K0306	LRD08L	LRD3359
DA1TT110	LR3D04	LR7K0308	LRD08L6	LRD3359A66
DA1TT120	LR3D046	LR7K0310	LRD10	LRD3361
DA1TT130	LR3D05	LR7K0312	LRD103	LRD3363
DA1TT140	LR3D056	LR7K0314	LRD106	LRD3365
DA1TT150	LR3D06	LR7K0316	LRD10L	LRD33656
DA1TT160	LR3D066	LR97D015B	LRD10L6	LRD33676
DA1TT170	LR3D07	LR97D015E	LRD12	LRD33696
DPER01	LR3D076	LR97D015F7	LRD123	LRD340
DPER21	LR3D07L	LR97D015M7	LRD126	LRD3406
DPER32	LR3D08	LR97D07B	LRD12L	LRD340L
DPER35	LR3D086	LR97D07E	LRD14	LRD340L6
ER1XA2M	LR3D08L	LR97D07F7	LRD143	LRD35
LA7D03B	LR3D10	LR97D07M7	LRD146	LRD350
LA7D03F	LR3D106	LR97D25B	LRD14L	LRD3503
LA7D03M	LR3D10L	LR97D25E	LRD1508	LRD3506
LA7D03Q	LR3D12	LR97D25F7	LRD1510	LRD350L
LA7D1020	LR3D126	LR97D25M7	LRD1512	LRD356
LA7D1064	LR3D12L	LR97D38B	LRD1514	LRD365
LA7D305	LR3D14	LR97D38E	LRD1516	LRD3653
LA7D3058	LR3D146	LR97D38F7	LRD1521	LRD3656
LA7D3064	LR3D14L	LR97D38M7	LRD1522	LRD365L
LA7D30646	LR3D16	LR9D5367	LRD1530	LRD365L6
LA7D903	LR3D166	LR9D5369	LRD1532	LRD380
LA7K0064	LR3D16L	LR9D5567	LRD16	LRD3803
LA9D730	LR3D21	LR9D5569	LRD163	LRD3806
LA9D91	LR3D216	LR9D67	LRD166	LRD4365
LAD703B	LR3D21L	LR9D69	LRD16L	LRD4367
LAD703E	LR3D22	LR9G115	LRD16L6	LRD4369
LAD703F	LR3D226	LR9G225	LRD21	LRD488C
LAD703M	LR3D22L	LR9G500	LRD213	LT4706BA
LAD703Q	LR3D313	LR9G630	LRD216	LT4706BS
LAD7305	LR3D318	LA9G3650	LRD21L	LT4706F7S
LAD7B105	LR3D32	LA9G3651	LRD21L6	LT4706M7A
LAD7B1056	LR3D325	LA9G3652	LRD22	LT4706M7S
LAD7B106	LR3D326	LA9G3653	LRD223	LT4730BA
LAD7B205	LR3D32L	LA9G82	LRD226	LT4730BS
LAD7C1	LR3D332	LA9G3704	LRD22L	LT4730EA
LAD7C2	LR3D3322	LA9G3705	LRD22L6	LT4730F7A
LR2D3522	LR3D3353	LA9G3706	LRD313	LT4730F7S
LR2D3553	LR3D3355	LRD01	LRD313L	LT4730M7A
LR2D3555	LR3D3363	LRD02	LRD318	LT4730M7S
LR2D3557	LR3D3365	LRD03	LRD318L	LT4760BA
LR2D3559	LR3D340	LRD04	LRD32	LT4760BS
LR2D3561	LR3D35	LRD046	LRD325	LT4760ES
LR2D3563	LR3D350	LRD04L6	LRD3256	LT4760F7S
LR2K0301	LR3D3522	LRD05	LRD325L	LT4760M7A
LR2K0302	LR3D3553	LRD056	LRD326	LT4760M7S
LR2K0303	LR3D3555	LRD05L	LRD32L	RM1XA001
LR2K0304	LR3D3557	LRD06	LRD32L6	RM1XA006
LR2K0305	LR3D3559	LRD063	LRD3312	RM1XA016
LR2K0306	LR3D3561	LRD066	LRD3314	RM1XA040
LR2K0307	LR3D3563	LRD06L	LRD332	RM1XA100
LR2K0308	LR3D365	LRD07	LRD3322	RM1XA160
LR2K0310	LR3D380	LRD073	LRD3323	RM1XA315
LR2K0312	LR3D3803	LRD076	LRD332L	RM1XA3151
LR2K0314	LR3D3806	LRD07L	LRD3353	RM1XA500
LR2K0316	LR3D4365	LRD07L6	LRD3353A66	
LR2K0321	LR3D4367	LRD08	LRD3355	
LR2K0322	LR3D4369	LRD083	LRD3357	
LR3D02	LR7K0305	LRD086	LRD3357A66	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

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#### Introduction

Exceeding the operating limits of an electric motor will lead, eventually, not only to destruction of the motor itself but also of the mechanisms it drives.

This type of load can be the cause of electrical or mechanical faults.

■ **Electrical faults:**

- overvoltage, voltage drop, imbalance and phase failure which cause variations in the current drawn,
- short-circuits which can cause the current to reach levels capable of destroying the load.

■ **Mechanical faults:**

- locked rotor,
- brief or prolonged overload which leads to an increase in the current drawn by the motor, and therefore overheating.

The cost of these faults must take into account loss of production, loss of raw materials, repair of the production tool, poor quality of production and delays in delivery.

These faults can also have dramatic consequences on the safety of persons in direct or indirect contact with the motor.

To prevent these faults, protection measures are necessary. They make it possible to isolate the equipment to be protected from the mains supply by measuring variations in electrical values (voltage, current, etc.).

**Each motor starter must therefore have:**

■ **short-circuit protection**, to detect and break, as quickly as possible, abnormal currents generally greater than 10 times the rated current ( $I_n$ ).

■ **overload protection**, to detect increases in current up to about  $10 I_n$  and switch off the starter before overheating of the motor and conductors damages the insulation.

This protection is provided by specific devices such as fuses, circuit breakers and thermal overload relays, or by more integrated devices offering several types of protection.

#### Causes, effects and consequences of various faults

There are two types of fault:

- Internal faults within the motor
- External faults: these are located outside the electric motor but their consequences can lead to damage inside the motor.

Faults	Causes	Effects	Consequences on the motor and on the machine
Short-circuit	Contact between several phases, or between one phase and neutral or between several turns of the same phase.	<ul style="list-style-type: none"> <li>■ Current peak</li> <li>■ Electrodynamical forces on the conductors</li> </ul>	Destruction of windings
Overvoltage	<ul style="list-style-type: none"> <li>■ Lightning</li> <li>■ Electrostatic discharge</li> <li>■ Operation</li> </ul>	Dielectric breakdown in the windings	Destruction of the windings due to loss of insulation
Phase imbalance and phase failure	<ul style="list-style-type: none"> <li>■ Opening of a phase</li> <li>■ Single-phase load upstream of the motor</li> <li>■ Short-circuit between the turns of the same winding</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduction of usable torque, efficiency and speed</li> <li>■ Increase in losses</li> <li>■ Starting impossible if phase failure</li> </ul>	Overheating <sup>(1)</sup>
High starting frequency	<ul style="list-style-type: none"> <li>■ Failure of the automation system</li> <li>■ Too many manual control operations</li> <li>■ Numerous fault trips</li> </ul>	High stator and rotor temperature rise due to the frequent start current	Overheating <sup>(1)</sup> Consequences on the process
Voltage variations	<ul style="list-style-type: none"> <li>■ Instability of the mains voltage</li> <li>■ Connection of heavy loads</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduction of usable torque</li> <li>■ Increase in losses</li> </ul>	Overheating <sup>(1)</sup>
Harmonics	■ Pollution of the mains supply by variable speed drives, inverters, etc...	<ul style="list-style-type: none"> <li>■ Reduction of usable torque</li> <li>■ Increase in losses</li> </ul>	Overheating <sup>(1)</sup>
Long starting time	<ul style="list-style-type: none"> <li>■ Resistive torque too high (load too heavy)</li> <li>■ Voltage drop</li> </ul>	Increase in starting time	Overheating <sup>(1)</sup>
Jamming	<ul style="list-style-type: none"> <li>■ Mechanical problem (crusher)</li> <li>■ Seizures</li> </ul>	Overcurrent	Overheating <sup>(1)</sup> Consequences on the process
No-load running	<ul style="list-style-type: none"> <li>■ Pump running empty</li> <li>■ Mechanical break in drive to the load</li> </ul>	Drop in current drawn	Consequences on the process
Frequency fluctuations	<ul style="list-style-type: none"> <li>■ Overload of a supply powered by limited independent sources</li> <li>■ Faulty alternator speed regulator</li> </ul>	<ul style="list-style-type: none"> <li>■ Increase in losses</li> <li>■ Interferes with synchronous devices (clock, recorder, ...)</li> </ul>	–
Overload	<ul style="list-style-type: none"> <li>■ Increase in resistive torque</li> <li>■ Voltage drop</li> <li>■ Drop in power factor</li> </ul>	Increase in current consumption	Overheating <sup>(1)</sup>
Loss of machine excitation	<ul style="list-style-type: none"> <li>■ Significant drop in excitation current</li> <li>■ Break in rotor winding</li> </ul>	<ul style="list-style-type: none"> <li>■ Increase in active power</li> <li>■ Drop in power factor</li> </ul>	Significant overheating of rotor and cage
Phase-Earth fault	<ul style="list-style-type: none"> <li>■ Accidental Phase-Earth contacts</li> <li>■ Accidental Phase-machine casing contacts (casing connected to earth)</li> </ul>	<ul style="list-style-type: none"> <li>■ Overvoltage developed in the mains supply</li> <li>■ Rise in earth potential (safety of persons)</li> </ul>	Consequences on safety of persons

<sup>(1)</sup> Then, in the longer or shorter term, depending on the seriousness of the fault and/or its frequency, short-circuit and destruction of the windings.

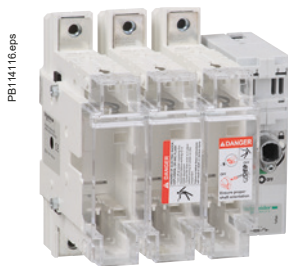
# TeSys Protect

## Overload relays

### Motor and machine protection



Fuse carrier  
Ref. LS1D32



Switch disconnectors  
Ref. GS2N3



Deca Magnetic circuit  
breaker  
Ref. GV2L



Deca Magnetic circuit  
breaker  
Ref. GV4LE

## Protection functions

### Short-circuit protection

#### General

A short-circuit results in a very rapid rise in current which can reach several hundred times the value of the operational current. The consequences of a short-circuit are dangerous to both equipment and persons. It is therefore imperative to use protection devices to detect the fault and very quickly break the circuit.

Two types of protection are commonly used:

- fuses (cutout) which break the circuit by melting, which then requires their replacement,
  - magnetic trip circuit breakers, often more simply called "magnetic circuit breakers", which only require re-setting to put them back into service.
- Short-circuit protection can also be built-into multifunction devices such as motor circuit breakers and contactor-breakers.

The main characteristics of short-circuit protection devices are:

- their breaking capacity: this is the highest prospective short-circuit current value that a protection device can break at a given voltage.
- their making capacity: this is the highest current value that the protection device can make at its rated voltage in specified conditions.

The making capacity is equal to  $k$  times the breaking capacity.

#### Fuses (cutouts)

Fuses provide individual phase protection (single-pole), with a high breaking capacity in a compact size:

- mounted either in fuse carriers,
- or in isolators, replacing the original links or shunt bars.

For motor protection, aM type fuses are used. Their design characteristics allow them to conduct the high magnetising currents that occur when motors are switched on. They are therefore unsuitable for overload protection (unlike gG type fuses). This is why an overload relay must be included in the motor power supply circuit.

#### Magnetic circuit breakers

These circuit breakers protect installations against short-circuits, within the limit of their breaking capacity.

Magnetic circuit breakers provide omnipole breaking as standard.

For relatively low short-circuit currents, the operation of a circuit breaker is faster than that of fuses.

This protection conforms to standard IEC 60947-2.

The thermal and electrodynamic effects are also limited, therefore ensuring better protection of cables and equipment.



# TeSys Protect

## Overload relays

### Motor and machine protection



Deca Thermal overload relay  
Ref. LRD08



Current measurement relay  
Ref. RM4JA

## Protection functions

### Overload protection

#### General

An overload condition is the most frequently encountered fault. The symptoms are a rise in the current drawn by the motor and thermal effects. A rapid return to normal operating conditions is important. The actual operating conditions (ambient temperature, operating altitude and type of standard duty) are essential to determine the operating values of the motor (power, current) and to be able to select effective overload protection. These operational values are given by the motor manufacturer.

According to the level required, protection can be provided by:

- overload relays and thermal overload relays (bi-metallic or electronic type) which protect motors in the event of:
  - overload, by monitoring the current drawn by each phase,
  - phase imbalance or failure, by their differential mechanism.
- relays with PTC thermistor probes (Positive Temperature Coefficient).
- overtorque relays,
- multifunction relays.

#### Overload relays

These relays protect motors against overload. They must allow the temporary overload that occurs on starting and must only trip if the starting time is abnormally long.

The overload relay will be selected according to the length of the starting time (tripping class) and the motor rating.

These relays have a thermal memory (except for certain electronic overload relays, indicated by their manufacturers) and can be connected:

- either in series with the load,
- or to current transformers placed in series with the load.

#### Bi-metallic thermal overload relays

Combined with a contactor, these relays protect the line and the equipment against small and prolonged overloads. They must be protected against strong overcurrent by a circuit breaker or fuses.

These relays may be used on an a.c. or d.c. system and are generally:

- 3-pole,
- compensated, i.e. insensitive to ambient temperature variations,
- with manual or automatic reset,
- graduated with a "motor FLC" scale: allowing direct setting to the full load current as shown on the motor rating plate.

They can also be sensitive to phase failure: this is known as 'differential'. This function conforms to standards IEC 60947-4-1 and 60947-6-2.

This type of relay is extremely reliable and is a relatively low cost device.

#### Electronic thermal overload relays

Electronic thermal overload relays have the advantage of electronics which allow a more complex thermal image of the motor to be created.

They can be combined with products having complementary functions, such as:

- temperature sensing via PTC probes,
- protection against jamming and overtorque,
- protection against phase reversal,
- earth fault protection,
- protection against no-load running,
- alarm function.

# TeSys Protect

## Overload relays

### Motor and machine protection



Relays for use with thermistor probes  
Ref. LT3S



Instantaneous electronic overcurrent relays  
Ref. LR97D07



Ultra starter Ref. LUB320 with multifunction control unit Ref. LUCM



Ultra controller Ref. LUTM20BL



T controller Ref. LTMR08MBD

#### Protection functions *(continued)*

##### Overload protection *(continued)*

###### Relays for use with PTC thermistor probes

With direct sensing of the stator windings, these relays can be used to protect motors against:

- overload,
- a rise in ambient temperature,
- a ventilation circuit fault,
- a high starting frequency,
- mechanical shocks, etc.

##### Overload (or overtorque) relays

These relays protect the drive line in the event of a locked rotor, seizure or mechanical shocks. This is an additional protection.

Unlike thermal overload relays, these relays do not have a thermal memory. They have definite time characteristics (adjustable current threshold and time delay).

The overtorque relay can be used as overload protection for motors with long starting times or very frequent starting (for example, lifting hoists).

##### Multifunction relays

Overcurrent relays are limited when it is necessary to take into account problems associated with voltage, temperature or special applications. New production or maintenance management needs have prompted manufacturers to offer products which provide not only adaptable protection, but also complete management of the motor and its load.

They incorporate:

- current and voltage sensors (T controllers),
- hybrid analog and digital electronic technology,
- the use of communication buses for data exchange and control,
- powerful motor modelling algorithms,
- integrated application programs whose parameters can be set.

These products make it possible to reduce installation and operating costs by reducing maintenance and downtime.

Ultra starters:

The multifunction relay is incorporated in the motor starter.

This solution is very compact with reduced wiring. It is limited to 32 A.

Ultra controllers:

The multifunction relay is separate from the power line and reuses the function blocks from the Ultra solution. It can be used in conjunction with a contactor up to 810 A.

T controllers:

The multifunction relay is separate from the power line and incorporates inputs and outputs. It can be used in conjunction with a contactor up to 810 A.

# TeSys Protect

## Overload relays

### Motor and machine protection

Protection relay selection table					
Relay type	Motor protection		Machine protection	Motor and machine protection	
	Thermal overload relay Ref. LR2K, LRD, LRD3, LR9D <sup>(1)</sup> , LR9G	Relays for use with PTC probes Ref. LT3S	Overtorque relays Ref. LR97D, LT47	Ultra controller Ref. LUTM	T controller Ref. LTMR
<b>Causes of overheating</b>	(2)		(2)	(2)	(3)
Slight overload	■	■	■	■	■
Locked rotor	■	■	■	■	■
No-load running	□	□	□	■	■
Supply phase failure	■	■	LR97D	■	■
Ventilation fault	□	■	□	□	With probes
Abnormal temperature rise	■	■	□	□	With probes
Shaft bearing seizure	■	■	■	■	With probes
Insulation fault	■	□	□	■	■
Protracted starting time	■	■	■	■	■
Severe duty	■	■	□	■	With probes
Voltage variation	■	■	■	■	■
Frequency fluctuations	■	□	□	□	■
Loss of machine excitation	□	□	□	□	■

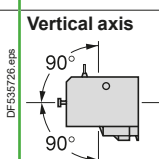
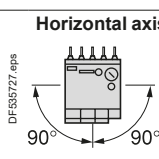
- Ideally suited
- Possible solution
- Not suitable (no protection)

(1) For motor circuit breaker ref. GV2ME.  
 (2) Protection based on current.  
 (3) Protection based on current and voltage.

# TeSys Protect

## LRK Thermal overload relay

### Characteristics

Environment					
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T14048.		
Product certifications			UL, CSA, CCC, EAC, CB, UKCA certification		
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact		
Ambient air temperature around the device	Storage	°C	-40...+70		
	For normal operation (IEC 60947)	°C	-20...+55 (without derating)		
	Operating limit	°C	-30...+60 (with derating) <sup>(1)</sup>		
Maximum operating altitude	Without derating	m	2000		
Operating positions			 <p>Vertical axis</p> <p>Without derating</p>	 <p>Horizontal axis</p> <p>With derating<sup>(1)</sup></p>	
Flame resistance	Conforming to 60695-2-11	°C	850		
Shock resistance, hot state (1/2 sine wave, 11 ms)	Conforming to IEC 60068-2-27, N/C contact		10 gn		
	Conforming to IEC 60068-2-27, N/O contact		10 gn		
Vibration resistance, hot state 5 to 300 Hz	Conforming to IEC 60068-2-6, N/C contact		2 gn		
	Conforming to IEC 60068-2-6, N/O contact		2 gn		
Cabling Screw clamp terminals	Solid cable	mm <sup>2</sup>	Minimum	Maximum	Maximum to IEC 60947
	Flexible cable without cable end	mm <sup>2</sup>	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible cable with cable end	mm <sup>2</sup>	1 x 0.75	2 x 4	2 x 2.5
		mm <sup>2</sup>	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Tightening torque	Philips head n° 2 - Ø6	N.m	0.8		
Mounting			Directly under the contactor or reversing contactor		
Connections			<p>Made automatically when mounted under the contactor, as follows:</p> <ul style="list-style-type: none"> <li>■ contactor terminal A2 connected to overload relay terminal 96 on all products,</li> <li>■ contactor terminal 14 connected to overload relay terminal 95 on products with 3 P + N/O.</li> </ul> <p>When using 3 P + N/C, or 4 P contactors, or the N/O auxiliary contact marked 13-14, at a voltage other than the coil voltage, break off the link marked 14.</p>		

Auxiliary contact characteristics										
Number of contacts			1 N/C + 1 N/O							
Conventional thermal current		A	6							
Short-circuit protection	Conforming to IEC 60947 gG fuse or circuit breaker GB2CB●●	A	6 max.							
Maximum power of the controlled contactor coils (sealed) (Occasional operating cycles of contact 95-96)	a.c.	V	24	48	110	220/230	400	415/440	600/690	
		VA	100	200	400	600	600	600	600	
	d.c.	V	24	48	110	220	250	–	–	
		W	100	100	50	45	35	–	–	
		V	690							
		V	250							

(1) Please consult your Regional Sales Office.  
(2) Very low safety voltage.

Ref.



Overload relays

# TeSys Protect

## LRK Thermal overload relays

### Characteristics

#### Electrical characteristics of the power circuit

Rated operational voltage (Ue)	Up to	V	690
Rated insulation voltage (Ui)	Conforming to IEC 60947	V	690
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	V	600
Rated impulse withstand voltage (Uimp)		kV	6
Frequency limits of the operational current		Hz	Up to 400
Power dissipated per pole		W	2

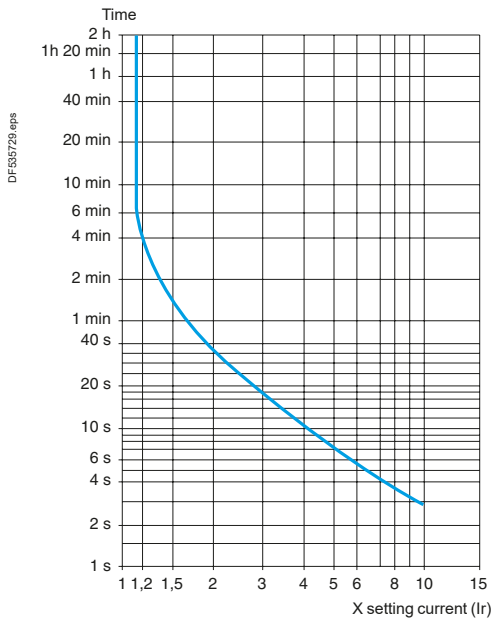
#### Operating characteristics

Tripping threshold	Conforming to IEC 60947-4-1	A	1.14 ±0.06 I <sub>r</sub>
Sensitivity to phase failure	Conforming to IEC 60947		Yes
Reset	Manual or automatic		Selected by means of a lockable and sealable switch on the front of the relay
Signalling	On front of relay		Trip indicator
Reset-Stop function			Pressing the Reset-Stop button: - actuates the N/C contact - has no effect on the N/O contact
Test function	By pushbutton		Pressing the Test button enables: - checking of the control circuit wiring - simulation of overload tripping (actuation of both N/C and N/O contacts, and of the trip indicator)
Short-circuit protection and coordination			See pages A5/12 and A5/30

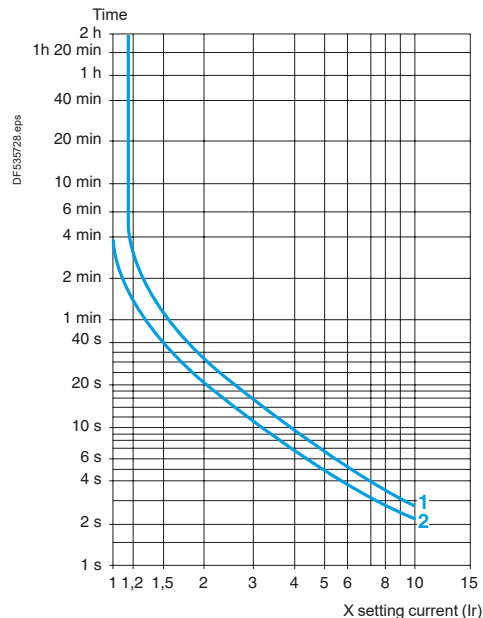
#### Tripping curves

##### Average operating time related to multiples of the current setting (Class 10 A)

Balanced 3-phase operation, from cold state



Balanced operation with 2 phases only, from cold state



Setting: at lower end of scale

Setting: at upper end of scale

Ref.



Overload relays

# TeSys Protect

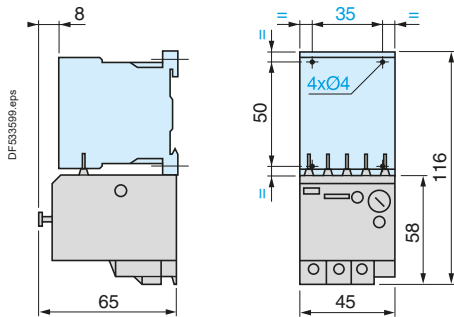
## LRK Thermal overload relays

### Dimensions, mounting, schemes

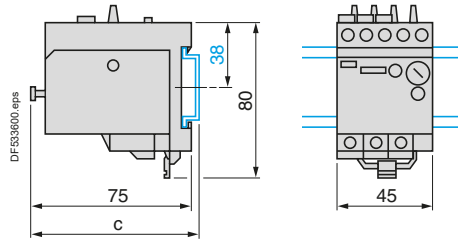
#### Dimensions, mounting

##### LR2K

Direct mounting beneath the contactor



Separate mounting with terminal block LA7 K0064 on 35 mm rail (AM1DP200 or AM1DE200)



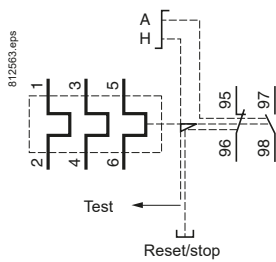
AM1	c
DP200	78.5
DE200	86

#### Schemes

##### LR2K

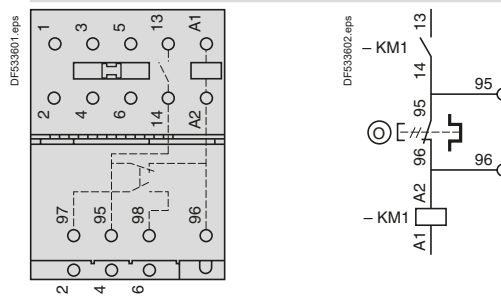


Ref.

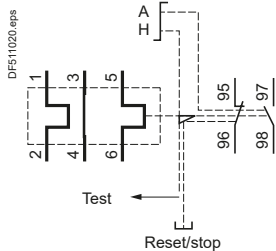


##### LR2K + LC0K

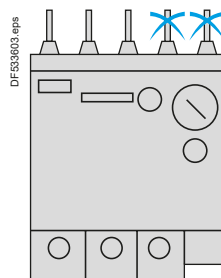
Pre-wiring scheme



##### LR7K



Note: If pre-wiring is not required, break off the 2 links located on the thermal overload relay.



Overload relays

# TeSys Protect

## Deca Thermal overload relays

### Characteristics



Ref. LRD08



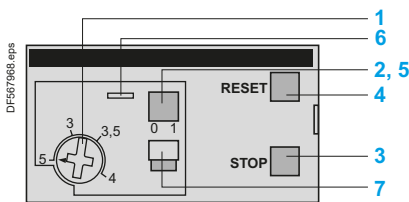
Ref. LRD05L...32L



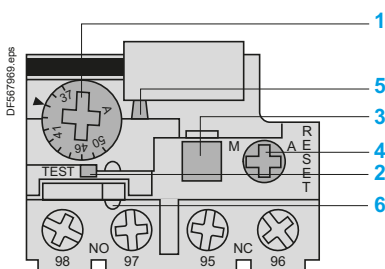
Ref. LRD365



Ref. LRD33●●



Ref. LRD01...35, LRD05L...32L  
LRD313...LRD365



Ref. LRD3361...4369, LR2 D3561...3563

### Introduction

3-pole Deca thermal overload relays are designed to protect a.c. circuits and motors against:

- overloads
- phase failure
- excessively long starting times
- prolonged stalled rotor condition.

### Power connection

#### Product references LRD01 to LRD35

LRD01 to 35 relays are designed for connection by screw clamp terminals. They can be supplied for connection by spring terminals or by lugs <sup>(1)</sup>.

#### Product references LRD04 to LRD32L

These relays are designed for connection by screw clamp terminals. They can be supplied for connection by lugs <sup>(1)</sup>.

#### Product references LRD313 to LRD380

These relays are for connection by BTR screw connectors (hexagon socket head). The screws are tightened by means of a size 4, insulated Allen key.

This type of connection uses the **EverLink**<sup>®</sup> system with creep compensation <sup>(2)</sup> (Schneider Electric patent).

This technique makes it possible to achieve accurate and durable tightening torque.

These relays are also available for connection by lugs <sup>(1)</sup>.

#### Product references LRD3361 to 4369, LR2D3561 to D3563

Product references LRD3361 to 4369 and LR2D3561 to D3563 relays are designed for connection by screw clamp terminals. They can be supplied for connection by lugs <sup>(1)</sup>.

### Description

Deca 3-pole thermal overload relays are designed to protect a.c. circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

- 1 Adjustment dial Ir.
- 2 Test button.  
Operation of the Test button allows:
  - checking of control circuit wiring,
  - simulation of relay tripping (actuates both the N/O and N/C contacts).
- 3 Stop button. Actuates the N/C contact; does not affect the N/O contact.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Selector for manual or automatic reset.

Product references LRD01 to 35, LRD05L to 32L and LRD313 to LRD380 relays are supplied with the selector in the manual position, protected by a cover. Deliberate action is required to move it to the automatic position.

<sup>(1)</sup> Connection by lugs meets the requirements of certain Asian markets and is suitable for applications subject to strong vibration, such as railway transport.

<sup>(2)</sup> Creep: normal crushing phenomenon of copper conductors, that is accentuated over time.



Overload relays

# TeSys Protect

## Deca Thermal overload relays

### Characteristics

Environment			
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, EN 50495 <sup>(1)</sup> , GB/T 14048.4, GB/T 14048.5
Product certifications			UL <sup>(2)</sup> , CSA <sup>(2)</sup> , UKCA IEC, CCC <sup>(3)</sup> , EAC, ATEX <sup>(1)</sup> ABS, BV <sup>(4)</sup> , DNV-GL <sup>(5)</sup> , LRoS <sup>(6)</sup> , RINA <sup>(7)</sup> , RMRS <sup>(8)</sup> , EU RO Mutual recognition <sup>(9)</sup>
Degree of protection (front face)	Conforming to IEC 60529		Protection against direct finger contact IP20
Climatic withstand			Conforming to IACS E10
Ambient air temperature around the device	Storage	°C	-60...+70
	Normal operation, without derating (IEC 60947-4-1)	°C	-20...+60
	Minimum /maximum operating temperatures (with derating)	°C	-20...+70
Operating positions without derating	In relation to normal vertical mounting plane		Any position. When mounting on a vertical rail, use a stop.
Flame resistance	Conforming to 60695-2-11	°C	850
Shock resistance	Permissible acceleration conforming to IEC 60068-2-27		15 gn - 11 ms
Vibration resistance <sup>(10)</sup>	Permissible acceleration conforming to IEC 60068-2-6		6 gn except LRD05L...LRD32L: 3 gn
Dielectric strength at 50 Hz	Conforming to IEC 60947-1	kV	1.89 (product Ui 690 V), 2.2 (product Ui 1000 V)
Impulse withstand voltage	Conforming to IEC 60947-1	kV	6

Electrical characteristics of power circuit										
Relay type		LRD01 ...16, LR3D02 ...16	LRD05L ...32L	LRD21 ...35, LR3D21 ...35	LRD313 ...365 LR3D 313 ...38	LRD313L ...365L	LRD3322 ...33696 LR3D3322 ... 33696	LR2D 3522 ... 3563	LRD 4365 ... 4369	
Tripping class	Conforming to UL 60947-4-1, IEC 60947-4-1	10 A	20	10 A	10 A	20	10 A	20	10 A	
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V						690		1000 <sup>(11)</sup>
	Conforming to UL, CSA	V						600		600 except LRD 4369
Rated impulse withstand voltage (Uimp)		kV						6		
Rated operational voltage (Ue)		V						690		
Frequency limits	Of the operating current	Hz						0...400		
Setting range	Depending on model	A	0.1...13	0.63...32	12...38	9...80	9...65	17...140	17...80	80...140

Auxiliary contact characteristics										
Conventional thermal current		A	5							
Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	a.c. supply, AC-15	V	120	240	380	480	500	600		
		A	3	1.5	0.95	0.75	0.72	0.12		
	d.c. supply, DC-13	V	125	250	440					
		A	0.22	0.1	0.06					
Protection against short-circuits	By gG, BS fuses. Maximum rating or by GB2	A	4							

<sup>(1)</sup> For relays LRD01 to LRD380, LRD3322 to LRD3365, LRD04L to LRD32L, LRD4365 to LRD4369, LRD33656 to LRD33696.

<sup>(2)</sup> Except for relays LRD4369.

<sup>(3)</sup> CCC: Except for LRD/LR3D04L to LRD/LR3D32L, LR2D3522 to LR2D3563.

<sup>(4)</sup> BV: except for LRD/LR3D04L to LRD/LR3D32L, LRD/LR3D313 to LRD/LR3D380.

<sup>(5)</sup> DNV-GL: except for LRD04L to LRD32L.

<sup>(6)</sup> LRoS: except for LRD/LR3D04L to LRD/LR3D32L, LRD/LR3D380.

<sup>(7)</sup> RINA: for LRD/LR3D01 to LRD/LR3D35.

<sup>(8)</sup> RMRS: for LRD/LR3D313 to LRD/LR3D380.

<sup>(9)</sup> EU RO Mutual Recognition: for LRD/LR3D313 to LRD/LR3D380, LRD313L to LRD365L.

<sup>(10)</sup> In case of vibration above 3gn on Deca Green contactor directly mounted with LRD, it is recommended do mount the devices separately by screws on metal plate.

<sup>(11)</sup> 750 V for LRD33656, LRD33676, LRD33696.





# TeSys Protect

## Deca Thermal overload relays

### Characteristics

Power circuit connection characteristics				LRD01 ...16, LR3D01 ...16	LRD04L ...21L	LRD22L ...32L	LRD21 ...35, LR3D21 ...35	LRD 313 ...365 LR3D 313 ...380	LRD 313L ...365L	LRD 3322 ...33696 LR3D 3322 ... 33696	LR2D 3522 ... ...3563	LRD 4365 ...4369
Connection to screw clamp terminals												
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	1.5...10			1.5...10	1...35	1...35	4...35			4...50
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1...4		1...6	1...6 except LRD21: 1...4	1...35	1...35	4...35			4...35
Solid cable without cable end	1 conductor	mm <sup>2</sup>	1...6		1.5...10	1.5/10 except LRD21: 1/6	1...35	1...35	4...35			4...50
Tightening torque		N.m	1.7		2.5	2.5	1...25: 5 35: 8	1...25: 5 35: 8	9	9		9
Connection to spring terminals (Min/max c.s.a.) (except LRD04L...LRD32L)												
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	1.5...4	-	-	1.5...4	-	-	-	-	-	-
Flexible cable with cable end	1 conductor	mm <sup>2</sup>	1.5...4	-	-	1.5...4	-	-	-	-	-	-
Connection by bars or lugs												
Relay type			LRD016...166 LRD04L6 ... 16L6	LRD216...356 LRD21L6 ... 32L6	LRD3136 ... 3806	LRD313L6 ... 365L6	LRD3322A66 ... 3365A66					
Pitch	Without spreaders	mm	14.5	17.5	17.5	17.5	21.5					
Bars or cables with lugs	e	mm	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6					
	L	mm	≤ 8	≤ 8	≤ 13.5	≤ 13.5	≤ 16					
	L'	mm	≤ 9.5	≤ 9.5	≤ 16.5	≤ 16.5	≤ 16					
	d		≤ 7	≤ 7	≤ 10	≤ 10	≤ 12					
Screws			M4	M4	M6	M6	M10					
	Tightening torque		N.m	1.7	2.5	6	6	11.3				

Control circuit connection characteristics				Connection to screw clamp terminals or spring terminals								
Bare cables												
Relay type			LRD01 ...16, LR3D01 ...16	LRD04L ...21L	LRD22L ...32L	LRD21 ...35, LR3D21 ...35	LRD 313 ...365 LR3D 313 ...380	LRD 313L ...365L	LRD3322 ...33696 LR3D 3322 ... 33696	LR2D 3522 ... 3563	LRD 4365 ...4369	
Connection to screw clamp terminals <sup>(1)</sup>	Solid cable without cable end	mm <sup>2</sup>	2 x 1...2.5									
	Flexible cable without cable end	mm <sup>2</sup>	2 x 1...2.5									
	Flexible cable with cable end	mm <sup>2</sup>	2 x 1...2.5									
Tightening torque		N.m	1.7									
Connection to spring terminals (Min/max c.s.a.) (except LRD04L...LRD32L)	Solid cable	mm <sup>2</sup>	1...2.5	-		1...2.5						
	Flexible cable without cable end	mm <sup>2</sup>	1...2.5	-		1...2.5						

(1) For relays **LRD313 to 380**: BTR hexagon socket head screws, **EverLink®** system. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/42).

# TeSys Protect

## Deca Thermal overload relays

### Characteristics

#### Operating characteristics

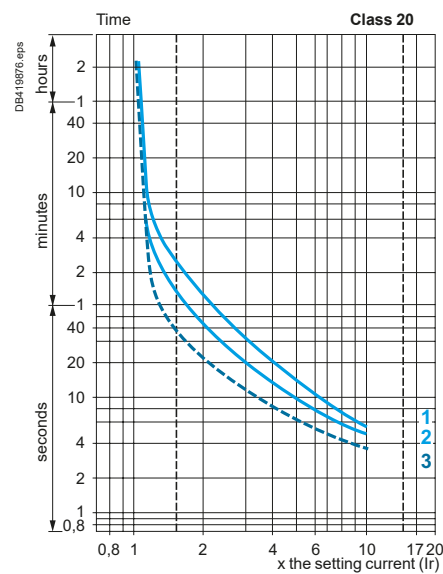
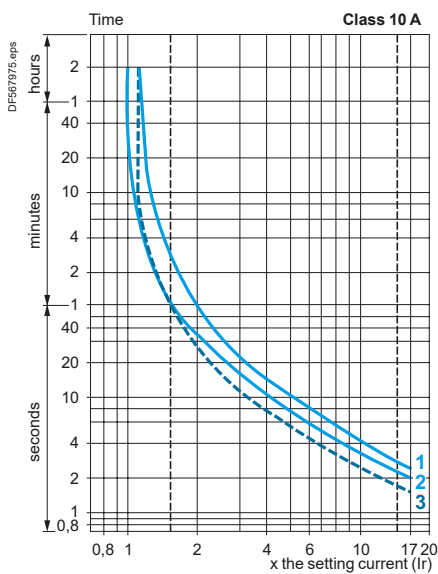
Relay type	LRD01 ...16, LR3D02 ...16	LRD04L... LRD32L	LRD21 ...35, LR3D21 ...35	LRD313 ...365 LR3D 313 ...380	LRD313L ...365L	LRD3322 ...33696 LR3D3322 ... 33696	LR2D 3522 ... 3563	LRD 4365 ...4369
Temperature compensation	°C		-20...+60					
Tripping threshold	Conforming to IEC 60947-4-1		A					
Sensitivity to phase failure	Tripping current 130 % of Ir on two phases, the third phase at 0.							

#### Tripping curves

Average operating time related to multiples of the setting current

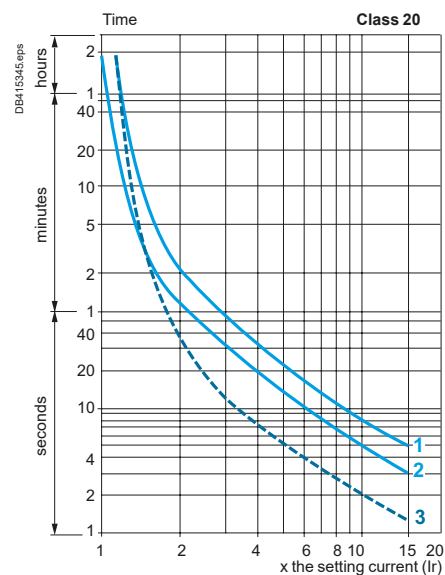
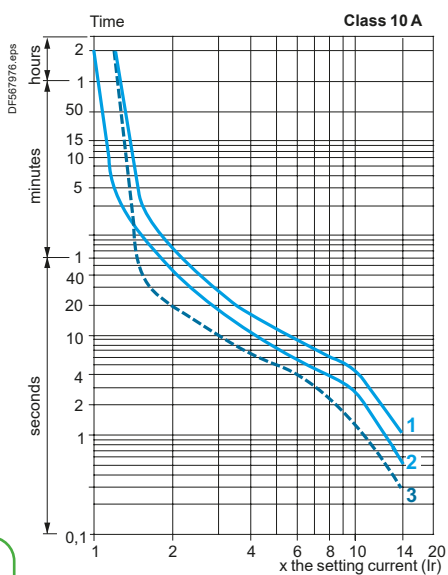
LRD01 to LRD35, LR2D and LRD3322 to LRD4369

LRD04L to LRD32L and LR2D3522 to LR2D3563



LRD313 to LRD380

LRD313L to LRD365L



- 1 Balanced operation, 3-phase, without prior current flow (cold state).
- 2 2-phase operation, without prior current flow (cold state).
- 3 Balanced operation, 3-phase, after a long period at the set current (hot state).



Overload relays

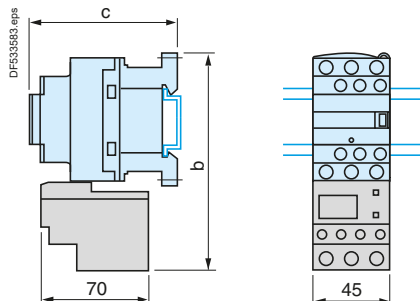
# TeSys Protect

## Deca Thermal overload relays

### Dimensions, mounting

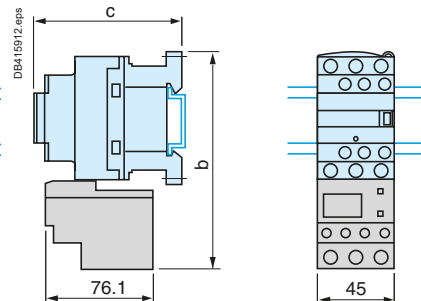
#### LRD01...35 <sup>(1)</sup>

Direct mounting beneath contactors with screw clamp connections



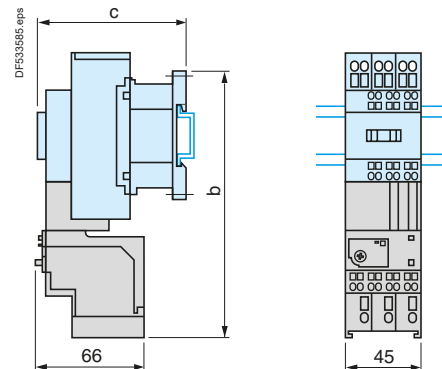
#### LRD04...32L <sup>(1)</sup>

Direct mounting beneath contactors with screw clamp connections



#### LRD063...223

Direct mounting beneath contactors with spring terminal connections



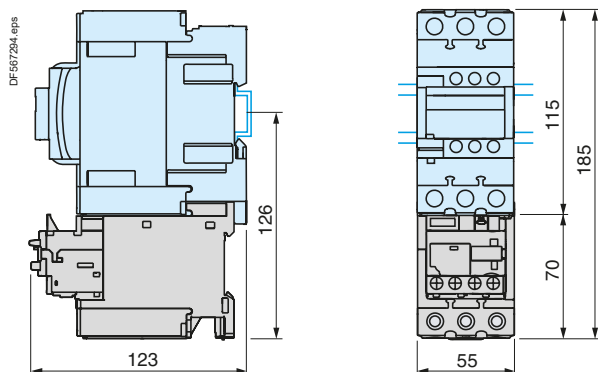
LC1	D09...D18	D25...D38
b	123	137
c	See pages B11/32 and B8/97	

LC1	D09...D18	D25...D38
b	123	137
c	See pages B11/32 and B8/97	

LC1	D093...D253
b	168
c	See pages B11/32 and B8/97

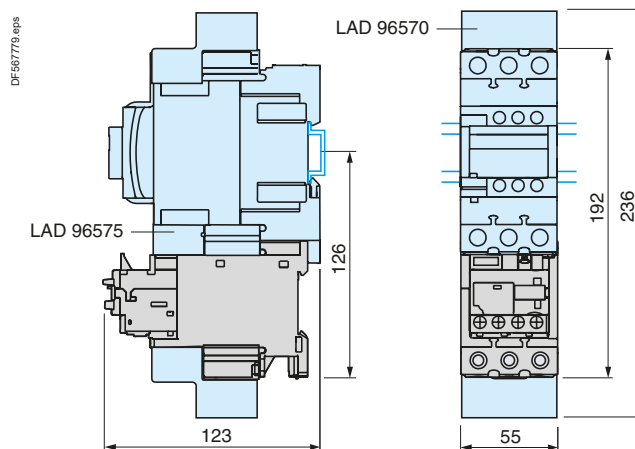
#### LRD313...380 <sup>(1)</sup>

Direct mounting beneath contactors LC1D40A...D80A with screw clamp connections or EverLink® connectors



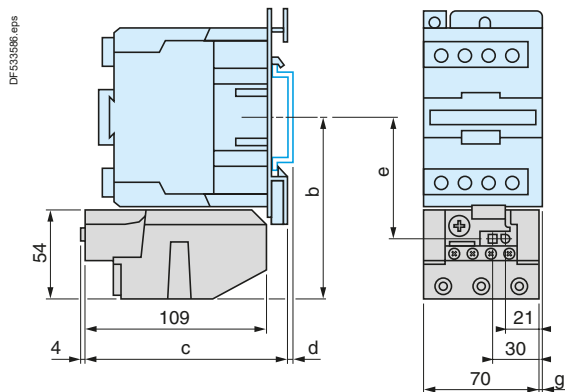
#### LRD3256...3806 <sup>(1)</sup>

Direct mounting beneath contactors LC1D40A6...D80A6 with lugs



#### LRD33...<sup>●●●</sup>

Direct mounting beneath contactors LC1D80...D95



AM1	DL201	DL200
d	7	17

	Control circuit AC				
	b	c	e	g (tri)	g (tetra)
LC1D80	115.5	124	76.9	9.5	22
LC1D95	115.5	124	76.9	9.5	-
	Control circuit DC				
	b	c	e	g (tri)	g (tetra)
LC1D80, D95	115.5	179.4	76.9	9.5	22

<sup>(1)</sup> In case of vibration above 3 gn on Deca Green contactor directly mounted with LRD, it is recommended do mount the devices separately by screws on metal plate.

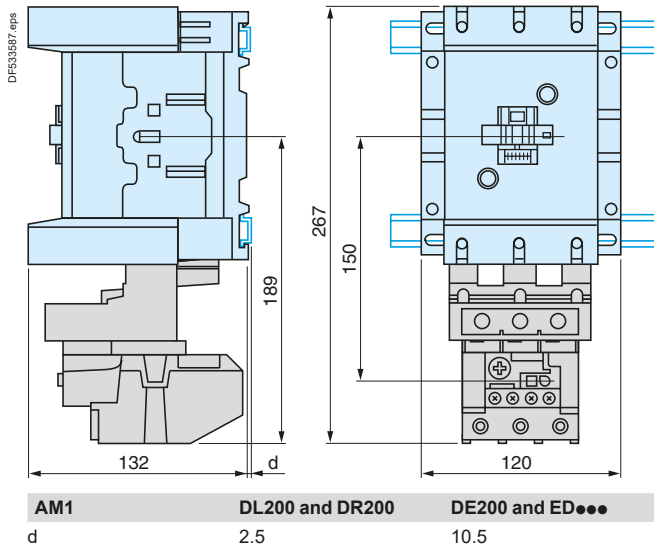
# TeSys Protect

## Deca Thermal overload relays

### Dimensions, mounting

#### LRD4●●●

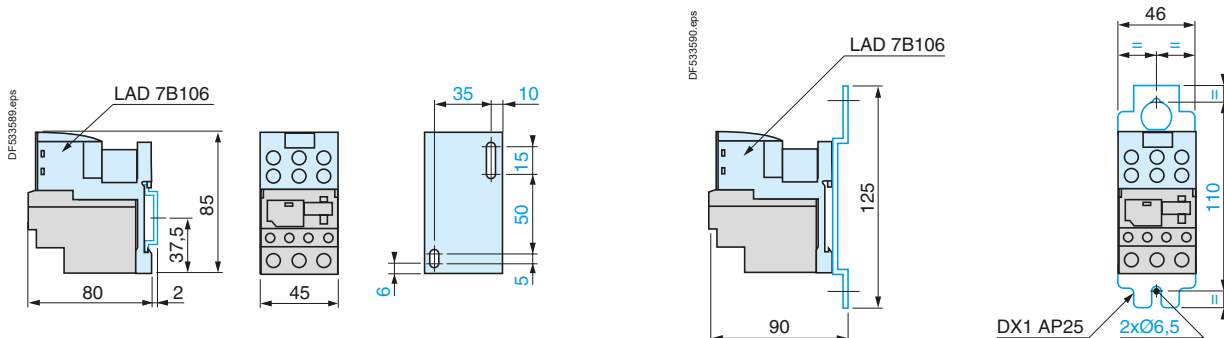
Direct mounting beneath contactors LC1D115 and D150



#### LRD01...35

Independent mounting on 50 mm centres or on rail AM1DP200 or DE200

Independent mounting on 110 mm centres



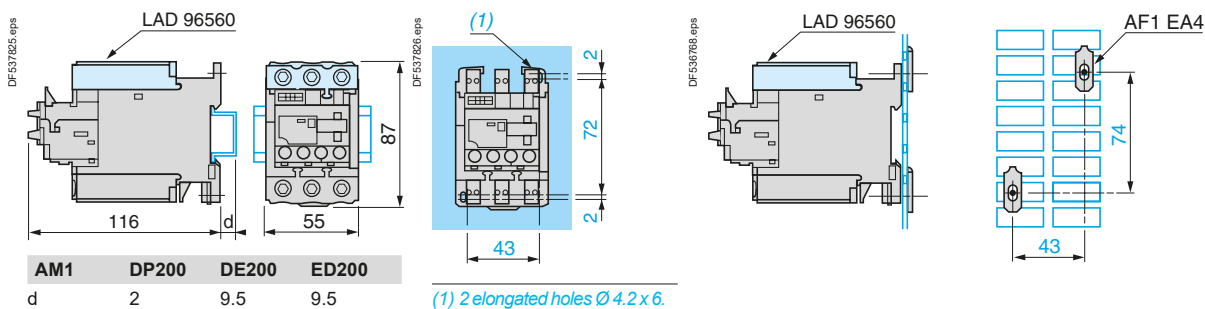
#### LRD313...380

Mounting on rail AM1D●200 or ED200  
With terminal block LAD96560

Panel mounting

Outgoing terminal block not shown

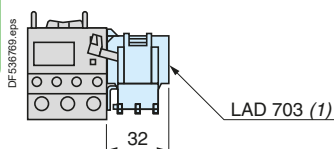
Mounted on plate AM1P



#### LRD01...35 and LRD313...380

Remote tripping or electrical reset

Overload relays



(1) Can only be mounted on RH side of relay LRD01...35 and LRD313...380.

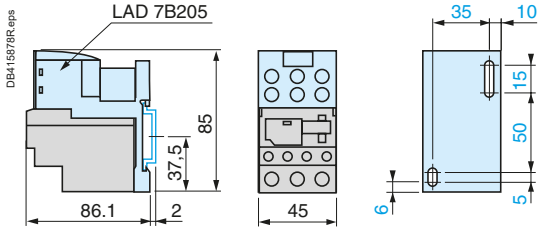
# TeSys Protect

## Deca Thermal overload relays

### Dimensions, mounting and schemes

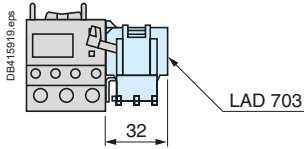
#### LRD04L...32L

Independent mounting on 50 mm centres or on rail AM1DP200 or DE200



AM1	DP200	DE200
d	2	9.5

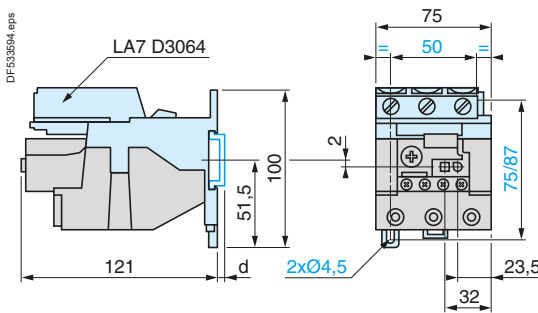
Remote tripping or electrical reset



(1) Can be mounted on RH or LH side of relay LR2D15.

#### LRD3... and LR2D35...

Independent mounting on 50 mm centres or on rail AM1DP200 or DE200



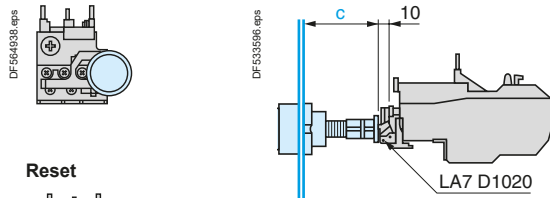
AM1	DP200	DE200
d	2	9.5

#### LRD3...

Adapter for door mounted operator

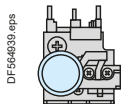
LA7D1020

Stop

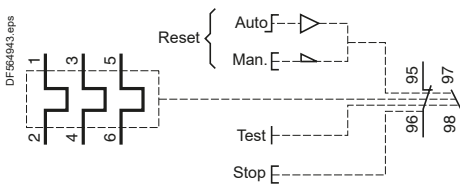


c: adjustable from 17 to 120 mm

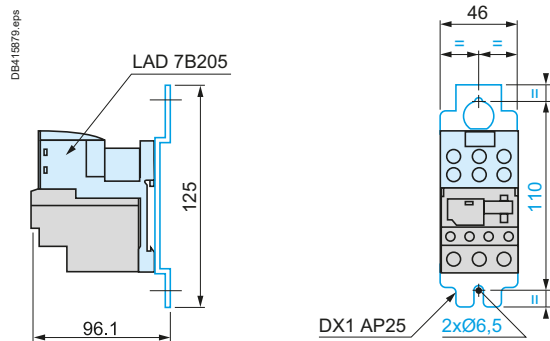
Reset



#### LRD..., LRD3... and LR2D...

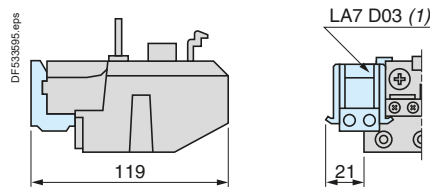


Independent mounting on 110 mm centres



#### LRD3..., LR2D35... and LR9D

Remote tripping or electrical reset



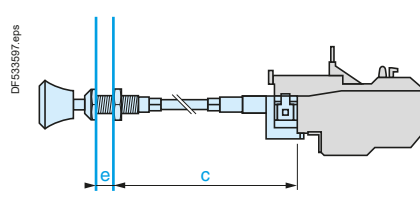
(1) Can be mounted on RH or LH side of relay LRD3..., LR2D35... or LR9D.

#### LRD, LRD313...380, LRD04...32L

"Reset" by flexible cable

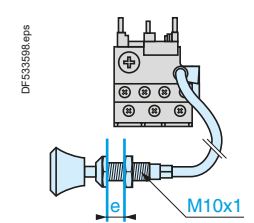
LA7D305 and LAD7305

Mounting with cable straight

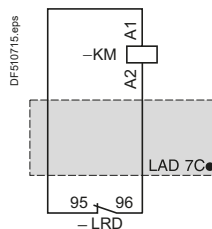


e: up to 20 mm / c: up to 550 mm

Mounting with cable bent



#### Pre-wiring kit LAD7C1, LAD7C2



Characteristics:  
pages B11/31 to B11/34

References:  
pages B11/4 to B11/7



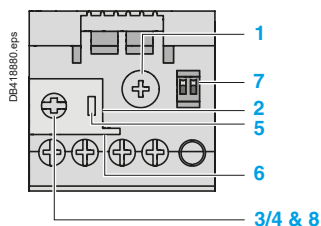
Ref.

Overload relays

# TeSys Protect

## Deca Electronic overload relays

### Characteristics



LR9D01...32

#### Product references LR9D01, 02, 08 and 32

These self-powered electronic thermal overload relays are designed for direct mounting to contactors LC1D09 through LC1D38.

In addition to the protection provided by the Deca thermal overload relays (see page B11/31), they offer the following additional features:

- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits

- 1 Adjustment dial Ir.
- 2 Test button.
- 3 Stop button.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Class 5/10/20/30 dipswitches.
- 8 Reset mode selector.

#### Environment

Relay type		LR9D01, 02, 08, 32	
Conforming to standards		IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4	
Product certifications		CCC, CSA, UL, CB, UKCA certification	
Degree of protection	Conforming to IEC 60529 and VDE 0106	IP 20 on front panel	
Ambient air temperature around the device (Conforming to IEC 60255-8)	Storage	°C	-55 to +80
	Normal operation	°C	-25 to +70
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane	Any position	
Shock resistance	Permissible acceleration conforming to IEC 60068-2-27	15 g (11ms)	
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6	6 g (10-150 Hz)	
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV	6
Surge withstand, common mode	Conforming to IEC 61000-4-5	kV	2
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8
Immunity to radiated radio-frequency disturbances	Conforming to IEC 61000-4-3 and NF C 46-022	V/m	10
Immunity to fast transient currents	Conforming to IEC 61000-4-4	kV	2
Electromagnetic compatibility	Draft EN 50081-1 and 2, EN 50082-2	Meets requirements	

#### Electrical characteristics of auxiliary contacts

Conventional thermal current		A	5					
Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	a.c. supply, AC-15	V	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	d.c. supply, DC-13	V	24	48	110	220	–	–
		W	100	100	50	45	–	–
Protection against short-circuits	By gG or BS fuses or by circuit breaker GB2	A	5					
Cabling Flexible cable without cable end	1 or 2 conductors	mm <sup>2</sup> (AWG)	1 to 2.5 (18 to 14)					
	Tightening torque	Nm (lb-in)	0.8 (7)					



# TeSys Protect

## Deca Electronic overload relays

### Characteristics

#### Electrical characteristics of power circuit

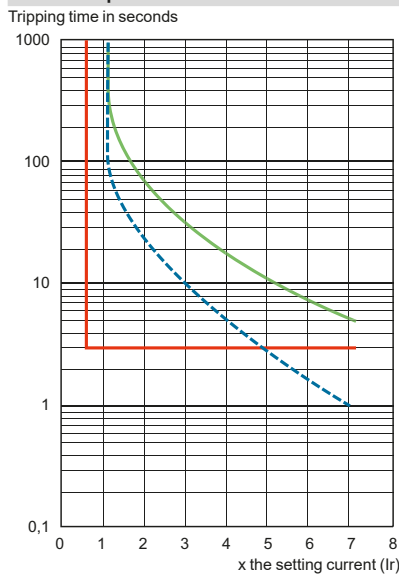
Relay type		LR9D01	LR9D02	LR9D08	LR9D32
Tripping class	Conforming to IEC/EN 60947-4-1	5, 10, 20, 30			
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	10, 20, 30			
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	<b>V AC</b>	1000		
Rated operational voltage (Ue)	Conforming to IEC 60947-4-1	<b>V AC</b>	690		
	Conforming to UL/CSA	<b>V AC</b>	600		
Rated impulse withstand voltage		<b>kV</b>	6		
Frequency limits	Of the operating current	<b>Hz</b>	50...60		
Setting range		<b>A</b>	0.1...0.5	0.4...2	1.6...8
Power circuit connections	Wire size - 1 or 2 conductors	<b>mm<sup>2</sup> (AWG)</b>	1 to 16 (14 to 6)		
	Tightening torque	<b>Nm (lb-in)</b>	3.1 (28)		

#### Operating characteristics

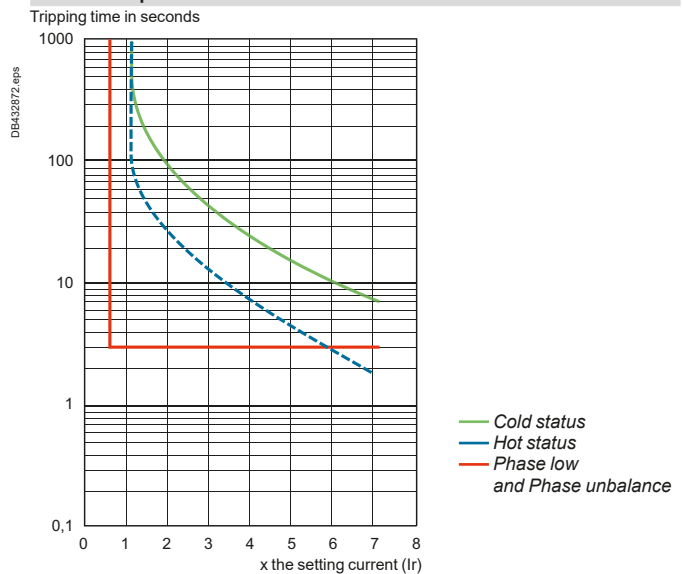
Consumption		<b>mW</b>	< 300
Tripping thresholds	Conforming to IEC 60947-4-1	<b>A</b>	1.25 I <sub>n</sub>
Sensitivity to phase unbalance	Conforming to IEC 60947-4-1		Phase difference > 40%, tripping in 3 s
Current setting ratio			5:1
Automatic reset time		<b>min.</b>	1.5...4

#### LR9D01, 02, 08, 32 tripping curves

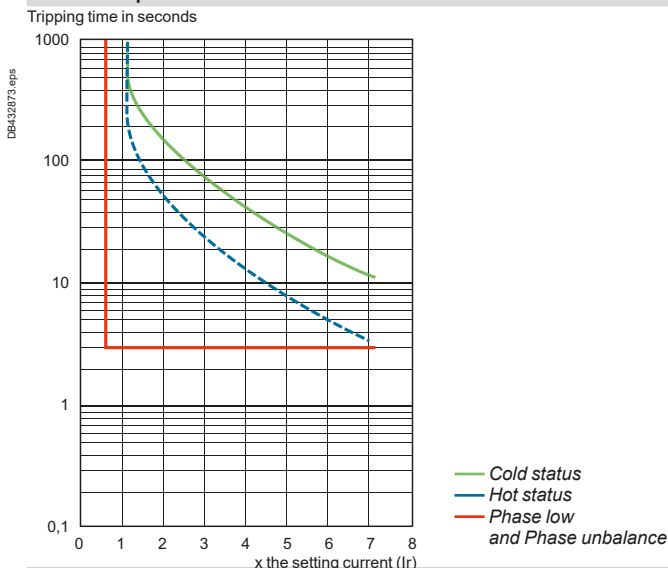
##### Class 5 Trip curve



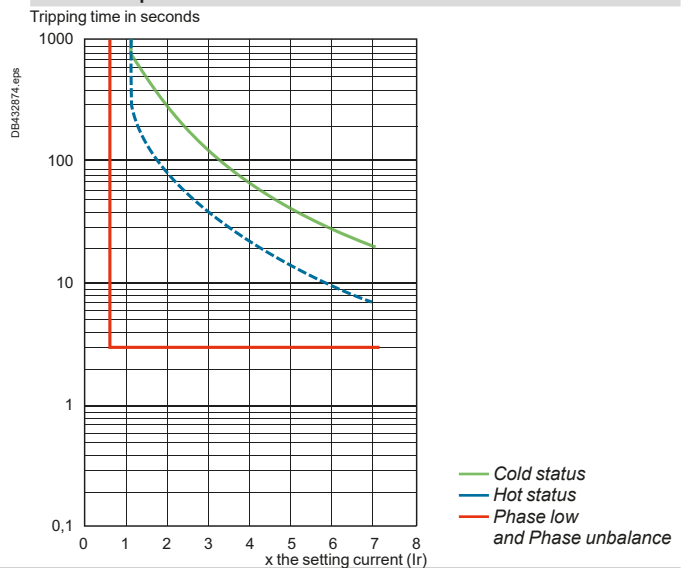
##### Class 10 Trip curve



##### Class 20 Trip curve



##### Class 30 Trip curve



References:  
page B11/10

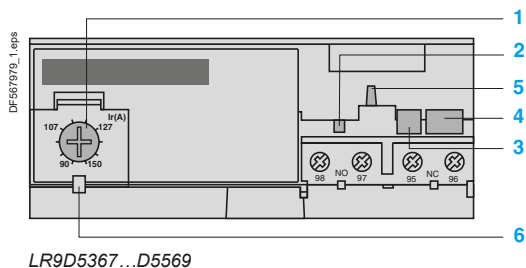
Dimensions, mounting:  
page B11/42

Schemes:  
page B11/43

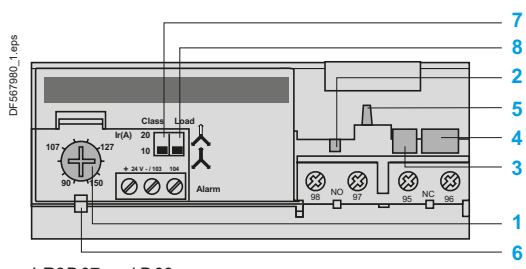
# TeSys Protect

## Deca Electronic overload relays

### Characteristics



LR9D5367...D5569



LR9D67 and D69

#### Description: LR9D5367...LR9D5569, LR9D67, LR9D69

These electronic thermal overload relays are designed for use with contactors LC1D115 and D150.

In addition to the protection provided by Deca thermal overload relays (see page B11/31), they offer the following special features:

- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits
- alarm function to avoid tripping by load shedding.

- 1 Adjustment dial Ir.
- 2 Test button.
- 3 Stop button.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Class 10/class 20 selector switch.
- 8 Selector for balanced load /unbalanced load

#### Environment

Relay type		LR9D5367...LR9D5569, LR9D67, LR9D69	
Conforming to standards		IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4	
Product certifications		UL, CSA, CCC, ABS, BV, DNV-GL, UKCA	
Degree of protection	Conforming to IEC 60529	IP 20 on front panel with protective covers <b>LA9D11570●</b> or <b>D11560●</b>	
Climatic withstand		according to IACS E10	
Ambient air temperature around the device (Conforming to IEC 60255-8)	Storage	°C	- 40...+ 85
	Normal operation	°C	- 20...+ 55 <sup>(1)</sup>
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane	Any position	
Shock resistance	Permissible acceleration conforming to IEC60028-2-27	13 gn - 11 ms	
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6	2 gn - 5...300 Hz	
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV	6
Surge withstand	Conforming to IEC 61000-4-5	kV	6
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8
Immunity to radiated radio-frequency disturbances	Conforming to IEC 61000-4-3	V/m	10
Immunity to fast transient currents	Conforming to IEC 61000-4-4	kV	2
Electromagnetic compatibility	EN 50081-1 and 2, EN 50082-2	Meets requirements	

#### Electrical characteristics of auxiliary contacts

Conventional thermal current		A	5					
Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	a.c. supply	V	24	48	110	220	380	600
	d.c. supply	VA	100	200	400	600	600	600
		V	24	48	110	220	440	–
		W	100	100	50	45	25	–
Protection against short-circuits	By gG or BS fuses or by circuit breaker <b>GB2</b>	A	5					
Cabling Flexible cable without cable end	1 or 2 conductors	mm <sup>2</sup>	Minimum c.s.a.: 1					
	Tightening torque	Nm	Maximum c.s.a.: 2.5					
			1.2					

(1) For operating temperatures up to 70 °C, please consult your Regional Sales Office.



# TeSys Protect

## Deca Electronic overload relays

### Characteristics

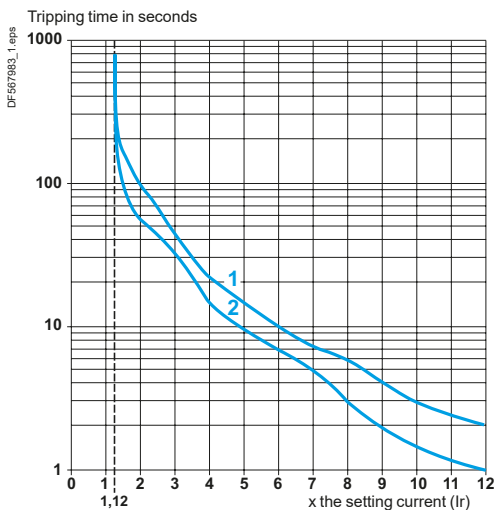
Electrical characteristics of power circuit			
Relay type		LR9D5367...LR9D5569, LR9D67, LR9D69	
Tripping class	Conforming to IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1		10 or 20
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	1000
	Conforming to UL, CSA	V	600
Rated impulse withstand voltage (Uimp)		kV	8
Frequency limits	Of the operating current	Hz	50...60 <sup>(1)</sup>
Setting range	Depending on model	A	60...150
Power circuit connections	Width of terminal lug	mm	20
	Clamping screw		M8
	Tightening torque	N.m	18

Operating characteristics			
Temperature compensation		°C	-20...+70
Tripping thresholds	Conforming to IEC 60947-4-1		
	Alarm	A	1.05 ± 0.06 I <sub>n</sub>
	Trip	A	1.12 ± 0.06 I <sub>n</sub>
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping in 4 s ± 20 % in the event of phase failure

Alarm circuit characteristics			
Rated supply voltage	d.c. supply	V	24
Supply voltage limits		V	17...32
Current consumption	No-load	mA	≤ 5
Switching capacity		mA	0...150
Protection	Short-circuit and overload		Self protected
Voltage drop	Closed state	V	≤ 2.5
Cabling	Flexible cable without cable end	mm <sup>2</sup>	0.5...1.5
Tightening torque		N.m	0.45

<sup>(1)</sup> For other frequencies and for applications involving the use of these overload relays with soft starters or variable speed drives, please consult your Regional Sales Office.

### LR9D5367...LR9D5569, LR9D67, LR9D69 tripping curves



Average operating time related to multiples of the setting current

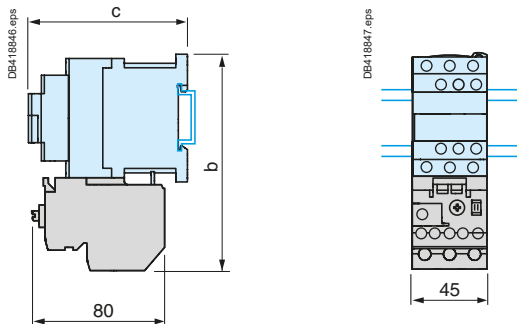
- 1 Cold state curve
- 2 Hot state curve

# TeSys Protect

## Deca Electronic overload relays

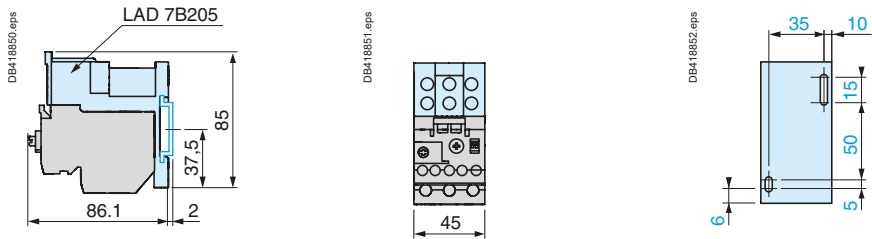
### Dimensions, mounting

#### LR9D01, 02, 08, 32



LC1	D09...D18	D25...D38
b	130	140
c	See pages B8/65 and B8/66	

#### LR9D01...32

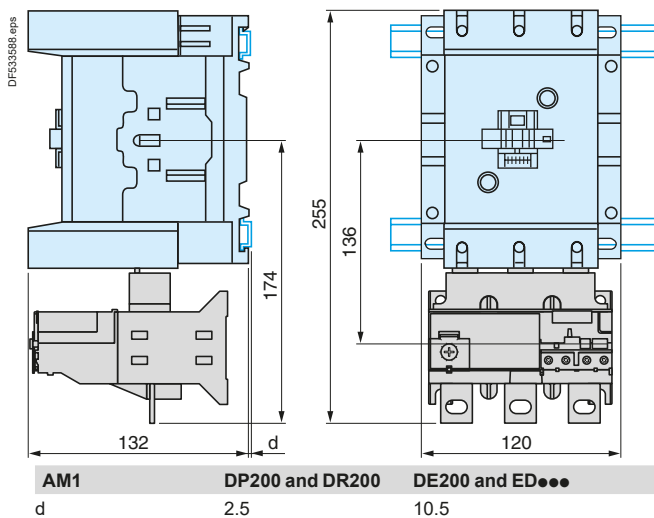


Ref.



#### LR9D53●●, LR9D55●●, LR9D67, LR9D69

Direct mounting beneath contactors LC 1D115 and D150



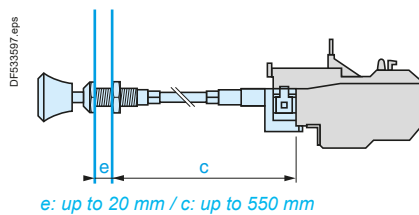
AM1	DP200 and DR200	DE200 and ED●●●
d	2.5	10.5

#### LR9D

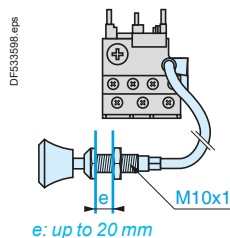
"Reset" by flexible cable

LA7D305 and LAD7305

Mounting with cable straight



Mounting with cable bent



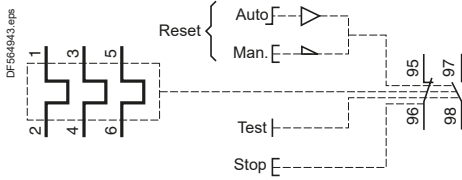
Overload relays

# TeSys Protect

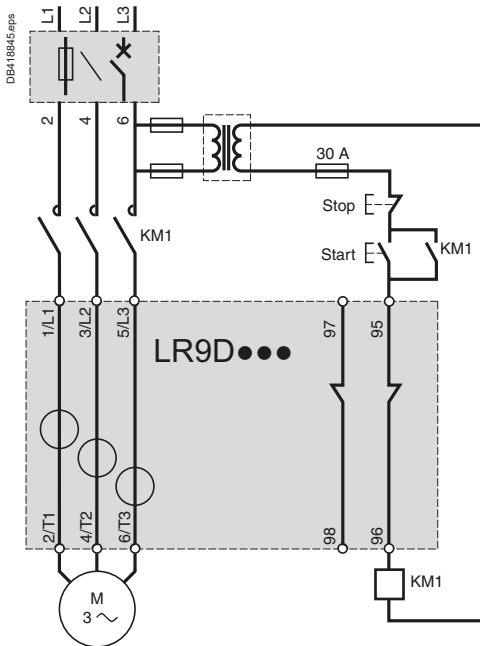
## Deca Electronic overload relays

### Schemes

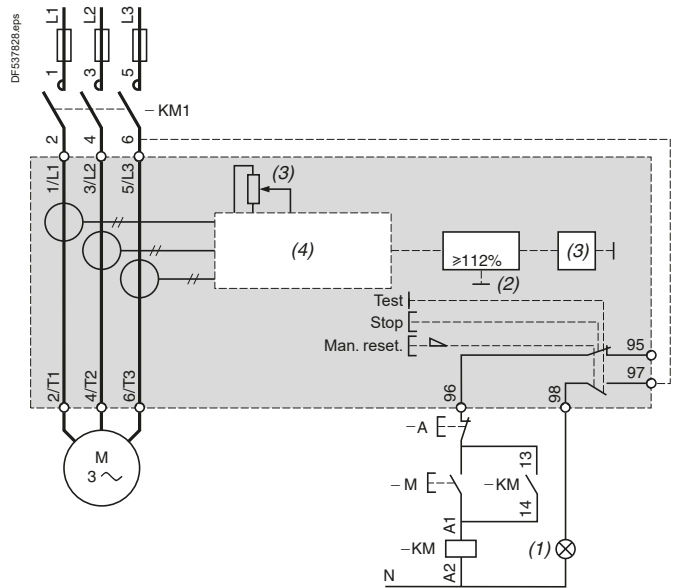
#### LR9D01, 02, 08, 32



#### LR9D01, 02, 08, 32, LR9 D110S



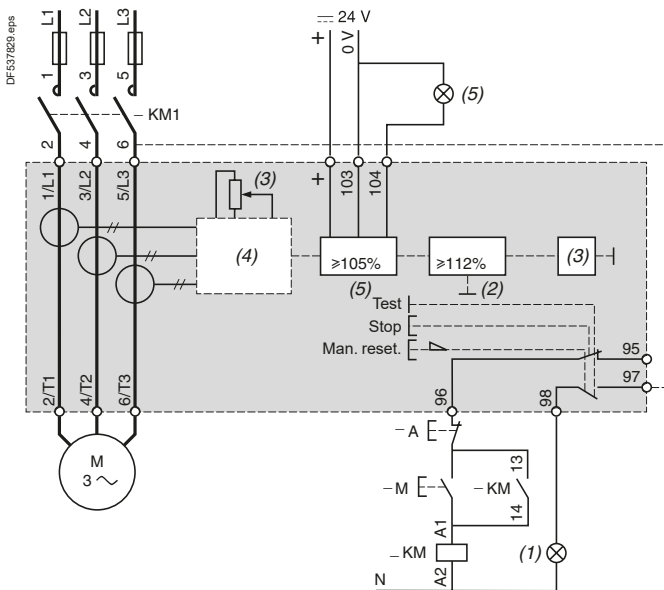
#### LR9D5...



- (1) Tripped.
- (2) Overload.

- (3) Setting current.
- (4) Specialised circuit.

#### LR9D67 and LR9D69



- (1) Tripped.
- (2) Overload.
- (3) Setting current.
- (4) Specialised circuit.
- (5) Alarm.

# TeSys Protect

## Giga Electronic overload relays

### Characteristics

Environment						
Contactor type			LR9G115	LR9G225	LR9G500	LR9G630
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4			
Product certifications			CB Scheme, CCC, cULus, UKCA, ATEX, EU-RO-MR by DNV			
Degree of protection	Conforming to IEC 60529 / VDE 0106		IP 20 on front of relay with accessories LA9G37●●			
Climatic withstand			according to IACS E10			
Ambient air temperature around the device (conforming to IEC 60255-8)	Storage	°C	-55...+80			
	Normal operation	°C	-25...+60			
Maximum operating altitude	Without derating	m	3000			
Net weight		kg	1.2		1.7	2.8
Operating positions without derating	In relation to normal vertical mounting plane		Any position			
Shock resistance 11 ms	Permissible acceleration conforming to IEC 60068-2-7		15 gn			
Vibration resistance 5 to 300 Hz	Permissible acceleration conforming to IEC 60068-2-6		6 gn			
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947-4-1	kV	8			
Surge withstand	Conforming to IEC 61000-4-5	kV	4			
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8 (in air) 6 (in direct mode)			
Resistance to radiated radio-frequency disturbance	Conforming to IEC 61000-4-3	V/m	20			
Resistance to fast transient currents	Conforming to IEC 61000-4-4	kV	4			
Electromagnetic compatibility		EN 50081-1 and 2, EN 50082-2	Conforming			

i

Ref.





Overload relays

# TeSys Protect

## Giga Electronic overload relays

### Characteristics

Power circuit - Electrical characteristics				LR9G115	LR9G225	LR9G500	LR9G630
Relay type							
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1 Over-voltage category III, degree of pollution: 3	V	1000				
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947-1	kV	8				
Rated operational current (Ie)		A	28 to 630				
Short-circuit protection and coordination			See pages A5/7 to A5/8, A5/23 to A5/26 and A5/38 to A5/39.				
Frequency limits of the operating current		Hz	50 / 60				
Power circuit connections	Width of terminal lug	mm	18	18	30	48	
	Clamping screw		M8	M8	M10	M12	
	Tightening torque	N.m	18	18	35	58	

Auxiliary contact electrical characteristics										
Conventional thermal current		A	5							
Short-circuit protection	By gG fuses	A	6							
Connection (Push-in type)	Flexible cable	1 conductor with cable end	mm <sup>2</sup> 	Min.	Max.					
				0.25	2.5					
	Solid cable	2 conductors with Dual Sleeve	mm <sup>2</sup> 	0.5	1					
		1 conductor	mm <sup>2</sup> 	0.2	2.5					
		Stripping length	mm 	10	10					
Rated operational contact power	a.c. supply AC-15	V	24	48	120	240	380	480	500	
		A	4	4	3	1.5	0.95	0.75	0.72	
		VA	96	192	360	360	361	360	360	
	d.c. supply DC-13	V	24	48	125	250	–	–	–	
		A	2	0.7	0.22	0.11	–	–	–	
		W	48	33.6	27.5	27.5	–	–	–	
Maximum operational voltage	a.c., category AC-15	V	500	500	500	500	500	500		
	d.c., category DC-13	V	250	250	250	250	250	250		

# TeSys Protect

## Giga Electronic overload relays

### Characteristics

#### Operating characteristics

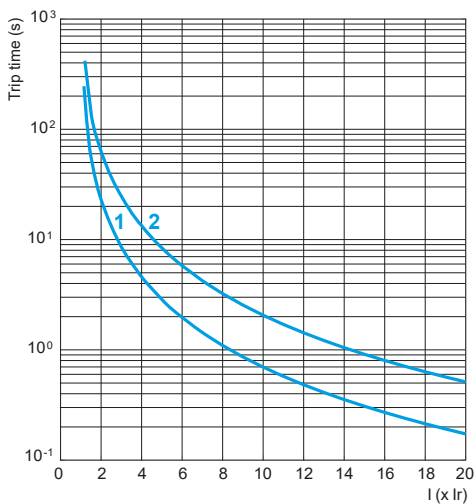
Tripping class	Conforming to IEC 60947-4-1		5E/10E/20E/30E
Operating temperature		°C	-40...+60 <sup>(1)</sup>
Reset			auto and manual
Trip alarm and fault indication			On front of relay
Test function			On front of relay
Tripping thresholds	Conforming to IEC 60947-4-1	Alarm	≥ 90% of permissible thermal state
		Tripping	1.2 ± 0.05 I <sub>r</sub>
Sensitivity to phase loss	Conforming to IEC 60947-4-1		Tripping in 4 s ± 1 s in the event of phase loss
Phase imbalance	Conforming to IEC 60947-1		Tripping in 5 s ± 1 s if imbalance ratio ≥ 40 % according to Annex T5.5
Ground fault	Conforming to IEC 60947-4-1		I <sub>g</sub> = 0.75 I <sub>r</sub>
			Tripping 1 s ± 20 % if I ≥ 1.1 I <sub>g</sub>
Adjustment (nominal motor current)			Setting dial on front of relay (64 settings)
Security sealing			Yes

(1) Adjustment of dial setting(s): -25...+60 °C.

#### LR9G tripping curves

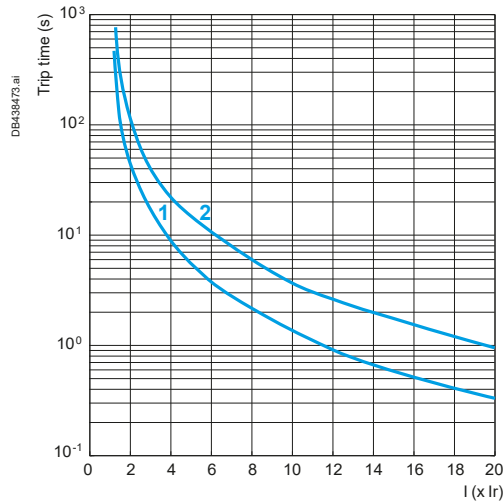
Average operating times depending on multiples of the setting current

##### Class 5E



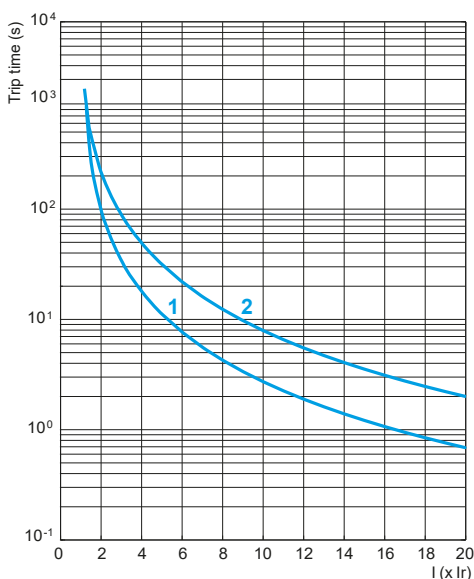
- 1 Hot state
- 2 Cold state

##### Class 10E



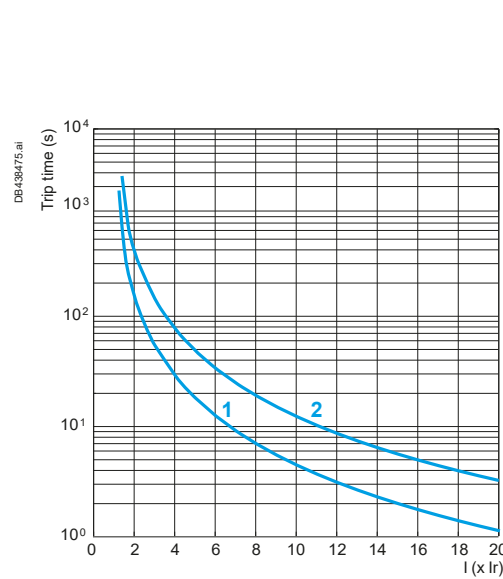
- 1 Hot state
- 2 Cold state

##### Class 20E



- 1 Hot state
- 2 Cold state

##### Class 30E



- 1 Hot state
- 2 Cold state

Introduction:  
pages B11/11 to B11/12

References:  
pages B11/13 to B11/14

Dimensions:  
page B11/47



Overload relays

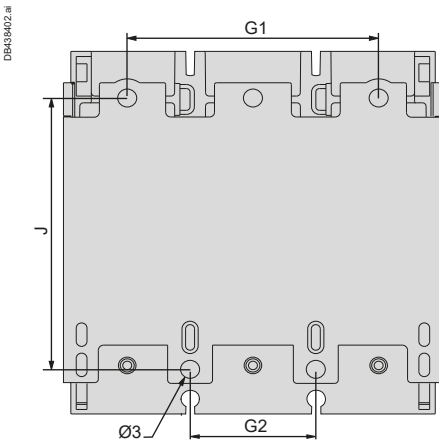
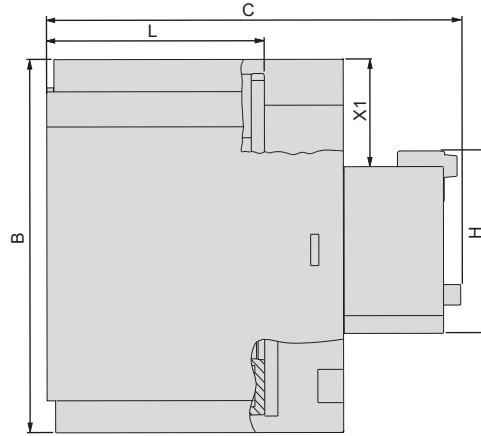
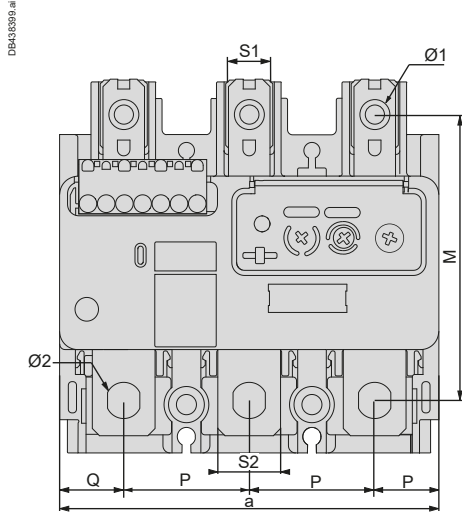
# TeSys Protect

## Giga Electronic overload relays

### Dimensions and diagram

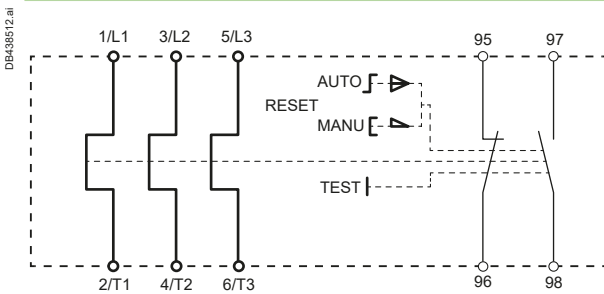
#### Dimensions

##### LR9G115...630



LR9G	115-225	500	630
a	105.7	140	210
b	109.55	115.65	149.45
c	126.2	139.2	185.9
G1	70	119.3	186.2
G2	35	45	70
J	80.1	68.25	86
M	78	83	100
H	52	52	52
L	66	79	107
P	35	45	70
Q	18	25	35
S1	11.5	22.5	22.5
S2	17.5	30.5	50
Ø1	8.3	10.6	13
Ø2	9	10.6	13
Ø3	5.3	5.3	8.5
X1	30	33	50

#### Diagram



# TeSys Protect

## RM1XA Magnetic overload relays

### Characteristics

#### Introduction

The RM1XA electromagnetic relay detects over current peaks in excess of the maximum permissible current value. It is designed for the protection of circuits which are not subject to current peaks (starters, resistors) or for controlling starting peaks on slip ring motors.

It trips instantaneously and is not suitable for frequent operation (12 operating cycles per hour). It can withstand a continuous current equivalent to 1.25 times the minimum setting current.

#### Environment characteristics

Conforming to standards		IEC/EN 60947-4-1
Product certifications		UKCA
Ambient air temperature around the device	°C	Storage: - 60...+ 70 Operation: - 40...+ 60
Maximum operating altitude	m	2000
Operating position		± 15° in relation to normal vertical mounting position

#### Electrical characteristics of power circuit

Maximum rated operational voltage	V	~ or ≡ 600
Frequency limits of the rated operational current	Hz	0...60

#### Electrical characteristics of auxiliary contacts

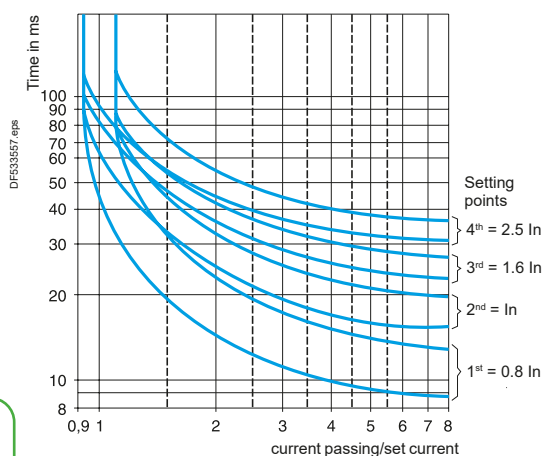
Conventional thermal current	A	10						
Occasional making and breaking capacities	a.c. supply	Voltage	V	48	110	220	380	600
		Power <sup>(1)</sup>	VA	4000	12 000	17 000	22 000	–
	d.c. supply	Voltage	V	48	110	220	440	600
		Power <sup>(2)</sup>	W	240	200	190	180	180

(1) Circuit such as the electromagnet of a contactor -  $\cos \varphi$  inrush: 0.7 and  $\cos \varphi$  sealed: 0.4.

(2) Circuit such as an electromagnet without economy resistor ; time constant varying from 20 ms for 5 W to 200 ms for 100 W or more.

#### Operating times

Operating times: because of the numerous applications for RM1 XA over current relays, it is not possible to give precise operating times. The curves shown are therefore purely indicative.



Overload relays



# TeSys Protect

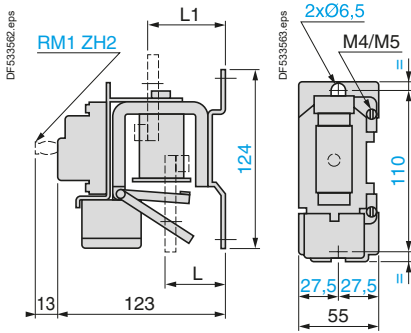
## RM1XA Magnetic overload relays

### Dimensions, schemes

#### Dimensions

RM1XA●●●,  
RM1XA●●●1

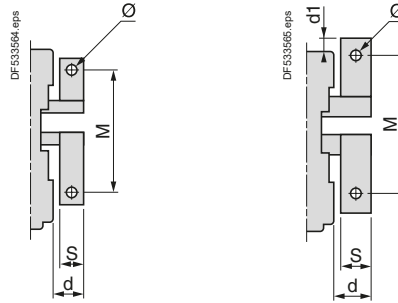
Common side view



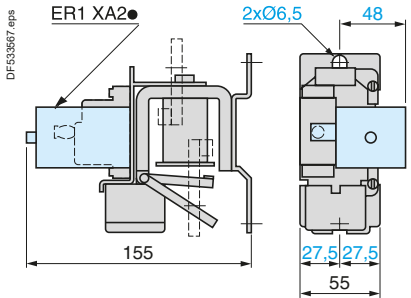
RM1XA001...XA040

RM1XA100, RM1XA315  
and RM1XA351

RM1XA160, RM1XA500



RM1XA●●●1 with electrical reset ER1XA2●

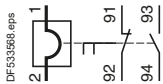


RM1	d	d1	M	L	L1	S	Ø
XA100	20.5	–	87	25	40	20	M8
XA160	27.5	5.5	94	25	40	25	M8
XA315	35.5	–	74	44	55	30	M10
XA500	40.5	7	84	44	55	40	M10

#### Schemes

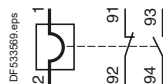
RM1XA●●●1

Latching



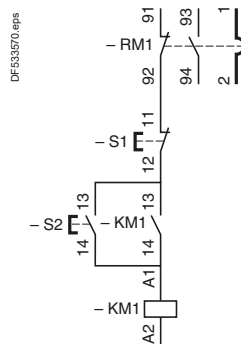
RM1XA●●●

Non-latching

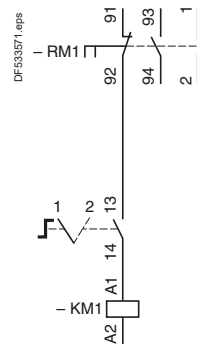


RM1XA

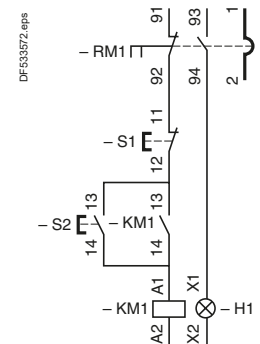
3-wire control (without  
mechanical latching)



2-wire control (with  
mechanical latching)



3-wire control  
(with "trip" signal)





### Application

LT3S thermistor protection units continuously monitor the temperature of the machines to be protected (motors, generators, etc.) by means of PTC thermistor probes embedded in the machine windings.

If the nominal operating temperature of the probes is reached, they convert the rapid increase in resistance into a switching function which can be used to switch off the machine or signal a fault (see paragraph relating to thermistor probes below).

Accidental breaks in the supply circuits of the thermistors are also detected.

### Electromagnetic compatibility

Conforming to "Electromagnetic compatibility" directive.  
 Conforming to standard IEC/EN 61000-6-2.

Resistance to electrostatic discharge (conforming to IEC 61000-4-2)	<b>Level 3</b>
Resistance to fast transients (conforming to IEC 61000-4-4)	<b>Level 3</b>
Susceptibility to electromagnetic fields (conforming to IEC 61000-4-3)	<b>Level 3</b>
Surge resistance 1.2/50 - 8/20 (conforming to IEC 61000-4.5)	<b>Level 4</b>
Immunity to microbreaks and voltage drops (IEC 61000-4-11)	
Suitable for use with variable speed controllers	

### Thermistor probes

Range of most commonly used PTC thermistor probes:  
 from 90 to 160 °C, in steps of 10 °C.

Curve  $R = f(\theta)$ , characteristic of a PTC thermistor probe, is defined by standard IEC 60947-8.

The choice of PTC thermistor probe to be incorporated in the motor winding depends on the insulation class, the type of motor and the most suitable location for the probe. This choice is usually made by the motor manufacturer or the motor rewinder, who have all the necessary information.

### Application example

Insulation class of rotating machines conforming to IEC 60034-11 (S1 duty)	NOT Nominal operating temperature	Temperature at which rapid increase in resistance occurs	
	°C	Probes used for Alarm °C	Fault °C
A	100	100	100
B	110	110	120
E	120	120	130
F	140	140	150
H	160	160	170

(1) PTC: Positive Temperature Coefficient.

# TeSys Protect

## LT3 Thermal protection units

### Characteristics

Protection unit type	LT3SE	LT3SA	LT3SM
Reset method	Automatic	Automatic	Manual/Automatic
Fault indication	–	On front panel of unit and remote	On front panel of unit and remote
Fault test	–	–	By pushbutton on front panel of unit
Probe interchangeability	Label "Mark A" to IEC 60034-11	Label "Mark A" to IEC 60034-11	Label "Mark A" to IEC 60034-11

### Environment

Conforming to standards		IEC 60947-8	IEC 60947-8	IEC 60947-8
Product certifications		UL, CSA		
Degree of protection		IP 20 conforming to IEC 60529		
CE marking		LT3S● protection units have been designed to comply with the basic recommendations of European directives relating to low voltage and EMC. Therefore LT3S● products bear the European Community CE mark.		
Ambient air temperature around the device	Storage	°C	- 40...+ 85	
	Conforming to IEC 60068-2-1 and 2-2			
	Operation	°C	- 25...+ 60	
Maximum operating altitude	Without derating		2000 m	
	With derating		Up to 3000 m, the maximum permissible ambient air temperature for operation (60 °C) must be reduced by 5 °C per additional 500 m above 1500 m	
Vibration resistance	Conforming to IEC 60068-2-6		2.5 gn (2...25 Hz) 1 gn (25...150 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		5 gn (11 ms)	
Operating positions without derating	In relation to normal vertical mounting plane		Any position	

### Power supply circuit characteristics

Rated control circuit voltage (Uc)	~ 50/60 Hz	Single voltage	V	115 or 230	–	400
		Dual voltage	V	–	115/230	115/230, 24/48
	0.85...1.1 Uc	Multivoltage	V	–	24...230	24...230
		–	Single voltage	V	24	–
	0.8...1.25 Uc	Dual voltage	V	–	24/48	24/48
		0.85...1.1 Uc	Multivoltage	V	–	24...230
Average consumption	Sealed	~	VA	< 2.5	< 2.5	< 2.5 except (400 V: 2.7)
		–	W	< 1	< 1	< 1

(1) PTC: Positive Temperature Coefficient.

Ref.



Overload relays

# TeSys Protect

## LT3 Thermal protection units

### Characteristics

#### Control circuit characteristics

Protection unit type			LT3SE	LT3SA	LT3SM	
Resistance	Tripping	Ω	2700...3100	2700...3100	2700...3100	
	Reset	Ω	1500...1650	1500...1650	1500...1650	
Maximum number of probes fitted in series <sup>(2)</sup>	Probes ≤ 250 Ω at 25°		6	6	6	
Voltage at terminals in the thermistor circuit	Normal operation (R = 1500 Ω)	V	< 2.5	< 2.5	< 2.5	
	Conforming to IEC 60034-11 (R = 4000 Ω)	V	< 7.5	< 7.5	< 7.5	
Thermistor probe short-circuit detection	Operating threshold	Ω	–	< 20	< 20	
Connection of probes to the LT3	Distance	m	300	400	500	1000 <sup>(3)</sup>
	Minimum c.s.a. of conductors	mm <sup>2</sup>	0.75	1	1.5	2.5

#### Electrical characteristics of the output relay contacts

Contact type	Single voltage or dual voltage		1 N/C	1 N/C + 1 N/O	1 N/C + 1 N/O
	Multivoltage		–	2 C/O	2 C/O
Rated insulation voltage		V	~ 500		
Maximum operational voltage		V	~ 250 (~ 400 V for <b>LT3SM00V</b> )		
Rated impulse withstand voltage	Uimp	kV	2.5		
Conventional thermal current		A	5		
Operational power	At 220 V	VA	100 for 0.5 million operating cycles		
Breaking capacity	In cat. AC-15	120 V	A	6	
		250 V	A	3	
	In DC-13	24 V	A	2	
Cabling (cage type connector) for flexible or solid cable	Without cable end	mm <sup>2</sup>	2 x 1...1 x 2.5		
	With cable end	mm <sup>2</sup>	1 x 0.75...2 x 2.5		
Tightening torque		N.m	0.8		

#### Thermistor probe characteristics

Probe type			DA1TT●●●	DA1TS●●●
Conforming to standards			IEC 60034-11. Mark A	
Resistance	At 25 °C	Ω	3 x 250 in series	250
Rated operational voltage (Ue)	Per probe	V	--- 2.5 V max	--- 2.5 V max
Rated insulation voltage (Ui)		kV	2.5	1
Insulation			Reinforced	Reinforced
Length of connecting cables	Between probes	mm	250	–
	Between probe and motor terminal plate	m	1	1

(1) PTC: Positive Temperature Coefficient.

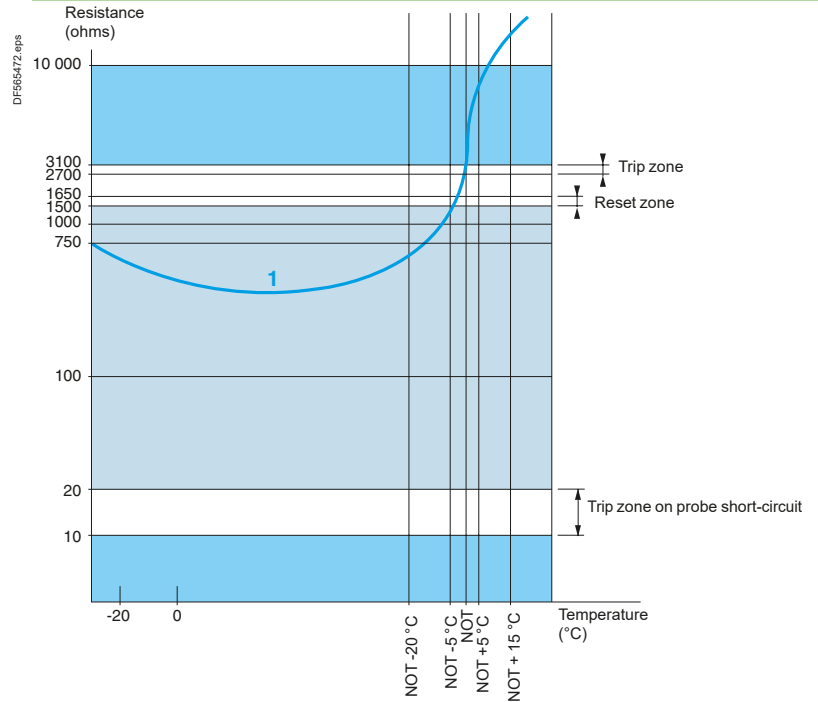
(2) Provided that the total resistance of the probe circuit is less than 1500 Ω at 20 °C.

(3) For distances greater than 500 m take cabling precautions (twisted shielded pairs).

**LT3S protection unit/thermistor probe combination**

Guaranteed operating zones: examples with 3 probes type DA1TT●●● (250 Ω at 25 °C) in series, conforming to standard IEC 60034-11, Mark A.

**LT3SE, LT3SA, LT3SM protection units**



1 3 probes type DA1TT●●● (250 Ω at 25 °C) in series.

NOT: Nominal Operating Temperature

- Protection unit tripped.
- Protection unit reset.

(1) PTC: Positive Temperature Coefficient.



# TeSys Protect

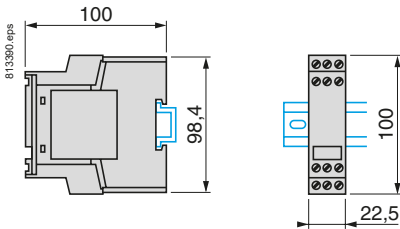
## LT3 Thermal protection units

### Dimensions, schemes, setting-up

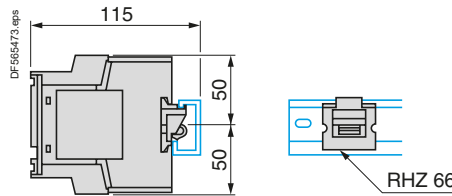
#### Dimensions

LT3SE, SA, SM

Mounting on  $\perp$  rail AM1 DP200



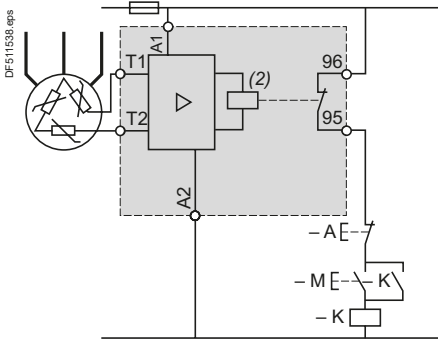
Mounting on 1  $\perp$  rail  
(with adapter RHZ 66)



#### Schemes for "no fault" operation

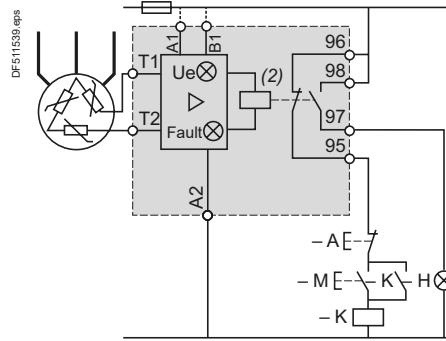
LT3SE00BD (24 V DC), LT3SE00F (115 V AC),  
LT3SE00M (230 V AC)

Without fault memory

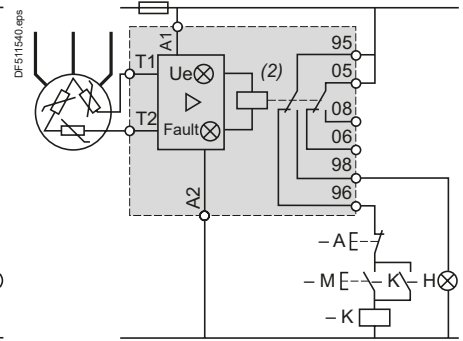


LT3SA00ED (24/48 V DC),  
LT3SA00M (115/230 V AC)

Refer to chart for use of A1/B1 terminal according  
power supply

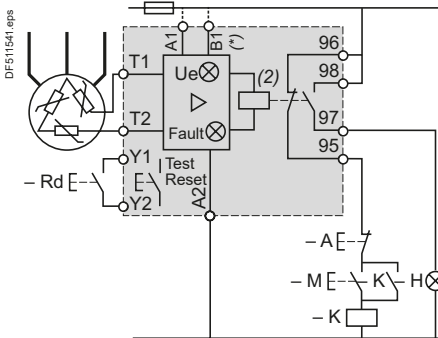


LT3SA00MW (24 to 230V AC/DC)

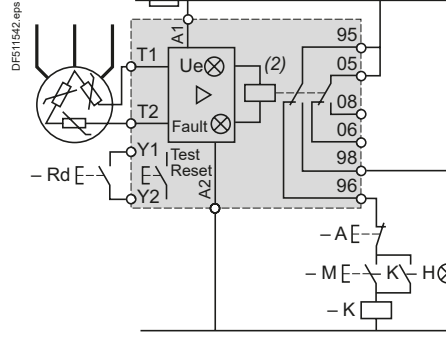


LT3SM00E (24/48V AC), LT3SM00ED (24/48V DC),  
LT3SM00M (115/230 V AC), LT3SM00V (400V AC)

Refer to chart for A1 - A2 - B1 supply terminals to be used



LT3SM00MW (24 to 230 V AC/DC)



(\*) no B1 terminal on LT3SM00V (400V AC).

LT3SA, LT3SM - dual voltage and 400 V -  
power terminal assignment

	24 V DC	48 V DC
LT3SA00ED, LT3SM00ED	B1(+) A2 (0V)	A1(+) A2 (0V)
LT3SA00M, LT3SM00M	115 V AC	230 V AC
Terminals	A1-B1	A1-A2
LT3SA00M, LT3SM00M	-	400 V AC
Terminals	-	A1-A2

#### Setting-up

##### Cabling

It is inadvisable to use the same multi-core cable for the thermistor probe circuit and the power circuit. This is especially important for long cable runs. If it is impossible to comply with the above recommendation, a pair of twisted conductors must be used for the thermistor probe circuit.

##### Testing the insulation of the line connecting the thermistors to the LT3S unit

Before carrying out this test, short-circuit all the terminals of the LT3S protection unit.

Measure the insulation value between these terminals and earth using a megger or a flash tester, progressively increasing the voltage to the value defined by the standards.

##### Checking the PTC thermistor probes for correct operation

With the machine stopped, in the cold state and after having taken all the necessary safety precautions:

- disconnect the line linking the thermistors to the LT3S protection unit, at the terminals of the machine being protected: motor, etc.,
- using an ohmmeter with a voltage rating less than or equal to 2.5 V, measure the resistance of the probe circuit at the machine terminals,
- depending on the number and type of thermistors connected in series, check that their resistance value at 25 °C is correct.

Example: motor fitted with 3 PTC thermistor probes with a resistance  $\leq 250 \Omega$  at 25 °C.

Any value higher than  $250 \times 3 = 750 \Omega$  indicates a problem.

(1) PTC: Positive Temperature Coefficient.

(2) Relay energised: the contacts are shown in the "operating" position.

References:

pages B11/17 and B11/18

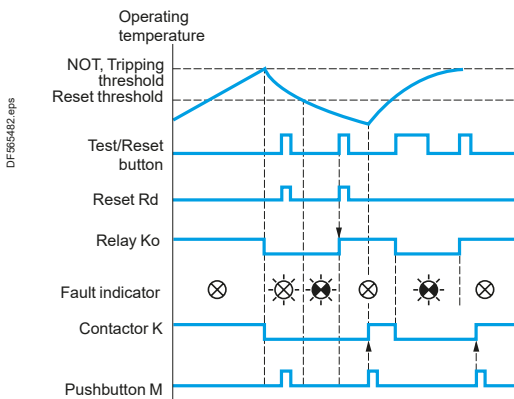
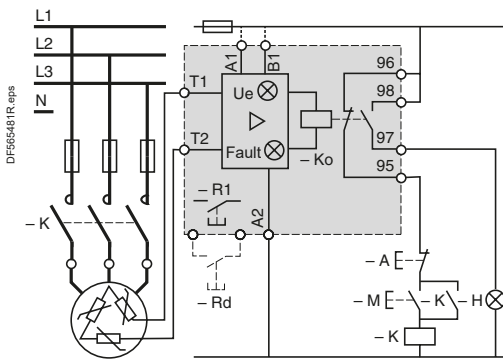
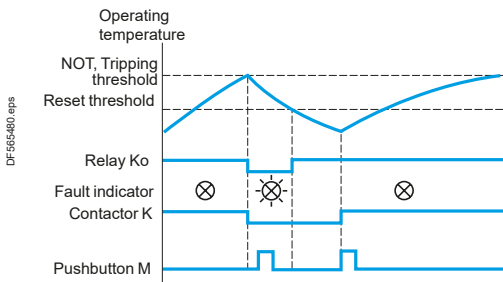
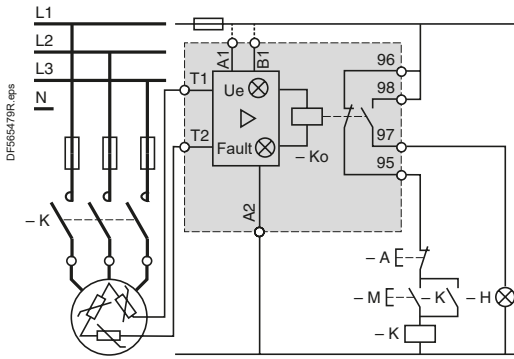
Characteristics:

pages B11/50 to B11/53

# TeSys Protect

## LT3 Thermal protection units

### Schemes, operation



### LT3SA protection units

#### Starting

The LT3SA is normally energised and its internal relay is in the pre-energised position. The motor is started by operating pushbutton M automatically held in by K (3-wire control circuit).

#### Thermal fault

The strong increase in resistance of the PTC probes at the moment their temperature reaches the nominal operating temperature (NOT) is detected by the LT3SA unit and causes the relay to drop out; indicator H comes on, as does the built-in indicator on unit LT3SA.

Contactor K drops out and pressing button M has no effect.

#### Reset

As the motor cools, it reaches the reset threshold, 2 to 3 °C below the nominal operating temperature.

The relay resets and the motor can be started by pressing button M.

### LT3SM protection units

Operation is very similar to that described above, except for the following:

#### Reset

After tripping on thermal fault and cooling to the reset threshold, the Test/RESET button on the unit (R1) or a remote reset button (Rd) must be pressed to energise the relay.

The fault is therefore memorised, even though the temperature of the probes has dropped to well below the reset threshold.

#### Signalling circuit

As the relay is fitted with 2 separate contacts, the signalling voltage may be different from the contactor control voltage.

#### Test

Pressing the Test/RESET button simulates a fault and causes the relay to drop out: the FAULT indicator comes on, as does the remote signalling indicator. The unit is reset by pressing the Test/RESET button again.

(1) PTC: Positive Temperature Coefficient.

# TeSys Protect

## LR97, LT47 Electronic over current relays

### Characteristics

#### Introduction



LR97D



LT47

LR97D and LT47 electronic over current relays have been developed to satisfy machine protection requirements. These relays have definite time characteristics: current threshold and time based function. They are particularly recommended for providing mechanical protection on machines with high resistive torque, high inertia and with strong probability of jamming under steady state conditions. They can be used for motor protection in the case of long starting times or frequent starting. The LR97D relay also incorporates two fixed time protection functions, one of 0.5 seconds against locked rotor and one of 3 seconds against phase failure. LR97D and LT47 can be used to provide mechanical shock protection. In this case, setting the O-Time knob to minimum will ensure tripping in 0.3 seconds. LR97D is designed to be directly connected downstream of the Deca contactor. LT47 provides two current transformers, to be crossed by the motor power cables.

#### Applications

LR97D and LT47 relays are particularly suitable for the following machines:

- Monitoring function for excessively long starting time on machines with a risk of difficult starting:
  - Machines with high resistive torque, high inertia machines.
  - Monitoring of machines during steady state operation: overtorque detection function
  - Machines with strong risk of jamming, machines with torque build-up over time,
  - Mechanical failure monitoring,
  - Faster detection of malfunctioning on machines where the motor is oversized in relation to its thermal protection  $I^2t$ .
- Motor protection for specific applications:
  - Machines with long starting times,
  - Machines with high on-load factor: more than 30 to 50 starts/hour,
  - Machine with fluctuating load from a steady state, where the thermal image of a thermal overload relay (thermal memory) is unsuitable in relation to actual overheating of the motor.

#### Examples of machines:

- Conveyors, crushers and mixers,
- Fans, pumps and compressors,
- Centrifuges and spin-dryers,
- Presses, shearing machines, saws, broaching machines, sanders and lifting hoists.

#### Operation

Because of their two separate time settings, LR97D and LT47 relays can be combined with the motor-starter function:

D-Time: starting time, O-Time: trip time during steady state.

The D-Time function is only available during the motor starting phase. During this phase the overload detection function is inhibited in order to allow starting. Under steady state conditions, when the motor current is greater than the setting current due to an overload or single-phasing, the red LED lights up and the internal relay switches its contact after a time preset by the O-Time knob.

The red LED stays on, indicating that the relay has tripped.

The relays are simple to set, in 5 easy steps:

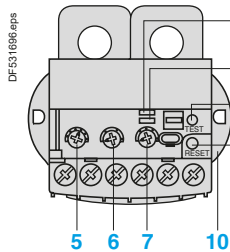
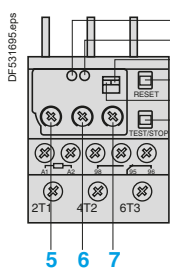
- Adjust the 3 knobs to maximum (Load, D-Time and O-Time),
- Adjust the D-Time knob to the value corresponding to the motor starting time.
- When the motor reaches steady state, adjust the Load knob (turn the knob counter-clockwise until the red LED starts to flicker).
- Slowly turn the Load knob clockwise until the LED goes out.
- Set the required tripping time, using the O-Time knob.

#### Description

##### Description

LR97D●●●●●

LT47●●●●●



- 1 RESET knob
- 2 TEST/STOP knob
- 3 Ready/Run Indicator
- 4 Relay tripped indicator
- 5 Current setting
- 6 Adjustment of starting time
- 7 Adjustment of tripping time
- 8 Manual/Auto adjustment
- 9 Single-phase/3-phase adjustment
- 10 Retractable fixing lugs

##### Status signalling

LR97D●●●●●

LT47●●●●●

To assist fast diagnostics, two LEDs (one green and one red) allow signalling of the operating status:

Status	LED signal	
	Green LED	Red LED
Voltage	On	Off
Starting		
Steady state	On	Off
Overload	On	
Trip	Over-current	Off
	Rotor locked	Off
	Phase failure	L1
L2		Off
L3		Off

Condition	LED signal	
	Green LED	Red LED
Voltage	On	Off
Starting		
Steady state	On	Off
Overload	On	
Trip	Off	On

Overload relays



# TeSys Protect

## LR97, LT47 Electronic over current relays

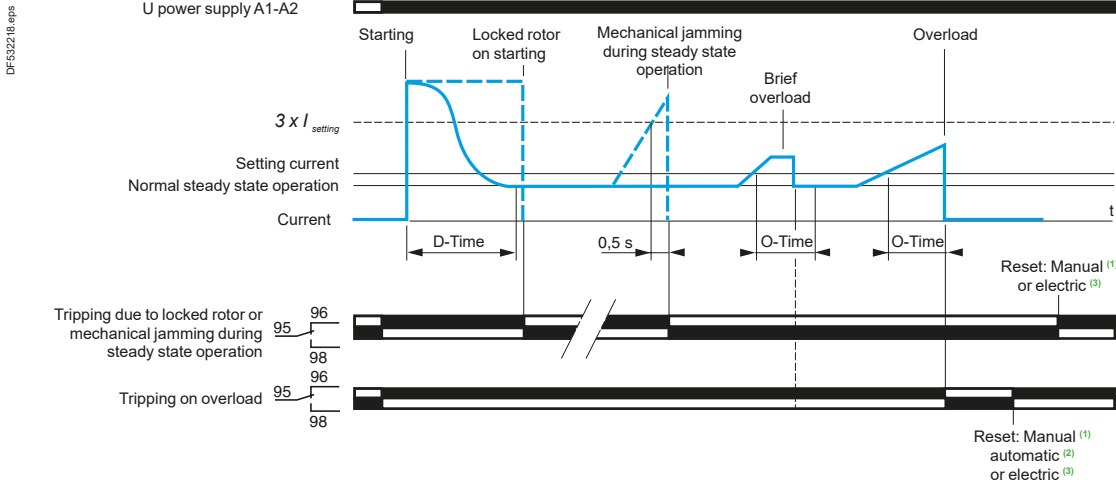
### Characteristics

#### Curves

##### LR97D

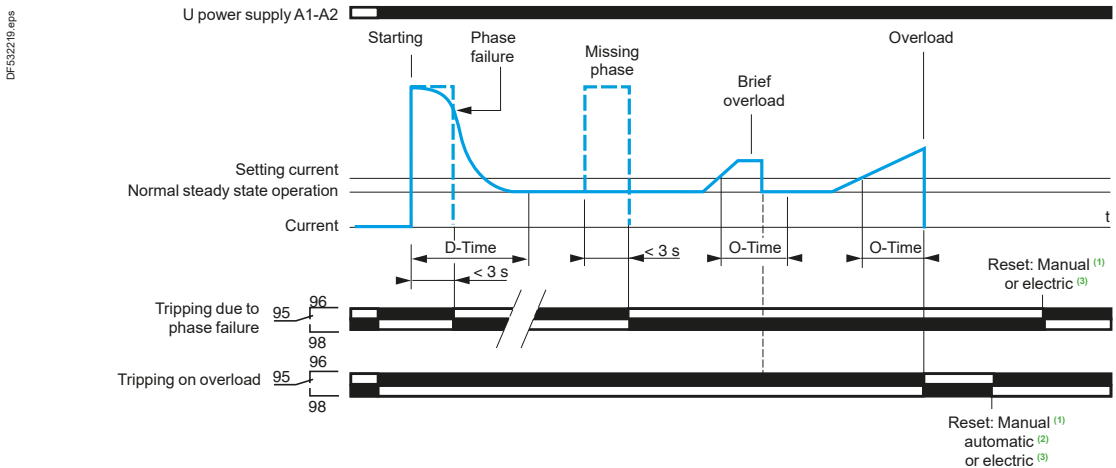
##### Overload protection

##### Protection against locked rotor and mechanical jamming under steady state conditions

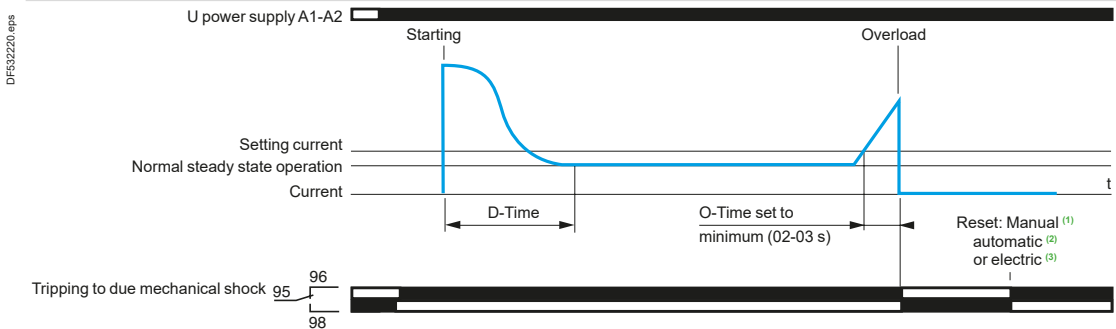


##### Overload protection

##### Protection against phase failure during starting and during steady state operation



##### Mechanical shock protection



(1) By Reset button.

(2) Fixed time of 120 s. Selectable by dip switch. Function not available in the event of tripping due to locked rotor/mechanical jamming ( $I > 3 \times I_{setting}$ ) or phase failure.

(3) By brief interruption of power supply, minimum 0.1 s.

# TeSys Protect

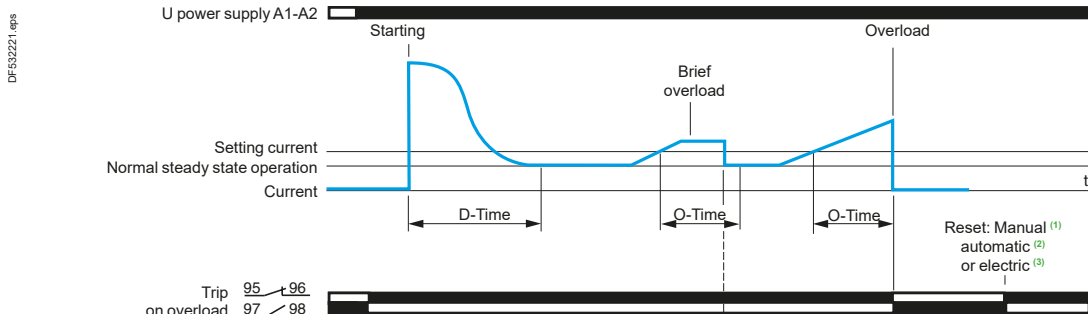
## LR97, LT47 Electronic over current relays

### Characteristics

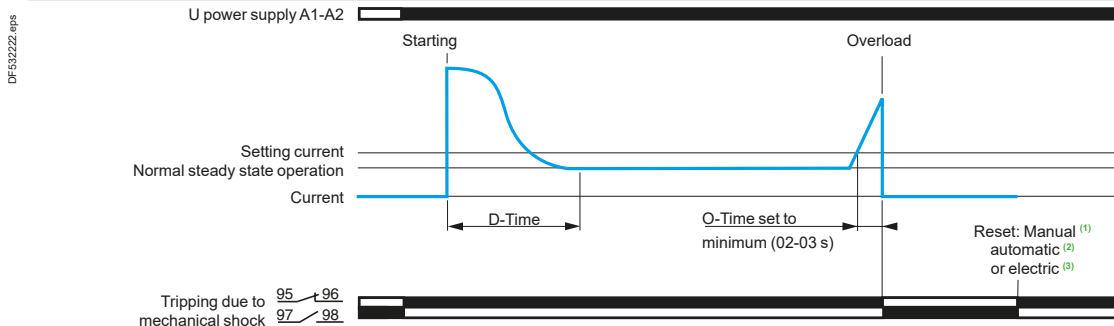
#### Curves

##### LT47

##### Overload protection



##### Mechanical shock protection



- (1) By Reset button.
- (2) Only available on version with automatic reset (LT47●●●●A). Time adjustable from 1 to 120 s with the R-Time knob.
- (3) By brief interruption of power supply, minimum 0.1 s.

#### Characteristics

##### Environment

Relay type		LR97D●●●●●	LT47●●●●●
Conforming to standards		IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5	IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5
Product certifications		UL, CSA, CCC, EAC	UL, CSA, CCC, EAC
Degree of protection	Conforming to IEC 60529	IP 20 (front face)	IP 20 (front face)
Ambient air temperature around the device	Storage	°C - 30...+ 80	- 30...+ 80
	Normal operation without derating (IEC 60947-4-1)	°C - 25...+ 60	- 25...+ 60
Maximum operating altitude	m	2000	2000
Operating positions without derating	In relation to normal vertical mounting plane	Any position	Any position
Shock resistance	Permissible acceleration conforming to IEC 60068-2-27	15 gn - 11 ms	15 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6	4 gn	4 gn
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV 2	2
Surge withstand	Conforming to IEC 61000-4-5	kV 6	6
Resistance to electrostatic discharge	In open air	kV 8 (level 3)	8 (level 3)
	In direct mode	kV 6 (level 3)	6 (level 3)
Immunity to radiated radio-frequency disturbance		V/m 10 (level 3)	10 (level 3)
Immunity to fast transient currents		kV 2	2
Conducted emissions	Conforming to EN 55011	Class A	Class A
Conducted HF disturbance	Conforming to EN 61000-4-6	V 10	10



Overload relays

# TeSys Protect

## LR97, LT47 Electronic over current relays

### Characteristics

Characteristics											
Auxiliary contact characteristics											
Relay type		LR97D●●●●●				LT47●●●●●					
Contact type		1 NO/NC				1 N/O + 1N/C					
Conventional thermal current		<b>A</b>	3				3				
Maximum hold consumption of controlled contactor coils (occasional operating cycles of contact 95-96)		Conforming to IEC 60947	<b>V</b>	~ 24	~ 48	~ 110	~ 220	~ 24	~ 48	~ 110	~ 220
			<b>VA</b>	70	140	360	360	70	140	360	360
			<b>V</b>	--- 24	--- 48	--- 110	--- 220	--- 24	--- 48	--- 110	--- 220
			<b>W</b>	55	55	28	28	55	55	28	28
Short-circuit protection		By gG, BS fuses. Maximum rating or GB2 circuit breaker	<b>A</b>	3				3			
Connection by cable or lug-clamps											
Flexible cable without cable end	1 or 2 conductors	Min.	<b>mm<sup>2</sup></b>	1 x 0.75				1 x 1			
		Max.	<b>mm<sup>2</sup></b>	2 x 2.5				2 x 2.5			
Flexible cable with cable end	1 or 2 conductors	Min.	<b>mm<sup>2</sup></b>	1 x 0.34				1 x 1			
		Max.	<b>mm<sup>2</sup></b>	1 x 1.5 + 1 x 2.5				2 x 2.5			
External Ø of lugs			<b>mm</b>	7				7			
Ø of screw			<b>mm</b>	M3				M3.5			
Tightening torque			<b>N.m</b>	0.6...1.2				0.8...1.7			
Electrical characteristics of power circuit											
Relay type				LR97D015●● to LR97D25●●		LR97D38●●		LT47●●●●●			
Setting range		Depending on model		<b>A</b>	0.3...38		0.5...60				
Tripping class					Adjustable		Adjustable				
Rated insulation voltage (Ui)		Conforming to IEC 60947-4-1		<b>V</b>	690		690				
		Conforming to UL, CSA		<b>V</b>	600		600				
Rated impulse withstand voltage (Uimp)				<b>kV</b>	6		6				
Frequency limits		Of the operating current		<b>Hz</b>	50...60		50...60				
Connection by cable or lug-clamps											
Flexible cable without cable end	1 conductor	Min.	<b>mm<sup>2</sup></b>	1.5	2.5	-					
		Max.	<b>mm<sup>2</sup></b>	10	10	-					
Flexible cable with cable end	1 conductor	Min.	<b>mm<sup>2</sup></b>	1	1	-					
		Max.	<b>mm<sup>2</sup></b>	4	6	-					
External Ø of lugs			<b>mm</b>	10	12	-					
Ø of screw			<b>mm</b>	M4	M4	-					
Tightening torque			<b>N.m</b>	2	2	-					
Operating characteristics											
Relay type				LR97D●●●●●		LT47●●●●S		LT47●●●●A			
Adjustment		Current		<b>A</b>	"Load" knob		"Load" knob		"Load" knob		
		Time		D-time knob	<b>s</b>	0.5...30		0.5...30		-	
				O-time knob	<b>s</b>	0.2/0.3...10		0.2/0.3...10		0.2/0.3...30	
				R-time knob	<b>s</b>	-		-		1...120	
Reset		Manual			Reset button		Reset button		Reset button		
		Automatic			120 s fixed		-		R-time knob: 1-120 s		
		Electrical			By interruption of power supply (minimum 0.1 s)		By interruption of power supply (minimum 0.1 s)		By interruption of power supply (minimum 0.1 s)		
Protection functions											
Overload $I_{max} > I_{setting}$		Tripping			<b>On starting</b>	<b>Steady state</b>	<b>On starting</b>	<b>Steady state</b>	-		
				Inhibited during D-time	After O-time	Inhibited during D-time	After O-time	After O-time			
				After D-time	< 0.5 s	Inhibited during D-time	After O-time	After O-time			
Locked rotor, mechanical jamming $I > 3 \times I_{setting}$		Tripping			< 3 s	< 3 s	Inhibited during D-time	After O-time	After O-time		
Sensitivity to phase failure		Tripping			< 3 s	< 3 s	Inhibited during D-time	After O-time	After O-time		
Status and fault signalling (see table page 24517/2)											
TEST/STOP function		Test			No load		No load		No load		
		Stop			Under load		Under load		Under load		
Sealing					Yes		Yes		Yes		



Overload relays

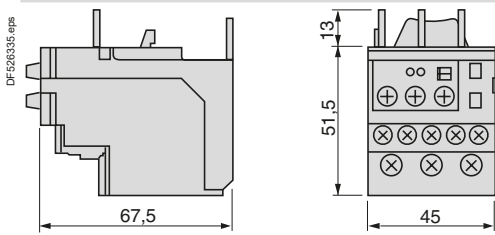
# TeSys Protect

## LR97, LT47 Electronic over current relays

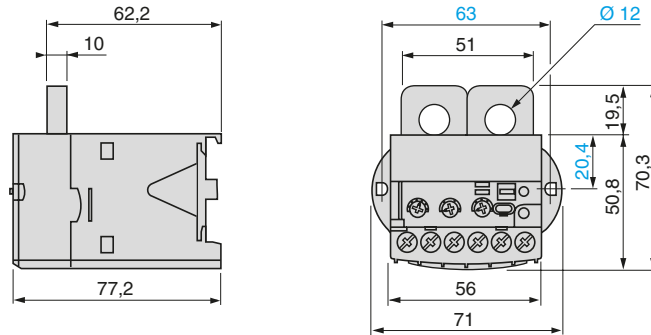
### Dimensions, mounting, schemes

#### Dimensions

LR97D●●●●



LT47●●●●

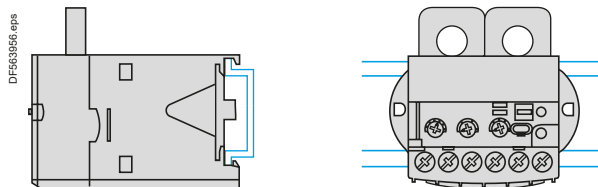
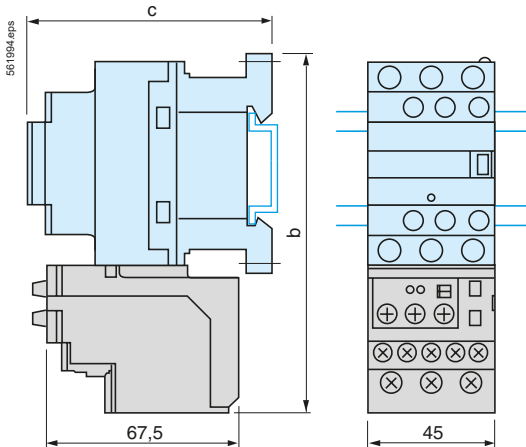


#### Mounting

LR97D●●●●

Direct mounting beneath the contactor

LT47●●●●

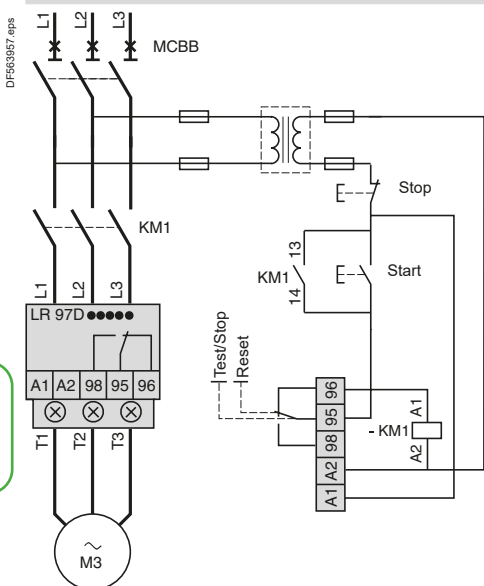


LC1	D09...D18	D25...D38
b	123	137
c	See pages B8/76 and B8/77	

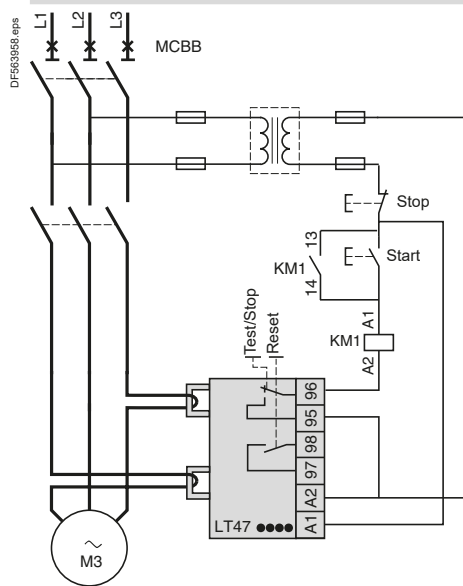
Note: Can be mounted on  $\perp$  rail.

#### Schemes

LR97D●●●●



LT47●●●●



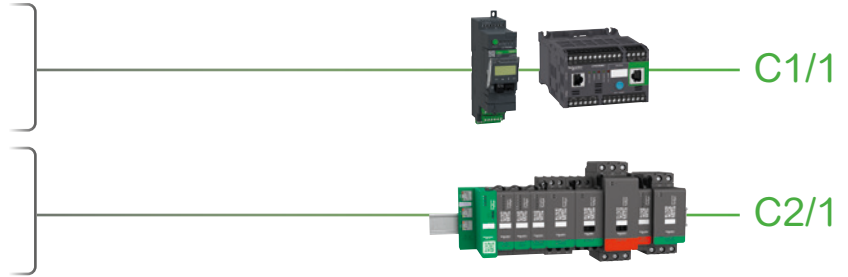
# Part C

## COMPONENTS FOR ADVANCED SOLUTIONS

**TeSys Control**  
Ultra motor management controller

**TeSys Active**  
T motor management system

**TeSys Active**  
Island motor starters



Motor  
management  
devices

Control and  
monitoring  
island



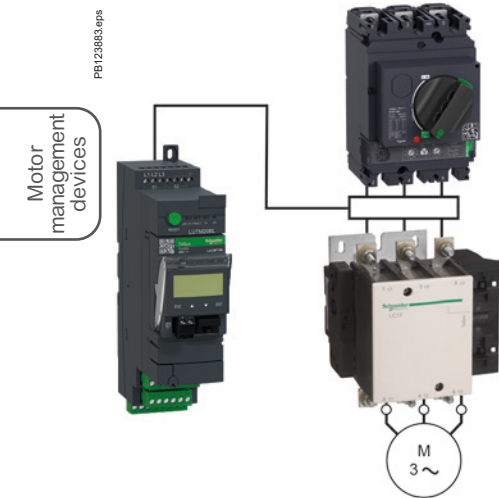
TeSys Ultra Motor management controller		
Type of product	Range	Pages
TeSys Ultra Motor management controller		C1/2
Current transformers for TeSys Ultra Motor management controller	From 30 to 800 A	C1/2
Type 2 coordination table for assemblies of: ■ circuit breaker + contactor + TeSys Ultra Motor management controller + current transformer ■ fuses + contactor + TeSys Ultra Motor management controller + current transformer		C1/3
TeSys T Motor management system		
TeSys T Motor management controllers with Modbus, or CANopen, Devicenet, Profibus, Ethernet TCP/IP communication port		C1/4
Extension modules for TeSys T Motor management system		C1/5
HMI terminal and cables		C1/5
Accessories		C1/6
Coordination tables: ■ fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers ■ magnetic circuit breaker + contactor + TeSys T + current transformers		C1/8

Motor  
management  
devices

# TeSys Control

## Ultra Motor management controller

### Product references



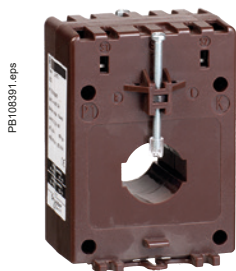
LUTM + LUCMT1BL + LUTC●●



LUTM10BL



LUCMT1BL



LUTC●●●●

### References

#### Control bases (auxiliary supply voltage $\approx$ 24 V)

Connection	Control	For use with contactor	Reference	Weight kg
Screws	Screws	LC1D●●	LUTM10BL	0.800
		LC1F●●●	LUTM20BL	0.800

#### Control units

Description	Class	For motor type	Setting range	Reference	Weight kg
Advanced	10	3-phase	0.35...1.05	LUCBT1BL	0.140
	20	3-phase	0.35...1.05	LUCDT1BL	0.140
Multifunction	5 to 30	3-phase	0.35...1.05	LUCMT1BL	0.175

#### Current transformers

Operating current		Reference	Weight kg
Primary	Secondary		
50	1	LUTC0501	0.330
100	1	LUTC1001	0.450
200	1	LUTC2001	0.590
400	1	LUTC4001	0.870
800	1	LUTC8001	1.210

#### Function modules and communication modules

The Ultra Motor management controller is compatible with the modules listed below:

- Thermal overload alarm module LUFW10,
- Motor load indication module LUFV2,
- Communication modules:
  - Modbus (LULC033),
  - CANopen (LULC08),
  - DeviceNet (LULC09),
  - Advantys STB (LULC15).

**Note:** Communication modules **LULC07** (Profibus DP), **ASILUFC5** and **ASILUFC51** (AS-Interface) are not compatible with the Ultra controller. Module **LUFW10** is only compatible with control units **LUCBT1BL** and **LUCDT1BL**.



# TeSys Control

## Ultra Motor management controller

### Product references

#### Combinations providing type 2 coordination

##### With Circuit breaker

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 400/415 V		Circuit breaker			Contactor	Ultra controller	Current transformers
PkW	IeA	Reference	Rating A	I <sub>rm</sub> <sup>(1)</sup> A	Reference <sup>(2)</sup>	Reference	Reference
18.5	35	GV3L40	40	560	LC1D50A	LUTM + LUC●	3 x LUTC0501
22	41	GV3L50	50	700	LC1D50A	LUTM + LUC●	3 x LUTC1001
30	55	GV3L65	65	910	LC1D65A	LUTM + LUC●	3 x LUTC1001
37	66	GV4L80	80	1040	LC1D80	LUTM + LUC●	3 x LUTC1001
45	80	NSX100HMA	100	1300	LC1D95	LUTM + LUC●	3 x LUTC1001
55	97	NSX160HMA	150	1350	LC1D115	LUTM + LUC●	3 x LUTC2001
75	132	NSX160HMA	150	1800	LC1D150	LUTM + LUC●	3 x LUTC2001
90	160	NSX250HMA	220	2200	LC1F185	LUTM + LUC●	3 x LUTC2001
110	195	NSX250HMA	220	2640	LC1F225	LUTM + LUC●	3 x LUTC4001
132	230	NSX400HMA	320	3200	LC1F265	LUTM + LUC●	3 x LUTC4001
160	280	NSX400HMA	320	4160	LC1F330	LUTM + LUC●	3 x LUTC4001
200	350	NSX630HMA	500	5000	LC1F400	LUTM + LUC●	3 x LUTC4001
220	385	NSX630HMA	500	5500	LC1F400	LUTM + LUC●	3 x LUTC4001
250	430	NSX630HMA	500	6000	LC1F500	LUTM + LUC●	3 x LUTC8001

##### With fuses

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 400/415 V		Switch-disconnector fuse	aM fuses		Contactor	Ultra controller	Current transformers
PkW	IeA	Reference	Size	Rating A	Reference <sup>(2)</sup>	Reference	Reference
18.5	35	GS●F	14 x 51	40	LC1D40A	LUTM + LUC●	3 x LUTC0501
22	41	GS●J	22 x 58	50	LC1D50A	LUTM + LUC●	3 x LUTC1001
30	55	GS●J	22 x 58	80	LC1D80	LUTM + LUC●	3 x LUTC1001
37	66	GS●J	22 x 58	100	LC1D80	LUTM + LUC●	3 x LUTC1001
45	80	GS●J	22 x 58	100	LC1D95	LUTM + LUC●	3 x LUTC1001
55	97	GS●L	T0	125	LC1D115	LUTM + LUC●	3 x LUTC2001
75	132	GS●L	T0	160	LC1D150	LUTM + LUC●	3 x LUTC2001
90	160	GS●N	T1	200	LC1F185	LUTM + LUC●	3 x LUTC2001
110	195	GS●N	T1	250	LC1F225	LUTM + LUC●	3 x LUTC4001
132	230	GS●QQ	T2	315	LC1F265	LUTM + LUC●	3 x LUTC4001
160	280	GS●QQ	T2	400	LC1F330	LUTM + LUC●	3 x LUTC4001
200	350	GS2S	T3	500	LC1F400	LUTM + LUC●	3 x LUTC4001
220	385	GS2S	T3	500	LC1F400	LUTM + LUC●	3 x LUTC4001
250	430	GS2S	T3	500	LC1F500	LUTM + LUC●	3 x LUTC8001
315	540	GS2S	T3	630	LC1F630	LUTM + LUC●	3 x LUTC8001

(1) I<sub>rm</sub>: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

Motor management devices



# TeSys Active

## T Motor management system

### Product references

Motor management devices



PB121434.eps

LTMR08MBD



PB121440.eps

LTMR08CBD



PB121441.eps

LTMR08DBD



PB121442.eps

LTMR08PBD



PB121443.eps

LTMR08EBD

### Controllers

Setting range	Control voltage	Current range	Reference
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A	V	A	
---	---	---	--

#### For Modbus

8	24	0.4...8	LTMR08MBD
	~ 100...240	0.4...8	LTMR08MFM
27	24	1.35...27	LTMR27MBD
	~ 100...240	1.35...27	LTMR27MFM
100	24	5...100	LTMR100MBD
	~ 100...240	5...100	LTMR100MFM

#### For CANopen

8	24	0.4...8	LTMR08CBD
	~ 100...240	0.4...8	LTMR08CFM
27	24	1.35...27	LTMR27CBD
	~ 100...240	1.35...27	LTMR27CFM
100	24	5...100	LTMR100CBD
	~ 100...240	5...100	LTMR100CFM

#### For DeviceNet

8	24	0.4...8	LTMR08DBD
	~ 100...240	0.4...8	LTMR08DFM
27	24	1.35...27	LTMR27DBD
	~ 100...240	1.35...27	LTMR27DFM
100	24	5...100	LTMR100DBD
	~ 100...240	5...100	LTMR100DFM

#### For Profibus DP

8	24	0.4...8	LTMR08PBD
	~ 100...240	0.4...8	LTMR08PFM
27	24	1.35...27	LTMR27PBD
	~ 100...240	1.35...27	LTMR27PFM
100	24	5...100	LTMR100PBD
	~ 100...240	5...100	LTMR100PFM

#### For Ethernet TCP/IP (communication protocols: Modbus/TCP and EtherNet/IP)

8	24	0.4...8	LTMR08EBD
	~ 100...240	0.4...8	LTMR08EFM
27	24	1.35...27	LTMR27EBD
	~ 100...240	1.35...27	LTMR27EFM
100	24	5...100	LTMR100EBD
	~ 100...240	5...100	LTMR100EFM

#### Filter

Control voltage	Current max	Reference
-----------------	-------------	-----------

V	mA	
~ 150...240	130	LTM9F

# TeSys Active

## T Motor management system

### Product references



PB121436.eps

LTMEV40BD



PB121444.eps

LTMCC004



PB112374.eps

LTMCUF

#### Extension modules (with voltage measurement on the 3 phases)

Input control voltage	Number of inputs	Supply to the electronics	Reference
<b>V</b>			
24	4	Via the controller	<b>LTMEV40BD</b>
~ 100...240	4	Via the controller	<b>LTMEV40FM</b>

#### HMI terminals

Description	Supply Voltage	Reference
Operator control unit	Languages: English French Spanish Supply via the controller	<b>LTMCU</b>
Operator control unit with Fast Device Replacement Service (FDR)	Languages: English French Spanish Supply via the controller	<b>LTMCUF</b>

#### Kit for portable LTM CU

Description	Number and type of connectors	Length m	Reference
Connecting cables for the LTM CU control unit	2 x RJ45	1	<b>LTM9CU10</b>
		3	<b>LTM9CU30</b>
Connecting cables for the XBT N410	SUB-D 25-way female RJ45	2.5	<b>XBTZ938</b>

#### Cables

Description	Number and type of connectors	Length m	Reference
Connecting cables For connecting the controller to the extension module	2 x RJ45	0.04	<b>LTMCC004<sup>(1)</sup></b>
		0.3	<b>LTM9CEXP03</b>
		1	<b>LTM9CEXP10</b>

<sup>(1)</sup> Sold in lots of 6.

Motor management devices



# TeSys Active

## T Motor management system

### Product references

Motor  
management  
devices

PF526393.eps



LT6CT4001



PB121445.eps



DA1TT●●●

### Configuration tools

Description	Composition	Reference	Weight kg
Connection cable for PC	USB to RJ45 cable, length 2.5 m	TCSMCNAM3M002P	0.200

### Current transformers <sup>(1)</sup>

Operational current		Reference	Weight kg
Primary A	Secondary A		
100	1 <sup>(2)</sup>	LT6CT1001	0.550
200	1 <sup>(2)</sup>	LT6CT2001	0.550
400	1 <sup>(2)</sup>	LT6CT4001	0.550
800	1 <sup>(2)</sup>	LT6CT8001	0.680

### Earth fault toroids (marketed under the Schneider Electric brand)

Rated operational current I <sub>e</sub> A	Internal Ø of toroid mm	Reference	Weight kg
<b>Closed toroids, type A</b>			
65	30	50437	0.120
85	50	50438	0.200
160	80	50439	0.420
250	120	50440	0.530
400	200	50441	1.320
630	300	50442	2.230

### Split toroids, type OA

85	46	50485	1.300
250	110	50486	3.200

### PTC thermistor probes <sup>(3)</sup>

Description	Nominal Operating Temperature (NOT) °C	Colour	Unit reference <sup>(4)</sup>
Triple probes	90	Green/green	DA1TT090
	110	Brown/brown	DA1TT110
	120	Grey/grey	DA1TT120
	130	Blue/blue	DA1TT130
	140	White/blue	DA1TT140
	150	Black/black	DA1TT150
	160	Blue/red	DA1TT160
	170	White/green	DA1TT170

<sup>(1)</sup> The transformers offered for use with Ultra starters are suitable.  
Please consult our "Ultra starter-controllers" catalogue.

<sup>(2)</sup> For use with LTMRO8●● controllers.

<sup>(3)</sup> PTC: Positive Temperature Coefficient.

<sup>(4)</sup> Sold in lots of 10.

Marking accessories (to be ordered separately)				
Description	Composition	Height mm	Unit reference	Weight kg
Clip-in markers	Strips of 10 identical numbers (0 to 9) or capital letters (A to Z)	5	NSYTRABF5● <sup>(1)</sup>	0.002
		6	NSYTRABF6● <sup>(1)</sup>	0.002

Connection accessories				
Description	Length m	Reference	Weight kg	
<b>For Modbus connection</b>				
Cables fitted with 2 x RJ45 connectors	0.3	VW3A8306R03	0.045	
	1	VW3A8306R10	0.065	
	3	VW3A8306R30	0.125	
T-junctions	0.3	VW3A8306TF03	0.032	
	1	VW3A8306TF10	0.032	
RS 485 line terminator	–	VW3A8306R	0.012	

For CANopen connection				
Cables	50	TSXCANCA50	4.930	
	100	TSXCANCA100	8.800	
	300	TSXCANCA300	24.560	
IP20 connectors	Elbowed (90°)	–	TSXCANKCDF90T	0.046
SUB-D 9-way female	Straight	–	TSXCANKCDF180T	0.049
Line end adapter switch	Elbowed (90°) with SUB-D 9-way connector for connection to PC or diagnostic tool	–	TSXCANKCDF90TP	0.051

For DeviceNet connection				
Cables	50	TSXCANCA50	4.930	
	100	TSXCANCA100	8.800	
	300	TSXCANCA300	24.560	

For Profibus DP connection <sup>(2)</sup>				
Cables	100	TSXPBSCA100	–	
	400	TSXPBSCA400	–	
Connectors	With line terminator	–	490NAD91103	–
	Without line terminator	–	490NAD91104	–
	With line terminator and terminal port	–	490NAD91105	–

For Ethernet TCP/IP connection				
<b>Shielded twisted pair cables to standard EIA/TIA568</b>				
Cables fitted with 2 x RJ45 connectors for connection to terminal equipment	Straight	2	490NTW00002	–
		5	490NTW00005	–
		12	490NTW00012	–
		40	490NTW00040	–
		80	490NTW00080	–
<b>Shielded twisted pair cables, UL and CSA 22.1 approved</b>				
Cables fitted with 2 x RJ45 connectors for connection to terminal equipment	Straight	2	490NTW00002U	–
		5	490NTW00005U	–
		12	490NTW00012U	–
		40	490NTW00040U	–
		80	490NTW00080U	–
Ethernet Connector	Elbowed 180°	–	LTM9CE180T <sup>(3)</sup>	0.180

<sup>(1)</sup> When ordering, replace the ● in the reference with the number or letter required.

<sup>(2)</sup> To order other connectors and cables (UL cables for harsh environments, etc.), please consult our Customer Care Centre.

<sup>(3)</sup> Sold in packs of 6.

# TeSys Active

## T Motor management system

Coordination: fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers

Motor management devices



0.37 to 75 kW at 400/415 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V			Switch-disconnector		aM fuses		Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	Reference <sup>(1)</sup>	Size	Rating	Reference <sup>(2)</sup>	Reference	Reference	Reference	
kW	A			A					
0.37	1.1	GS1DD	10 x 38	2	LC1D09	LTMR08●●	–		
0.55	1.5	GS1DD	10 x 38	2	LC1D09	LTMR08●●	–		
0.75	1.9	GS1DD	10 x 38	4	LC1D09	LTMR08●●	–		
1.1	2.7	GS1DD	10 x 38	4	LC1D09	LTMR08●●	–		
1.5	3.6	GS1DD	10 x 38	4	LC1D09	LTMR08●●	–		
2.2	4.9	GS1DD	10 x 38	6	LC1D09	LTMR08●●	–		
3	6.5	GS1DD	10 x 38	8	LC1D09	LTMR27●●	–		
4	8.5	GS1DD	10 x 38	10	LC1D09	LTMR27●●	–		
5.5	11.5	GS1DD	10 x 38	16	LC1D12	LTMR27●●	–		
7.5	15.5	GS1DD	10 x 38	16	LC1D25	LTMR27●●	–		
10	19	GS●F	14 x 51	25	LC1D25	LTMR27●●	–		
11	22	GS●F	14 x 51	25	LC1D25	LTMR27●●	–		
15	29	GS●F	14 x 51	32	LC1D32	LTMR100●●	–		
18.5	35	GS●F	14 x 51	40	LC1D40A	LTMR100●●	–		
22	41	GS●J	22 x 58	50	LC1D50A	LTMR100●●	–		
30	55	GS●J	22 x 58	80	LC1D65A	LTMR100●●	–		
37	66	GS●J	22 x 58	100	LC1D80	LTMR100●●	–		
45	80	GS●J	22 x 58	100	LC1D95	LTMR100●●	–		
55	97	GS●K	T00	125	LC1D115	LTMR08●●	LT6CT2001		
75	132	GS●L	T0	160	LC1D150	LTMR08●●	LT6CT2001		

(1) GS●: GS1 for direct operator, GS2 for external operator.

(2) For reversing operation, replace the prefix LC1 with LC2.

90 to 355 kW at 400 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector		aM fuses		Contactor	TeSys T controller	External current transformer
400 V			Product type	Size	Rating	Product type	Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	Reference
P	I <sub>e</sub>	I <sub>q</sub>						A	
kW	A	kA			A				
90	160	80	GS●●N	1	200	LC1G185	LTMR08●●●	160	LUTC2001
110	195	80	GS●●N	1	250	LC1G225	LTMR08●●●	195	LUTC4001
132	230	80	GS●●QQ	2	315	LC1G265	LTMR08●●●	230	LUTC4001
160	280	80	GS●●QQ	2	400	LC1G330	LTMR08●●●	280	LUTC4001
200	350	80	GS2S	3	500	LC1G400	LTMR08●●●	350	LUTC8001
250	430	80	GS2S	3	500	LC1G500	LTMR08●●●	430	LUTC8001
315	540	80	GS2S	3	630	LC1G630	LTMR08●●●	540	LUTC8001
355	610	80	GS2V	4	800	LC1G630	LTMR08●●●	610	LUTC8001

(1) Please refer to C1/4 to select the complete reference for TeSys T motor management controller.

(2) This setting is a general guidance, I<sub>r</sub> should be adjusted according to motor characteristics and conditions of use.

# TeSys Active

## T Motor management system

Coordination: magnetic circuit breaker + contactor + TeSys T  
+ current transformers

0.06 to 75 kW at 400/415 V: type 2 coordination							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V			Limiting block	Circuit breaker	Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	I <sub>q</sub>	Reference	Reference	Reference	Reference	Reference
kW	A	kA					
0.06	0.2	130	–	GV2L03	LC1D09	LTMR08●●	–
0.09	0.3	130	–	GV2L03	LC1D09	LTMR08●●	–
0.12	0.44	130	–	GV2L04	LC1D09	LTMR08●●	–
0.18	0.6	130	–	GV2L04	LC1D09	LTMR08●●	–
0.25	0.85	130	–	GV2L05	LC1D09	LTMR08●●	–
0.37	1.1	130	–	GV2L05	LC1D09	LTMR08●●	–
0.4	1.1	130	–	GV2L05	LC1D09	LTMR08●●	–
0.55	1.5	130	–	GV2L06	LC1D09	LTMR08●●	–
0.6	1.5	130	–	GV2L06	LC1D09	LTMR08●●	–
0.75	1.9	130	–	GV2L07	LC1D09	LTMR08●●	–
0.8	1.9	130	–	GV2L07	LC1D09	LTMR08●●	–
1.1	2.7	130	–	GV2L07	LC1D18	LTMR08●●	–
1.5	3.6	130	–	GV2L08	LC1D18	LTMR08●●	–
2.2	4.9	130	–	GV2L10	LC1D18	LTMR08●●	–
3	6.5	130	–	GV2L14	LC1D18	LTMR08●●	–
4	8.5	130	–	GV2L14	LC1D18	LTMR27●●	–
5.5	11.5	130	–	GV2L16	LC1D25	LTMR27●●	–
7.5	15.5	50	–	GV2L20	LC1D25	LTMR27●●	–
9	18.1	50	–	GV2L22	LC1D25	LTMR27●●	–
11	22	50	–	GV2L22	LC1D25	LTMR27●●	–
15	29	50	–	GV3L32	LC1D40A	LTMR100●●	–
7.5	15.5	85	GV1L3	GV2L20	LC1D25	LTMR27●●	–
9	18.1	85	GV1L3	GV2L22	LC1D25	LTMR27●●	–
11	22	85	GV1L3	GV2L22	LC1D25	LTMR27●●	–
15	29	85	GV1L3	GV2L32	LC1D40A	LTMR100●●	–
18.5	35	50	–	GV3L40	LC1D50A	LTMR100●●	–
22	41	50	–	GV3L50	LC1D50A	LTMR100●●	–
30	55	50	–	GV3L65	LC1D65A	LTMR100●●	–
37	66	70	–	GV4LE80S	LC1D80	LTMR100●●	–
45	80	70	–	NSX100HMA	LC1D115	LTMR100●●	–

Motor management devices



# TeSys Active

## T Motor management system

Coordination: magnetic circuit breaker + contactor + TeSys T  
+ current transformers

Motor management devices

### 0.06 to 75 kW at 400/415 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V			Circuit breaker	Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	I <sub>q</sub>	Reference	Reference	Reference	Reference
kW	A	kA				
55	97	50	NSX160NMA	LC1D115	LTMR08●●	LT6CT2001
55	97	70	NSX160HMA	LC1D115	LTMR08●●	LT6CT2001
75	132	50	NSX160NMA	LC1D150	LTMR08●●	LT6CT2001
75	132	70	NSX160HMA	LC1D150	LTMR08●●	LT6CT2001

### 90 to 250 kW at 400 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker	Contactor	TeSys T controller	External current transformer		
400 V			Product type <sup>(1)</sup>	I <sub>rm</sub> <sup>(2)</sup>	Product type	Product type <sup>(3)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	Reference
P	I <sub>e</sub>	I <sub>q</sub>		A			A	
kW	A	kA						
90	160	130	NSX250● + MA	2200	LC1G185	LTMR08●●	160	LUTC2001
110	195	130	NSX250● + MA	2640	LC1G225	LTMR08●●	195	LUTC2001
132	230	130	NSX400● + MicroLogic 1.3 M	3200	LC1G265	LTMR08●●	230	LUTC4001
150	280	130	NSX400● + MicroLogic 1.3 M	3840	LC1G330	LTMR08●●	280	LUTC4001
200	350	130	NSX630● + MicroLogic 1.3 M	5000	LC1G400	LTMR08●●	350	LUTC4001
220	388	130	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LTMR08●●	388	LUTC4001
250	430	130	NSX630● + MicroLogic 1.3 M	6000	LC1G500	LTMR08●●	430	LUTC8001
300	460	130	NS800L + MicroLogic 5.0 LR OFF	8800	LC1G630	LTMR08●●	460	LUTC8001
335	575	130	NS800L + MicroLogic 5.0 LR OFF	9600	LC1G630	LTMR08●●	575	LUTC8001

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●/ NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	130	150

(2) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.

(3) Please refer to C1/4 to select the complete reference for TeSys T motor management controller.

### Substitution table

Motor current	Old range LT6P multifunction protection relay			New range T controllers		
	Reference	Reference	External current transformer Reference	Reference	Reference	External current transformer Reference
	~ 100...240 V	≡ 24 V		~ 100...240 V	≡ 24 V	
I < 5 A	LT6POM005FM	LT6POM005S144	-	LTMR08●FM	LTMR08●BD	-
5 A < I < 25 A	LT6POM025FM	LT6POM025S144	-	LTMR27●FM	LTMR27●BD	-
25 A < I < 100 A	LT6POM005FM	LT6POM005S144	LT6CT1001	LTMR100●FM	LTMR100●BD	-
100 A < I < 200 A	LT6POM005FM	LT6POM005S144	LT6CT2001	LTMR08●FM	LTMR08●BD	LT6CT2001
200 A < I < 400 A	LT6POM005FM	LT6POM005S144	LT6CT4001	LTMR08●FM	LTMR08●BD	LT6CT4001
400 A < I < 800 A	LT6POM005FM	LT6POM005S144	LT6CT8001	LTMR08●FM	LTMR08●BD	LT6CT8001



# TeSys Active

## T Motor management system

Coordination: fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers

0.37 to 75 kW at 690 V: type 2 coordination							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3		Switch-disconnector <sup>(1)</sup>	aM fuses		Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	Reference	Size	Rating	Reference	Reference	Reference
kW	A			A			
0.37	0.64	GS●F	14 x 51	1	LC1D09	LTMR08●●	–
0.55	0.87	GS●F	14 x 51	2	LC1D09	LTMR08●●	–
0.75	1.1	GS●F	14 x 51	2	LC1D09	LTMR08●●	–
1.1	1.6	GS●F	14 x 51	2	LC1D09	LTMR08●●	–
1.5	2.1	GS●F	14 x 51	4	LC1D09	LTMR08●●	–
2.2	2.8	GS●F	14 x 51	4	LC1D09	LTMR08●●	–
3	3.8	GS●F	14 x 51	6	LC1D09	LTMR08●●	–
4	4.9	GS●F	14 x 51	6	LC1D09	LTMR08●●	–
5.5	6.7	GS●F	14 x 51	8	LC1D25	LTMR08●●	–
7.5	8.9	GS●F	14 x 51	10	LC1D25	LTMR27●●	–
11	12.8	GS●F	14 x 51	16	LC1D25	LTMR27●●	–
15	17	GS●G	T000	20	LC1D32	LTMR27●●	–
18.5	21	GS●G	T000	25	LC1D32	LTMR27●●	–
22	24	GS●G	T000	32	LC1D40A	LTMR27●●	–
30	32	GS●G	T000	40	LC1D50A	LTMR100●●	–
37	39	GS●J	22 x 58	50	LC1D65A	LTMR100●●	–
45	47	GS●J	22 x 58	63	LC1D80	LTMR100●●	–
55	57	GS●J	22 x 58	80	LC1D115	LTMR100●●	–
75	77	GS●KK	T00	100	LC1D115	LTMR100●●	–

(1) GS●: GS1 for direct operator, GS2 for external operator.

110 to 400 kW at 690 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	TeSys T controller	External current transformer	
690 V			Product type	Size	Rating	Product type	Product type <sup>(1)</sup>	I <sub>r</sub> setting <sup>(2)</sup>	
P	I <sub>e</sub>	I <sub>q</sub>						Reference	
kW	A	kA			A			A	
110	113	80	GS●●KK	0	125	LC1G185	LTMR08●●●	113	LUTC2001
132	134	80	GS●●L	0	160	LC1G265	LTMR08●●●	134	LUTC2001
160	162	80	GS●●N	1	160	LC1G265	LTMR08●●●	162	LUTC2001
200	203	80	GS●●N	1	200	LC1G330	LTMR08●●●	203	LUTC2001
220	224	80	GS●●QQ	2	250	LC1G400	LTMR08●●●	224	LUTC4001
250	250	80	GS●●QQ	2	250	LC1G400	LTMR08●●●	250	LUTC4001
290	292	80	GS●●QQ	2	315	LC1G500	LTMR08●●●	292	LUTC4001
315	313	80	GS●●QQ	2	400	LC1G500	LTMR08●●●	313	LUTC4001
355	354	80	GS2S	3	500	LC1G630	LTMR08●●●	354	LUTC4001
400	400	80	GS2S	3	630	LC1G630	LTMR08●●●	400	LUTC8001

(1) Please refer to C1/4 to select the complete reference for TeSys T motor management controller.

(2) This setting is a general guidance, I<sub>r</sub> and I<sub>rm</sub> should be adjusted according to motor characteristics and conditions of use.



# TeSys Active

## T Motor management system

Coordination: magnetic circuit breaker + contactor + TeSys T  
+ current transformers

Motor management devices

### ½ to 20 HP at 480 V - 3P

Standard power ratings 480 V			Limiter block	Circuit breaker	Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	I <sub>q</sub>	Reference	Reference	Reference	Reference	Reference
HP	A	kA					
–	0.49	100	–	GV2L04	LC1D09	LTMR08●●	–
–	0.64	100	–	GV2L05	LC1D09	LTMR08●●	–
–	0.87	100	–	GV2L05	LC1D09	LTMR08●●	–
0.5	1.1	100	–	GV2L06	LC1D09	LTMR08●●	–
0.75	1.6	100	–	GV2L06	LC1D25	LTMR08●●	–
1	2.1	65	GV1L3	GV2L07	LC1D25	LTMR08●●	–
1.5	3	65	GV1L3	GV2L08	LC1D25	LTMR08●●	–
2	3.4	65	GV1L3	GV2L08	LC1D25	LTMR08●●	–
3	4.8	65	GV1L3	GV2L10	LC1D25	LTMR08●●	–
5	7.6	65	GV1L3	GV2L14	LC1D25	LTMR08●●	–
7.5	11	65	GV1L3	GV2L16	LC1D25	LTMR27●●	–
10	14	65	GV1L3	GV2L16	LC1D25	LTMR27●●	–
15	21	65	GV1L3	GV2L22	LC1D32	LTMR27●●	–
20	27	65	GV1L3	GV2L32	LC1D40A	LTMR100●●	–



### 0.25 to 22 kW at 690 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 690 V			Limiter block	Circuit breaker	Contactor	TeSys T controller	External current transformer
P	I <sub>e</sub>	I <sub>q</sub>	Reference	Reference	Reference	Reference	Reference
kW	A	kA					
–	0.49	100	–	GV2L04	LC1D09	LTMR08●●	–
–	0.64	100	–	GV2L05	LC1D09	LTMR08●●	–
–	0.87	100	–	GV2L05	LC1D09	LTMR08●●	–
0.75	1.1	100	–	GV2L06	LC1D09	LTMR08●●	–
1.1	1.6	100	–	GV2L06	LC1D09	LTMR08●●	–
1.5	2.1	65	LA9LB920	GV2L07	LC1D09	LTMR08●●	–
2.2	2.8	65	LA9LB920	GV2L08	LC1D09	LTMR08●●	–
3	3.8	65	LA9LB920	GV2L08	LC1D09	LTMR08●●	–
4	4.9	65	LA9LB920	GV2L10	LC1D09	LTMR08●●	–
5.5	6.7	65	LA9LB920	GV2L14	LC1D09	LTMR08●●	–
7.5	8.9	65	LA9LB920	GV2L14	LC1D09	LTMR27●●	–
9	10.6	65	LA9LB920	GV2L16	LC1D18	LTMR27●●	–
11	12.8	65	LA9LB920	GV2L16	LC1D18	LTMR27●●	–
15	17	65	LA9LB920	GV2L20	LC1D18	LTMR27●●	–
18.5	21	65	LA9LB920	GV2L22	LC1D18	LTMR27●●	–
22	24	65	LA9LB920	GV2L32	LC1D18	LTMR100●●	–



# TeSys Control - TeSys Active

## Ultra Motor management controller

## T Motor management system

### Product references

Motor  
management  
devices

50437	LTMR08PFM
50438	LTMR100CBD
50439	LTMR100CFM
50440	LTMR100DBD
50441	LTMR100DFM
50442	LTMR100EBD
50485	LTMR100EFM
50486	LTMR100MBD
490NAD91103	LTMR100MFM
490NAD91104	LTMR100PBD
490NAD91105	LTMR100PFM
490NTW00012U	LTMR27CBD
490NTW00040U	LTMR27CFM
490NTW00080U	LTMR27DBD
DA1TT090	LTMR27DFM
DA1TT110	LTMR27EBD
DA1TT120	LTMR27EFM
DA1TT130	LTMR27MBD
DA1TT140	LTMR27MFM
DA1TT150	LTMR27PBD
DA1TT160	LTMR27PFM
DA1TT170	LUCBT1BL
LT6CT1001	LUCDT1BL
LT6CT2001	LUCMT1BL
LT6CT4001	LUTC0501
LT6CT8001	LUTC1001
LTM9BPS	LUTC2001
LTM9CE180T	LUTC4001
LTM9CEXP10	LUTC8001
LTM9CU10	LUTM10BL
LTM9CU30	LUTM20BL
LTM9F	TSXCANCA100
LTM9KCU	TSXCANCA300
LTMCU	TSXCANCA50
LTMCUF	TSXCANKCDF180T
LTMEV40BD	TSXCANKCDF90T
LTMEV40FM	TSXCANKCDF90TP
LTMR08CBD	TSXPBSCA100
LTMR08CFM	TSXPBSCA400
LTMR08DBD	VW3A8306R
LTMR08DFM	VW3A8306R03
LTMR08EBD	VW3A8306R10
LTMR08EFM	VW3A8306R30
LTMR08MBD	VW3A8306TF03
LTMR08MFM	VW3A8306TF10
LTMR08PBD	XBTZ938

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).  
If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Contents

### Ultra Motor management controller:

- > characteristics..... C1/16 to C1/19
- > dimensions..... C1/20
- > schemes..... C1/21

### T Motor management system:

- > characteristics..... C1/22 to C1/36
- > curves ..... C1/37
- > dimensions..... C1/38 to C1/39
- > schemes..... C1/40 to C1/43

# TeSys Control

## Ultra Motor management controller

### Characteristics

Motor management devices



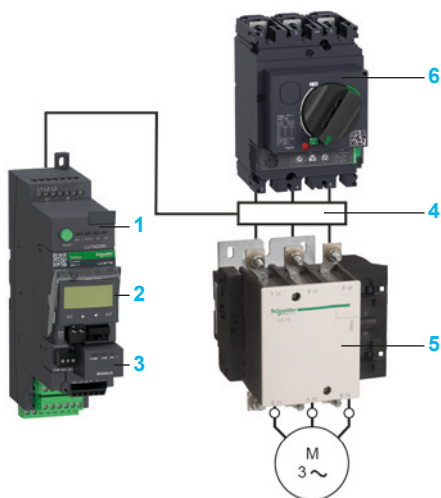
PB 123882 eps

Ref.



PB 121450 eps

PB 123884 eps



### Introduction

Above 32 A, TeSys Ultra Motor management controller provides a motor starter management solution identical to that provided by TeSys Ultra starter-controllers.

Used in conjunction with a short-circuit protection device and a contactor, it provides a motor starter whose functions are the same as those of a TeSys Ultra starter-controller and, in particular, provides the following functions: overload protection, motor starter control and application monitoring.

It consists of a control unit whose adjustment range is compatible with the secondary of current transformers, plus a control base which also allows fitment of a function module or a communication module.

It requires a  $\sim$  24 V external power supply.

The secondaries of current transformers, the  $\sim$  24 V power supply, the 10 inputs and the 5 outputs are connected by screw terminal block.

### Application example

Detecting blockage of a rock crusher by monitoring the motor current.

### Operating conditions

- Power: 90 kW at 400 V.
- In: 185 A.
- Duty class S1.
- Control circuit voltage:  $\sim$  230 V
- Control-command by PLC and serial link using the Modbus protocol.

### Products used

Description	Item	Quantity	Reference	Page
Controller	1	1	LUTM20BL	C1/2
				C1/3
Multifunction control unit	2	1	LUCMT1BL	A4/12
Modbus communication module	3	1	LULC033	A4/27 to A4/31
Current transformer	4	3	LUTC4001	C1/2
				C1/3
Contactor	5	1	LC1F185P7	–
Circuit breaker	6	1	GV5P150F	–

### Functions performed

- Short-circuit protection with level of protection of 70 kA at 400V.
- Electronic protection against thermal overloads with an adjustment range of 4.
- Detection of crusher blockage by monitoring the induced overcurrent. To use the "over torque or jam" function, the following parameters must be entered:
  - trip: the answer yes/no enables or disables the function,
  - time before tripping: the time period during which the value of the current must be above the tripping threshold in order to cause tripping (adjustable from 1 to 30 s).
  - tripping threshold: value as a % of the load current ratio in relation to the setting current. If the ratio remains above this threshold for the time specified in the previous parameter, the product trips (adjustable from 100 to 800 %).

It is possible to set the parameter for an alarm at a preset threshold under the same conditions as above.

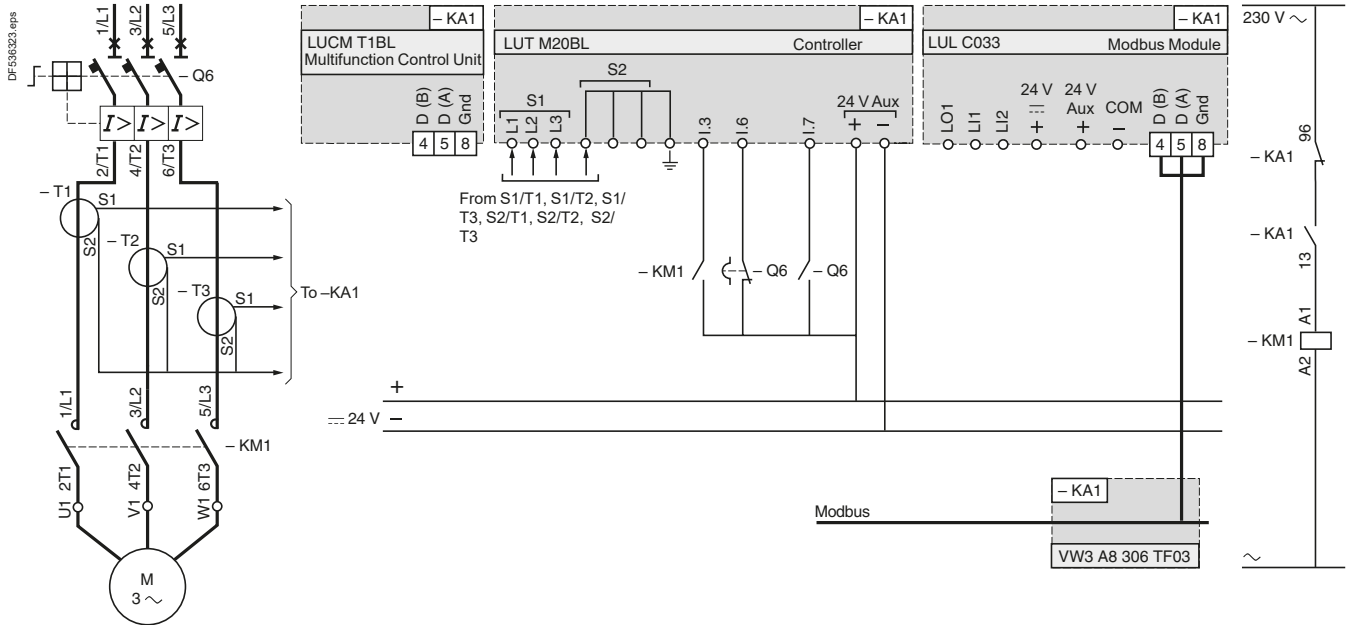
# TeSys Control

## Ultra Motor management controller

### Characteristics

#### Application example

#### Scheme



Motor management devices

#### Other functions

The multifunction control unit incorporates other control and protection functions, such as: monitoring and control of phase current, alarm, ... Communication module LUL C033 also provides a programmable output and two programmable inputs.

Ref.

# TeSys Control

## Ultra Motor management controller

### Characteristics

Motor management devices

Ref.

Environment			
Control base and control unit type		LUTM + LUCBT1BL or LUCDT1BL without LULC	LUTM + LUCMT1BL or LULC
Product certifications		UL, CSA, ASEFA, UKCA	
Conforming to standards		IEC/EN 60947-4-1, UL 508, CSA C22-2 N°14	
Rated insulation voltage of the outputs (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	V	250
	Conforming to UL508, CSA C22-2 n°14	V	250
Rated impulse withstand voltage of the outputs (Uimp)	Conforming to IEC/EN 60947-4-1	kV	4
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel (outside connection zone)		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	- 40...+ 85
	Operation	°C	- 25...+ 70
Maximum operating altitude		m	2000
Operating positions Without derating	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components)
		°C	650
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN60068-2-27 <sup>(1)</sup>		15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 <sup>(1)</sup>		4 gn
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3
		kV	On contact: 6 - Level 3
Resistance to radiated fields	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	CT outputs and inputs: 4 - Level 4
		kV	Inputs and supply: 2 - Level 3
Immunity to radioelectric fields	Conforming to IEC/EN 61000-4-6	V	10
Control base and control unit relays			
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-4-1		<b>Common mode</b>
			<b>Serial mode</b>
	Output relays / power line	kV	4
	Inputs	kV	2
	Serial communication	kV	2

<sup>(1)</sup> Without modifying the contact states, in the most unfavourable direction.



# TeSys Control

## Ultra Motor management controller

### Characteristics

Control circuit supply characteristics			
Operational voltage		<b>V</b>	≈ 20.4...28.8
Power consumption		<b>W</b>	2 max
Associated protection		<b>A</b>	gG fuse, 0.5
Cabling			
Connectors	Pitch	<b>mm</b>	5
Flexible cable without cable end	1 conductor	<b>mm<sup>2</sup></b>	0.2...2.5
	2 identical conductors	<b>mm<sup>2</sup></b>	0.2...1.5
Flexible cable with cable end			
Without insulated ferrule	1 conductor	<b>mm<sup>2</sup></b>	0.25...2.5
	2 identical conductors	<b>mm<sup>2</sup></b>	0.25...1
With insulated ferrule	1 conductor	<b>mm<sup>2</sup></b>	0.25...2.5
	2 identical conductors <sup>(1)</sup>	<b>mm<sup>2</sup></b>	0.5...1.5
Solid cable without cable end	1 conductor	<b>mm<sup>2</sup></b>	0.2...2.5
	2 identical conductors	<b>mm<sup>2</sup></b>	0.2...1
Conductor size	1 conductor		AWG24 to AWG12
Tightening torque		<b>N.m</b>	0.5...0.6
Flat screwdriver		<b>mm</b>	3

Input characteristics		
Operational voltage	<b>V</b>	≈ 24
Logic inputs		Logic state 1: $I \geq 6 \text{ mA} - 16 \text{ V}$ Logic state 0: $I \leq 1.5 \text{ mA} - 5 \text{ V}$

Discrete output characteristics			
Base controller type		LUTM10BL	LUTM20BL
Type		Single break volt-free contacts	
Load	a.c. supply	C 300	B 300
	d.c. supply	24 V/5 A	24 V/5 A
Permissible power in cat. AC-15	For 500 000 operating cycles	<b>VA</b> 180	500
Permissible power in cat. DC-13	For 500 000 operating cycles	<b>W</b> 30	30
Associated protection		<b>A</b> gG fuse, 4	gG fuse, 4
Used with contactor type <sup>(2)</sup>		Control voltage ≈ 24 V: LP1K, LC1D09...D95.  Control voltage ≈ 24...240 V: LC1K, LC1D.	Control voltage ≈ 100...240 V: LC1K, LC1D, LC1F185...F500

Characteristics of external current transformers LUTC●●●1						
Precision		Class 5P				
Precision limit factor		10				
Maximum operating temperature	<b>°C</b>	70				
Transformer ratio		50/1	100/1	200/1	400/1	800/1
Diameter of conductor passage hole	<b>mm</b>	22	35	32	–	–
Maximum wire c.s.a.	<b>mm<sup>2</sup></b>	30 x 10	40 x 10	65 x 32	38 x 127	53 x 127

<sup>(1)</sup> Use a double cable end.

<sup>(2)</sup> For other combinations, use an intermediate relay between the output of controller LUTM and the contactor coil.

# TeSys Control

## Ultra Motor management controller

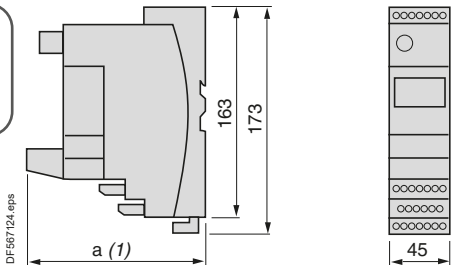
### Dimensions, mounting

#### Dimensions, mounting

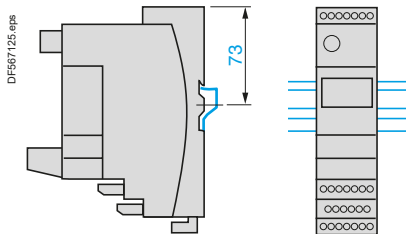
##### Controllers

###### LUTM●0BL

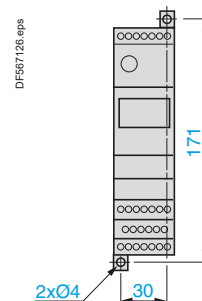
Motor management devices



###### Rail mounting



###### Rail mounting



**a**

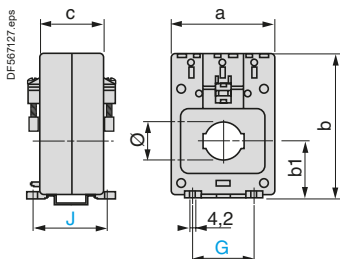
With Modbus module	135
With Advantys STB, CANopen or DeviceNet modules	147

(1) Depth with communication module.

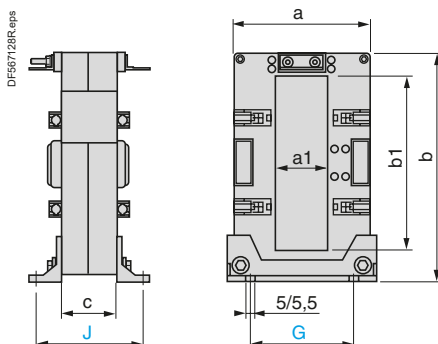
##### Current transformers

###### LUTC0501...1001

Ref.



###### LUTC2001...8001



LUTC	a	b	b1	c	Ø	G	J
0501	56	84	31	42	23	45	50
1001	77	107	42.5	46	35	45	54

LUTC	a	b	b1	c	Ø	G	J
2001	90	32	94	55	40	62	62
4001	99	38	160	127	40	75	65
8001	125	54	160	127	40	100	65

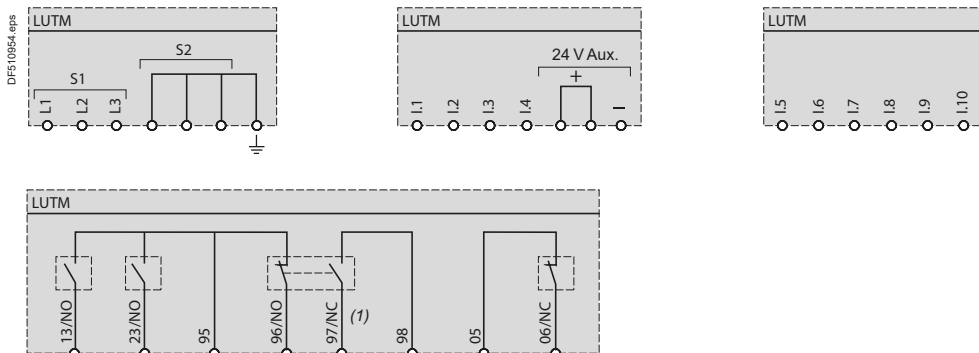
# TeSys Control

## Ultra Motor management controller

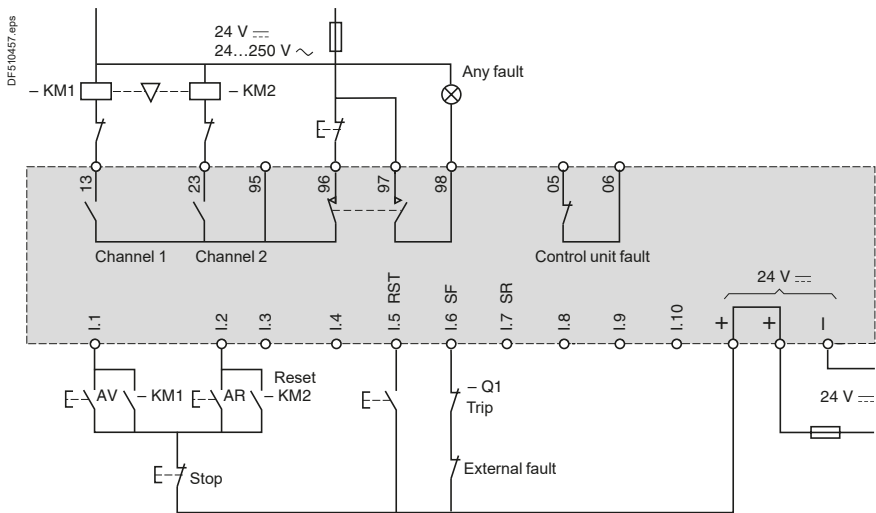
### Schemes

#### Schemes

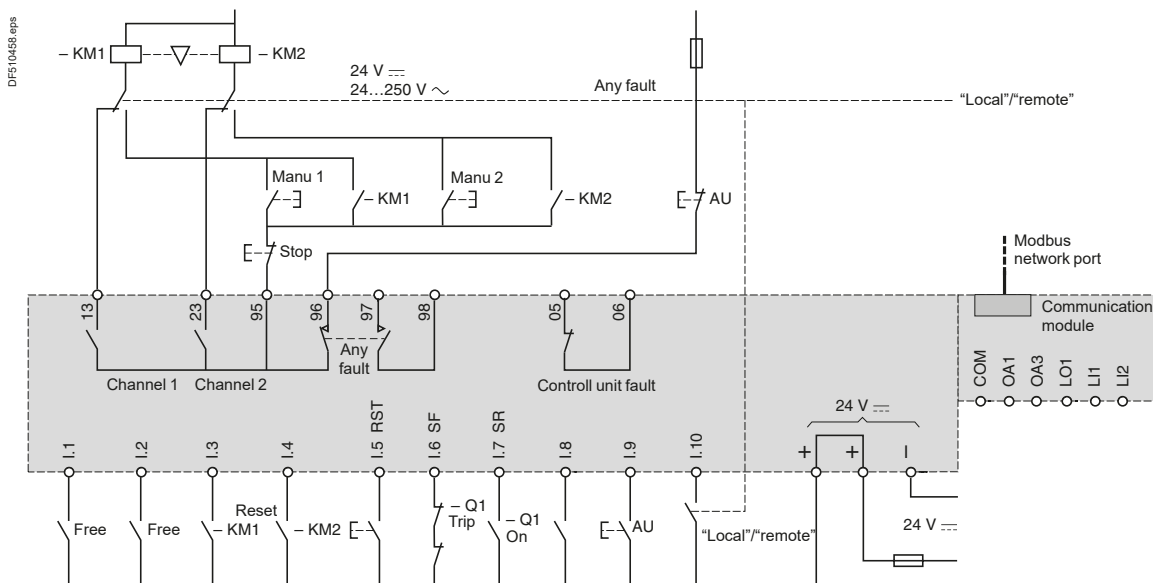
##### Reversing controller LUTM



##### 3-wire control, pulsed start with maintaining contact



##### Control for Modbus communication module LULC033



(1) The contacts are represented with controller powered up and not in a fault condition.

Characteristics:  
pages C1/16 to C1/19

References:  
pages C1/2 and C1/3

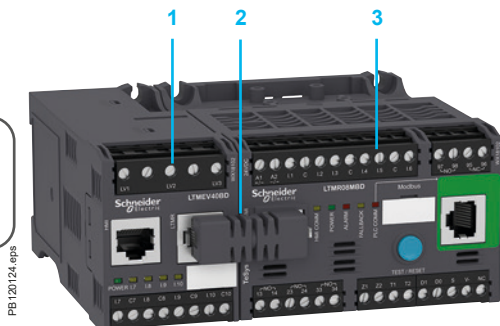
Dimensions, mounting:  
page C1/20

# TeSys Active

## T Motor management system

### Characteristics

Motor management devices



- 1 LTMEV40BD extension module
- 2 LTMCC004 2 x RJ45 jumper
- 3 LTMR08MBD controller



### Introduction

TeSys T is a motor management system that provides protection, metering and monitoring functions for single-phase and 3-phase, constant speed, a.c. motors up to 810 A.

Suitable for the harshest applications, this product range offers:

- high-performance multifunction protection, independent of the automation system
- a local HMI control unit for reading, displaying and modifying the parameters monitored, diagnostics, etc.
- configuration using SoMove software
- connection to the automation system via a communication network (selection according to various protocols).

### Application

The TeSys T motor management system is used for motor control and protection in harsh industrial applications, in which downtime must be avoided because it is very costly: Oil & Gas, chemical industry, water treatment, metal, minerals and mining, pharmaceutical industry, microelectronics, tunnels, airports etc.

With TeSys T motor management system, unexpected stops of a process or manufacturing, associated with a motor, are anticipated via predictive analysis of fault situations. Fault tripping is therefore reduced to a minimum.

Its use in motor control panels makes it possible to:

- increase the operational availability of installations
- improve flexibility from project design through to implementation
- increase productivity by making available all information needed to run the system.

The motor management system integrates perfectly with Schneider Electric low voltage equipment, such as Okken, Blokset and Prisma.

PB123812.eps



- 1 Magnetic Circuit breaker
- 2 Contactor
- 3 Controller with extension module
- 4 Operator control unit

# TeSys Active

## T Motor management system

### Characteristics



LTM08MBD



LTMEV40BD



LTMCUF

#### Introduction

##### Composition of the motor management system

The system comprises:

- an LTMR motor management controller
  - with internal current transformer up to 100 A
  - above 100 A, by external current transformer up to 810 A
- an LTME extension module
- an LTMCU operator control unit
- configuration software incorporated in the SoMove software application
- accessories for system set-up.

##### Communication

The LTMR controller is equipped with a communication interface to allow remote monitoring and control of the motor. All motor information is then available at automation system level.

The following networks are available:

- Modbus, CANopen, DeviceNet, ProfiBus DP and Ethernet TCP/IP (with two communication protocols, Modbus/TCP and EtherNet/IP).

#### T system functions

##### Protection functions

- against thermal overload
- against phase imbalance and phase failure
- thermal motor protection via PTC probes
- against phase reversal
- against earth faults
- against long starting times and motor stalling
- against automatic load shedding and restarting
- against load fluctuations (I, U, P)
- against variations of Cos  $\varphi$  (power factor).

##### Metering functions

- Measurements (rms values):
  - current on the 3 phases
  - voltage on the 3 phases (shedding)
  - motor temperature
  - earth fault.
- Values calculated:
  - average current
  - frequency
  - Cos  $\varphi$  (power factor), power, power consumption...

##### Motor control functions

A motor managed by TeSys T motor management system can be controlled:

- locally, using the logic inputs present on the product, or via the HMI terminal
- remotely, via the network (connection by terminal block or connector except for DeviceNet: terminal block only).

##### Motor control modes

5 predefined motor control modes are incorporated in the controller:

- overload mode: monitoring of motors whose control is not managed by the controller,
- independent mode: starting of non-reversing motors,
- reverser mode: starting of reversing motors,
- 2-step mode: 2-step starting of motors (star-delta, by autotransformer and by resistor),
- 2-speed mode: 2-speed starting of motors (Dahlander, pole changer).

A 6<sup>th</sup> "Custom" mode is available to allow the user to create a specific motor control mode that is not predefined in the controller.

##### Statistical and diagnostic functions

- Fault statistics: counters per type of protection and history of the last 5 faults.
- Motor statistics: saving of motor statistics values.
- Diagnosis of faults affecting correct operation of the product.

# TeSys Active

## T Motor management system

### Characteristics

Motor management devices



PE121447.eps

LTM028●●

Ref.



#### Controller ref. LTM0

The controller is the central component in the motor management system. It manages the basic functions such as:

- measurement of 3-phase current via integral current transformers from 0.4 to 100 A (up to 810 A by external current transformers)
- measurement of earth current by external earth fault toroid
- measurement of motor temperature by PTC probe
- inputs and outputs for the various motor control modes, fault management and associated functions.

#### Characteristics

##### Supply

2 types of controller power supply are available:

- 24 V $\overline{\text{DC}}$
- 100...240 V $\sim$ .

##### Current ranges

3 current ranges allow measurement of motor current from 0.4 to 100 A:

- 0.4...8 A
- 1.35...27 A
- 5...100 A.

For use with external current transformers, choose the 0.4...8 A range (1 or 5 A current transformer secondary).

##### Inputs

- 6 discrete logic inputs.

##### Outputs

- 3 relay logic outputs (1N/O).
- 1 relay output for fault signalling (1N/O + 1N/C).

##### Measurements

- Connections for a temperature probe.
- Connections for an earth fault toroid.

#### Extension module ref. LTME

The extension module adds the following functionalities to the T controller:

- voltage measurement on the 3 phases. This enables it to calculate numerous engine monitoring parameters (power, frequency, Cos  $\phi$ ...)
- 4 additional inputs.

#### Characteristics

##### Inputs

- 4 discrete logic inputs (independent).

##### Power supplies

- 2 types of power supply for the inputs: 24 V $\overline{\text{DC}}$  and 100...240 V $\sim$ .
- A 24 V $\overline{\text{DC}}$  expansion module can be assembled with a 24 V $\overline{\text{DC}}$  controller or with a 100...240 V $\sim$  controller.
- A 100...240 V $\sim$  expansion module can be assembled with a 100...240 V $\sim$  controller.

**Voltage measurement between phases up to 690 V nominal.**



LTMCU

#### Human/Machine Interfaces (HMI)

Depending on the application, 2 types of HMI can be used with the LTMR controller.

- The LTMCU operator control unit:
  - entirely dedicated to the T range
  - only for control/monitoring of an LTMR controller.
- A Magelis XBTN410 terminal for control/monitoring of 1 to 8 LTMR controllers.

#### Operator control unit ref. LTMCU

Dedicated exclusively to T controllers, control unit LTMCU makes it possible to:

- configure the parameters of the LTMR controller
- display information on controller configuration and operation
- monitor the alarms and faults generated by the controller
- local control of the motor via the local control interface (keys can be customised). Three different languages can be loaded into the LTMCU controller at the same time.

By default, these 3 languages are:

- LTMCU: English, French and Spanish

**Note:** English is the only compulsory language.

A language download utility (LangTool), together with all the other languages, are available on the website "www.se.com".

This tool allows the languages present in the LTMCU control unit to be adapted.

The LTMCU HMI control unit has an RJ45 port, protected by a flexible cover to provide a good level of protection (IP54).

This port on the front panel allows connection to a PC, via a connecting cable, in order to use SoMove software.

In this case, the control unit acts as a transmitter and all information can then be viewed in SoMove.

The LTMCU HMI can be used as a portable version by using the separate kit LTM9KCU. This kit consists of two snap-on plastic shells (tool-free mounting) fitted with a simple fixing system that uses magnets for mounting on all types of metal surfaces.

#### The Magelis XBT N410 HMI terminal

Two applications have been predefined for T motor management system.

Depending on the application loaded, the HMI terminal makes it possible to:

- configure and monitor a motor starter (LTM\_1T1\_V1.dop)
- monitor and modify certain parameters on up to 8 motor starters (LTM\_1T8\_X\_V1.dop) <sup>(1)</sup>.

XBTL 1000 programming software is needed for loading applications into the HMI terminal.

These applications are available on the website "www.se.com".

**(1)** Replace the X with an E for the English version, or an F for the French version.

# TeSys Active

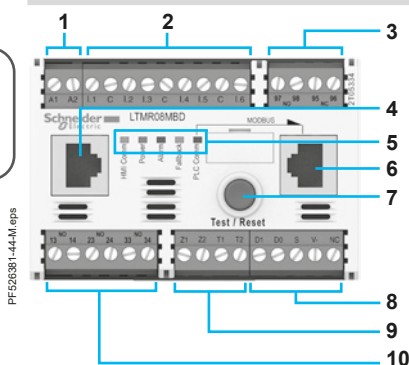
## T Motor management system

### Characteristics

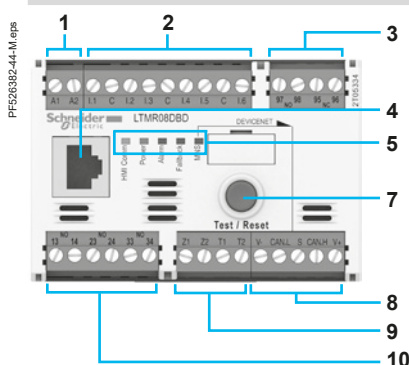
Motor management devices

#### Controllers ref. LTMR

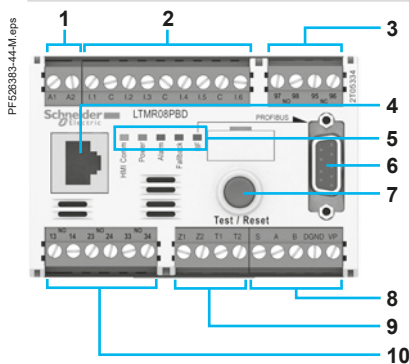
##### Modbus



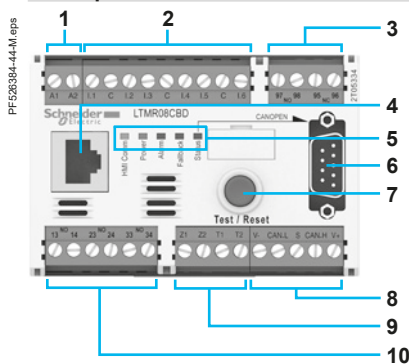
##### DeviceNet



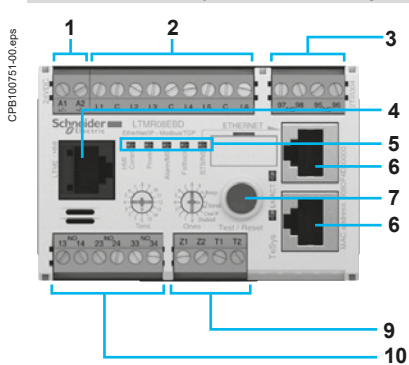
##### Profibus DP



##### CANopen



##### Ethernet TCP/IP (communication protocols: Modbus/TCP and EtherNet/IP)



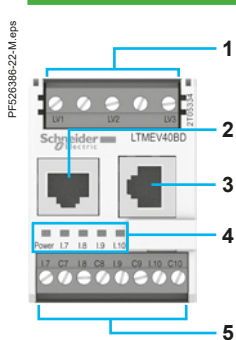
Controllers feature the following on their front panel:

- 1 Controller power supply.
- 2 Input connections.
- 3 Fault outputs (N/O+N/C).
- 4 Port for connection to the HMI terminal, a PC or an extension module (RJ45).
- 5 Controller status LEDs.
- 6 Network port for connection to the network by connector (except DeviceNet) <sup>(1)</sup>.
- 7 Test/Reset button.
- 8 Connection to the network by terminal block (except Ethernet TCP/IP).
- 9 Connection for an earth fault toroid and temperature probes.
- 10 Outputs for motor control mode function.

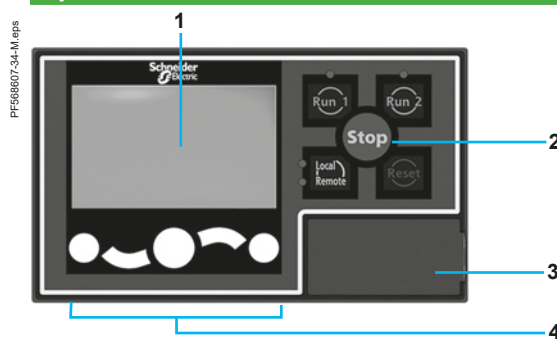
- Ref.
- 
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<sup>(1)</sup> Connection using power extension (daisy-chaining) is possible for Ethernet TCP/IP.

#### Extension modules ref. LTMEV40



#### Operator control unit ref. LTMCU



Extension modules have the following on their front face:

- 1 Inputs for voltage measurement.
- 2 Port for connection to the HMI terminal or to the PC.
- 3 Port for connection to the controller.
- 4 Extension module status LEDs.
- 5 Connection of additional inputs.

The control unit has the following on its front face:

- 1 Screen LCD display.
- 2 Local control interface including control keys and LEDs.
- 3 RJ45 port on front panel for connection to a PC (protected by a cover).
- 4 Contextual navigation keys.



# TeSys Active

## T Motor management system

### Characteristics

Thermal and current protection functions					
Functions	Setting range	Controller LTMR	Controller and extension module (LTMR + LTME)	Alarm threshold	Fault threshold
<b>Description</b>					
Thermal overload: thermal protection of motor by monitoring current consumption	Class: 5, 10, 15, 20, 25, 30. Inverse ther/definite time				
Motor temperature: thermal monitoring of the motor using temperature probes (winding, paper...). Up to 3 sensors in series.	PTC binary PTC/NTC analogue: 20 ...6500 Ohm				
Phase imbalance: monitors the symmetry of currents. To be used for imbalance < 80 % of the average current <sup>(1)</sup> .	10...70% I average 0.2...20 s				
Phase failure: monitors the symmetry of currents. To be used for imbalance < 80 % of the average current <sup>(1)</sup> .	0.1...30 s				
Phase reversal: signals when the phase sequence is different from the defined sequence (motor running).	A-B-C A-C-B				
Long starting time: monitors the motor starting time	100...800 % of FLC <sup>(2)</sup> 1...200 s				
Locked rotor: locking detected by a sudden increase in current after the start phase	100...800 % of FLC <sup>(2)</sup> 1...30 s				
Min/max current load limit variations: monitors motor load through variations of current around preset thresholds.	min.: 30...100 % of FLC <sup>(2)</sup> 1...200 s max.: 20...800 % of FLC <sup>(2)</sup> 1...250 s				
Earth fault: signals internal insulation faults, by vectorial summing of external currents, via earth fault toroid.	internal: 50...500 % min FLC <sup>(2)</sup> 0.5...25 s external: 0.02...21 A 0.1...25 s				
Frequent starting: Protects the motor against overheating due to frequent starting.	0...999.9 s				
Voltage and power protection functions					
Phase imbalance: monitors the symmetry of voltage between phases. To be used for imbalance < 40 % of the average voltage <sup>(3)</sup> .	3...15 % 0.2...20 s				
Phase failure: monitors the symmetry of voltage between phases. To be used for imbalance > 40 % of the average voltage <sup>(3)</sup> .	0.1...30 s				
Phase reversal: signals when the phase sequence is different from the defined sequence (motor stopped).	A-B-C A-C-B				
Voltage variations. Min/max voltage limits: monitors voltage variations around preset thresholds.	min.: 70...99 % 0.2...25 s max.: 101...115 % 0.2...25 s				
Load shedding: opens outputs O.1 and O.2 if voltage drops below a preset threshold.	68...115 % 1...9999 s				
Power variations. Min/max power limits: monitors power variations around preset thresholds.	20...800 % 1...100 s				
Variations of Cos φ. Min/max limits of Cos φ: monitors variations of Cos φ around preset thresholds.	0...1 s 1...25 s				

Function performed.

<sup>(1)</sup> Average current value measured on the 3 phases.

<sup>(2)</sup> FLC: Full Load Current (setting current).

<sup>(3)</sup> Average voltage value measured on the 3 phases.

# TeSys Active

## T Motor management system

### Characteristics

Motor management devices



Motor control functions			
Functions	Description	With controller LTMR	With controller LTMR and extension module LTME
Control modes	Local, via terminal block	■	■
	Local, via HMI terminal <sup>(1)</sup>	■	■
	Remote, via network	■	■
Operating modes	Overload	■	■
	Independent	■	■
	Reverser	■	■
	2-step	■	■
	2-speed	■	■
	"Custom" mode	■	■
Fault management	Manual reset	■	■
	Automatic reset	■	■
	Remote reset	■	■

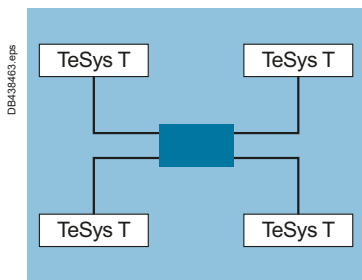
Metering functions and statistics				
Functions	Description	Measurement range	With controller LTMR	With controller LTMR and extension module LTME
Measurements <sup>(2)</sup>	Current/Phase	0.08...1000 A	■	■
	Earth current	0.1633 x CT ratio	■	■
	Average current	0.08...1000 A	■	■
	Current imbalance between phases	0...200 %	■	■
	Thermal capacity level	0...200 %	■	■
	Motor temperature rise	0...6500 Ohm	■	■
	Frequency	0... 100 Hz	■	■
	Voltage between phases	~ 0...830 V	■	■
	Voltage imbalance between phases	0...200 %	■	■
	Active power	0...6553.5 kW	■	■
	Reactive power	0...6553.5 kWr	■	■
	Cos φ (power factor)	0...100	■	■
	Active power consumption	0...400 kWh	■	■
	Reactive power consumption	0...400 kWrh	■	■
Fault statistics	Protection fault counters		■	■
	Protection alarm counters		■	■
	Diagnostic fault counters		■	■
	Motor control function counters		■	■
	Fault history		■	■
Fault diagnostics	Internal watchdog fault		■	■
	Controller internal temperature		■	■
	Temperature sensor connection		■	■
	Current connection		■	■
	Voltage connection		■	■
	Motor control commands (start, stop, run check back and stop check back)		■	■
	Control configuration checksum		■	■
Motor statistics	Loss of communication		■	■
	Number of motor control commands (O.1/O.2 starts)		■	■
	Operating time		■	■
	Number of starts/hour		■	■
	Last start I max.		■	■
Thermal overload statistics	Duration of last start		■	■
	Time to trip		■	■
System operating statistics	Time to restart		■	■
	Run, ON, Start, alarm, fault.		■	■

(1) HMI: Human Machine Interface.  
 (2) See measurement details page C1/34.

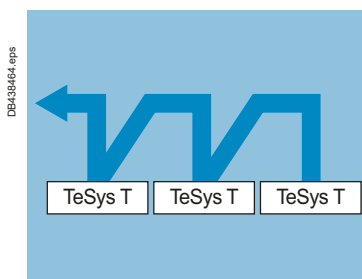
# TeSys Active

## T Motor management system

### Characteristics



Star topology



Daisy chain topology

#### Star topology

In a star topology, all the peripherals are linked via an intermediate peripheral (hub or switch).

In industrial Ethernet applications, the use of full duplex switches (instead of hubs) as central peripherals is strongly recommended.

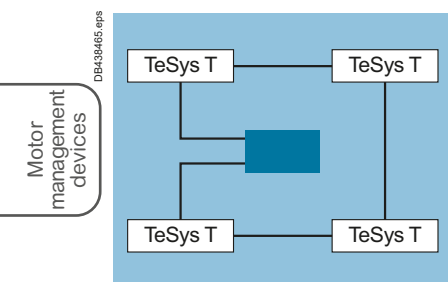
#### Daisy chain topology

Daisy chaining, at bus level, is another connection topology commonly used in industrial automation system networks. The cable segments link several peripherals to each other, constituting the peripheral "section" of the network cable.

Motor  
management  
devices

Ref.





Ring topology

## Ethernet: different network topologies

### Ring topology

In a ring topology, all the peripherals or components of the network infrastructure are connected within a loop.

This type of topology makes it possible to achieve different levels of redundancy of the network.

### Ethernet ring

Ethernet rings are generally the main networks in applications where a high level of reliability is required. If a ring topology is required, the switches handling this function must be used.

### Redundancy

Redundancy of the network infrastructure is the key to development of applications with high operational reliability.

Implementing a single or double ring architecture makes it possible to provide protection against breaks in network segments.

### Single ring

The first level of redundancy can be achieved by installing a single ring.

ConneXium switches can be used to establish main network ring configurations.

The ring is created using RSTP protocol.

If a section of the line fails, the ring structure converts into a line type configuration.

## Ethernet: different communication protocols

LTMR controllers communicating over an Ethernet network can communicate either using the Modbus/TCP communication protocol or using the EtherNet/IP communication protocol. Both protocols are loaded in the controller. One must be selected for the operation.

*Note: EtherNet/IP communication protocol is supported by ODVA, also promoter of DeviceNet communication solution. Note that in EtherNet/IP, IP stands for Industrial Protocol.*

- IP address Class for Ethernet TCP/IP version: Class A 20 ETH10/100.

### Services available on Ethernet TCP/IP version

	In Modbus/TCP	In Ethernet/IP
Web Server	■	■
Modbus messaging	■	
IO Messaging		■
Explicit Messaging		■
Client FDR	■	■
SNMP network administrator	■	■
RSTP	■	■
Discovery	■	■
Master IP	■	■
Broadcast Storm Protection	■	■

Ref.

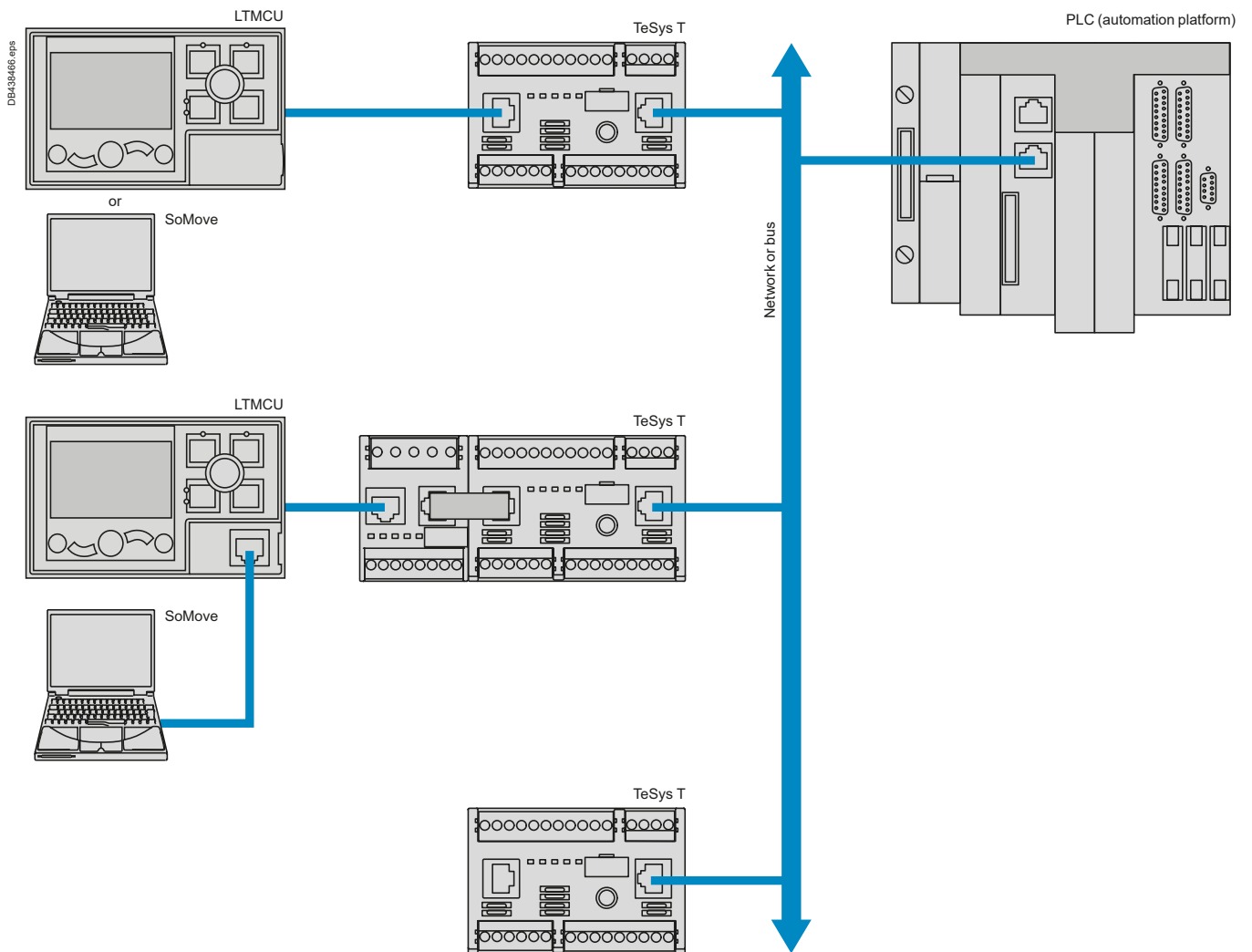


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## T Motor management system

### Characteristics

### Possible configurations and applications



Motor management devices

Ref.

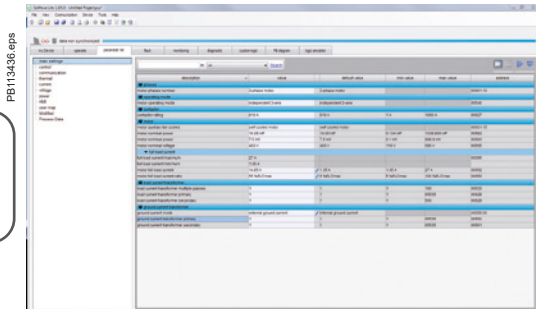


# TeSys Active

## T Motor management system

### Characteristics

Motor management devices



Example of T configurator setup screen

### Configuration with SoMove

The T configurator is incorporated in the SoMove software application, as from version 2.5. <sup>(1)</sup>

It allows configuration, commissioning and maintenance of motor starters protected by TeSys T motor management system.

A library containing predefined motor control mode functions is available in order to:

- allow standardisation
- avoid errors
- reduce motor starter setup times.

5 predefined motor control modes are incorporated in the controller:

- overload mode: monitoring of motors whose control is not managed by the controller
- independent mode: starting of non-reversing motors
- reverser mode: starting of reversing motors
- 2-step mode: 2-step starting of motors (star-delta, by autotransformer and by resistor)
- 2-speed mode: 2-speed starting of motors (Dahlander, pole changer).

By using logic functions, a "Custom" mode makes it possible to:

- easily adapt these predefined motor control mode functions to the specific needs of your applications
- create a link with the motor starter environment or
- create new functions.

The functions thus defined can be saved and used to build your function library for future applications.

To create special functions, a logic editor is incorporated in the configurator and allows a choice of 2 programming languages:

- function block
- structured text.

<sup>(1)</sup> An update file is available, free of charge, on the website "www.se.com". It will enable you to take advantage of the latest functions in the T motor management system.

Ref.

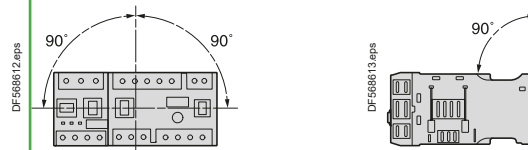


# TeSys Active

## T Motor management system

### Characteristics

Environment		LTMR controllers		LTMEV40 extension modules			
Product type		LTMR controllers		LTMEV40 extension modules			
Conforming to standards		IEC/EN 60947-4-1, UL60947-4-1A, CSA 22-2 n°60947-4-1, IACS E10					
Product certifications		UL, CSA, CE, CCC, UKCA, EAC/GOST, RCM/CTIC'K, Atex, Marine (BV, LROS, DNV, RINA, ABS) <sup>(1)</sup>					
Rated insulation voltage of the outputs (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution 3	V	690				
	Conforming to UL 508, CSA C222 n° 14	V	690				
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-4-1						
	~ 100...240 V supply, inputs and outputs	kV	4	4			
	--- 24 V supply, inputs and outputs	kV	0.8	0.8			
	Communication circuits	kV	0.8	-			
	Current or voltage measurement circuit	kV	6	6			
Short-circuit withstand	Conforming to IEC/EN 60947-4-1	kA	100				
Climatic withstand	Conforming to IEC/EN 60068-2-30		12 x 24 hour cycles				
	Conforming to IEC/EN 60070-2-11	h	48				
Ambient air temperature around the device	Storage	°C	-40...+80				
	Operation	°C	-20...+60				
Operating position without dating	In relation to normal vertical mounting plane		±30° in relation to mounting plate, ±90°				
Flame resistance	Conforming to UL 94	°C	960 (for parts supporting live components)				
	Conforming to IEC/EN 60695-2-12	°C	650 (for other parts)				
Shock resistance (1/2 sine wave, 11 ms)	Conforming to IEC/EN 60068-2-27 <sup>(2)</sup>		15 gn				
Vibration resistance	Conforming to IEC/EN 60068-2-6 <sup>(2)</sup> 5...300 Hz		4 gn (plate mounted) 1 gn (mounted on rail)				
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3 On contact: 6 - Level 3				
Immunity to radiated electromagnetic interference	Conforming to IEC 61000-4-3	V/m	10 - Level 3				
Immunity to fast transient bursts	Conforming to IEC 61000-4-4	kV	On supply and relay outputs: 4 - Level 4 Other circuits: 2 - Level 3				
Immunity to radioelectric fields <sup>(3)</sup>	Conforming to IEC/EN 61000-4-6	V	10 - Level 3				
Immunity to dissipated shock waves	Conforming to IEC/EN 61000-4-5		<b>Common mode</b>	<b>Serial mode</b>	<b>Common mode</b>	<b>Serial mode</b>	
	Relay outputs and supply	kV	4	2	-	-	
	--- 24 V inputs	kV	1	1	1	1	
	~ 100...240 V inputs	kV	2	1	2	1	
	Voltage inputs	kV	-	-	4	2	
	Communication	kV	2	-	2	-	
	Temperature sensor (IT1/IT2)	kV	1	0.5	-	-	
Altitude derating			<b>2000 m</b>	<b>3000 m</b>	<b>3500 m</b>	<b>4000 m</b>	<b>4500 m</b>
	Rated operational voltage (Ui)		1	0.93	0.87	0.8	0.7
	Max. operating temperature		1	0.93	0.92	0.9	0.88



(1) Certain certifications are pending; please consult your Customer Care Centre.

(2) Without modifying the contact states, in the most unfavorable direction.

(3) This product has been designed for use in environment A and in B, it may cause unwanted electromagnetic disturbance to other devices, which may require the implementation of adequate mitigation measures.

Motor management devices

Ref.



Controller and extension module characteristics							
Product type			Controllers		Extension modules		
			LTMR●●●BD	LTMR●●●FM	LTMEV40BD	LTMEV40FM	
<b>Control supply</b>							
Operational voltage (U)	Conforming to IEC/EN 60947-1	V	≡ 24	~ 100...240	-		
Resistance to voltage dips	Conforming to IEC/EN 61000-4-11	V	0 for 3 ms 70 % of U for 500 ms		-		
Associated protection		A	gG fuse, 0.5		-		
Operational voltage	Limit values	V	≡ 20.4...26.24	~ 93.5...264	-		
Current consumption	50/60 Hz	mA	≡ 56...127	~ 8...62.8	-		
Connectors	Pitch	mm	5.08		5.08		
Flexible cable without cable end	1 conductor	mm <sup>2</sup>	0.2...2.5		0.2...2.5		
	2 identical conductors	mm <sup>2</sup>	0.2...1.5		0.2...1.5		
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...2.5		0.25...2.5	
		2 identical conductors	mm <sup>2</sup>	0.5...1.5		0.5...1.5	
	With insulated ferrule	1 conductor	mm <sup>2</sup>	0.25...2.5		0.25...2.5	
		2 identical conductors	mm <sup>2</sup>	0.2...1		0.2...1	
Solid cable without cable end	1 conductor	mm <sup>2</sup>	0.2...2.5		0.2...2.5		
	2 identical conductors	mm <sup>2</sup>	0.2...1		0.2...1		
Conductor size			AWG24 to AWG14		AWG24 to AWG14		
Tightening torque		N.m	0.5...0.6		0.5...0.6		
Flat screwdriver		mm	3		3		
<b>Input characteristics</b>							
Nominal values	Conforming to IEC/EN 61131-1		Type 1 positive logic (≡: resistive, ~: capacitive)				
	Voltage	V	≡ 24	~ 100...240	≡ 24	~ 100...240	
	Current	mA	≡ 7	~ 3.1 for 100 V ~ 7.5 for 240 V	≡ 7	~ 3.1 for 100 V ~ 7.5 for 240 V	
Logic inputs	Logic state 1	Voltage	V	15 min	79 < U < 264	15 min	79 < U < 264
		Current	mA	2 min...15 max	2 min at 110 V... 3 min at 220 V	2 min...15 max	2 min at 110 V... 3 min at 220 V
	Logic state 0	Voltage	V	5 max	0 < U < 40	5 max	0 < U < 40
		Current	mA	15 max	15 max	15 max	15 max
Response time	Change to state 1	ms	15	25	15	25	
	Change to state 0	ms	5	25	5	25	
<b>Output characteristics</b>							
Type			Volt free, single break				
Load	~		250 V / 5 A B300				
	≡		30 V / 5 A				
Permissible power in cat. AC-15	For 500 000 operating cycles	VA	480 / Ie max: 2 A				
Permissible power in cat. DC-13	For 500 000 operating cycles	W	30 / Ie max: 1.25 A				
Associated protection		A	gG fuse, 4				
Max. frequency		Hz	2				
Max. operating level		op. cycles/h	1800				
Response time	Change to state 1	ms	10 max				
	Change to state 0	ms	10 max				
<b>Measurement details</b>							
Current			1 % for the 0.4...8 A and 1.35...27 A ranges 2 % for the 5...100 A range				
Voltage			1 % from 100 to 830 V				
Earth fault current	Internal measurement without earth fault toroid		5...15 % for current > 0.1 A in the 0.4...8 A range current > 0.2 A in the 1.35...27 A range current > 0.3 A in the 5...100 A range				
	External measurement with earth fault toroid		< 5 % or 0.01 A				
Temperature measurement			2 %				
Power factor			10 %				
Active and reactive power			15 %				
Internal clock			±30 min / year				



# TeSys Active

## T Motor management system

### Characteristics

#### Bus and network characteristics

Type of bus/network	Modbus	CANopen	DeviceNet	Profibus DP	Ethernet
Physical interface	2-wire RS 485	ISO 11898	ISO 11898	polarised 2-wire RS 485	IEEE 802.3
Addressing	1 to 247	1 to 127	1 to 64	1 to 125	0 to 159 <sup>(1)</sup>
Transmission speeds	1.2 to 19.2 kb/s	10, 20, 50, 125, 250, 500, 800 and 1000 kb/s + Auto baud	125 to 500 kb/s	9.6 kb to 12 Mb/s	10/100 Mb/s, with automatic recognition
Connections	RJ45/terminal block	9-way SUB-D/terminal block	Terminal block	9-way SUB-D/terminal block	RJ45
Cables	2 shielded twisted pairs	4 twisted, shielded wires	4 twisted, shielded wires	2 shielded twisted pairs, type A	2 shielded twisted pairs

#### LTMCU operator control unit

##### Environment

Conforming to standards		IEC/EN 61131-2, UL60947-4-1A, CSA 22-2 n°60947-4-1
Product certifications		UL, CSA, CE, EAC/GOST, RCM/CTIC'K
Ambient air temperature around the device	Storage Operation	°C °C
		-40...+80 -20...+60
Relative humidity		15...95 % without condensation
Climatic withstand	Conforming to IEC/EN 60068-2-30	12 x 24 hour cycles
Degree of protection	Conforming to IEC 60947-1	IP54
Shock resistance	Conforming to IEC/EN 60068-2-27	15 gn / 11ms
Vibration resistance	Conforming to IEC/EN 60068-2-6 5...300 Hz	4 gn
Flame resistance	Conforming to IEC 60947-1 Conforming to UL 94	°C
		650 V2

##### Electrical characteristics

Supply to the product		Powered via the controller
Maximum current	<b>mA</b>	140
Maximum power dissipated	<b>W</b>	1
Resistance to electromagnetic discharge	Conforming to IEC/EN 61000-4-2	<b>kV</b>
		In open air: 8. Level 3 On contact: 4. Level 3
Immunity to radiated electromagnetic interference	Conforming to IEC/EN 61000-4-3	<b>V/m</b>
		10 - Level 3
Immunity to fast transient bursts	Conforming to IEC/EN 61000-4-4	<b>kV</b>
		2, shielded access. Level 3
Immunity to radioelectric fields	Conforming to IEC/EN 61000-4-6	<b>V</b>
		10. Level 3
Immunity to shock waves	Conforming to IEC/EN 61000-4-5	<b>kV</b>
		2, shielded access. Level 3

##### Physical characteristics

Mounting		Flush mounted
Display		Backlit LCD
Signalling		By 4 LEDs
Cabling		RJ45

<sup>(1)</sup> For DHCP, stored IP, addressing limited by subnet mask.

# TeSys Active

## T Motor management system

### Characteristics

Motor management devices

#### LT6CT●●●● external current transformer characteristics

Conforming to standards	IEC 60185, BS 7626				
Precision	Class 5P				
Precision limit factor	15				
Rated insulation voltage (Ui)	690				
Maximum operating temperature	°C	50			
Transformer ratio	A	100/1	200/1	400/1	800/1
Diameter of conductor passage hole	mm	35	35	35	35
Maximum cabling c.s.a.	mm <sup>2</sup>	30 x 10	30 x 10	30 x 10	incorporated <sup>(1)</sup>

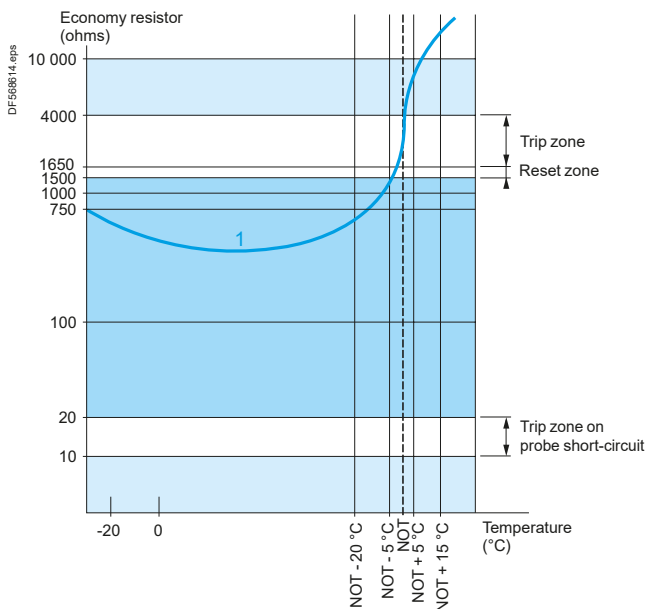
#### Earth fault toroid characteristics

Toroid type	50437	50438	50439	50440	50441	50442	50485	50486	
Rated insulation voltage Ui	V 1000								
Operating temperature	°C - 35... + 70								
Protection index	IP30 (connections IP20)								
Transformer ratio	1/1000								
Rated operational current Ie	A	65	85	160	250	400	630	85	250
Max. conductor c.s.a. per phase	mm <sup>2</sup>	25	50	95	240	2 x 185	2 x 240	50	240

#### DA1TT●● probe characteristics

Conforming to standards	IEC 60034-11 mark A	
Economy resistor	At 25 °C	Ω 3 x 250 in series
Rated operational voltage (Ue)	Per probe	V --- 2.5 max
Rated insulation voltage (Ui)		kV 2.5
Insulation		Reinforced
Length of connecting cables	Between probes	mm 250
	Between probe and motor terminal plate	m 1

**Guaranteed operating zones:** example with 3 probes type DA1TT●●● (250 Ω at 25 °C) in series, conforming to standard EC 60034-11, mark A.



1 3 probes type DA1●●● (250 Ω at 25 °C) in series.

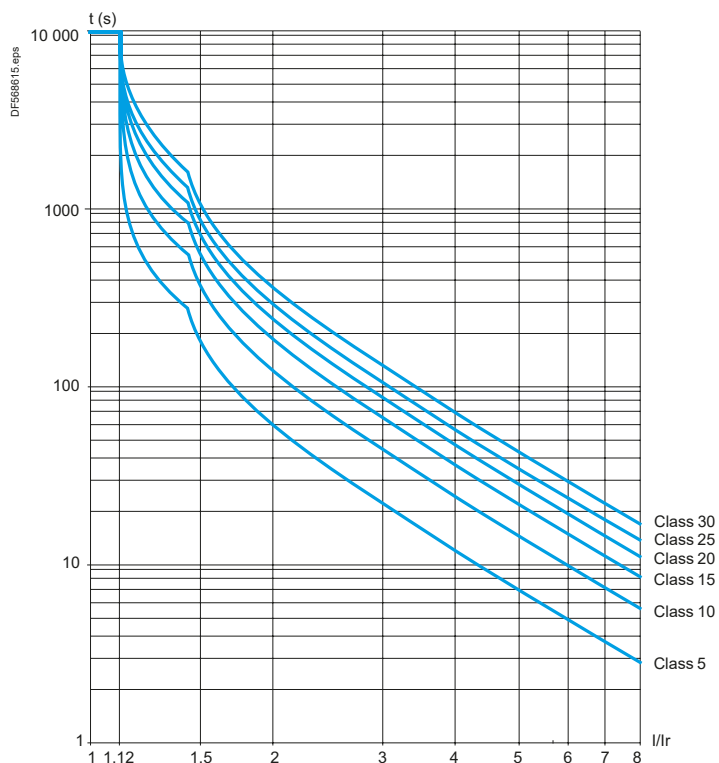
NOT: Nominal Operating Temperature.

Protection unit tripped.

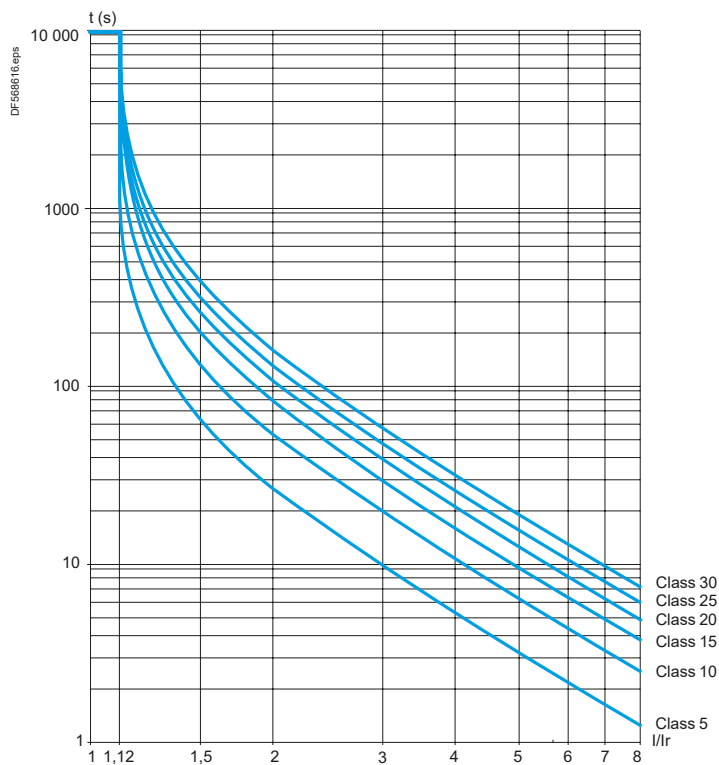
Protection unit reset.

<sup>(1)</sup> Electrical connection to be made using M10 bolt.

### Cold state curves



### Hot state curves



Motor management devices

Ref.

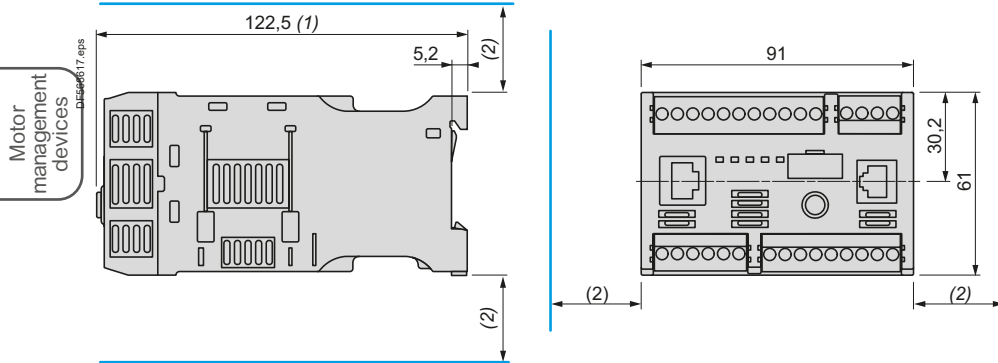


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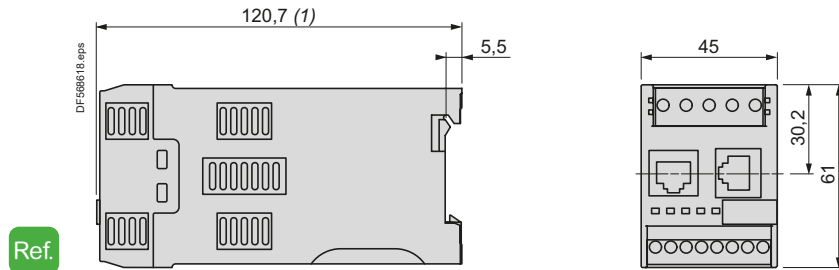
## T Motor management system

### Dimensions, mounting

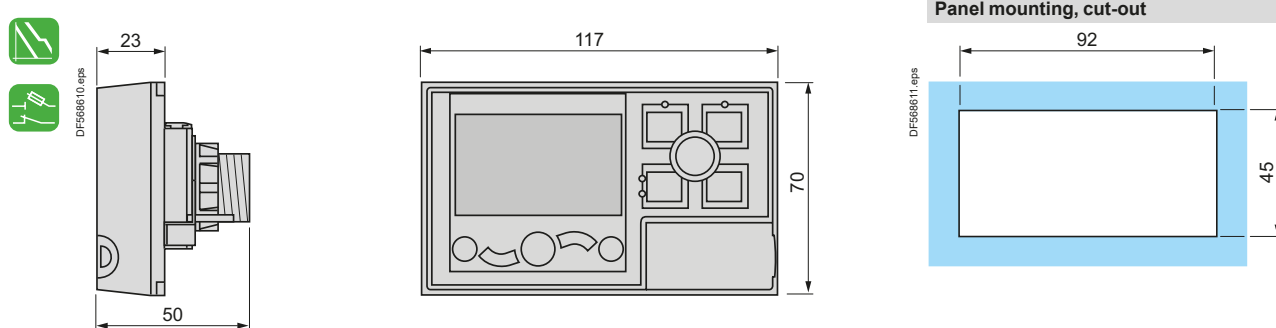
#### LTMR●● controllers



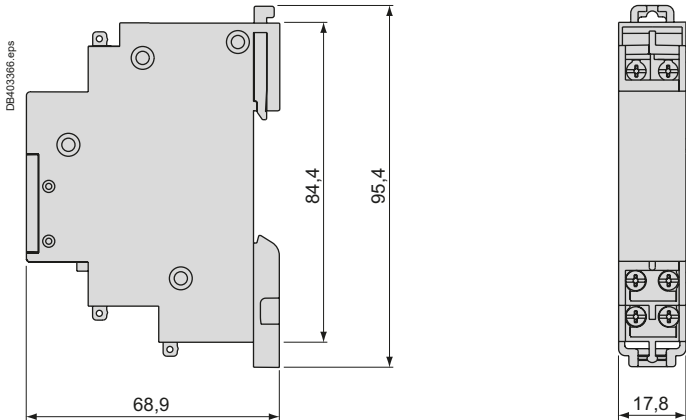
#### LTMEV40●● extension modules



#### LTMCU operator control unit



#### LTM9F



- (1) 140 mm with RJ45 connector for connection to extension module and to network, 166 mm with Profibus DP/CANopen connector.
- (2) Leave a gap around the device of: 9 mm at 45 °C, 9 to 40 mm from 45 to 50 °C, 40 mm at 60 °C.

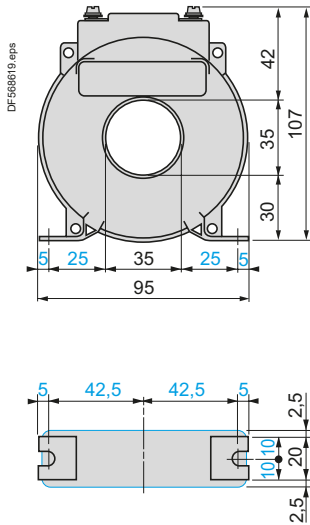
# TeSys Active

## T Motor management system

### Dimensions

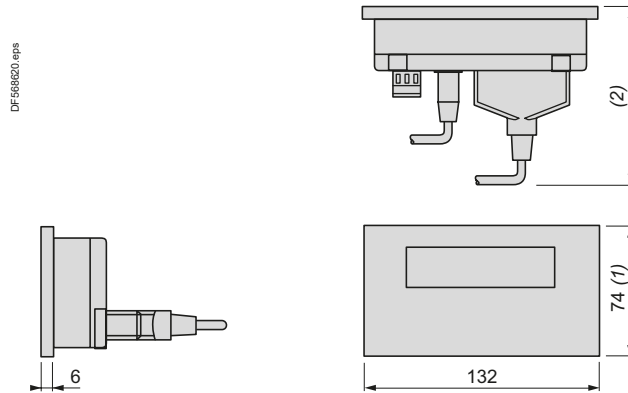
#### Current transformers

##### LT6CT



#### HMI terminal

##### XBTN410



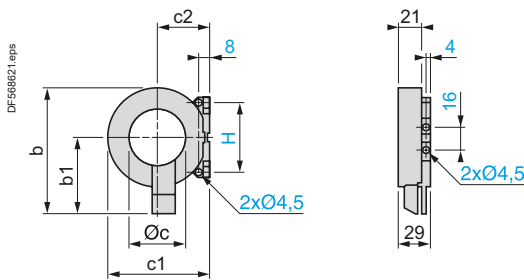
(1) 104 mm with fixing clips (supplied with the product).

(2) 58 mm with SUB-D 25-way elbowed cable **XBTZ9680** for Twido, TSX Micro and Premium or **XBTZ998** for Advantys STB.

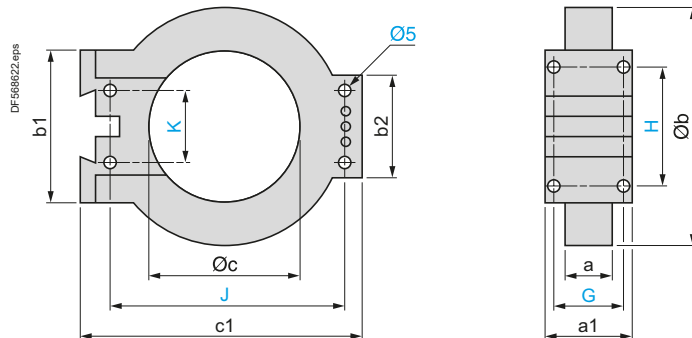
104 mm with SUB-D 25-way cable **XBTZ68/Z9681** for Twido, TSX Micro and Premium.

#### Earth fault toroids

##### 50437 and 50438



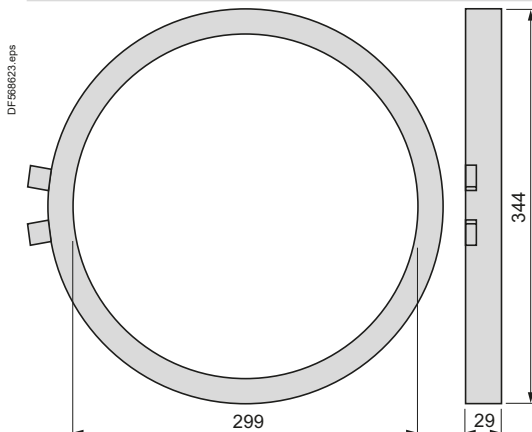
##### 50439, 50440 and 50441



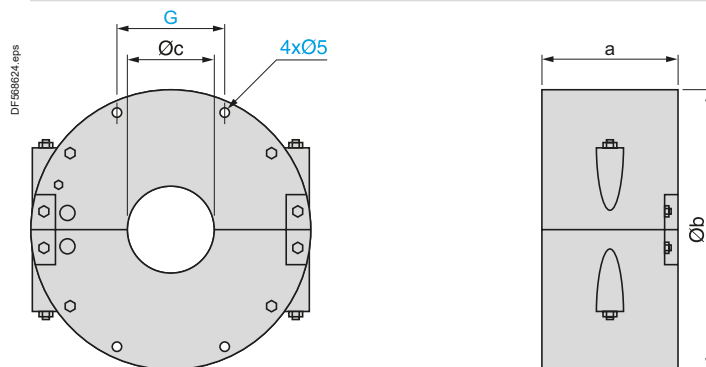
Type	b	b1	Øc	c1	c2	H
50437	83	53	30	60	31	50
50438	109	66	50	87	45	60

Type	a	a1	Øb	b1	b2	Øc	c1	G	H	J	K
50439	26.5	44	122	80	55	80	150	35	65	126	40
50440	26.5	44	164	80	55	120	190	35	65	166	40
50441	29	46	256	120	90	196	274	37	104	254	60

##### 50442



##### 50485 and 50486



Type	a	Øb	Øc	G
50485	72	148	46	57
50486	78	224	110	76

References:  
pages C1/4 to C1/11

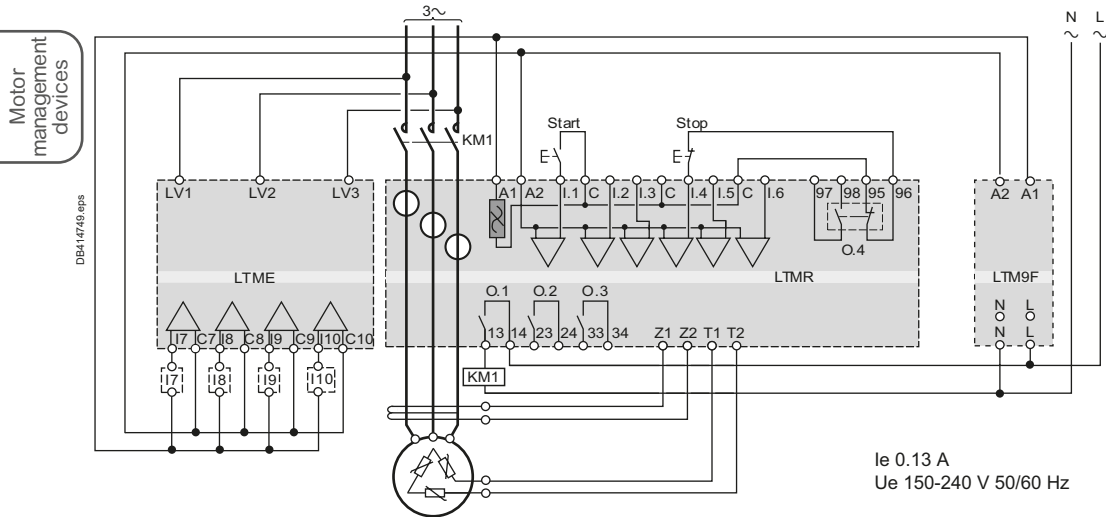
Characteristics:  
pages C1/22 to C1/36

Curves:  
page C1/37

Schemes:  
pages C1/40 to C1/43

#### Schemes

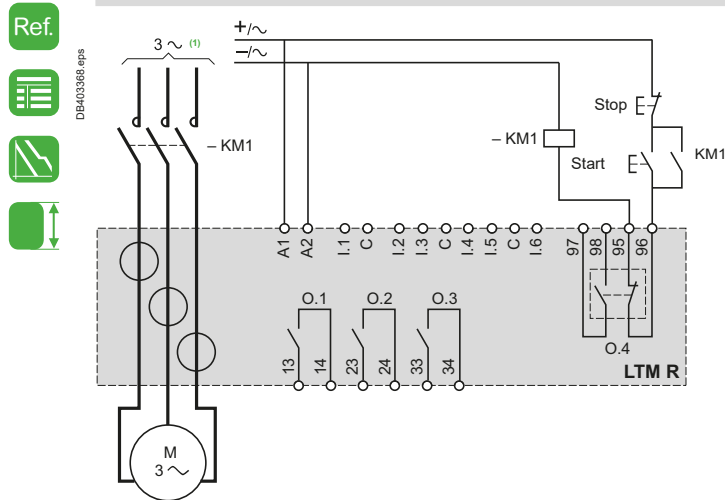
#### LTMR●●FM wiring with LTM9F filter



**Note:** inputs **MUST** be connected across the common terminals (C).

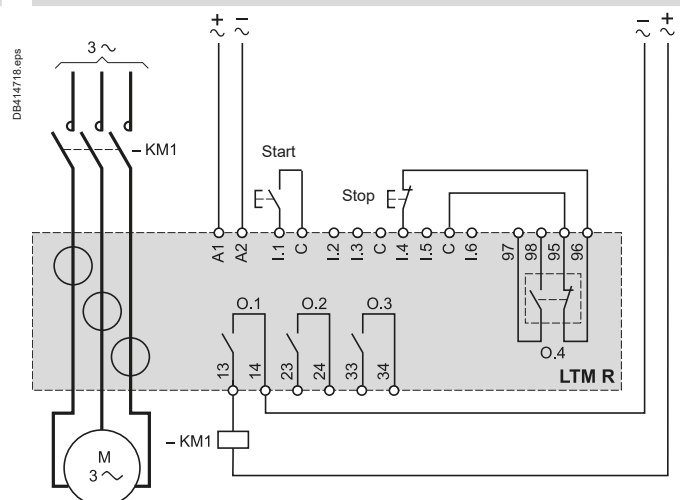
#### Overload mode

##### 3-wire local-control



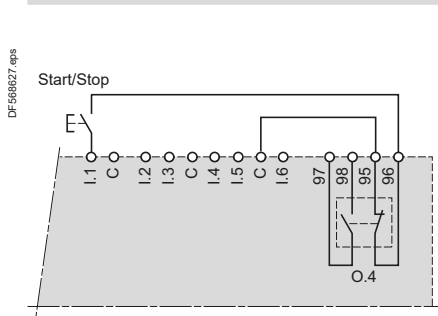
#### Independent mode

##### 3-wire local-control

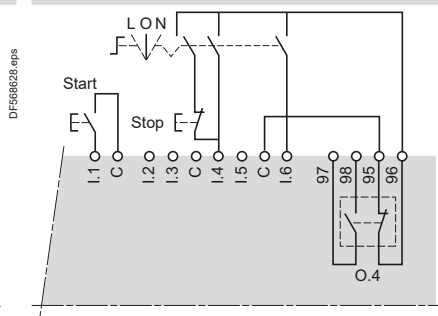


(1) Connection of a single-phase motor is possible. In this case, do not use the central current transformer.

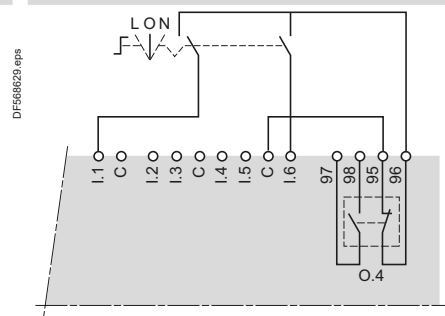
#### 2-wire local-control



#### 3-wire with switchable local/network control



#### 2-wire with switchable local/network control



L: Local control  
O: Stop  
N: Network control

# TeSys Active

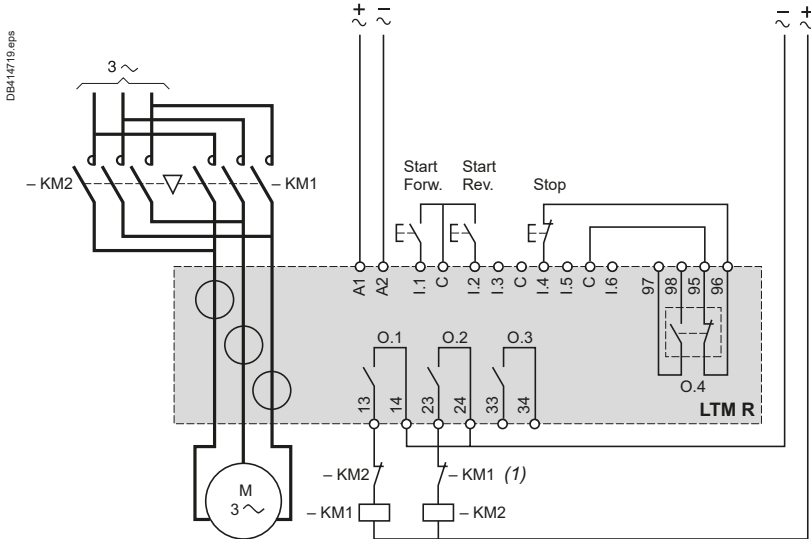
## T Motor management system

### Schemes

#### Schemes

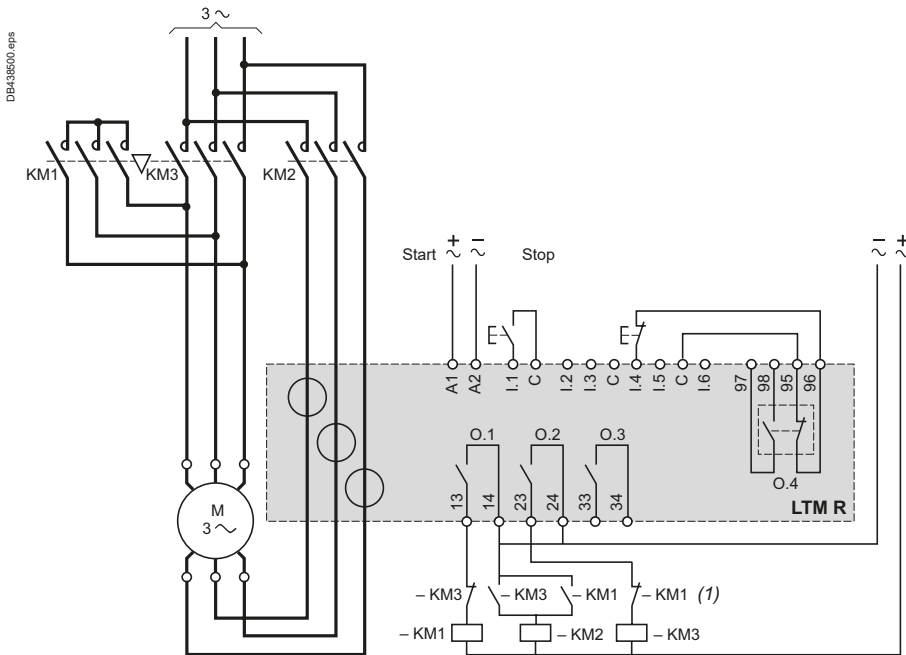
##### Reverser mode

##### 3-wire local-control



##### 2-step mode, star-delta application

##### 3-wire local-control



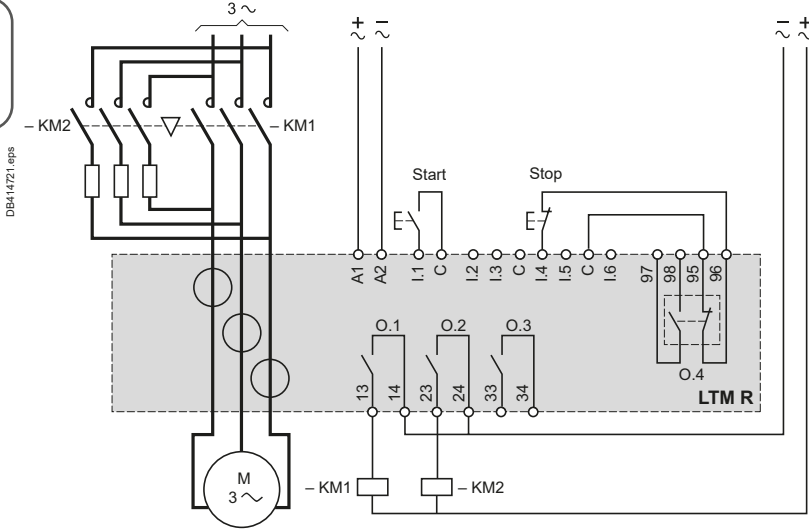
(1) Contacts for interlocking KM1 and KM2 are not obligatory because the controller electronically interlocks outputs O.1 and O.2.

#### Schemes

##### 2-step mode, primary resistor application

##### 3-wire local-control

Motor management devices

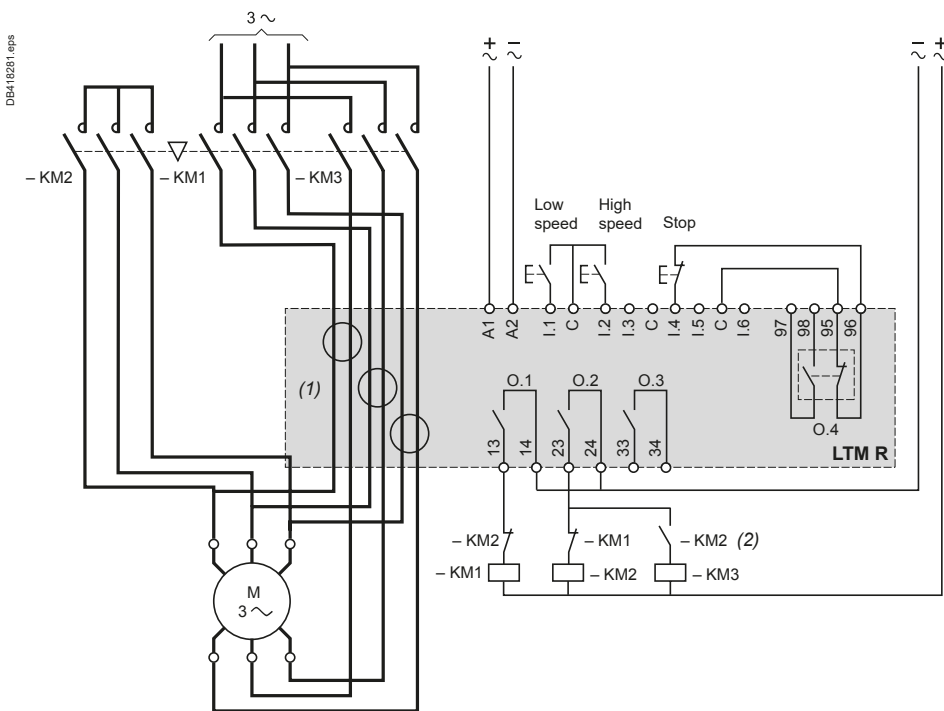


Ref.

##### 2-speed mode, Dahlander application

##### 3-wire local-control

Motor management devices

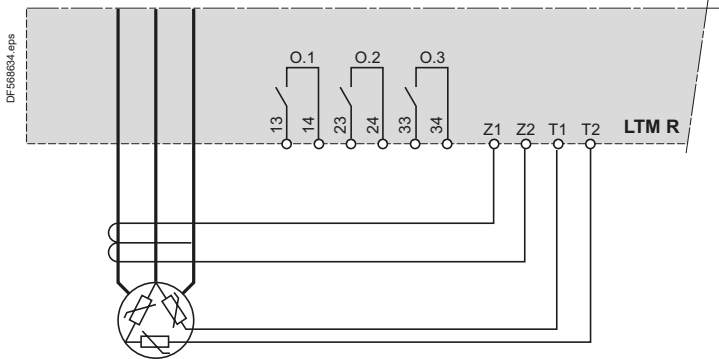


- (1) For a Dahlander application, all the power cables must pass through current transformers. The controller can also be placed upstream of the contactor. In this case, and if the Dahlander motor is used in "variable torque" mode, all the cables downstream of the contactors must be of identical size.
- (2) Contacts for interlocking KM1 and KM2 are not obligatory because the controller electronically interlocks outputs O.1 and O.2.



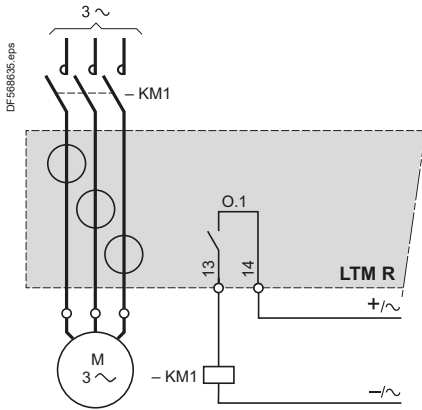
#### Schemes

#### Earth fault toroid and motor temperature probe connection

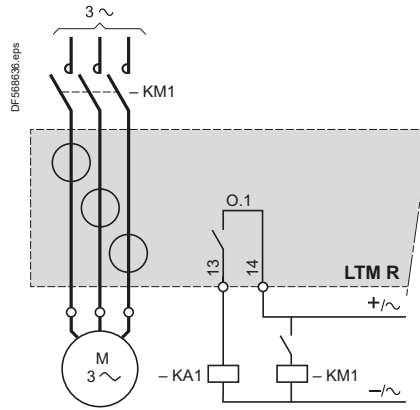


#### Connection of outputs for motor control mode function

##### Without intermediate relay



##### With intermediate relay



Motor management devices

Ref.





## TeSys island Motor starters

### Type of information

### Pages

#### Introduction

Digital multifunctional load management solution



C2/2

Control and  
monitoring  
island

## Digital multifunctional load management solution

TeSys Active - island Motor starters are designed to switch, protect, and manage motors and other electrical loads up to 80 Amps (AC3) in an electrical control panel.



### Dedicated to Control and Monitor Machine and Processes

TeSys island is a digital load management solution that makes machines and processes smarter and more reliable.

TeSys island is a fully digitized and object-oriented load management system and an Industry 4.0 compliant data provider.

It is reducing time to market and is enabling OEMs to move forward in their Industry 4.0 journey.

### Benefits of the object-oriented functional approach

The TeSys avatar approach simplifies application and system configuration and reduces engineering tasks. Thus TeSys island makes the machine engineering and installation phase much faster.

In addition, TeSys island can be easily integrated into 3<sup>rd</sup> party automation systems and supports several fieldbuses like EtherNet/IP, Modbus TCP, PROFINET and PROFIBUS.

TeSys island gives users access to all relevant load data for advanced system diagnostics.



## More information

- Watch videos, read documents and use the product selector online on Schneider Electric website.

# TeSys Active island Motor starters

## Introduction

TeSys island catalog:



> Ref. Document:  
LVCATISL\_EN

TeSys island design guides:

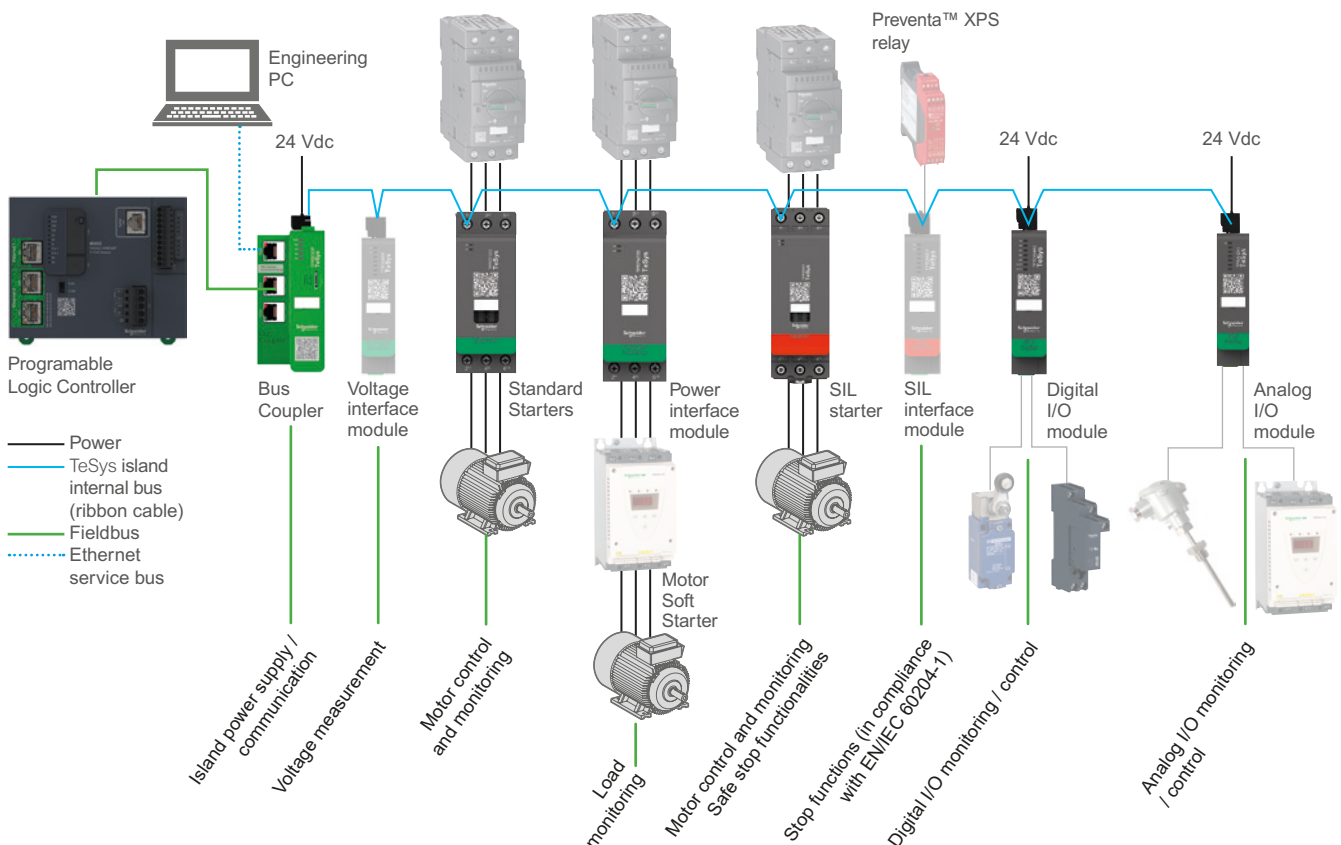
- > 8536IB1901: TeSys island System Guide
- > 8536IB1902: TeSys island Installation Guide
- > 8536IB1903: TeSys island Operating Guide
- > 8536IB1904: TeSys island Functional Safety (Safe Stop according to EN 61800-5-2) Guide
- > 8536IB1905: Third Party Function Block Guide and more.

## Main characteristics

- TeSys island manages motors and other electrical loads up to 80 A (AC-3) / 37 kW/40 hp
- Fieldbus connectivity via bus coupler for EtherNet/IP, Modbus TCP, PROFINET or PROFIBUS
- Availability of all relevant load data like current, power, energy and advanced diagnostic data
- Simplified engineering and commissioning due to TeSys avatar objects and dedicated configuration and maintenance tools
- Up to 20 modules on 1 island mounted on DIN rail (up to 112 cm length)
- No control or auxiliary wiring required, thanks to full connectivity over fieldbus
- All adjustments and setting are digitized, no mechanical dials or dip switches
- Limited number of references including 5 starter sizes, digital & analog I/Os and voltage measurement modules
- SIL starter available for integration into functional safety systems according to IEC 61508, IEC 62061 and ISO 13849-1, including TUV certification (Stop 0 and 1 with wiring categories 1 to 2, suitable for PL c, d and SIL level 2), UKCA
- Fully compliant to international standards (IEC / UL / CSA 61010, IEC / UL / CSA 60947, GB/T14018)
- Embedded Cybersecurity (Achilles Level 2).

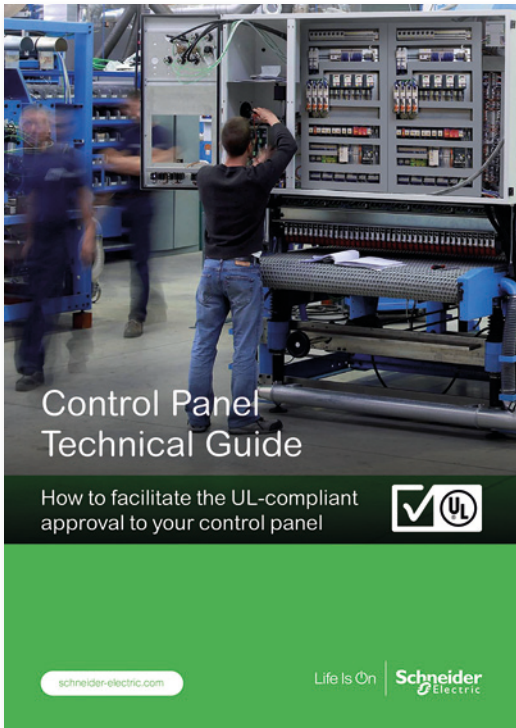
Control and monitoring island

## Modular architecture, thanks to TeSys Active - island Motor starters internal bus



## Control Panel Technical guides

- > Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.
- > Free download on [www.se.com](http://www.se.com) with the document reference or from the QR codes.



How to facilitate the UL-compliant approval to your control panel

> Ref: CPTG005\_EN

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How to prevent machine malfunctions and electronic damage due to voltage surges

> Ref: CPTG002\_EN

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How to protect a machine from malfunctions due to electromagnetic disturbance

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How to reduce damage to components through effective thermal management

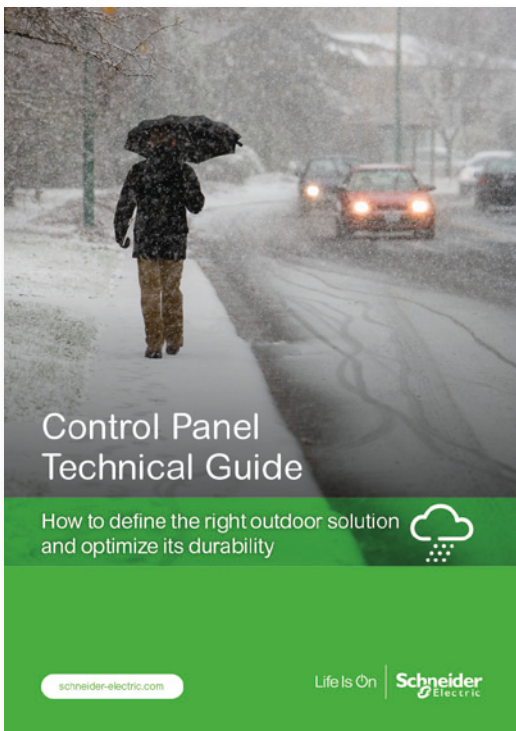
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How to select the appropriate motor starters for your HVAC & R\* equipments

\* Heating, Ventilation, Air conditioning & Refrigeration

> Ref: CPTG007\_EN

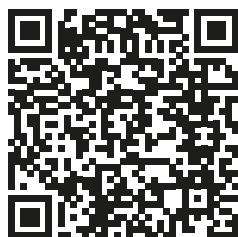
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How to choose the circuit breaker and transfer switch for a generator set

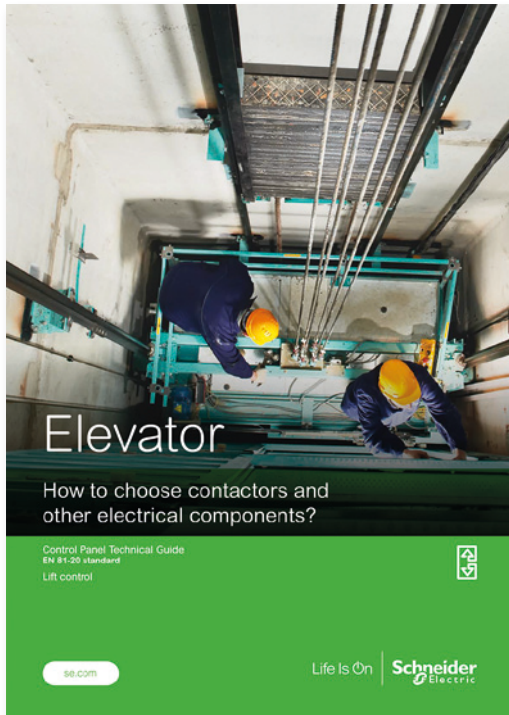
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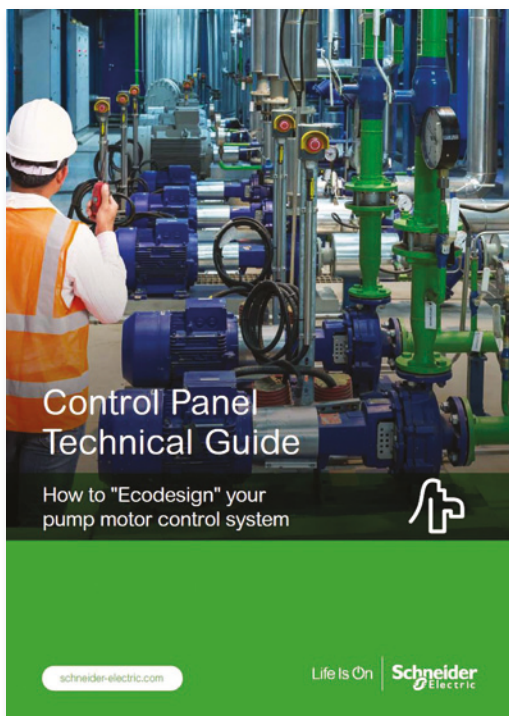


**New edition 2020**

Elevator  
How to choose contactors and other electrical components

> Ref: CPTG009\_EN

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How to "Ecodesign" your pump motor control system

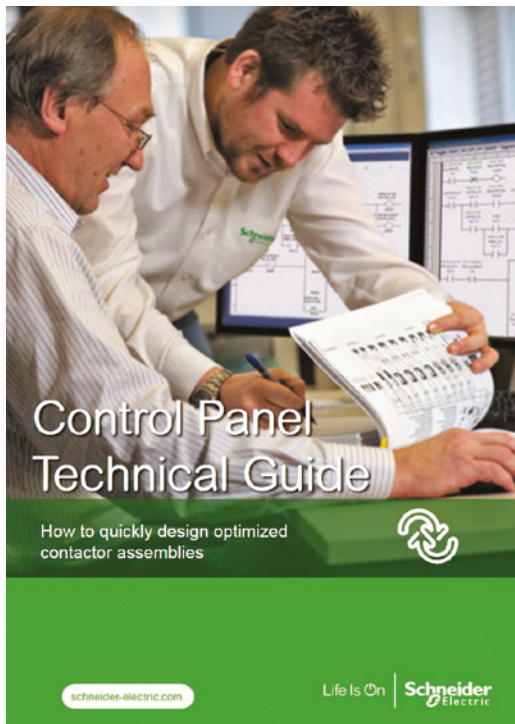
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How to quickly design optimized contactor assemblies

> Ref: CPTG011\_EN

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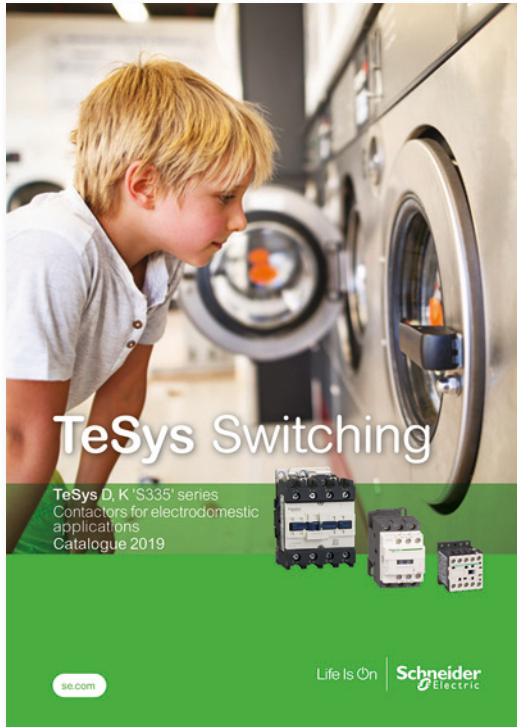


## Catalogues of contactors for specific applications

> For applications requiring components conforming to specific standards with increased severity.

### > TeSys Switching

TeSys D, K S355 and S207 series contactors are built for these purpose, with new materials.

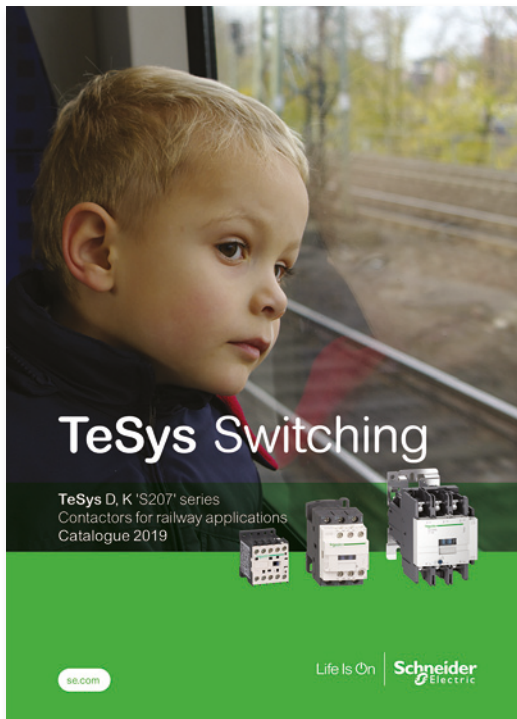
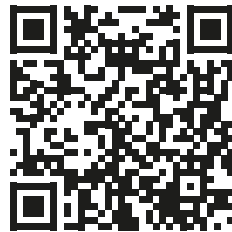


### > TeSys Switching

TeSys D, K 'S355 series' (EN60335 standards)  
Contactors for electrodomestic applications

> Ref: LVCATESDK335\_EN

> [Click on QR code to download.](#)

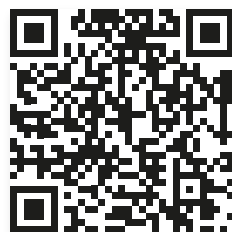


### > TeSys Switching

TeSys D, K 'S207' series (EN45545 R22 HL3 standards)  
Contactors for railways applications

> Ref: LVCATRAIL\_EN

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# Green Premium™

An industry leading portfolio of offers delivering sustainable value



More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

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- REACH substance information
- Industry leading # of PEP's\*
- Circularity instructions



Discover what we mean by green  
**Check your products!**

The Green Premium program stands for our commitment to deliver customer valued sustainable performance. It has been upgraded with recognized environmental claims and extended to cover all offers including Products, Services and Solutions.

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Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO<sub>2</sub> emissions.

#### Cost of ownership optimization through... Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

#### Peace of mind through... Well-being Performance

Green Premium products are RoHS and REACH compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

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Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

\*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

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