RZ7-FE Electronic Timing Relays

The economical choice for most industrial timing applications

The RZ7-FEM multifunction timing relay combines all functions in one device.

Sprecher + Schuh's RZ7-FE electronic timing relays offer seven popular output functions in an economical package. This series is especially designed for applications where a high quality, yet basic timing relay is required. Timing formats include ON-delay, OFF-delay, Wye-Delta and four other choices. All models are multi-time relays, meaning that various time ranges (from 0.05 seconds to 10 hours) can be selected from the face of the relay.

Solid state accuracy and reliability

Except for their hard silver contacts, all RZ7-FE timing relays are built with solid state surface mounted electronics and are accurate to within one percent. Their ruggedness and accuracy is due to the thorough testing of function, timing characteristics and surge voltage strength performed on *each device* prior to shipment.

In addition, RZ7-FE relays function reliably from 15% under rated operating voltage to 10% over rated operating voltage (AC). Voltage tolerance is even greater in DC applications.

Universal voltage capability

All RZ7-FE timing relays operate with multiple supply voltages ranging from 24VAC or DC to 240VAC. Universal voltage capability means smaller inventories and more flexibility.

Choose from two different output contacts

New to the RZ7-FE series is the choice between one normally open (NO) contact or one single pole double throw (SPDT) contact. The new SPDT version can be used either normally open or normally closed. This version has several technical advantages such as shorter impulse duration requirements and a faster recovery time.

Multiple functions in one relay

The RZ7-FEM relay combines four of the most popular timing functions into one device. Six timing ranges are included that are individually selectable from 0.05 seconds to 10 hours. This multifunction relay reduces inventories and is ideal for maintaining remote installations where stocking several different timing relays would not be practical.

Many safety and convenience features

- Each relay is equipped with an LED that indicates output status conditions.
- Finger and back of hand protection to IP40.
- Terminals are captive and supplied in the open position.
- All RZ7's can be surface mounted, rail mounted, or mounted directly on our family of CA7/CS7 or CA4/CS4 devices.
- RZ7 relays can be mounted in any plane.
- Terminals, setting knob and LED's are all accessible from the front of the unit.
- RZ7-FE Timing Relays are very compact, measuring approximately 1" x 3" x 3".

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Quick Selection Guide

Single Function Timing Relays

RZ7-FE	A	1	S	U22
Type	**Function**	**Contacts**	**Time Ranges**	**Supply Voltages**
	A On-Delay **B** Off-Delay **D** One Shot / Watchdog **E** Fleeting Off-Delay **F** Symmetric flasher starting with a pulse **L** Impulse Converter	*Functions A, B, D & F* **1** One normally open contact	**S** 0.75…1 hour ❶	**U22** 24VAC or DC A3/A2 110…240V 50/60Hz A1/A2
		All Functions: **3** One single pole double contact	**T** 0.05s…10 hours ❶	**U23** 24…48VDC A1/A2 24…240V 50/60Hz A1/A2

Multi-Function Timing Relays

RZ7-FE	M	1	R	U22
Type	**Function**	**Contacts**	**Time Ranges**	**Supply Voltages**
	M Multi-function *Four single functions* *- On-delay* *- Off-delay* *- One shot* *- Symmetric flasher starting with a pulse*	**1** One normally open contact	**R** 0.5…1 hour ❶	**U22** 24VAC or DC A3/A2 110…240V 50/60Hz A1/A2
		3 One single pole double contact	**T** 0.05s…10 hours ❶	**U23** 24…48VDC A1/A2 24…240V 50/60Hz A1/A2

Special Function Timing Relays

RZ7-FE	Y	2	Q	U23
Type	**Function**	**Contacts**	**Time Ranges**	**Supply Voltages**
	Y Wye-Delta Timing Relay	**2** Two normally open contacts (one side common)	**Q** 0.15s…10 minutes ❶	**U23** 24…48VDC A1/A2 24…240V 50/60Hz A1/A2

❶ Multi-time setting range. See appropriate catalog page for specific time settings.

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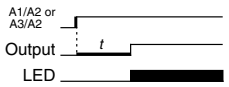
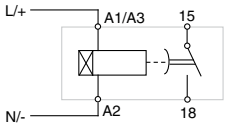
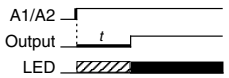
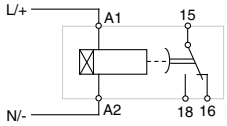
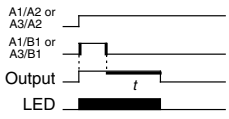
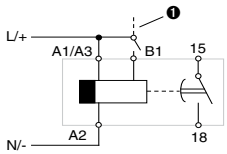
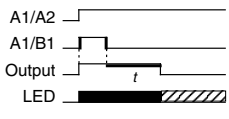
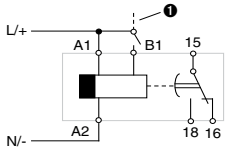
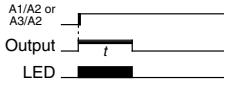
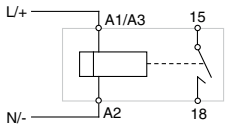
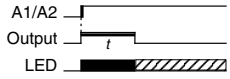
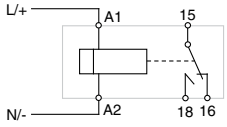
RZ7-FE Timing Relays – Single Function, One Pole

Functional Description	Functional Diagram	Terminal Arrangement	Type	Catalog Number	Price
ON-Delay Timing Relay (A) When supply voltage is applied, output contact(s) change state after time delay *t*.			• One NO contact • Multi-timing range (from 0.75s to 1h) ❷ • Supply voltage selected via wiring terminals A1, A2 or A3 • LED indicator	**RZ7-FEA1SU22**	**84**
			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEA3TU23**	**90**
OFF-Delay Timing Relay (B) When control contact B1 closes, the output contact changes state immediately. When control contact B1 opens, the output contact changes state after time delay *t*. Constant supply voltage required on terminals A1/A2 or A3/A2. ***Note:*** *Control pulse duration minimum 250ms for RZ7-FEB1SU22; 50ms (AC) and 30ms (DC) for RZ7-FEB3TU23.*			• One NO contact • Multi-timing range (from 0.75s to 1h) ❷ • Supply voltage selected via wiring terminals A1, A2 or A3 • LED indicator	**RZ7-FEB1SU22**	**90**
			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEB3TU23**	**97**
One Shot Relay / Watchdog (D) When supply voltage is applied, the output contact changes state for time period *t*.			• One NO contact • Multi-timing range (from 0.75s to 1h) ❷ • Supply voltage selected via wiring terminals A1, A2 or A3 • LED indicator	**RZ7-FED1SU22**	**84**
			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FED3TU23**	**90**

Supply Voltage

The last three digits in the catalog number represent the supply voltage range the relay will accept:

U22	24V AC or DC	(A3/A2)
	110…240V 50/60Hz	(A1/A2)
U23	24…48VDC and 24…240V 50/60Hz	(A1/A2)

Bi-Color LED

Relays with SPDT contacts have bi-color LEDs to indicate function:

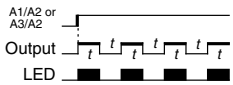
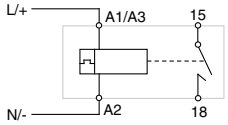
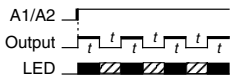
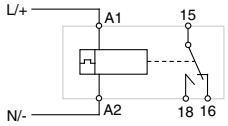
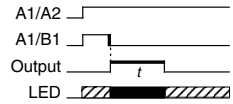
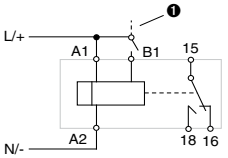
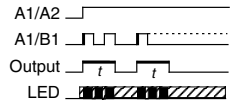
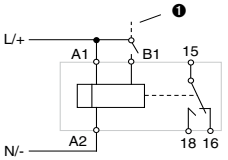
▨	LED = green	Supply voltage available
■	LED = red	Output is energized

Timing Ranges	
RZ7-FE with NO contact	**RZ7-FE with SPDT contact**
(15s) 0.75…15 sec (1mn) 0.05…1 min (8mn) 0.4…8 min (1h) 0.05…1 hour	(1s) 0.05…1 sec (10s) 0.5…10 sec (1mn) 0.05…1 min (10mn) 0.5…10 min (1h) 0.05…1 hour (10h) 0.5…10 hours

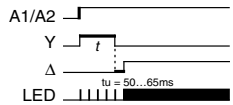
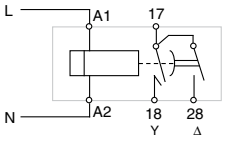
RZ7-FE timing relay

❶ For timing control, a voltage other than the supply voltage can also be used.
❷ Timing range is screwdriver selectable from the faceplate.

RZ7-FE Timing Relays – Single Function, One Pole

Functional Description	Functional Diagram	Terminal Arrangement	Type	Catalog Number	Price
Symmetric Flasher Starting With A Pulse (F) When supply voltage is applied, the output contact changes state immediately and then repeatedly changes after every time period *t*, continuing until supply voltage is removed.			• One NO contact • Multi-timing range (from 0.75s to 1h) ❷ • Supply voltage selected via wiring terminals A1, A2 or A3 • LED indicator	**RZ7-FEF1SU22**	**84**
			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEF3TU23**	**90**
Fleeting OFF-Delay Timing Relay (E) When control contact B1 is pulsed, the output contact changes state for time period *t*. ***Note:*** *Control pulse duration minimum 50ms (AC) - 30ms (DC).*			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEE3TU23**	**97**
Impulse Converter (L) When a pulse is applied to control contact B1, the output contact changes state immediately for time period *t*. Pulses received during timing period *t* have no further effect. ***Note:*** *The period t is not dependent on the length of the control pulse. Control pulse duration minimum 50ms (AC) - 30ms (DC).*			• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEL3TU23**	**97**

RZ7-FE Timing Relays – Special Function, One Pole

Functional Description	Functional Diagram	Terminal Arrangement	Type	Catalog Number	Price
Wye-Delta Timing Relay (Y) When supply voltage is applied, output contact Y closes for time period *t*. After time period *t*, plus a fixed time period t_u, (50-65ms) output contact Δ closes.			• Two single pole N.O. contacts (one side common) • Multi-timing range (from 0.15s to 10m) ❷ • "Universal" terminals accept all appropriate supply voltages • LED indicator	**RZ7-FEY2QU23**	**121**

Supply Voltage

The last three digits in the catalog number represent the supply voltage range the relay will accept:

U22	24V AC or DC	(A3/A2)
	110…240V 50/60Hz	(A1/A2)
U23	24…48VDC and 24…240V 50/60Hz	(A1/A2)

Timing Ranges		
RZ7-FE with NO contact	**RZ7-FE with SPDT contact**	**RZ7-FEY with two NO contacts**
(15s) 0.75…15 sec (1mn) 0.05…1 min (8mn) 0.4…8 min (1h) 0.05…1 hour	(1s) 0.05…1 sec (10s) 0.5…10 sec (1mn) 0.05…1 min (10mn) 0.5…10 min (1h) 0.05…1 hour (10h) 0.5…10 hours	(3s) 0.15…3 sec (10s) 0.5…10 sec (1mn) 0.05…1 min (10mn) 0.5…10 min

Bi-Color LED

Relays with SPDT contacts have bi-color LEDs to indicate function:

//////////	LED = green	Supply voltage available
▬▬▬▬▬	LED = red	Output is energized

❶ For timing control, a voltage other than the supply voltage can also be used.
❷ Timing range is screwdriver selectable from the faceplate.

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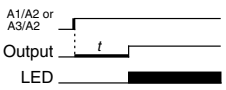
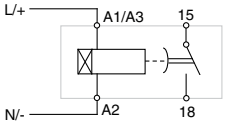
RZ7-FE Timing Relays – Multi-Function, One Pole

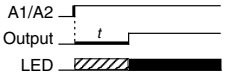
RZ7-FEM Multi-function Relay	Functional Description	Type	Catalog Number	Price
	**Multi-Function Relay (M)** The RZ7-FEM multifunction relay combines *four* timing functions in one device. Each timing function and timing range is selectable from the face of the relay with a screwdriver actuated knob. The RZ7-FEM offers the following timing functions: On-Delay — Off-Delay One Shot/Watchdog — Symmetric Flasher Starting With a Pulse The RZ7-FEM3 offers one single pole double throw contact that can be used as either a normally open or normally closed contact.	• One NO contact • Multi-timing range (from 0.5s to 1h) ❷ • Supply voltage selected via wiring terminals A1, A2 or A3 • LED indicator	**RZ7-FEM1RU22**	**114**
		• One SPDT contact • Multi-timing range (from 0.05s to 10h) ❷ • "Universal" terminals accept all appropriate supply voltages • Bi-color LED indicator	**RZ7-FEM3TU23**	**121**

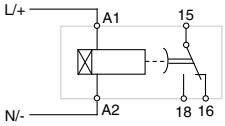
On-Delay (A)





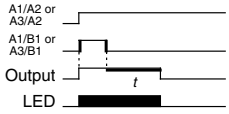
1 N.O.

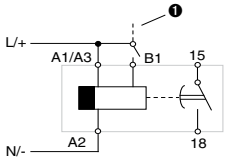




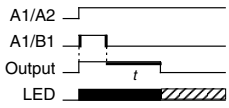
1 S.P.D.T.

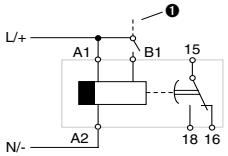
Off-Delay (B)





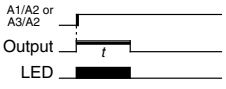
1 N.O.

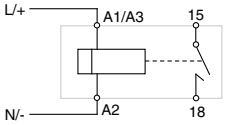




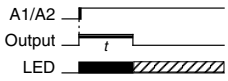
1 S.P.D.T.

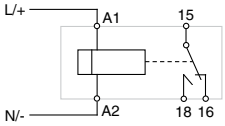
On-Shot / Watchdog (D)





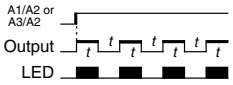
1 N.O.

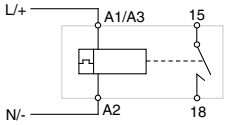




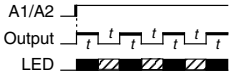
1 S.P.D.T.

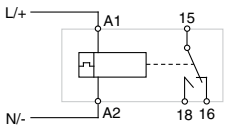
Symmetric Flasher Starting With A Pulse (F)





1 N.O.





1 S.P.D.T.

Supply Voltage

The last three digits in the catalog number represent the supply voltage range the relay will accept:

U22	24V AC or DC	(A3/A2)
	110…240V 50/60Hz	(A1/A2)
U23	24…48VDC and 24V…240V 50/60Hz	(A1/A2)

Bi-Color LED

RZ7-FEM timing relays with single pole double throw contacts have bi-color LEDs to indicate function:

▨	LED = green	Supply voltage available
■	LED = red	Output is energized

Timing Ranges	
RZ7-FEM with one NO contact	**RZ7-FEM with one SPDT contact**
(10s) 0.5…10 secs (1mn) 0.05…1 min (10mn) 0.5…10 min (1h) 0.05…1 hour	(1s) 0.05…1 sec (10s) 0.5…10 sec (1mn) 0.05…1 min (10mn) 0.5…10 min (1h) 0.05…1 hour (10h) 0.5…10 hours

❶ For timing control, a voltage other than the supply voltage can also be used.
❷ Timing range is screwdriver selectable from the faceplate.

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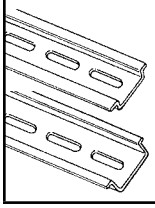
Accessories

Accessory	Description	Catalog Number	Price
	**Setting Knob With Scale -** For time setting without tools.	**RZ7-FSK**	**8.50**
	**Panel Mounting Adaptor -** For surface mounting RZ7-FS/FE timing relays.	**26.506.221-01**	**6.75**
	**DIN-rail** - 2 meter lengths (≈6' 6") Top Hat, low profile (price per rail) Top Hat, high profile (price per rail)	 **3F** **3AF**	 **29** **44**

Marking Systems

Component	Description	Pkg. Qty.	Catalog Number	Price Each
	**Label Sheet –** 1 sheet with 105 self-adhesive paper labels each, 6 x 17mm	1	**CA7-FMS**	**1.75**
	**Marking Tag Sheet -** 1 sheet with 160 perforated paper labels each, 6 x 17mm. To be used with transparent cover.	1	**CA7-FMP**	**1.75**
	Transparent Cover - To be used with Marking Tag Sheets.	100 ❶	**CA7-FMC**	**.17**
	Tag Carrier - For marking with Series V7 Clip-on Tags.	100 ❶	**CA7-FMA2**	**.17**

❶ Minimum order quantity is one package of 100. Price each x 100 = total price.

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Technical Data

	RZ7-FE With NO Contact	RZ7-FE With SPDT Contact
Setting Accuracy	±5% of the time range final value (t_{max})	
Repeatability	±1% of the time range final value (t_{max})	
Tolerance	by voltage: ±0.01%/%ΔU by temperature: ±0.25%/°C	by voltage: ±0.001%/%ΔU by temperature: ±0.025%/°C
Supply		
Supply Voltage	24 AC or DC and 110…240VAC, 50/60Hz	24…48VDC and 24…240VAC, 50/60 Hz
Voltage Tolerance	-15%/+20% (DC), -15%/+10% (AC)	
Power Consumption	0.5W at 24VDC, 9VA at 240VAC	0.5W at 24VDC, 5VA at 240VAC
Timer Energized	100%	
Recovery Time	250ms	100ms
Voltage Isolation	–	≤30ms without reset (supply voltage)
Cable length (supply voltage control)	max. 100 meters (300 ft.)	max. 250 meters (700 ft.)
Pulse Control (B1)		
Impulse Duration	≥250ms	≥50ms (AC), ≥30ms (DC)
Input Voltage	supply voltage range	
Input Current	1mA	
Cable Length	max. 250 meters without parallel load between B1 and A2 max. 50 meters with load (<3 kΩ) between B1 and A2	
Outputs		
Contact Type	1N.O. contact	1 Form C-SPDT contact
Switching Capacity	Voltage: 250VAC Current: 5A (Resistive, AC1) Power: 1250VA according to IEC 947-5-1: 1A/250VAC (inductive load, AC14) 1A/24VDC (inductive load, DC13) according to UL508: 1A/300VAC (D300)	
Short Circuit Resistance	6A gL (fast blow fuse)	
Dielectric Withstand Voltage (contact to coil)	4000V	
Life	mechanical: 20 million operations electrical operations: 0.4 Mil. at 1A/250VAC, cosφ = 1 0.4 Mil. at 0.5A/250VAC, cosφ = 0.4 0.4 Mil. at 1A/24VDC, resistive	
State Indicator	1 LED	1 bi-color LED (Supply = green; Relay = red)
General Characteristics		
Insulation Characteristics	2 kVAC/50Hz test voltage according to VDE 0435 and 4kV 1.2/50µ surge voltage according to IEC 947-1 between all inputs and outputs	
EMC Interference Immunity	The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 1000-4-5: Level 3 (A1-A2) 110…240VAC, according to IEC 1000-4-5: Level 2 (A3-A2) 24V AC/DC. Burst according to IEC 1000-4-4: Level 3. ESD discharge according to IEC 1000-4-2: Level 3.	The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 1000-4-5: Level 3. Burst according to IEC 1000-4-4: Level 3. ESD discharge according to IEC 1000-4-2: Level 3.
EMC/Emission	electromagnetic fields according to EN 55 022: Class B	
Safe Isolation	according to VDE 106, Part 101	
Climatic Withstand	56 cycles (24h) at 25…40°C and 95% relative humidity according to IEC 68-2-30 and IEC 68-2-3	
Vibration Resistance	4g in 3 axis at 10…500Hz, test FC according to IEC 68-2-6	
Shock Resistance	50g according to IEC 68-2-27	
Protection Class	Enclosure: IP40 Terminal: IP20	
Weight	60g	60g
Approvals/Standards	UL, C-UL, CE	UL, C-UL, Germanischer Lloyd, CE
Ambient Temperature	Open: -25°C…+60°C Enclosed: -25°C…+45°C Storage: -40°C…+85°C	
Standard	EN 60947-1, EN 60947-5-1, EN 50081-1, IEC 947, UL 508, CSA 22.2	

Technical Data *(continued)*

		RZ7-FE With NO Contact	RZ7-FE With SPDT Contact
General Characteristics (continued)			
Connections	Screw terminals:	M3 for Pozidrive No: 1, Phillipsa nd slotted screws No: 3, suitable for power screwdriver	
	Rated tightening torque:	0.8Nm (max. 1.0Nm) [8.8 lb-in]	
	Wire size:	Cross-sections of 1 x 0.5mm^2...2 x 1.5mm^2 (solid) or 2 x 1.5mm^2 (stranded with sleeve)	
	Finger protection:	AWG 20...14	
Mounting		according to VDE 0106 Snap-on mounting on 35mm DIN-rail Side mounting on cA7/CA4 contactors and CS7/CS4 relay s(with dovetail joint)	
Disposal		Screw fixing by Panel Mount and two screws (M4) - [surface mounting in any position] Synthetic materials without dioxin according to EC/EFTA-Notification No: 93/0141/D Electrical contacts contain cadmium	

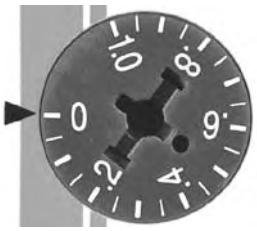
RZ7 Relative Scale Setting Knob

Series RZ7 Timing Relays have a "relative scale" setting knob numbered 0 to 1.0. Think about this as 0 to 100% of the relay's built-in time range. Example: To set an RZ7-FE timing relay (with a 0.05 to 1 minute range) to activate after 25 seconds:

1) Divide the desired activation time (25 seconds) by the maximum time limit of the relay (60 seconds).

   25 ÷ 60 = .416

2) Rotate the setting knob to just past the .4 mark



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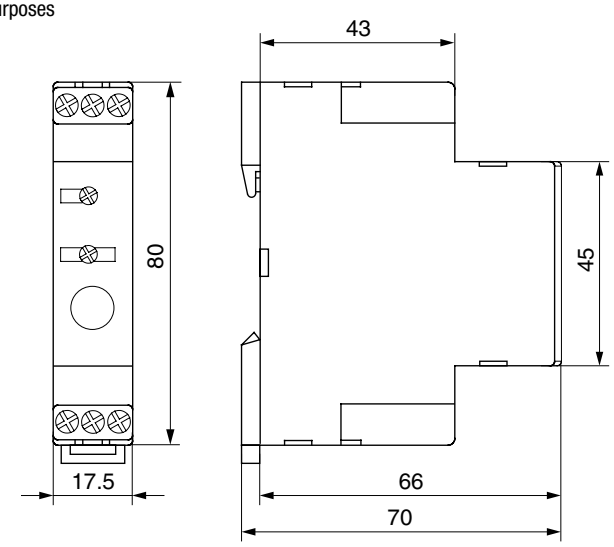
Dimensions

Series RZ7-FE Timing Relays *(one and two pole)*

- Dimensions are in millimeters
- Dimensions not intended for manufacturing purposes



Panel Mount Adaptor (26.506.221-01)

- Dimensions are in millimeters
- Dimensions not intended for manufacturing purposes