

Electrical Data

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Rated Insulation Voltage U_i											
IEC, AS,BS,SEV, VDE 0660	[V]								690V		
UL; CSA	[V]								600V		
Rated Impulse Voltage U_{imp}	[kV]								8kV		
Rated Voltage U_e-Main Contacts											
AC 50/60Hz	[V]				115, 200, 208, 230, 240, 380, 400, 415, 460, 500, 575, 690V						
DC	[V]				24, 48, 110, 115, 220, 230, 300, 440V						
Operating Frequency for AC Loads	[Hz]								50...60Hz		

Switching Motor Loads
Standard IEC Ratings

AC-2, AC-3, AC-4												
230V	[A]	12	15	20	26.5	35	38	44	62	72	85	
DOL Reversing	[A]	12	15	20	26.5	35	38	44	62	72	85	
50Hz/60° C	[A]	9	12	16	23	30	37	43	60	72	85	
415V	[A]	9	12	16	23	30	37	43	60	72	85	
500V	[A]	7	10	14	20	25	30	38	55	67	80	
690V	[A]	5	7	9	12	18	21	25	34	42	49	
230V	[kW]	3	4	5.5	7.5	10	11	13	18.5	22	25	
240V	[kW]	3	4	5.5	7.5	10	11	13	18.5	22	25	
400V	[kW]	4	5.5	7.5	11	15	18.5	22	32	40	45	
415V	[kW]	4	5.5	7.5	11	15	20	22	32	40	45	
500V	[kW]	4	5.5	7.5	13	15	20	25	37	45	55	
690V	[kW]	4	5.5	7.5	10	15	18.5	22	32	40	45	

UL/CSA/IEC

DOL Reversing		115V	[A]	9.8	9.8	16	24	24	34	34	56	56	80
60Hz/60° C	1Ø	230V	[A]	10	12	17	17	28	28	40	50	68	68
		115V	[HP]	1/2	1/2	1	2	2	3	3	5	5	7-1/2
		230V	[HP]	1 1/2	2	3	3	5	5	7-1/2	10	15	15
		200V	[A]	7.8	11	17.5	17.5	25.3	32.2	32.2	48.3	62.1	78.2
	3Ø	230V	[A]	6.8	9.6	15.2	22	28	28	42	54	68	80
		460V	[A]	7.6	11	14	21	27	34	40	52	65	77
		575V	[A]	9	11	17	17	27	32	32	52	62	62
		200V	[HP]	2	3	5	5	7-1/2	10	10	15	20	25
		230V	[HP]	2	3	5	7-1/2	10	10	15	20	25	30
		460V	[HP]	5	7-1/2	10	15	20	25	30	40	50	60
		575V	[HP]	7-1/2	10	15	15	25	30	30	50	60	60
Maximum Operating Rate	AC2	[ops/hr]		450	450	450	400	400	400	400	300	250	200
(at max. amps)	AC3	[ops/hr]		700	700	700	600	600	600	600	500	500	500
	AC4	[ops/hr]		200	150	120	80	80	70	70	70	60	50

① Approved by Lloyd's register of shipping.

Electrical Data

Contactors

CA7

CA7-9 CA7-12 CA7-16 CA7-23 CA7-30 CA7-37 CA7-43 CA7-60 CA7-72 CA7-85

Switching Motor Loads (continued)

AC-4 200,000 Op. Cycles 50Hz	230V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	240V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	400V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	415V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	500V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	690V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38			
	230V	[kW]	0.75	1.5	2.2	2.2	3	3.7	4	6.3	7.5	11			
	240V	[kW]	0.75	1.5	2.2	2.2	3	4	4	7.5	7.5	11			
	400V	[kW]	1.8	3	4	4	5.5	6.3	7.5	13	15	20			
	415V	[kW]	1.8	3	4	4	5.5	6.3	7.5	13	17	20			
	500V	[kW]	2.2	3.7	5.5	5.5	7.5	7.5	10	15	20	25			
	690V	[kW]	3	5.5	7.5	7.5	10	11	15	22	25	32			
	60Hz	1Ø	115V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38	
			230V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38	
115V			[HP]	1/8	1/4	1/3	1/2	1/2	3/4	1	2	2	3		
230V			[HP]	1/3	1/2	1	1-1/2	2	2	2	3	5	5		
3Ø		200V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38		
		230V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38		
		460V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38		
		575V	[A]	4.3	6.6	9	10	12	14	16.5	25.5	31	38		
		200V	[HP]	3/4	1	2	2	3	3	3	7-1/2	7-1/2	10		
		230V	[HP]	1	1-1/2	2	3	3	3	5	7-1/2	10	10		
		460V	[HP]	2	3	5	5	7-1/2	10	10	15	20	25		
		575V	[HP]	3	5	7-1/2	7-1/2	10	10	10	20	25	30		
		Maximum Operating Rate			[250	250	220	200	200	200	200	120	120	120
		Wye-Delta (Star Delta) 50 Hz	230V	[kW]	5.5	7.5	10	13	17	20	22	32	37	45	
240V	[kW]		5.5	7.5	10	13	18.5	20	22	32	40	50			
400V	[kW]		7.5	10	13	20	25	32	40	55	63	80			
415V	[kW]		7.5	11	15	22	25	37	40	55	63	80			
500V	[kW]		7.5	11	15	22	25	32	45	63	80	90			
690V	[kW]		7.5	10	13	18.5	25	32	40	55	63	80			
60 Hz	200V		[HP]	5	5	7-1/2	7-1/2	10	15	20	30	40	50		
	230V		[HP]	5	7-1/2	10	10	15	20	25	40	50	60		
	460V		[HP]	10	15	20	25	30	40	50	75	100	125		
	575V		[HP]	10	15	20	25	30	40	50	75	100	125		
AC Elevator Control Ratings															
UL / CSA 500,000 operations	Max FLC		[A]	8.0	11.0	16.0	21.0	27.0	31.0	37.0	43.0	54.0	62.0		
	200V		[A]	7.8	11.0	11.0	17.5	25.3	25.3	32.2	32.2	48.3	62.1		
	230V		[A]	6.8	9.6	15.2	15.2	22.0	28.0	28.0	42.0	54.0	68.0		
	460V	[A]	7.6	11.0	14.0	21.0	27.0	27.0	34.0	40.0	52.0	65.0			
	575V	[A]	6.1	9.0	11.0	17.0	22.0	27.0	32.0	41.0	52.0	62.0			
	200V	[HP]	2	3	3	5	7-1/2	7-1/2	10	10	15	20			
	230V	[HP]	2	3	5	5	7-1/2	10	10	15	20	25			
	460V	[HP]	5	7-1/2	10	15	20	20	25	30	40	50			
	575V	[HP]	5	7-1/2	10	15	20	25	30	40	50	60			

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
AC-1 Load, 30 Switching												
Ambient Temperature 40° C	I_n	[A]	32	32	32	32	65	65	85	100	100	100
	230V	[kW]	13	13	13	13	26	26	34	40	40	40
	240V	[kW]	13	13	13	13	27	27	35	42	42	42
	400V	[kW]	22	22	22	22	45	45	59	69	69	69
	415V	[kW]	23	23	23	23	47	47	61	72	72	72
	500V	[kW]	28	28	28	28	56	56	74	87	87	87
	690V	[kW]	38	38	38	38	78	78	102	120	120	120
Ambient Temperature 60° C												
	I_n	[A]	32	32	32	32	65	65	80	100	100	100
	230V	[kW]	13	13	13	13	26	26	32	40	40	40
	240V	[kW]	13	13	13	13	27	27	33	42	42	42
	400V	[kW]	22	22	22	22	45	45	55	69	69	69
	415V	[kW]	23	23	23	23	47	47	57	72	72	72
	500V	[kW]	28	28	28	28	56	56	69	87	87	87
	690V	[kW]	38	38	38	38	78	78	95	120	120	120
Maximum Operating Rate	[		1,000	1,000	1,000	1,000	1,000	1,000	300	600	600	600
Continuous Current (UL/CSA)												
General Purpose Rating (40°)	Open	[A]	25	25	30	30	45	55	60	90	90	100
	Enclosed	[A]	25	25	30	30	55	60	75	90	90	100
Maximum Operating Rate	[		1,400	1,400	1,200	1,200	1,200	1,000	1000	700	700	600
Lighting Loads ①												
Elec.Dischrg.Lamps-AC-5a, single compensated	Open	[A]	22.5	25	28	29	40.5	45	77	81	85	90
	Enclosed	[A]	22.5	25	28	29	37	41	57	57	81	90
Max. capacitance at prospective short circuit current available at the contactor	10kA	[µf]	1,000	1,000	1,000	1,000	2,700	2,700	3,200	4,000	4,000	4,700
	20kA	[µf]	500	500	500	500	1,350	1,350	1,600	2,000	2,000	2,350
	50kA	[µf]	200	200	200	200	540	540	640	800	800	940
Incandescent Lamps - AC -5b												
Electrical endurance ~ 100,000 operations		[A]	12	16	18	22	30	37	43	60	70	76
Switching power transformers AC-6a												
50Hz												
Inrush	= n											
Rated transformer current												
		[A]	10.9	10.9	10.9	10.9	20	20	23	40.8	40.8	40.8
n=30	230 VAC	[kVA]	4.3	4.3	4.3	4.3	8	8	9.2	16	16	16
	240 VAC	[kVA]	4.5	4.5	4.5	4.5	8.3	8.3	10	17	17	17
	400 VAC	[kVA]	7.5	7.5	7.5	7.5	14	14	16	28	28	28
	415 VAC	[kVA]	7.8	7.8	7.8	7.8	14	14	17	29	29	29
	500 VAC	[kVA]	9.4	9.4	9.4	9.4	17	17	20	35	35	35
	690 VAC	[kVA]	13	13	13	13	24	24	27	49	49	49
n=20		[A]	16.3	16.3	16.3	16.3	30	30	34.5	61.3	61.3	61.3
	230 VAC	[kVA]	6.5	6.5	6.5	6.5	12	12	13.7	24.4	24.4	24.4
	240 VAC	[kVA]	6.8	6.8	6.8	6.8	12.5	12.5	14.3	25.5	25.5	25.5
	400 VAC	[kVA]	11.3	11.3	11.3	11.3	20.8	20.8	23.9	42.5	42.5	42.5
	415 VAC	[kVA]	11.7	11.7	11.7	11.7	21.6	21.6	24.8	44.1	44.1	44.1
	500 VAC	[kVA]	14.1	14.1	14.1	14.1	26	26	29.9	53.1	53.1	53.1
	690 VAC	[kVA]	19.5	19.5	19.5	19.5	35.9	35.9	41.2	73.3	73.3	73.3
n=15		[A]	22	22	22	22	40	40	46	82	82	82
	230 VAC	[kVA]	2.3	2.3	2.3	2.3	4.3	4.3	5.0	8.8	8.8	8.8
	240 VAC	[kVA]	2.4	2.4	2.4	2.4	4.5	4.5	5.2	9.2	9.2	9.2
	400 VAC	[kVA]	4.1	4.1	4.1	4.1	7.5	7.5	8.6	15.3	15.3	15.3
	415 VAC	[kVA]	4.2	4.2	4.2	4.2	7.8	7.8	8.9	15.9	15.9	15.9
	500 VAC	[kVA]	5.1	5.1	5.1	5.1	9.4	9.4	10.8	19.1	19.1	19.1
	690 VAC	[kVA]	7.0	7.0	7.0	7.0	12.9	12.9	14.9	26.4	26.4	26.4

① CA7 ratings for lighting loads are provided for technical reference. For cUL rated and labeled devices, see CAL7 contactors listed in this section.

Electrical Data

Contactors

CA7

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85	
Switching power transformers AC-6a													
60Hz													
Inrush = n													
Rated transformer current													
n=30	200 VAC	[A]	10.9	10.9	10.9	10.9	20	20	23	40.8	40.8	40.8	
	208 VAC	[kVA]	3.8	3.8	3.8	3.8	6.9	6.9	8.0	14.1	14.1	14.1	
	240 VAC	[kVA]	3.9	3.9	3.9	3.9	7.2	7.2	8.3	14.7	14.7	14.7	
	480 VAC	[kVA]	4.5	4.5	4.5	4.5	8.3	8.3	9.6	17	17	17	
	600 VAC	[kVA]	9.1	9.1	9.1	9.1	16.6	16.6	19.1	33.9	33.9	33.9	
	660 VAC	[kVA]	11.3	11.3	11.3	11.3	20.8	20.8	23.9	42.4	42.4	42.4	
	660 VAC	[kVA]	12.5	12.5	12.5	12.5	22.9	22.9	26.3	46.6	46.6	46.6	
n=20	200 VAC	[A]	16.3	16.3	16.3	16.3	30	30	34.5	61.3	61.3	61.3	
	208 VAC	[kVA]	5.6	5.6	5.6	5.6	10.4	10.4	12	21.2	21.2	21.2	
	240 VAC	[kVA]	5.9	5.9	5.9	5.9	10.8	10.8	12.4	22.1	22.1	22.1	
	480 VAC	[kVA]	6.8	6.8	6.8	6.8	12.5	12.5	14.3	25.5	25.5	25.5	
	600 VAC	[kVA]	13.6	13.6	13.6	13.6	24.9	24.9	28.7	51	51	51	
	660 VAC	[kVA]	16.9	16.9	16.9	16.9	31.2	31.2	35.9	63.7	63.7	63.7	
	660 VAC	[kVA]	18.6	18.6	18.6	18.6	34.3	34.3	39.4	70.1	70.1	70.1	
n=15	200 VAC	[A]	22	22	22	22	40	40	46	82	82	82	
	208 VAC	[kVA]	7.5	7.5	7.5	7.5	13.9	13.9	15.9	28.4	28.4	28.4	
	240 VAC	[kVA]	7.8	7.8	7.8	7.8	14.4	14.4	16.6	29.5	29.5	29.5	
	480 VAC	[kVA]	9	9	9	9	16.6	16.6	19.1	34.1	34.1	34.1	
	600 VAC	[kVA]	18.1	18.1	18.1	18.1	33.3	33.3	38.2	68.2	68.2	68.2	
	660 VAC	[kVA]	22.6	22.6	22.6	22.6	41.6	41.6	47.8	85.2	85.2	85.2	
	660 VAC	[kVA]	24.9	24.9	24.9	24.9	45.7	45.7	52.6	93.7	93.7	93.7	
DC-1 Switching - 60°C													
1 Pole	24VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	48VDC	[A]	20	20	20	20	25	25	30	40	40	40	
	60VDC	[A]	20	20	20	20	25	25	30	40	40	40	
	110VDC	[A]	6	6	6	6	8	8	9	11	11	11	
	220VDC	[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	
	440VDC	[A]	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	
2 Poles in Series	24VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	48VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	60VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	110VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	220VDC	[A]	8	8	8	8	10	10	10	15	15	15	
	440VDC	[A]	1	1	1	1	1	1	1	1.5	1.5	1.5	
3 Poles in Series	24VDC	[A]	25	25	32	32	45	45	63	90	90	100	
	48VDC	[A]	25	25	32	32	45	45	63	90	90	100	
	60VDC	[A]	25	25	32	32	45	45	63	90	90	100	
	110VDC	[A]	25	25	32	32	45	45	63	90	90	100	
	220VDC	[A]	25	25	32	32	45	45	50	70	80	80	
	440VDC	[A]	3	3	3	3	3.5	3.5	4	5	5	5	
DC-2, 3, 5 Switching - 60°C													
Starting, reverse current braking, reversing, DC-5, 60°C	24VDC	[A]	25	25	32	32	45	45	63	90	90	100	
	48VDC	[A]	25	25	32	32	45	45	50	70	70	80	
	60VDC	[A]	25	25	32	32	45	45	50	70	70	80	
Shunt Wound	110VDC	[A]	20	20	25	25	30	30	35	70	70	80	
	220VDC	[A]	6	6	6	10	15	15	20	25	25	30	
	440VDC	[A]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Series-wound Motors	3 Poles in Series	24VDC	[A]	25	25	32	32	45	45	63	90	90	100
		48VDC	[A]	25	25	32	32	45	45	50	70	70	80
		60VDC	[A]	25	25	32	32	45	45	50	70	70	80
		110VDC	[A]	20	20	25	25	30	30	35	70	70	80
		220VDC	[A]	6	6	6	10	15	15	20	25	25	30
		440VDC	[A]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Capacitor Ratings ①												
Capacitor Switching AC-6b-50 Hz												
Single Capacitor - 40°C	230 V	[kVar]	8	8	8.5	9	14	14	24	28	28	28
	240 V	[kVar]	8	8	8.5	9	14	14	25	29	29	29
	400 V	[kVar]	8	8	10	12.5	20	24	35	48	48	48
	415 V	[kVar]	8	8	10	12.5	20	25	35	50	50	50
	500 V	[kVar]	8	8	10	12.5	20	25	35	50	55	60
	690 V	[kVar]	8	8	10	12.5	20	25	35	50	55	60
Single Capacitor - 60°C	230 V	[kVar]	8	8	8.5	9	12.5	12.5	18	28	28	28
	240 V	[kVar]	8	8	8.5	9	12.5	12.5	18	29	29	29
	400 V	[kVar]	8	8	10	12.5	20	21.5	30	42	48	48
	415 V	[kVar]	8	8	10	12.5	20	22	30	42	50	50
	500 V	[kVar]	8	8	10	12.5	20	25	30	42	50	55
	690 V	[kVar]	8	8	10	12.5	20	25	30	42	50	55
Capacitor Bank - 40°C ②	230 V	[kVar]	5	5	8	9	12.5	14	20	28	28	28
	240 V	[kVar]	5	5	8	9	12.5	14	20	29	29	29
	400 V	[kVar]	5	5	8	10	15	20	25	40	48	48
	415 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	500 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	690 V	[kVar]	5	5	8	10	15	20	25	40	50	50
Capacitor Bank - 60°C ②	230 V	[kVar]	5	5	8	9	12.5	12.5	18	28	28	28
	240 V	[kVar]	5	5	8	9	12.5	12.5	18	29	29	29
	400 V	[kVar]	5	5	8	10	15	20	25	40	48	48
	415 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	500 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	690 V	[kVar]	5	5	8	10	15	20	25	40	50	50
Capacitor Switching - 60Hz												
Single Capacitor - 40°C	200 V	[kVar]	5	5	8	9	12.5	14	20	28	28	28
	230 V	[kVar]	5	5	8	9	12.5	14	20	29	29	29
	460 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	600 V	[kVar]	5	5	8	10	15	20	25	40	50	60
Capacitor Bank - 40°C ②	200 V	[kVar]	5	5	8	9	12.5	12.5	18	28	28	28
	230 V	[kVar]	5	5	8	9	12.5	12.5	18	29	29	29
	460 V	[kVar]	5	5	8	10	15	20	25	40	50	50
	600 V	[kVar]	5	5	8	10	15	20	25	40	50	50

① CA7 capacitor ratings are provided for technical reference. For cUL rated and labeled devices, see CAQ7 contactors listed in this section.

② CA7-9...CA7-30 = L min. 30 μH; CA7-37...CA7-85 = L min. 6 μH

Electrical Data

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85	
Resistance and Watt Loss / I_e AC3												
Resistance per power pole	[mΩ]	2.7	2.7	2.7	2.0	2.0	2.0	1.5	0.9	0.9	0.9	
Watt Loss - 3 power poles	[W]	0.66	1.2	2.1	3.2	5.4	8.2	8.3	9.7	14.0	19.5	
Coil and 3 power poles	AC	[W]	3.3	3.8	4.7	6.2	8.4	11.2	11.5	11	13.8	17.5
	DC	[W]	6.7	7.2	8.1	12.4	14.6	17.4	18.4	11	13.8	17.5
Coil only	AC	[W]	2.6	2.6	2.6	3.0	3.0	3.0	3.2	4.5	4.5	4.5
	DC	[W]	6.0	6.0	6.0	9.2	9.2	9.2	10.0	4.9	4.9	4.9
Short-Circuit Coordination												
Max. Fuse or circuit breaker ratings												
DIN Fuses -gG, gL												
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	
Type "1" (690V) ③	[A]	50	50	50	80	125	125	160	250	250	250	
Type "2" (690V) ③	[A]	25	35	35	40	80	80	100	160	160	160	
BS 88 Fuses												
Available Fault Current	[A]	80 KA	80 KA	80 KA	80 KA	80 KA	80 KA	80 KA	80 KA	80 KA	80 KA	
Type "1" (690V) ③	[A]	25	32	35	50	63	80	100	100	125	160	
Type "2" (690V) ③	[A]	25	32	35	50	63	80	100	100	125	160	
Class K1, RK1 Fuses												
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	
Type "2" (600V) ③	[A]	15	20	20	30	40	50	50	80	100	100	
cUL Short-Circuit Ratings												
Class K1, RK1, K5, and RK5 Fuses												
Available Fault Current	[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	
cUL Max. Rating (600V) ② Type 1	[A]	35	40	70	90	110	125	150	200	250	300	
Class CC & CSA HRCI Fuses												
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	~	~	~	~	~	~	
cUL Max. Rating (600V) ② Type 2	[A]	15	20	30	30	~	~	~	~	~	~	
Class J CSA & HRCI-J Fuses												
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	
cUL Max. Rating (600V) ② Type 2	[A]	15	20	30	30	50	50	70	80	100	150	
Inverse-Time Circuit Breaker ①												
Available Fault Current	[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	10 KA	10 KA	
cUL Max. Rating 480V ② Type 1	[A]	30	30	50	50	125	125	125	250	250	250	
cUL Max. Rating 600V ② Type 1	[A]	~	~	~	~	125	125	125	250	250	250	
Short Time Current Withstand Ratings												
I _{cw} 60° C	10 s	[A]	170	170	170	215	300	304	375	700	700	700
Off Time Between Operations		[Min.]	20	20	20	20	20	20	20	20	20	20

① When used as a Branch Circuit Protection device, NEC 430-152 defines the maximum rating of an Inverse-time circuit breaker to be sized at 250% of the motor nameplate FLA for most applications.

② UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.

③ Per IEC 60947-1 for contactor and fuses only.

Electrical Data

Short Circuit Coordination / AC3

Type 2 Coordination Combinations (contactor, overload and fuses) — Per UL 508 and IEC 60947-4-1

Contactor	Overload Relay	Withstand Rating	Maximum Voltage	Max. Amp Rating (UL Class CC or J Fuses)
CA7-9	CEP7-M/A/B32-0.32...	100kA	600V	1
	CEP7-M/A/B32-1.0...	100kA	600V	2
	CEP7-M/A/B32-2.9...	100kA	600V	6
	CEP7-M/A/B32-5...	100kA	600V	10
	CEP7-M/A/B32-12...	100kA	600V	15
CA7-12...	CEP7-M/A/B32-12...	100kA	600V	20
CA7-16...	CEP7-M/A/B32-32...	100kA	600V	20
CA7-23...	CEP7-M/A/B32-32...	100kA	600V	30
CA7-30...	CEP7-M/A/B37-37...	100kA	600V	40
CA7-37...	CEP7-M/A/B37-37...	100kA	600V	50
CA7-43...	CEP7-M/A/B45-45...	100kA	600V	50
CA7-60...	CEP7-M/A/B85-85...	100kA	600V	80
CA7-72...	CEP7-M/A/B85-85...	100kA	600V	100
CA7-85...	CEP7-M/A/B85-85...	100kA	600V	100

**CEP7 First Generation
Scheduled for
Obsolescence 2006**

UL Listed Combinations (contactor, overload and circuit breaker) — Per UL 508

Contactor	Overload Relay	Withstand Rating	Maximum Voltage	Max. Amp Rating (UL Listed Circuit Breaker)
CA7-9...12	CEP7-M/A32-2.9...12	5kA	480V	30
	CT7-24-0.16...10			
CA7-12	CT7-24-16	5kA	480V	50
	CEP7-M/A32-2.9...32			
CA7-16...23	CT7-24-0.16...16	5kA	480V	50
	CT7-24-24			
CA7-23	CEP7-M/A37-12...37	5kA	600V	125
	CT7-24-16...CT7-45-30			
CA7-30...37	CT7-45-45	5kA	600V	125
	CEP7-M/A45...45			
CA7-43	CT7-45-30...45	5kA	600V	250
	CEP7-M/A85...85			
CA7-60	CT7-75-30...60	5kA	600V	250
	CEP7-M/A85...85			
CA7-72	CT7-75-30...75	10kA	600V	250
	CEP7-M/A85...85			
CA7-85	CT7-75-30...CT7-100-90	10kA	600V	250
	CEP7-M/A85...85			

Short Circuit Ratings

Standard Fault Short Circuit Ratings per UL508 and CSA 22.2 No.14

CEP7 Second Generation Cat. No.		Max. available fault current (kA)	Conditional S.C. current, Iq (kA)	S.C.P.D.
CEP7	ED1AB, EEAB ED1BB, EEBB	1	600	Suitable for use with fuses only
	ED1CB, ED1DB, ED1EB, EECB, EEDB, EEEB, EEED, EEFD, EEPB, EERB, EESB, EETD	5		Not restricted to
	EEEE, EEFE, EEGE, EEUE	10		

IEC Short Circuit Ratings per EN60947-4-1

CEP7 Second Generation Cat. No.		Prospective S.C. current, Ir (kA)	Conditional S.C. current, Iq (kA)	Max. voltage (V)	S.C.P.D.
CEP7	ED1AB, EEAB ED1BB, EEBB	1	100	690	Suitable for use with fuses only
	ED1CB, ED1DB, EECB, EEDB, EEPB, EERB	1			
	ED1EB, EEEB, EEED, EEFD, EEEE, EEFE, EESB, EETD	3			Not restricted to
	EEGE, EEUE	5			

High Fault Short Circuit Ratings per UL508 and CSA 22.2 No.14

CEP7 Second Generation Cat. No.	Contactors Cat. No.	Max. starter FLC (A)	Max. available fault current (kA)	Max. voltage (V)	UL Class J and CSA HRCI-J fuse (A)	
CEP7	ED1AB, EEAB ED1BB, EEBB	CA7-09	0.5	100	600	3
		1	6			
	ED1CB, ED1DB, ED1EB, EEEB, EECB, EEDB	CA7-09	09			20
		CA7-12	12			20
		CA7-16	16			30
		CA7-23	23			30
		CA7-30	30			50
	EEED, EEFD	CA7-37	37			50
		CA7-43	43			70
		CA7-60	60			80
	EEEE, EEFE EEGE	CA7-72	72			100
		CA7-85	85			150

IEC Type 1 and Type II Fuse Coordination with CA7 Series contactors per EN60947-4-1

CEP7 Second Generation Cat. No.	Contactors Cat. No.	Max. starter FLC (A)	Prospective S.C. current, Ir (kA)	Conditional S.C. current, Iq (kA)	Max. voltage (V)	Type I with Class J fuse (A)	Type II with Class J fuse (A)	
CEP7	ED1AB, EEAB ED1BB, EEBB	CA7-09	0.5	1	100	600	3	3
		1	6				6	
	ED1CB, ED1DB, EECB, EEDB	CA7-09	09	1			20	15
		CA7-12	12				20	20
		CA7-16	16				30	30
		CA7-23	23				30	30
		CA7-30	30				50	50
	ED1EB, EEEB	CA7-09	09	3			20	15
		CA7-12	12				20	20
		CA7-16	16				30	30
	EEED, EEFD	CA7-23	23	3			30	30
		CA7-30	30				50	50
		CA7-37	37				50	50
	EEEE, EEFE	CA7-43	43	3			70	70
		CA7-60	60				80	80
		CA7-72	72				100	100
	EEGE	CA7-85	85	5			150	150
		CA7-60	60				80	80
		CA7-72	72				100	100
		CA7-85	85				150	150

Electro-Mechanical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Service Life												
Mechanical	AC	[Mil.]	13	13	13	13	13	13	12	10	10	10
	DC	[Mil.]	13	13	13	13	13	13	13	10	10	10
Electrical AC-3 (400V)	AC	[Mil.]	1.3	1.3	1.3	1.3	1.3	1.3	1.0	1.0	1.0	1.0
Shipping Weights												
AC - CA7		[kg]	0.39	0.39	0.39	0.39	0.48	0.49	0.51	1.45	1.45	1.45
		[Lbs.]	0.86	0.86	0.86	0.86	1.06	1.08	1.12	3.20	3.20	3.20
AC -CAU7		[kg]	0.85	0.85	0.85	0.85	1.08	1.08	1.15	3.14	3.14	3.14
		[Lbs.]	1.89	1.89	1.89	1.89	2.39	2.39	2.54	6.92	6.92	6.92
DC - CA7		[kg]	0.60	0.60	0.60	0.73	0.85	0.85	1.00	1.47	1.47	1.47
		[Lbs.]	1.32	1.32	1.32	1.61	1.87	1.87	2.20	3.24	3.24	3.24
DC - CAU7		[kg]	1.27	1.27	1.27	1.53	1.81	1.81	2.13	3.22	3.22	3.22
		[Lbs.]	2.81	2.81	2.81	3.39	4.00	4.00	4.70	7.10	7.10	7.10

Terminations - Power

Description												
	1 Wire	[mm ²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...16	2.5...35	2.5...35	2.5...35
	2 Wires	[mm ²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...10	2.5...25	2.5...25	2.5...25
	1 Wire	[mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...25	2.5...50	2.5...50	2.5...50
	2 Wires	[mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...16	2.5...35	2.5...35	2.5...35
	1 Wire	[AWG]	16...10	16...10	16...10	16...10	14...4	14...4	14...4	14...1	14...1	14...1
	2 Wires	[AWG]	16...10	16...10	16...10	16...10	14...4	14...4	14...4	14...1	14...1	14...1
Torque Requirement		[Nm]	1.0...2.5	1.0...2.5	1.0...2.5	1.0...2.5	2.5...3.5	2.5...4	2.5...4	3.5...6	3.5...6	3.5...6
		[Lb-in]	9...22	9...22	9...22	9...22	22...31	22...35	22...35	31...53	31...53	31...53

Terminations - Control

Description												
			Combination Screw Head: Cross, Slotted, Pozidrive									
Coils	1 or 2	[mm ²]	1.5...6									
Wires		[AWG]	16...12									
Control Modules	1 or 2	[mm ²]	1.5...6									
Wires		[AWG]	16...12									
Torque Requirement		[Nm]	1...2.5									
		[Lb-in]	9...13									

Degree of Protection - contactor

IP 2LX per IEC 529 and DIN 40 050 (with wires installed)

Protection Against Accidental Contact

Safe from touch by fingers and back-of-hand per VDE 0106; Part 100

Environmental and General Specifications

Ambient Temperature

Storage	-55...+80° C (-67...176° F) - [CRI7E Electronic Interface -50...+80° C (-58...176° F)]
Operation	-25...+60° C (-13...140° F)
Conditioned 15% current reduction after AC-1 at >60° C	-25...+70° C (-13...158° F)

Altitude at installed site

2000 meters above sea level per IEC 947-4

Resistance to Corrosion/Humidity

Damp-alternating climate: cyclic to IEC 68-2, 56 cycles
Dry heat: IEC 68-2, +100°C (212° F), relative humidity <50%, 7 days.
Damp tropical: IEC 68-2, +40°C (104°F), relative humidity <92%, 56 days.

Shock Resistance

IEC 68-2: Half sinusoidal shock 11ms, 30g (in all three directions)

Vibration Resistance

IEC 68-2: Static > 2g, in normal position no malfunction <5g

Pollution Degree

3

Operating Position

Refer to Dimension Pages










Standards

IEC947-1/4, EN 60947; UL 508; CSA 22.2, No. 14

Approvals

CE, UL, CSA

Lug Kit and Paralleling Link Specifications

			CA7-P-KN23 / KL23	CA7-P-K37	CA7-P-K43	CA7-P-K85	CA7-P-B23	CA7-P-B37
Approvals			UL Listed; CSA Certified; C					
Conformity to Standards			UL508; CSA 22.2 No. 14; IEC 60947-4					
Protection Against Accidental Contact			IP2LX Finger Protection					
Terminations								
Description			Cross, slotted or Pozidrive screw		Allen Head; 5mm, 3/16		Allen Head; 7 mm, 15/32	
Wire Size								
	1 Wire	[mm²]	4...16	4..16	6...35	10...70	35...70	35...70
	1 Wire	[mm²]	4...25	4..25	6...50	10...95	35...95	35...95
	1 Wire	[AWG]	10...4	10...4	8...2	8..2/0	0...2/0	0...2/0
Torque Requirement			[Nm]	2...3	3..6	8...12	6...12	6...12
			[Lb-in]	18...27	18...27	27...54	72...108	54...108

Coil Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-60	CA7-72	CA7-85
Voltage Range												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[xU _d]							0.85...1.1			
	Dropout	[xU _d]							0.3...0.6			
DC	Pickup	[xU _d]	0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25)									
	Dropout	[xU _d]	0.1...0.6									
Coil Consumption												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[VA/W]	70/50	70/50	70/50	70/50	80/60	80/60	130/90	200/110	200/110	200/110
	Hold-in	[VA/W]	8/2.6	8/2.6	8/2.6	9/3	9/3	9/3	10/3.2	16/4.5	16/4.5	16/4.5
True DC Coils (CA7C)	Pickup	[W]	6.5	6.5	6.5	9.2	9.2	9.2	10.1	~	~	~
	Hold-in	[W]	6.5	6.5	6.5	9.2	9.2	9.2	10.1	~	~	~
Two Winding DC Coils (CA7Y & CA7D)	Pickup	[W]	120	120	120	200	200	200	200	200	200	200
	Hold-in	[W]	1.1	1.1	1.1	1.2	1.2	1.2	1.3	4.5	4.5	4.5
Operating Times												
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[ms]	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...40	20...40	20...40
	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60
with RC Suppressor	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60	10...60
True DC Coils (CA7C)	Pickup	[ms]	40...70	40...70	40...70	40...70	50...80	50...80	50...80	~	~	~
without Suppression	Dropout	[ms]	7...15	7...15	7...15	7...15	7...15	7...15	7...15	~	~	~
with Integrated Suppression	Dropout	[ms]	14...20	14...20	14...20	17...23	17...23	17...23	17...23	~	~	~
with External Suppression	Dropout	[ms]	70...95	70...95	70...95	80...125	80...125	80...125	80...125	~	~	~
Two Winding DC Coils (CA7Y/D)	Pickup	[ms]	17...26	17...26	15...27	15...27	15...27	15...27	15...27	20...40	20...40	20...40
with Internal Suppression	Dropout	[ms]	9...20	9...20	14...24	14...24	14...24	14...24	14...24	20...35 ①	20...35 ①	20...35 ①

① ≤ 220V.

Electrical Data

		CA7-9- M40(31; 22)	CA7-12- M40(31; 22)	CA7-16- M40(31; 22)	CA7-23- M40(31; 22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40	
Rated Insulation Voltage U_i										
IEC, AS, BS, SEV, VDE 0660		690V								
UL; CSA		600V								
Rated Impulse Voltage U_{imp}		8 kV								
Rated Voltage U_e - Main Contacts										
AC 50/60Hz		115, 200, 208, 230, 240, 380, 400, 415, 460, 500, 575, 690V								
DC		24, 48, 110, 115, 220, 230, 300, 440V								
Operating Frequency for AC Loads		50...60Hz								
Switching Motor Loads										
Standard IEC Ratings										
AC-2, AC-3, AC-4	230V	[A]	12	15	20	26.5	38	38	85	85
DOL & Reversing	240v	[A]	12	15	20	26.5	38	38	85	85
50Hz/60°C	400V	[A]	9	12	16	23.	37	37	85	85
	415V	[A]	9	12	16	23	37	37	85	85
	500V	[A]	7	10	14	20	29	30	80	80
	690V	[A]	5	7	9	12	9	21	22	49
	230V	[kW]	3	4	5.5	7.5	11	11	25	25
	240V	[kW]	3	4	5.5	7.5	11	11	25	25
	400V	[kW]	4	5.5	7.5	11	18.5	18.5	45	45
	415V	[kW]	4	5.5	7.5	11	18.5	18.5	45	45
	500V	[kW]	4	5.5	7.5	13	18.5	20	55	55
	690V	[kW]	4	5.5	7.5	10	7.5	18.5	18.5	45
UL/CSA/IEC										
DOL & Reversing	115V	[A]	7.2	9.8	16	24	34	34	80	80
60Hz/60°C	230V	[A]	18	12	17	17	28	28	68	68
	115V	[HP]	1/2	1/2	1	2	3	3	7-1/2	7-1/2
	230V	[HP]	1-1/2	2	3	3	5	5	15	15
	200V	[A]	7.8	11	17.5	17.5	32.2	32.2	78.2	78.2
	230V	[A]	6.8	9.6	15.2	22	28	28	80	80
	460V	[A]	7.6	11	14	21	34	34	65	77
	575V	[A]	9	11	17	17	17	32	22	52
	200V	[HP]	2	3	5	5	10	10	25	25
	230V	[HP]	2	3	5	7-1/2	10	10	30	30
	460V	[HP]	5	7-1/2	10	15	25	25	50	60
	575V	[HP]	7-1/2	10	15	15	15	30	20	50
Maximum Operating Rate (at max. amps)	AC2	[ops/hr]	450	450	450	400	400	400	200	200
	AC3	[ops/hr]	700	700	700	600	600	600	500	500
	AC4	[ops/hr]	200	150	120	80	70	70	50	50

Electrical Data

			CA7-9- M40(31; 22)	CA7-12- M40(31; 22)	CA7-16- M40(31; 22)	CA7-23- M40(31; 22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40
AC-1 Load, 3Ø Switching										
Ambient Temperature 40°C	I_m	[A]	32	32	32	32	75	75	130	130
	230V	[kW]	13	13	13	13	30	30	52	52
	240V	[kW]	13	13	13	13	31	31	54	54
	400V	[kW]	22	22	22	22	52	52	90	90
	415V	[kW]	23	23	23	23	54	54	93	93
	500V	[kW]	28	28	28	28	65	65	113	113
	690V	[kW]	38	38	38	38	90	90	155	155
	I_m	[kW]	32	32	32	32	60	60	110	110
	230V	[kW]	13	13	13	13	24	24	44	44
Ambient Temperature 60°	240V	[kW]	13	13	13	13	25	25	46	46
	400V	[kW]	22	22	22	22	42	42	76	76
	415V	[kW]	23	23	23	23	43	43	79	79
	500V	[kW]	28	28	28	28	52	52	95	95
	690V	[kW]	38	38	38	38	72	72	131	131
Max Operating Rate		[ops/hour]	1,000	1,000	1,000	1,000	300	300	600	600
Continuous Current (UL/CSA)										
General Purpose Rating (40°)	Open	[A]	25	25	30	30	60	60	125	130
	Enclosed	[A]	25	25	30	30	60	60	125	130
Max. Operating Rate		[ops/hour]	1,400	1,400	1,200	1,200	1,000	1,000	600	600
Lighting Loads										
Elec. Dischrg.Lamps-AC-5a,	Open	[A]	22.5	25	28	29	65	65	115	115
single compensated	Enclosed	[A]	22.5	25	28	29	54	54	95	95
Incandescent Lamps AC-5b,										
Electrical endurance~100,000 operations			12	16	18	22	18	25	60	75
DC-1 Switching - 60°C										
1 Pole	24VDC	[A]	25	25	32	32	45	45	80	80
	48VDC	[A]	20	20	20	20	25	25	40	40
	60VDC	[A]	20	20	20	20	25	30	40	40
	110VDC	[A]	6	6	6	6	10	10	11	11
	220VDC	[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.8	1.8
	440VDC	[A]	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
2 Pole in Series	24VDC	[A]	25	25	32	32	45	45	80	80
	48VDC	[A]	25	25	32	32	45	45	80	80
	60VDC	[A]	25	25	32	32	45	45	80	80
	110VDC	[A]	25	25	32	32	45	45	80	80
	220VDC	[A]	8	8	8	8	10	10	15	15
	440VDC	[A]	1	1	1	1	1	1	1.5	1.5
3 Poles in Series	24VDC	[A]	25	25	32	32	~	48	~	100
	48VDC	[A]	25	25	32	32	~	48	~	100
	60VDC	[A]	25	25	32	32	~	48	~	100
	110VDC	[A]	25	25	32	32	~	48	~	100
	220VDC	[A]	25	25	32	32	~	48	~	80
	440VDC	[A]	3	3	3	3	~	3.5	~	5
4 Poles in Series	24VDC	[A]	25	25	32	32	~	60	~	110
	48VDC	[A]	25	25	32	32	~	60	~	110
	60VDC	[A]	25	25	32	32	~	60	~	110
	110VDC	[A]	25	25	32	32	~	60	~	110
	220VDC	[A]	25	25	32	32	~	60	~	100
	440VDC	[A]	8	8	8	8	~	10	~	15






















① CA7 ratings for lighting loads are provided for technical reference. For cUL rated and labeled devices, see CAL7 contactors listed in this section.

Electrical Data

		CA7-9- M40(31; 22)	CA7-12- M40(31; 22)	CA7-16- M40(31; 22)	CA7-23- M40(31;22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40
Resistance and Watt Loss I_e AC3									
Resistance per power pole	[mΩ]	2.7	2.7	2.7	2.0	2.0	1.5	0.8	0.7
Watt Loss - 4 power poles	[W]	2.8	2.8	2.8	2.0	11.3	8.4	13.5	11.8
Coil and 4 power poles									
AC	[W]	13.7	13.7	13.7	10.8	26.1	37.4	36.0	56.3
DC (true)	[W]	17.6	17.6	17.6	17.4	32.6	43.9	~	~
DC (2 winding)	[W]	~	~	~	~	~	~	32.5	52.8
Short Circuit Coordination									
DIN Fuses -gG, gL									
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	50 KA	50 KA	50 KA	50 KA
Type "1" (690V) ③	[A]	50	50	50	80	160	160	250	250
Type "2" (690V) ③	[A]	25	35	35	40	100	100	160	160
BS 88 Fuses									
Available Fault Current	[A]	80 KA	80 KA	80 KA	80 KA	~	~	~	~
Type "1" (690V) ③	[A]	25	32	35	50	~	~	~	~
Type "2" (690V) ③	[A]	25	32	35	50	~	~	~	~
Class K1, RK1 Fuses									
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA
Type "2" (600V) ③	[A]	15	20	20	30	70	70	100	100
cUL Short-Circuit Ratings									
Class K1, RK1, K5, and RK5 Fuses									
Available Fault Current	[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	10 KA	10 KA
cUL Max. Rating (600V) ②	[A]	35	40	70	90	125	125	300	300
Type 1									
Class CC & CSA HRCI Fuses									
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	~	~	~	~
cUL Max. Rating (600V) ② Type 2	[A]	15	20	30	30	~	~	~	~
Class J CSA & HRCI-J Fuses									
Available Fault Current	[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA
cUL Max. Rating (600V) ② Type 2	[A]	15	20	30	30	70 ④	70 ④	150 ④	150 ④
Inverse-Time Circuit Breaker ①									
Available Fault Current	[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	10 KA	10 KA
cUL Max. Rating 480V ② Type 1	[A]	30	30	50	50	125	125	250	250
cUL Max. Rating 600V ② Type 1	[A]	~	~	~	~	125	125	250	250
Short Time Current Withstand Ratings									
I_{sw} 60° C	[A]	170	170	170	215	304	304	700	700
Off Time Between Operations	[Min.]	20	20	20	20	5	5	5	5

- ① When used as a Branch Circuit Protection device, NEC 430-152 defines the maximum rating of an Inverse-time circuit breaker to be sized at 250% of the motor nameplate FLA for most applications.
- ② UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.
- ③ Per IEC 60947-1 for contactor and fuses only.
- ④ UL Testing not complete a the time of printing this catalog.

Mechanical Data

		CA7-9- M40(31; 22)	CA7-12- M40(31; 22)	CA7-16- M40(31; 22)	CA7-23- M40(31; 22)	CA7-40-M22	CA7-40-M40	CA7-90- M22	CA7-90- M40	
Service Life										
Mechanical	AC [Mil.]	13	13	13	13	10	10	10	10	
	DC [Mil.]	13	13	13	13	10	10	10	10	
Shipping Weights										
AC - CA7	[kg]	0.39	0.39	0.39	0.39	0.51	0.51	1.45	1.45	
	[Lbs.]	0.86	0.86	0.86	0.86	1.12	1.12	3.20	3.20	
DC - CA7	[kg]	0.60	0.60	0.60	0.73	1.00	1.00	1.47	1.47	
	[Lbs.]	1.32	1.32	1.32	1.61	2.20	2.20	3.24	3.24	
Terminations - Power										
Description										
		One saddleclamp per pole: cross, slotted or Pozidrive No. 2/blade No. 3 screw				Dual connection; one saddleclamp and one box lug per pole; cross, slotted or Pozidrive No. 2/blade No. 4 screw		Dual connection; two box lugs per pole Allen Head: 4mm, 5/32		
	1 Wire [mm ²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...16	2.5...35	
	2 Wires [mm ²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...10	2.5...25	
 	1 Wire [mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...25	2.5...50	
	2 Wires [mm ²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...16	2.5...35	
 	1 Wire [AWG]	16...10	16...10	16...10	16...10	14...6	14...6	14...4	14...1	
	2 Wires [AWG]	16...10	16...10	16...10	16...10	14...6	14...6	14...4	14...1	
Torque Requirement		[Nm]	1.0...2.5	1.0...2.5	1.0...2.5	2.5...4	2.5...4	2.5...4	3.5...6	
	[Lb-in]	9...22	9...22	9...22	9...22	22...35	22...35	22...35	31...53	
Terminations - Control										
Description										
		Combination Screw Head: Cross, Slotted, Pozidrive								
Coils	1 or 2 [mm ²]					1.5...6				
Wires	[AWG]					16...12				
Control Modules	1 or 2 [mm ²]					1.5...6				
Wires	[AWG]					16...12				
Torque Requirement						1...2.5				
	[Lb-in]					9...13				
Degree of Protection - contactor						IP 2LX per IEC 529 and DIN 40 050 (with wires installed)				
Protection Against Accidental Contact						Safe from touch by fingers and back-of-hand per VDE 0106; Part 100				

Environmental and General Specifications

Ambient Temperature	
Storage	-55...+80° C (-67...176° F) - [CRI7E Electronic Interface -50...+80° C (-58...176° F)]
Operation	-25...+60° C (-13...140° F)
Conditioned 15% current reduction after AC-1 at >60° C	-25...+70° C (-13...158° F)
Altitude at installed site	2000 meters above sea level per IEC 947-4
Resistance to Corrosion/Humidity	Damp-alternating climate: cyclic to IEC 68-2, 56 cycles Dry heat: IEC 68-2, +100°C (212° F), relative humidity <50%, 7 days. Damp tropical: IEC 68-2, +40°C (104° F), relative humidity <92%, 56 days.
Shock Resistance	IEC 68-2: Half sinusoidal shock 11ms, 30g (in all three directions)
Vibration Resistance	IEC 68-2: Static > 2g, in normal position no malfunction <5g
Pollution Degree	3
Operating Position	Refer to Dimension Pages
Standards	IEC947-1/4, EN 60947; UL 508; CSA 22.2, No. 14
Approvals	CE, UL, CSA

Coil Data (CA7 4-Pole)






			CA7-9- M40(31; 22)	CA7-12- M40(31; 22)	CA7-16- M40(31; 22)	CA7-23- M40(31; 22)	CA7-40- M22	CA7-40- M40	CA7-90- M22	CA7-90- M40	
Voltage Range											
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[xU _N]					0.85...1.1				
	Dropout	[xU _N]					0.3...0.6				
DC	Pickup	[xU _N]	0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25)								
	Dropout	[xU _N]	0.1...0.6								
Coil Consumption											
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[VA/W]	70/50	70/50	70/50	70/50	130/90	130/90	400/240	400/240	
	Hold-in	[VA/W]	8/2.6	8/2.6	8/2.6	9/3	12/3.6	12/3.6	24/9	24/9	
True DC Coils (CA7C)	Pickup	[W]	6.5	6.5	6.5	9.2	10.1	10.1	~	~	
	Hold-in	[W]	6.5	6.5	6.5	9.2	10.1	10.1	~	~	
Two Winding DC Coils CA7Y & CA7D	Pickup	[W]	~	~	~	~	~	~	325	325	
	Hold-in	[W]	~	~	~	~	~	~	5.5	5.5	
Operating Times											
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[ms]	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	
	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40	20...40	
with RC Suppressor	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40	20...40	
True DC Coils (CA7C)	Pickup	[ms]	40...70	40...70	40...70	40...70	50...80	50...80	~	~	
	Dropout	[ms]	7...15	7...15	7...15	7...15	7...15	7...15	~	~	
with Integrated Suppression	Dropout	[ms]	14...20	14...20	14...20	17...23	~	~	~	~	
with External Suppression	Dropout	[ms]	70...95	70...95	70...95	80...125	~	~	~	~	
Two Winding DC Coils	Pickup	[ms]	~	~	~	~	~	~	15...20	20...25	
	Dropout	[ms]	~	~	~	~	~	~	20...25	20...25	

Technical Information – Auxiliary Contact Data

		Mounted Standard Auxiliary	Built-in Auxiliary Contacts in Contac- tor CA7-9...CA7-23	Front Mounted Auxiliary Contacts CA7-PV, CS7-PV, CZE/A7, CV7	Front Mounted Bifurcated Auxiliary Contacts	Side Mounted Auxiliary Contacts CA-PA, CM7
Electrical Contact Ratings - NEMA			A600, P600	A600, Q600		A600, Q600
Min. Contact Rating			17V, 10 mA	17V, 5 mA	5V, 3 mA	17V, 10 mA
Contact Ratings - IEC AC-15 (solenoids, contactors) rated voltage IEC 60947-5-1		24V	10 A	6 A	3 A	6 A
		48V	10 A	6 A	3 A	6 A
		120V	10 A	6 A	3 A	6 A
		240V	10 A	5 A	3 A	5 A
		400V	6 A	3 A	2 A	3 A
		480V/500V	2.5 A	1.6 A	1.2 A	1.6 A
		600V	1 A	1 A	0.7 A	1 A
		690V	1 A	1 A	0.7 A	1 A
AC-12 (Control of resistive loads) IEC 60947-5-1	40 °C	I _{th}	20 A	10 A	10 A	10 A
		230V	8 kW			
		400V	14 kW			
		690V	24 kW			
	60 °C	I _{th}	20 A	6 A	6 A	6 A
		230V	8 kW			
	400V	14 kW				
	690V	24 kW				
DC-12 Switching DC Loads t _R < 1 ms, Resistive Loads IEC 60947-5-1		24V	12 A	12 A	6 A	6 A
		48V	9 A	9 A	3.2 A	3.2 A
		110V	3.5 A	3.5 A	0.45 A	0.45 A
		220V	0.55 A	0.55 A	0.18 A	0.18 A
		440V	0.2 A	0.2 A	0.1 A	0.1 A
DC-13 IEC 60947-5-1, Solenoids and contactors		24V	5 A	5 A	2.5 A	5 A
		48V	3 A	3 A	1.5 A	3 A
		110V	1.2 A	1.2 A	0.6 A	1.2 A
		220V	0.6 A	0.6 A	0.3 A	0.6 A
		440V	0.3 A	0.15 A	0.15 A	0.15 A

A
Contactors
CA7

Auxiliary Contacts

			Built-in Auxiliary Contacts in Contactor CA7-9...CA7-23	Front Mounted Auxiliary Contacts CA7-PV, CS7-PV, CZE/A7, CV7	Side Mounted Auxiliary Contacts CA-PA, CM7
Continuous Current Rating per UL/CSA					
Rated Voltage	AC	[V]	600 max.	600 max.	600 max.
Continuous Rating	40°C	[A]	10 A general purpose Heavy pilot duty (A600)	10 A general purpose Heavy pilot duty (A600)	10 A general purpose Heavy pilot duty (A600)
Continuous Rating	DC	[A]	5A, 600 max. Standard pilot duty (P600)	2.5A, 600 max. Standard pilot duty (Q600)	2.5A, 600 max. Standard pilot duty (Q600)
Short-Circuit Protection -gGFuse					
Type 2 Coordination		[A]	20	10	10
Rated Impulse Voltage U_{imp}					
		[kV]	8	8	6
Insulation Voltage (between control and load circuit) per DIN < VDE 0103, Part 101 (NAMUR recommendation)					
		[V]	380	440	440
Mechanically Linked Contacts (per IEC60947-5-1 Annex L (SUVA Third-party certified))					
			Mutually unrestricted between all NO and NC contacts	Mutually unrestricted between all NO & NC contacts. CZE & CV7 not mechanically linked with contactor main contacts	Mutually unrestricted between all NO and NC contacts
Terminals					
Terminal Type					
Maximum Wire Size per IEC 947-1			2xA4	2xA4	2xA4
	Flexible with Wire-End	1 conductor [mm ²]	1...4	0.5...2.5	0.5...2.5
	Fernule	2 conductor [mm ²]	1...4	0.75...2.6	0.75...2.6
	Solid/Stranded-Conductor	1 conductor [mm ²]	1.5...6	0.5...2.5	0.5...2.5
		2 conductor [mm ²]	1.5...6	0.75...2.6	0.75...2.6
Recommended Tightening Torque			[Nm]	1...15	1...15
Max. Wire Size per UL/CSA			[AWG]	18...14	18...14
Recommended Tightening Torque			[lb-in]	9...13	9...13

Accessories

Latch Attachment Release, CV7-11		
Coil Consumption	[VA/W]	AC 45/40 DC 25W
Contact Signal Duration	[min/max]	0.03...15s
Time Attachment		
Reset Time		
at min. time setting	[ms]	10
at max. time setting	[ms]	70
Repeat Accuracy		
±10%		

Contact Ratings (Per NEMA/UL A600 & Q600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC	60A/7200VA	6A/720VA	10
	240AC	30A/7200VA	3A/720VA	
	480AC	15A/7200VA	1.5A/720VA	
	600AC	12A/7200VA	1.2A/720VA	
Q600	125DC	0.55A/69VA	0.55A/69VA	25
	250DC	0.27A/69VA	0.27A/69VA	
	301-600DC	0.1A/69VA	0.1A/69VA	

Positively-Guided Contacts (Mechanically-linked) SUVA Certified

- Restricted guidance guarantees without restrictions from contactor to auxiliary contact and auxiliary contact to contactor.●

● See Section G for additional details.

Determining Contact Life

To determine the contactor's estimated electrical life, follow these guidelines:

1. Identify the appropriate Utilization Category from Table A.
2. On the following pages, choose the graph for the Utilization Category selected.

3. Locate the Rated Operational Current (I_n) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
4. Read the estimated contact life along the vertical axis.

Table A – IEC Special Utilization Categories, AC Ratings ①

Category	Typical Applications	Rated Current	Conditions for testing electrical life						Ops.	Conditions for testing making and breaking capacity						Ops.	
			Make			Break				Make			Break				
			I/le	U/ue	cos	Ic/le	Ur/Ue	cos		I/le	U/ue	cos	I/le	U/ue	cos		
CONTACTORS	AC-1	Non-inductive or slightly inductive loads; resistance furnaces	All values	1	1	0.95	1	1	0.95	6000	1.5	1.05	0.8	1.5	1.05	0.8	50
	AC-2	Slip-ring motors: Starting, plugging	All values	2	1.05	0.65	2	1.05	0.65	6000	4	1.05	0.65	4	1.05	0.65	50
	AC-3	Slip-ring motors: Starting, switching off motors during running	$I_n \leq 17Amp$	6	1	0.65	1	0.17	0.65	6000	10	1.1	0.65	8	1.1	0.65	50
			$17Amp < I_n < 100Amp$	6	1	0.35	1	0.17	0.35		10	1.1	0.35	8	1.1	0.35	
			$I_n > 100Amp$	6	1	0.35	1	0.17	0.35		8 ②	1.1	0.35	6 ③	1.1	0.35	
	AC-4	Squirrel-cage motors: Starting, plugging, inching ⑤	$I_n \leq 17Amp$	6	1	0.65	6	1	0.65	6000	12	1.1	0.65	10	1.1	0.65	50
			$17Amp < I_n < 100Amp$	6	1	0.35	6	1	0.35		12	1.1	0.35	10	1.1	0.35	
			$I_n > 100Amp$	6	1	0.35	6	1	0.35		10 ④	1.1	0.35	8 ②	1.1	0.35	
	AC-5a	Switching of electric discharge lamp control		2	1.05	0.45	2	1.05	0.45	6000	3	1.05	0.45	3	1.05	0.45	50
	AC-5b	Switching of incandescent lamps		1	1.05		1	1.05		6000	1.5	1.05		1.5	1.05		50
AC-6a	Switching of transformers									Rating derived from AC-3 rating (x 0.45)							
AC-6b	Switching of capacity banks									Depends on circuit conditions of application							
CONTROL DEVICES	AC-12	Control of resistive loads and solid state loads with isolation by opto couplers	All values	1	1	0.9	1	1	0.9	6050							
	AC-13	Control of solid state loads with transformer isolation		2	1	0.65	1	1	0.65	6050	10	1.1	0.65	1.1	1.1	0.65	10
	AC-14	Control of small electromagnetic loads	72 VA	6	1	0.3	1	1	0.3	6050	6	1.1	0.7	6	1.1	0.7	10
	AC-15	Control of electromagnetic loads	72 VA	10	1	0.3	1	1	0.3	6050	10	1.1	0.3	10	1.1	0.3	10
	AC-20	Connecting and disconnecting under no load conditions		No testing required													
	AC-21	Switching or resistive loads, including moderate overloads	All values	1	1	0.95	1	1	0.95	10000	1.5	1.05	0.95	1.5	1.05	0.95	5
SWITCHES	AC-22	Switching of mixed resistive & inductive loads, including moderate overloads	All values	1	1	0.8	1	1	0.8	10000	3	1.05	0.65	3	1.05	0.65	5
	AC-23	Switching of motor loads or other highly inductive loads	All values	1	1	0.65	1	1	0.65	10000	10	1.05	0.45	8	1.05	0.45	5

Legend

- U_e** Rated operational voltage
- U** Voltage before make
- U_r** Recovery voltage
- I_e** Rated operational current
- I** Making current
- I_c** Breaking current
- L** Inductance of test circuit
- R** Resistance of test circuit

- ① Utilization categories and test conditions for AC & DC. For contactors according to IEC 158-1, starters according to IEC 292-1 ... 4 and control switches according to IEC 337-1 and IEC 337-1A.
- ② With a minimum value of 1000A for I or I_c .
- ③ With a minimum value of 800A for I_c .
- ④ With a minimum value of 1200A for I .
- ⑤ Plugging is understood as stopping or reversing the motor rapidly by reversing the motor primary connections while the motor is running. Inching [or jogging] is understood as energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.

Determining Contact Life

To determine the contactor's estimated electrical life, follow these guidelines:

1. Identify the appropriate Utilization Category from Table A.
2. On the following pages, choose the graph for the Utilization Category selected.
3. Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
4. Read the estimated contact life along the vertical axis.

Table A – IEC Special Utilization Categories, DC Ratings ❶

Category	Typical Applications	Rated Current	Conditions for testing electrical life						Ops.	Conditions for testing making and breaking capacity						Ops.
			Make			Break				Make			Break			
			I/I_e	U/U_e	cos	I_c/I_e	U_r/U_e	cos		I/I_e	U/u_e	cos	I/I_e	U/u_e	cos	
DC-1	Non-inductive or slightly inductive loads, resistance furnaces	All Values	1	1	1	1	1	1		1.5 ❷	1.1 ❷	1 ❷	1.5 ❷	1.1 ❷	1 ❷	
DC-2	Shunt-motors: Starting, switching off motors during running	All Values	2.5	1	2	1	0.1	7.5		4	1.1	2.5	4	1.1	2.5	
DC-3	Shunt motors: Starting, plugging, inching	All Values	2.5	1	2	2.5	1	2		4	1.1	2.5	4	1.1	2.5	
DC-4	Series-motors: Starting, switching off motors during running	All Values	2.5	1	7.5	1	0.3	10		4	1.1	15	4	1.1	15	
DC-5	Series-motors: Starting, plugging, inching	All Values	2.5	1	7.5	2.5	1	7.5		4	1.1	15	4	1.1	15	
DC-15	Electromagnets for contactors, valves, solenoid actuators	All Values	1	1	6 x P ❸	1	1	6 x P ❸		1.1	1.1	6 x P ❸	1.1	1.1	6 x P ❸	

Legend

- U_e** Rated operational voltage
- U** Voltage before make
- U_r** Recovery voltage
- I_e** Rated operational current
- I** Making current
- I_c** Breaking current
- L** Inductance of test circuit
- R** Resistance of test circuit

❶ Utilization categories and test conditions for AC & DC. For contactors according to IEC 158-1, starters according to IEC 292-1 ... 4 and control switches according to IEC 337-1 and IEC 337-1A.

❷ Only according to VDE.

❸ $P = U_e \times I_e$ rated power [W]. The value "6 x P" has been derived from an empiric relationship which covers most magnetic loads for DC up to an upper limit of $P = 50W$.

Predicting Electrical Life

Sprecher + Schuh contactors are designed for superior performance in a wide variety of applications, by giving consideration to the specific load, utilization category and required electrical life, you can purchase exactly the type

and size of contactor required. This assures reliable operation and high value the ability to very closely match the contactor to the application.

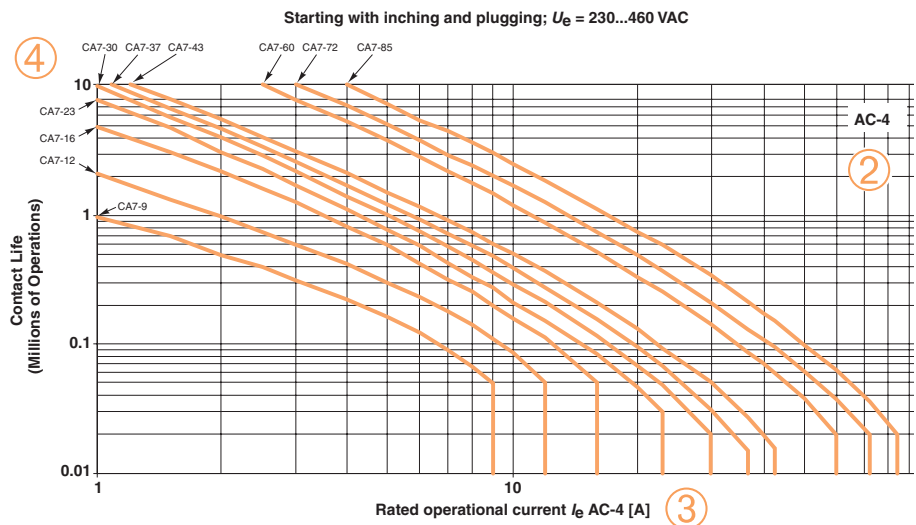
- ① Identify the appropriate utilization category. For this example, we will determine CA7 contact life for inching and plugging squirrel-cage motors. ❶

Utilization Category	Definition	
AC-1	Resistance Furnaces	Non inductive or slightly inductive loads, Resistive Furnaces
AC-2	Slip-ring motors	Starting and stopping of running motors
AC-3	Squirrel-cage motors	Starting and stopping of running motors
① AC-4	Squirrel-cage motors	Starting, plugging, and inching (Plugging is understood as stopping or reversing the motor rapidly by reversing the motor primary connections while the motor is running. Inching [or jogging] is understood as energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.)
AC-15	Electromagnets	Electromagnets for contactors, valves, solenoid actuators

- ② Choose the graph for the utilization category selected. (a graph pertaining to most Utilization Categories can be found in each contactor section.)

- ③ Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.

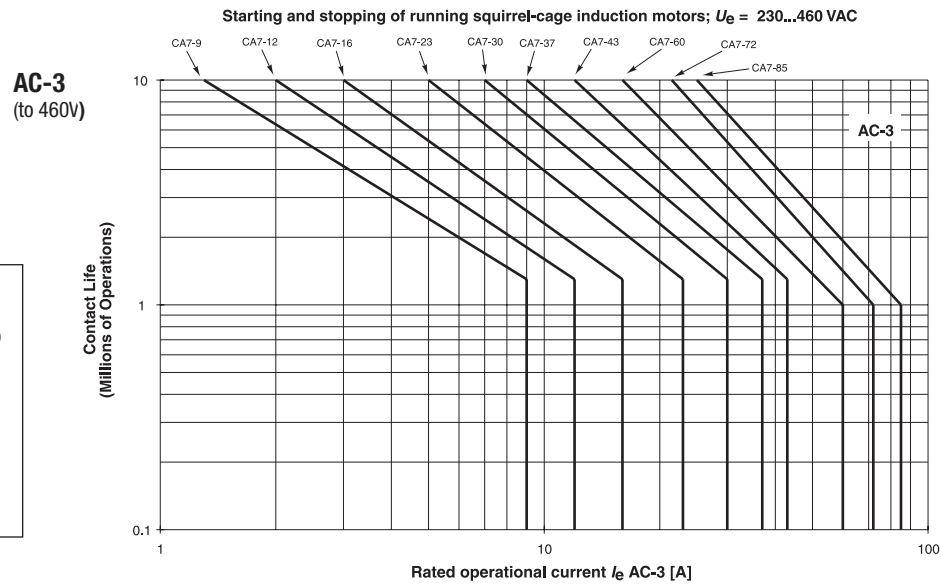
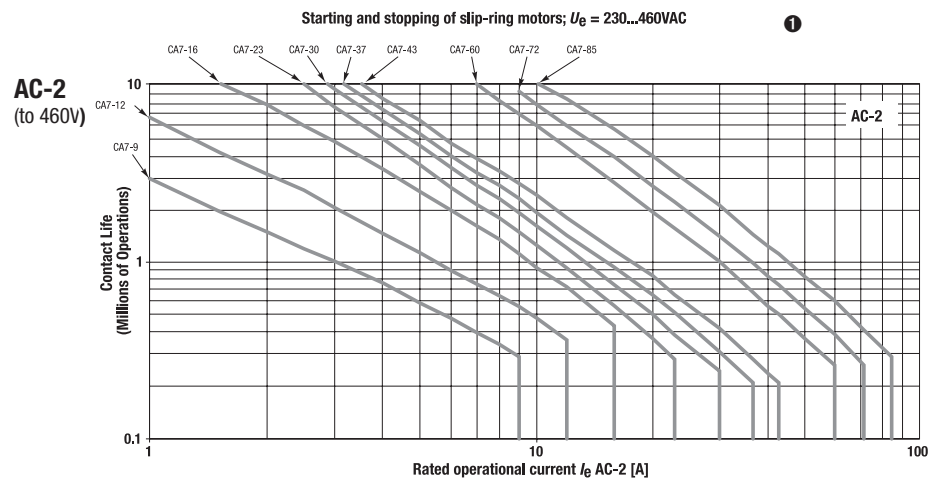
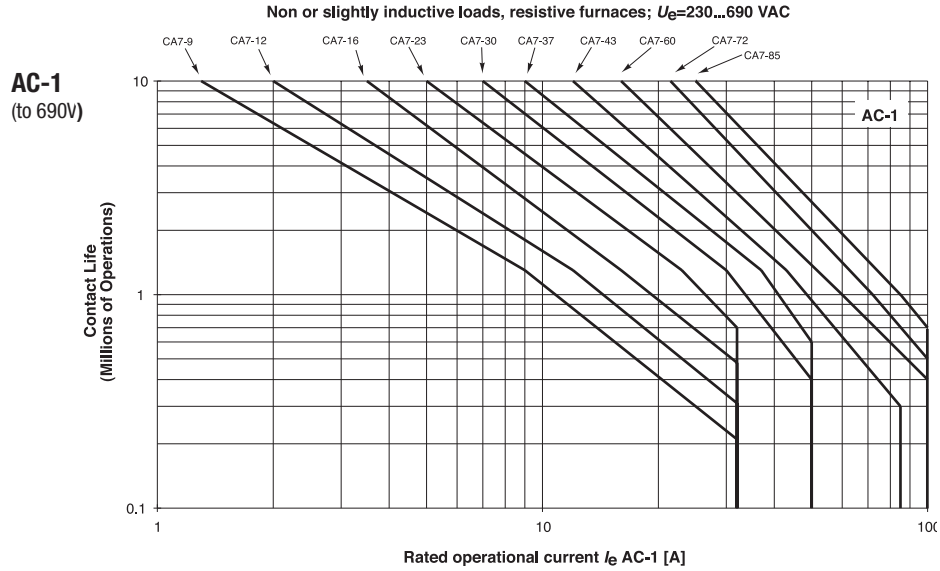
- ④ Read the estimated contact life along the vertical axis.



- ❶ A comprehensive list of Utilization Categories can be found in each contactor section, however, these are the primary categories used in most industrial motor applications.
- ❷ The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in a given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

Life-Load Curves

- Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
- Read the estimated contact life along the vertical axis.



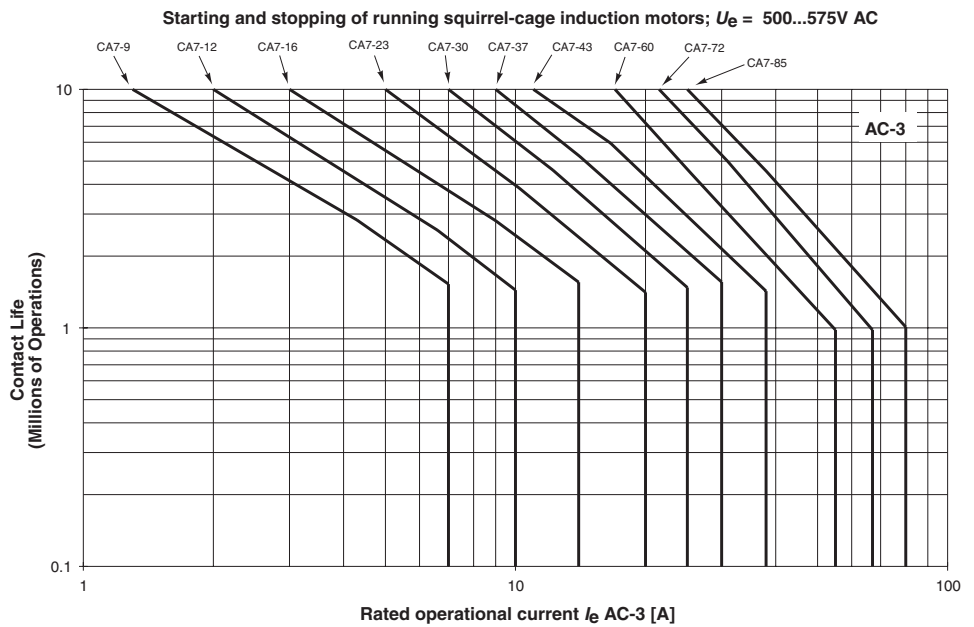
NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

① 575V applications use 90% of curve value.

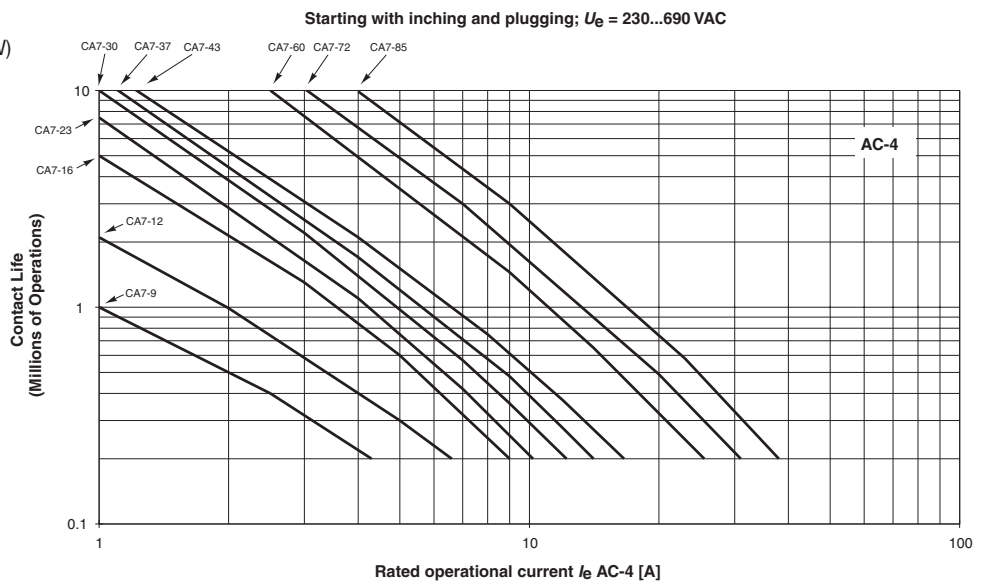
Life-Load Curves

- Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
- Read the estimated contact life along the vertical axis.

AC-3
(to 575)



AC-4
(to 690V)



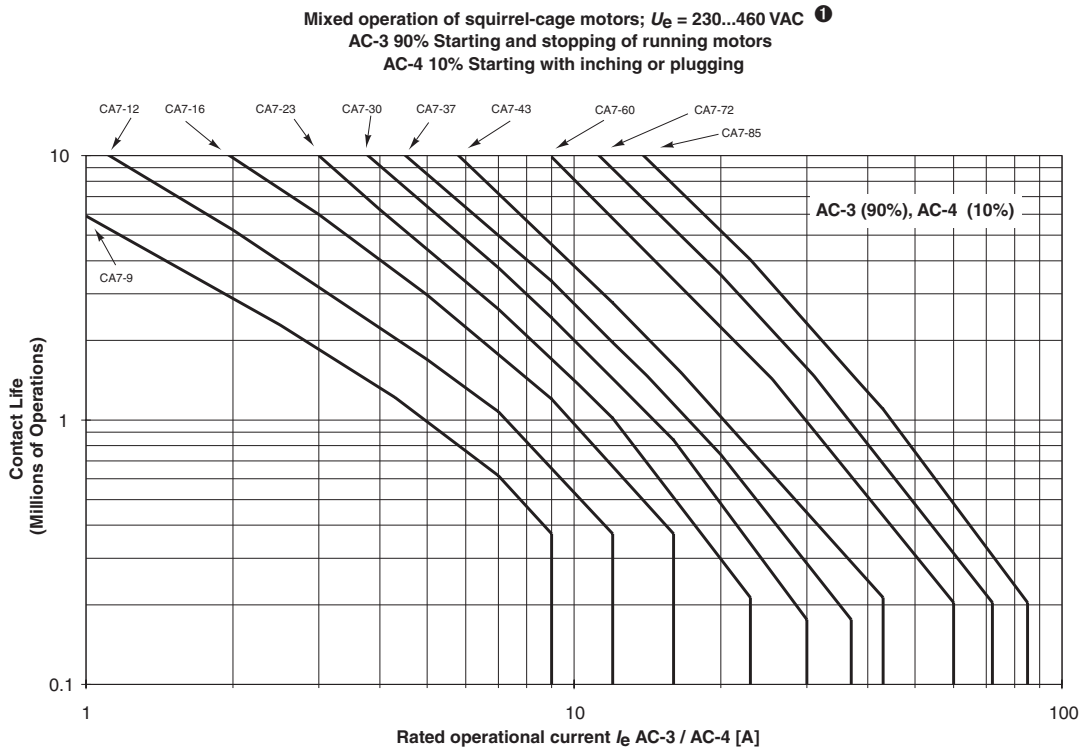
NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

Life-Load Curves

Contactors

CA7

AC-3 (90%),
AC-4 (10%)

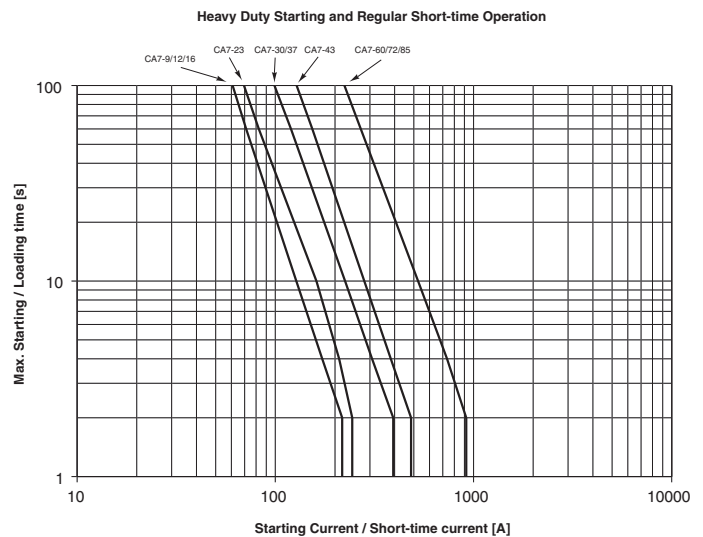


**Contact Life for Mixed Utilization Categories
AC-3 and AC-4**

In many applications, the utilization category cannot be defined as either purely AC-3 or AC-4. In those applications, the electrical life of the contactor can be estimated with the following equation:

$$L_{\text{mixed}} = L_{\text{ac3}} / [1 + P_{\text{ac4}} \times (L_{\text{ac3}} / L_{\text{ac4}} - 1)], \text{ where:}$$

- L_{mixed} Approximate contact life in operations for a mixed AC-3/AC-4 utilization category application.
- L_{ac3} Approximate contact life in operations for a pure AC-3 utilization category (from the AC-3 life-load curve).
- L_{ac4} Approximate contact life in operations for a pure AC-4 utilization category (from the AC-4 life-load curve).
- P_{ac4} Percentage of AC-4 operations



NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

① 575V applications use 85% of curve value.

Operating Rates

The estimated contact life shown in the life-load curves is based on the standard operating rates shown in Table B below. For applications requiring a higher operating frequency, the maximum operating power (Pn in kW or HP) for a given contactor must be reduced to maintain the same contact life.

To find a contactor's maximum operating power, for an operating rate greater than shown in Table B, follow these guidelines:

1. Identify the appropriate curve for the contactor and utilization category from Table B.
2. Locate the appropriate Maximum Operating Rate curve on the following pages.
3. Locate the intersection of the curve with the application's operating rate (ops/hr.) found on the vertical axis.

4. Read the percent of maximum operating power (Pn) of the contactor from the horizontal axis.

5. Multiply the % maximum power by the standard power rating.

Example: The contactor selected for an AC-4 utilization category application is a CA7-16 (10HP at 460V), however, the application requires an operating rate of 200 ops/hr., compared to the standard operating rate of 120 ops/hr. as shown in Table B.

1. Locate the AC-4 Maximum Operating Rate curve on the following pages.
2. Locate the intersection of 200 ops/hr on the CA7-16 curve. The data shows that the maximum operating power of the CA7-16 contactor in this application is 60%.
3. Therefore, the maximum horsepower that can be switched by the CA7-16 contactor in this application is 6 HP (0.60 x 10HP).

Table B – Standard Operating Rates by Contactor and Utilization Category

Contactor	AC-1	AC-2	AC-3	AC-4	AC-4 @ I _e for
	Max. ops/hr.	Max. ops/hr.	Max. ops/hr.	Max. ops/hr.	200K ops.
	Max. ops/hr.				
	Operating Parameters and Start Time				
			40% Duty Cycle 250ms ❶	250ms	250ms
CA-9	1000	500	700	200	400
CA-12	1000	500	700	150	300
CA-16	1000	500	700	120	240
CA-23	1000	400	600	80	160
CA-30	1000	400	600	80	160
CA-37	1000	400	600	70	140
CA-43	1000	400	600	70	140
CA-60	800	300	500	70	140
CA-72	800	250	500	60	120
CA-85	600	200	500	50	140

❶ **Duty Cycle or Load Factor** – Defined as the “on” time for a given operating cycle per hour including the “start time.” A 40% Duty Cycle is calculated in the following manner:

Contactor switches six (6) times per minute (tpm), 250ms start time; 40% duty cycle.

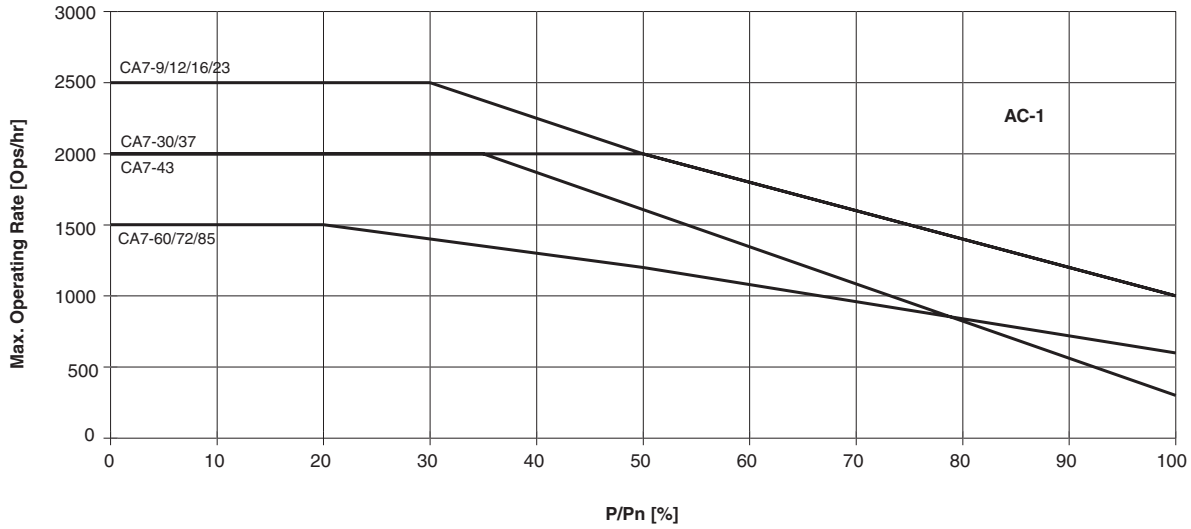
To determine the “on” time and “off” time:

- Operations per hour = 360; [60 min x 6 tpm = 360]
- One operating cycle = 10 sec; [60 min ÷ 6 tpm = 10 sec]
- “On” time at 40% duty cycle = 4 sec; [10 sec x 0.4 (40%) = 4 sec]
- 4 sec “on” time includes the start time of 250ms
- “Off” time at 40% duty cycle = 6 sec; [10 sec – 4 sec = 6 sec]

Operating Rate Curves

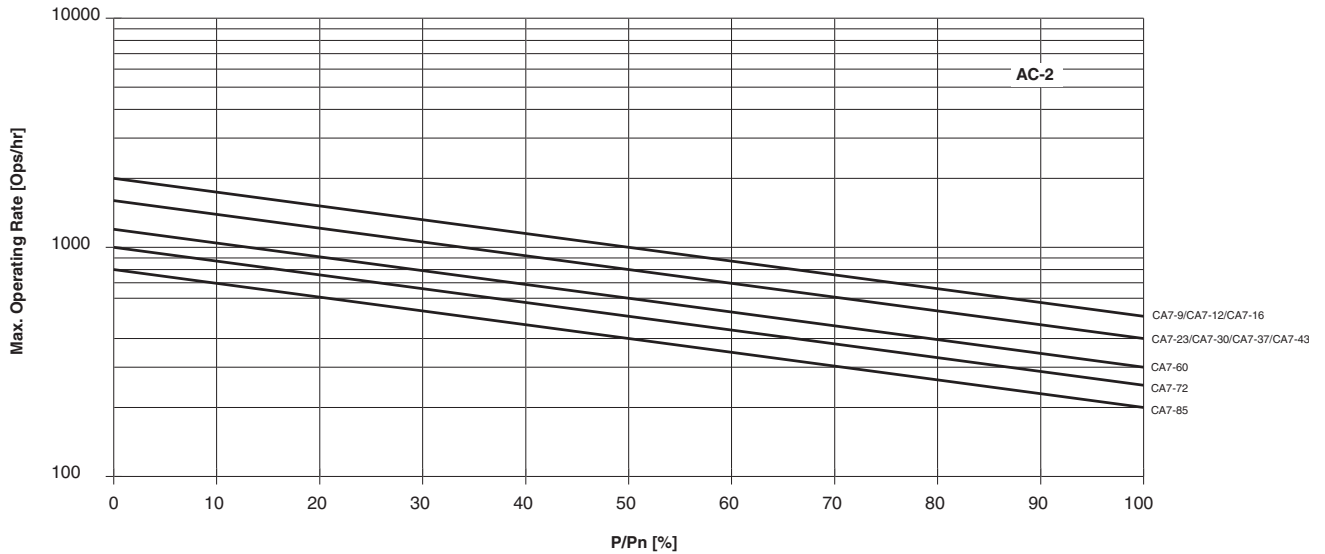
AC-1

Non or slightly inductive loads, resistance furnaces; $U_e = 230...690$ VAC



AC-2

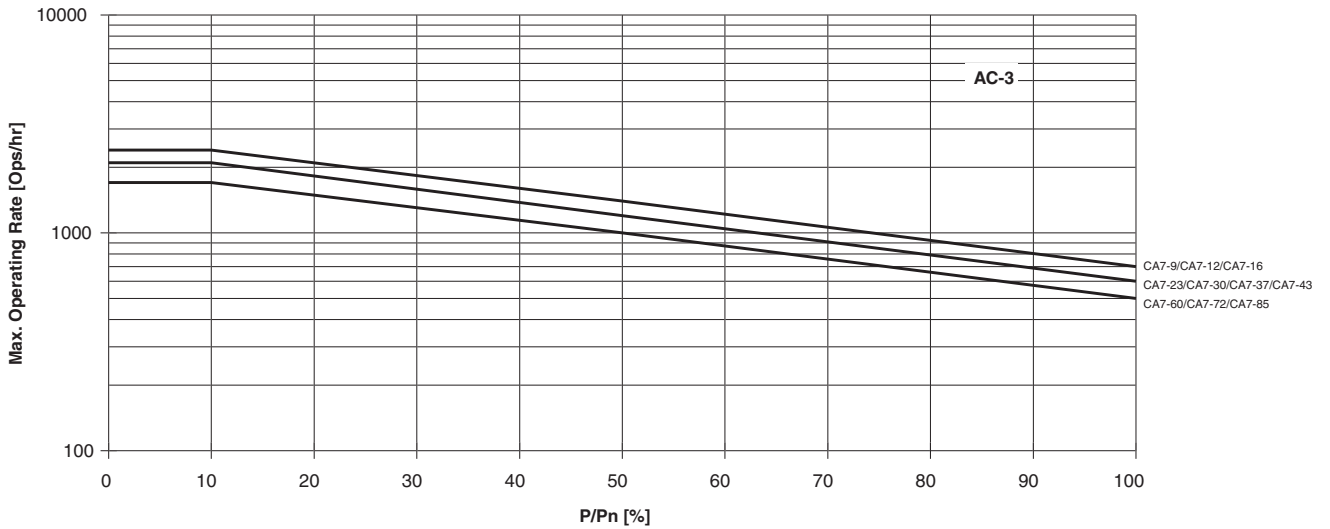
Slip-ring motors: starting, switching off; $U_e = 230...460$ VAC



Operating Rate Curves

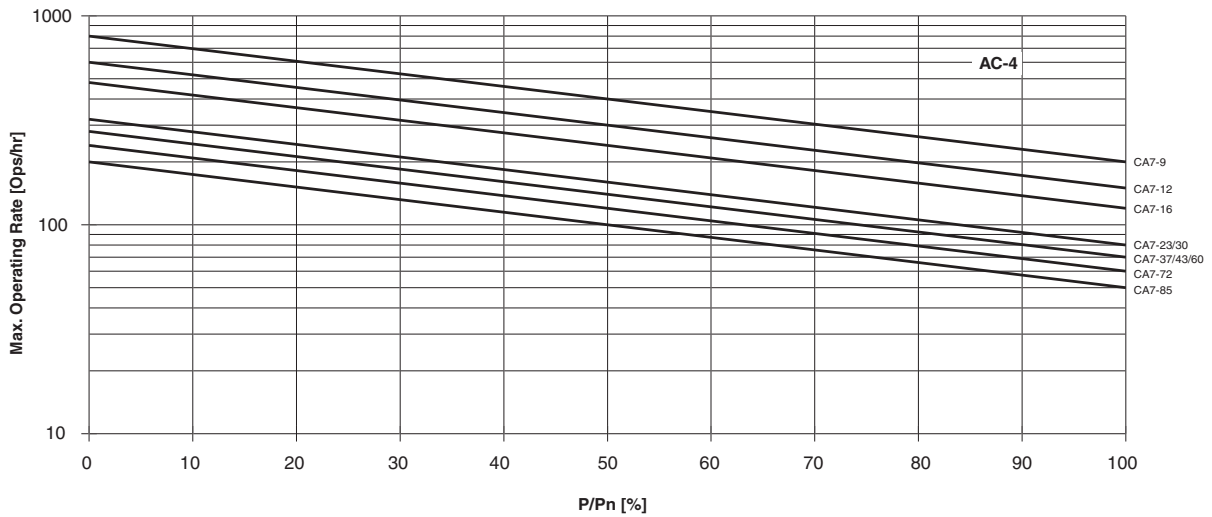
AC-3

Squirrel-cage motors: starting, switching off motors during running; $U_e = 230...460$ VAC
Relative operating time 40%, Starting time $t_A = 0.25$ s

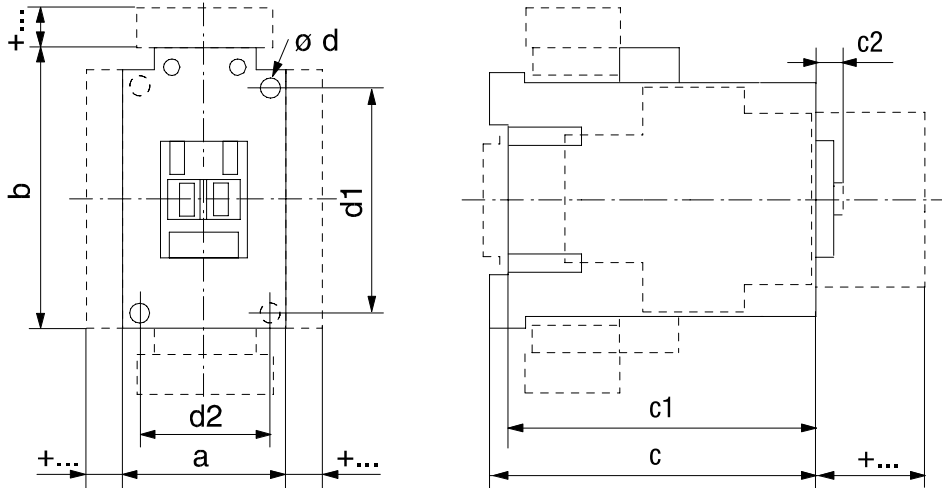


AC-4

Squirrel-cage motors: starting, plugging, inching; $U_e = 230 ...460$ VAC
Starting Time $t_A = 0.25$ s



Series CA7, CAU7, CAQ7, CNX, CAN7 and CAL7 (Contactors, Reversing Contactors & Special Use Contactors)

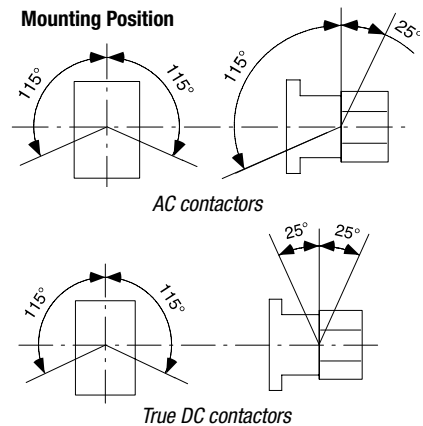


- Dimensions are in millimeters (inches)
- Dimensions not intended for manufacturing purposes

	Catalog Number	a	b	c	c1	c2	ød	d1	d2
AC Contactors	CA7-9...CA7-23; CAQ7-16; CAN7-12, CNX-205...208; CAN7-12, CA(V)L7-20	45 (1-25/32)	80 (3-3/16)	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-30...CA7-37; CNX-209; CAN7-30...CAN7-37	45 (1-25/32)	81 (3-3/16)	97.5 (4)	92.6 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-40	59 (2-21/64)	81 (3-3/16)	100.5 (4-7/64)	95.5 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-43, CNX-212	54 (2-1/8)	81 (3-3/16)	100.5 (4-7/64)	95.5 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-60...CA7-85 CNX-218	72 (2-53/64)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
	CA7-90	95 (3-3/4)	81 (3-3/16)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
True DC Contactors	CA7-9C...CA7-16C, CAQ7-16C CNX-205C...206C; CAN7-12C	45 (1-25/32)	81 (3-3/16)	106.5 (4-3/16)	101.5 (4)	6 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-23C CNX-207C...208C	45 (1-25/32)	81 (3-3/16)	123.5 (4-55/64)	119 (4-43/64)	6 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-30C...CA7-37C; CAQ7-37C; CNX-209C; CAN7-30C...CAN7-37C	45 (1-25/32)	81 (3-3/16)	141.5 (5-37/64)	136.5 (5-3/8)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-40C	59 (2-21/64)	81 (3-3/16)	144.5 (5-11/16)	139.5 (5-1/2)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-43C, CNX-212C	54 (2-1/8)	81 (3-3/16)	144.5 (5-11/16)	140 (5-33/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)

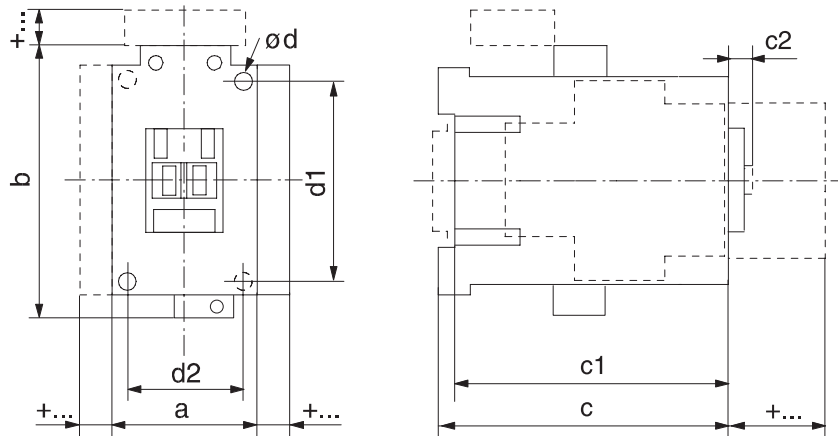
Reversing Contactors, Capacitor Contactors & Accessories (+...)

Contactors with...		Dim. [mm]	Dim. [inches]
auxiliary contact block-front mounting	2-, or 4-pole	c/c1 + 39	c/c1 + 1-37/64
(CAQ7) capacitor switching deck -front mounting		c/c1 + 39	c/c1 + 1-37/64
auxiliary contact block-side mounting	1-, or 2 pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
reversing contactor w-mech.interlock	on side of contactor	a+9+a	a + 23/64+a
mechanical latch		c/c1 + 61	c/c1 + 2-31/64
interface module	on coil terminal side	b + 9	b + 23/64
surge suppressor	on coil terminal side	b + 3	b + 1/8
Labeling with...	label sheet	+0	+0
	marking tag sheet with clear cover	+0	+0
	marking tag adapter for V7 Terminals	+5.5	+7/32



Series CA7 with Two Winding DC Coil

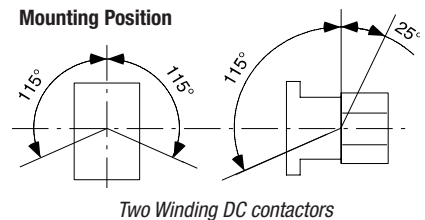
- Dimensions are in millimeters (inches)
- Dimensions not intended for manufacturing purposes



Catalog Number	a	b	c	c1	c2	ød	d1	d2
CA7-9Y...CA7-23Y	54 (2-9/64)	90 (3-35/64)	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
CA7-30Y, CA7-37Y	54 (2-9/64)	90 (3-35/64)	97.5 (4)	92.6 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
AC Contactors CA7-43Y	63 (2-31/64)	90 (3-35/64)	100.5 (4-7/64)	95.6 (3-7/8)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
CA7-60D...CA7-85D	81 (3-3/16)	131 (5-5/32)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
CAN7-72D, CNX-218D	95 (3-3/4)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)

Reversing Contactors, Capacitor Contactors & Accessories (+...)

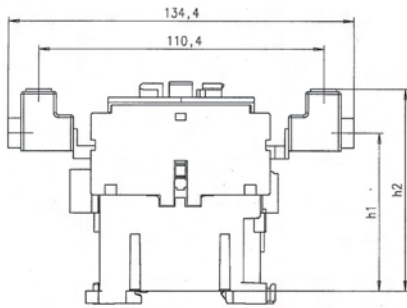
	Contactors with...	Dim. [mm]	Dim. [inches]
auxiliary contact block-front mounting	2-, or 4-pole	c/c1 + 39	c/c1 + 1-37/64
auxiliary contact block- left side mounting	1-, or 2 pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
mechanical latch		c/c1 + 61	c/c1 + 61
interface module	on coil terminal side	b + 9	c/c1 + 2-31/64
Labeling with...	label sheet	+0	+0
	marking tag sheet with clear cover	+0	+0
	marking tag adapter for V7 Terminals	+5.5	+7/32



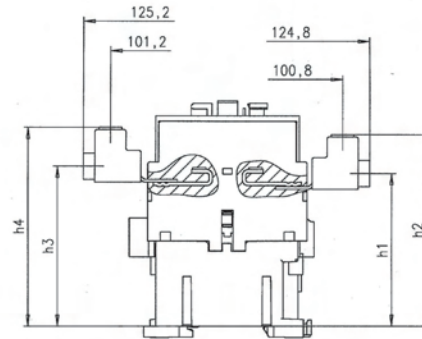
Two Winding DC contactors

CA7 Contactors with Terminal Lugs

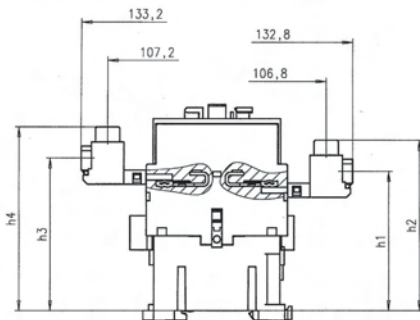
- Dimensions are in millimeters (inches)
- Dimensions not intended for manufacturing purposes



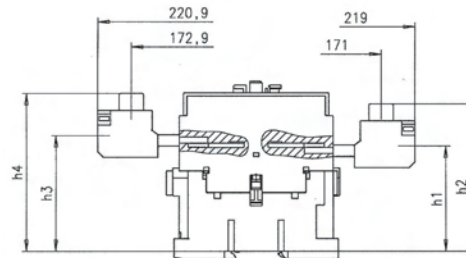
CA7-P-KN23 / KL23



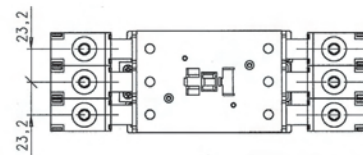
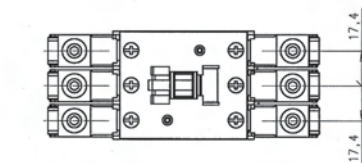
CA7-P-K37



CA7-P-K43



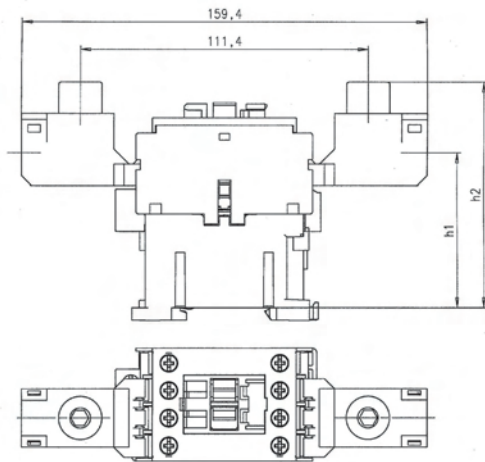
CA7-P-K85



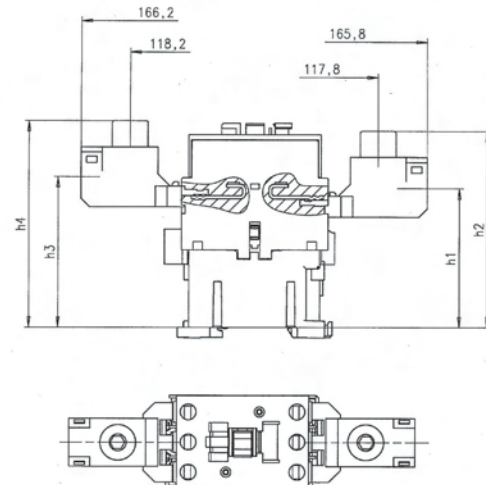
Catalog Number	With Contactor	AC Operated Contactor				DC Operated Contactor			
		h1	h2	h3	h4	h1	h2	h3	h4
CA7-P-KN23 / KL23	CA7-9...16	61.6 (2-27/64)	78.6 (3-3/32)	~	~	87.2 (3-7/16)	104.2 (4-3/32)	~	~
	CA7-23	61.6 (2-27/64)	78.6 (3-3/32)	~	~	105.2 (4-9/64)	122.2 (4-13/16)	~	~
CA7-P-K37	CA7-30 & 37	67.6 (2-21/32)	84.6 (3-21/64)	71.5 (2-13/16)	88.5 (3-31/64)	111.2 (4-3/8)	128.2 (5-3/64)	115.1 (4-17/32)	132.1 (5-13/64)
CA7-P-K43	CA7-43	69.0 (2-23/32)	85.0 (3-11/32)	74.5 (2-15/16)	90.5 (3-9/16)	112.6 (4-7/16)	128.6 (5-1/16)	118.1 (4-21/32)	134.1 (5-9/32)
CA7-P-K85	CA7-60...85	79.7 (3-1/8)	104.7 (4-1/8)	86.7 (3-13/64)	111.7 (4-3/8)	79.7 (3-1/8)	104.7 (4-1/8)	86.7 (3-13/64)	111.7 (4-3/8)

CA7 Contactors with Paralleling Links

- Dimensions are in millimeters (inches)
- Dimensions not intended for manufacturing purposes



CA7-P-B23



CA7-P-B37

Catalog Number	With Contactor	AC Operated Contactor				DC Operated Contactor			
		h1	h2	h3	h4	h1	h2	h3	h4
CA7-P-B23	CA7-9...16	65.1 (2-9/16)	90.1 (3-9/16)	~	~	90.7 (1/4)	104.2 (2-3/16)	~	~
	CA7-23	65.1 (2-9/16)	90.1 (3-9/16)	~	~	108.7 (4-9/32)	133.7 (5-17/64)	~	~
CA7-P-K37	CA7-30 & 37	69.0 (2-23/32)	94.0 (3-45/64)	74.5 (2-15/16)	99.5 (3-29/32)	112.6 (4-7/16)	137.6 (5-13/32)	118.1 (4-21/32)	143.1 (5-5/8)