







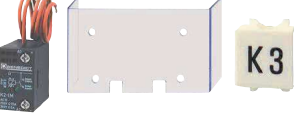


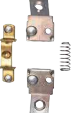


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Contactors 3-pole

- Up to 1200A AC3
- Up to 1350A AC1
- DIN-rail mounting up to AC3 115A
- International Approvals
- Data according to IEC 947 / EN 60947



Ratings		10A	14A	18A	22A	24A	32A	40A	50A	62A	74A	90A	115A
AC3 400V	Motor	4kW	5,5kW	7,5kW	11kW	11kW	15kW	18,5kW	22kW	30kW	37kW	45kW	55kW
	380-400V 660-690V	5,5kW	7,5kW	10kW	10kW	15kW	18,5kW	18,5kW	30kW	37kW	45kW	55kW	55kW
AC1 690V at 40°C		25A	25A	32A	32A	50A	65A	80A	110A	120A	130A	160A	200A
Type	K3-	10ND10	14ND10	18ND10	22ND10	24A00	32A00	40A00	50A00	62A00	74A00	90A00	115A00
Auxiliary contacts		1NO	1NO	1NO	1NO	-	-	-	-	-	-	-	-
Type	K3-	10ND01	14ND01	18ND01	22ND01								
Auxiliary contacts		1NC	1NC	1NC	1NC								
Cable cross-section													
Solid	mm ²	0,75 - 6				1,5 - 25			4 - 50			10 - 120	
Flexible	mm ²	1 - 4				2,5 - 16			10 - 35			10 - 95	
Auxiliary contact													
I _{th} 40°C	A	10				-			-			-	
AC15 230V	A	3				-			-			-	
400V	A	2				-			-			-	
Power consumption		33 - 45				90 - 115			140 - 165			280	
of coils	hold VA	7 - 10				9 - 13			13 - 18			5	
Operation range of coils		0,85 - 1,1				0,85 - 1,1			0,85 - 1,1			0,85 - 1,1	
Mounting		35mm DIN-rail or base										2x DIN-rail or base	
Additional aux. contact blocks		HN10 1NO f. low level switching		HN01 1NC f. low level switching		HA10 1NO 25A I _{th}		HA01 1NC 25A I _{th}		max. 4 HN.. or 4 HA..		max. 7 HN.. or 7 HA..	
Additional aux. contact blocks		-				HB11 1NO+1NC f. low level switching		HB02 2NC f. low level switching		max. 2 HB..			
Overload Relay (thermal)													
Single phase protection													
Temperature compensation													
Trip and alarm contacts													
Type		U3/32				U3/42			U3/74			U85	
		U12/16..K3											
Number of Setting Ranges from		16 0,12 - 30A		16 0,12 - 32A		4 10 - 42A		5 20 - 74A		2 60 - 120A			
Busbar sets		-				-			-			-	



Contactor, Motor-Starters

Circuit Breakers

Manual Motor-Starters

Switches

AC-Main Switches

DC-Switch Disconnectors











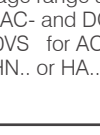
Push Buttons

Representatives, Suppliers

150A	175A	210A	260A	315A	450A	550A	700A	860A	1000A	1200A
75kW 90kW	90kW 110kW	110kW 160kW	132kW 210kW	160kW 250kW	250kW 375kW	300kW 475kW	400kW 630kW	500kW 700kW	580kW 850kW	680kW 1000kW
250A	300A	350A	450A	600A	700A	800A	1000A	1100A	1200A	1350A
151A00	176A00	210A00	260A00	316A00	450A22	550A22	700A22	860A22	1000A12	1200A12
-	-	-	-	-	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	1NO+2NC	1NO+2NC
2 x 16-120 2 x 16-120		busbar 30x6	busbar 30x6	busbar 30x6	busbar 30x5	busbar 40x6	busbar 50x8	busbar 50x8	busbar 50x10	busbar 50x10
- - -		- - -				10 3 2			10 3 2	
350 5 0,85 - 1,1	350 5	360 5	360 5 0,85 - 1,1	360 5	800-950 9-11	800-950 9-11	1350-1600 21-25 0,85 - 1,1	1350-1600 21-25	2400 70 0,85-1,1	2400 70
base										
	HKT11 HKT22 1NO+1NC 2NO+2NC max. 1 pc.					HKF22 2NO+2NC max. 1 pc.			HKB11 1NO+1NC max. 2 pcs.	
	HKA11 1NO+1NC max. 2 pcs.				-	-	-	-	-	-
										
U180	U320				U800					
1 120 - 180A integrated	2 144 - 320A integrated				3 240 - 800A SU840/550		SU840/860			

Contactors 3-pole

AC Operated

Ratings		Rated Current	Aux. Contacts		Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.
AC2, AC3			Built-in	Additional see page 52				
380V								
400V	660V	AC1			Typ	24		
415V	690V	690V				110		
kW	kW	A	NO	NC	Typ	230		
						400		
								
4	5,5	25	1	-	max. 4		1	0,23
4	5,5	25	-	1	HN.. or HA..		1	0,23
5,5	7,5	25	1	-			1	0,23
5,5	7,5	25	-	1			1	0,23
7,5	10	32	1	-			1	0,23
7,5	10	32	-	1			1	0,23
11	10	32	1	-			1	0,23
11	10	32	-	1			1	0,23
								
11	15	50	-	-	max. 4		1	0,48
15	18,5	65	-	-	HN.. or HA..		1	0,48
18,5	18,5	80	-	-	HA.. and 2HB..		1	0,48
								
22	30	110	-	-	max. 4 (3) ⁴⁾		1	0,85
30	37	120	-	-	HN.. or HA..		1	0,85
37	45	130	-	-	HA.. and 2HB..		1	0,85
								
45	55	160	-	-	max. 7		1	2,2
55	55	200	-	-	HN.. or HA.. and 2HB..		1	2,2
								
75	110	250	-	-	1 HKT..		1	4
90	132	300	-	-	and 2 HKA11		1	4
								
110	160	350	-	-			1	7,2
132	210	450	-	-			1	7,2
160	250	600	-	-			1	7,2
								
250	375	700	2	2	1 HKF22		1	13
300	475	800	2	2			1	13,5
								
400	630	1000	2	2			1	26,5
500	700	1100	2	2			1	27,6
								
580	850	1200	1	2	2 HKB11		1	49
680	1000	1350	1	2			1	53

1) Coil voltage range and other coil voltages see page 57

2) Type for AC- and DC-operating: e.g.: 230: 220-240V 50/60Hz and 220V DC (with integrated coil suppressor)

3) Type 230VS for AC-operating 220-240V 50Hz (with integrated coil suppressor)

4) max. 3 HN.. or HA.. for DC-operated Contactors.

DC Operated

Type	Coil voltage ¹⁾		Coil power	Additional Overload Relay	see page 114	Pack pcs.	Weight kg/pc.
	24	48					
	24V DC	48V DC					
	110V DC	110V DC	inrush/hold				
	220	110V DC	W/W	Type			

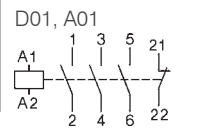
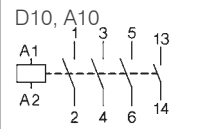
Wiring Diagram

Coil Circuits see page 53

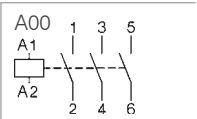
Terminal Markings



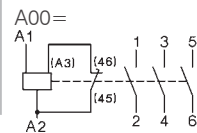
KG3-10A10 ... ⁵⁾	3/3	U3/32	1	0,53
KG3-10A01 ... ⁵⁾	3/3	U12/16E U12/16EQ	1	0,53
KG3-14A10 ... ⁵⁾	3/3	UAT21	1	0,53
KG3-14A01 ... ⁵⁾	3/3		1	0,53
KG3-18A10 ... ⁵⁾	3/3		1	0,53
KG3-18A01 ... ⁵⁾	3/3		1	0,53
KG3-22A10 ... ⁵⁾	3/3		1	0,53
KG3-22A01 ... ⁵⁾	3/3		1	0,53



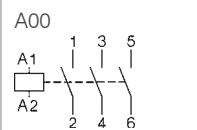
KG3-24A00 ... ⁵⁾	4/4	U3/32	1	0,57
KG3-32A00 ... ⁵⁾	4/4	U3/42	1	0,57
KG3-40A00 ... ⁵⁾	4/4	UAT..	1	0,57



K3-50A00= ...	200/6	U3/74	1	0,9
K3-62A00= ...	200/6		1	0,9
K3-74A00= ...	200/6		1	0,9



K3-90A00 ... ²⁾	280/5	U85	1	2,2
K3-115A00 ... ²⁾	280/5		1	2,3



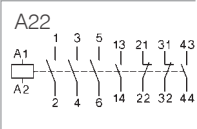
K3-151A00 ... ²⁾	350/5	U180	1	4
K3-176A00 ... ²⁾	350/5		1	4



K3-210A00 ... ²⁾	360/5	U320	1	7,2
K3-260A00 ... ²⁾	360/5		1	7,2
K3-316A00 ... ²⁾	360/5		1	7,2

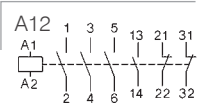


K3-450A22 ... ²⁾	800/10	U800	1	13
K3-550A22 ... ²⁾	800/10	+SU840/550	1	13,5



K3-700A22 ... ²⁾	1500/20	U800	1	26,5
K3-860A22 ... ²⁾	1500/20	+SU840/860	1	27,6

K3-1000A12= ...	2100/60		1	49
K3-1200A12= ...	2100/60		1	53



1) Other coil voltages on request

2) Type for AC- and DC-operating: e.g.: 24V 50/60Hz and 24V DC (with integrated coil suppressor)

5) with integrated coil suppressor

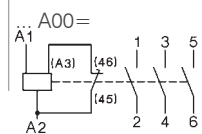
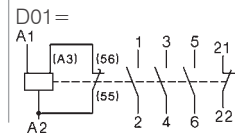
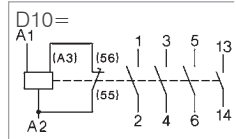
Contactors 3-pole

DC Operated with double winding coil



Ratings		Rated Current	Aux. Contacts		Type	Coil voltage ¹⁾	Pack Weight pcs.	Weight kg/pc.
AC2	AC3		Built-in	Additional see page 52				
380V		AC1				24 24V= DC		
400V	660V	690V	NO	NC	Type	48 48V= DC		
415V	690V					110 110V= DC		
kW	kW	A				220 220V= DC		
4	5,5	25	1	-	max. 3		1	0,25
4	5,5	25	-	1	HN..		1	0,25
5,5	7,5	25	1	-	HA..		1	0,25
5,5	7,5	25	-	1			1	0,25
7,5	10	32	1	-			1	0,25
7,5	10	32	-	1			1	0,25
11	10	32	1	-			1	0,25
11	10	32	-	1			1	0,25
11	15	50	-	-	max. 4		1	0,55
15	18,5	65	-	-	HN.. or		1	0,55
18,5	18,5	80	-	-	HA.. + 2HB..		1	0,55

Wiring Diagram



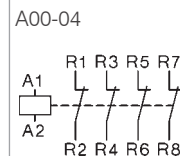
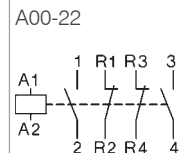
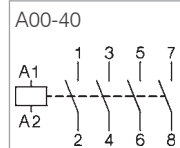
Contactors 4-pole

AC or DC Operated



Ratings		Rated Current	Aux. Contacts		Type	Coil voltage ²⁾	Pack Weight pcs.	Weight kg/pc.
AC2	AC1		Built-in	Additional see page 52				
380V		AC1				24 24V 50/60Hz		
400V		690V	NO	NC	Type	110 110V 50/60Hz		
415V	400V					230 220-240V 50Hz		
kW	kW	A				400 380-415V 50Hz		
						= 24 24V= DC ³⁾		
4	17,5	25	-	-	max. 4 ³⁾		1	0,23
4	17,5	25	-	-	HN.. or		1	0,23
4	17,5	25	-	-	HA..		1	0,23
5,5	17,5	25	-	-			1	0,23
5,5	17,5	25	-	-			1	0,23
5,5	17,5	25	-	-			1	0,23
7,5	22	32	-	-			1	0,23
7,5	22	32	-	-			1	0,23
7,5	22	32	-	-			1	0,23
11	22	32	-	-			1	0,23
11	31	45	-	-	max. 4		1	0,65
15	34,5	50	-	-	HN..		1	0,65
18,5	34,5	50	-	-	or HA..		1	0,65
22	55	80	-	-	max. 6		1	1,1
30	69	100	-	-	HN.. or HA..		1	1,1
15	43	63	-	-	1HKT..		1	1,4
15	43	63	-	-	+		1	1,4
					2xHKA11			
30	85	125	-	-			1	2,42
30	85	125	-	-			1	2,42
45	94	135	-	-			1	2,42
55	139	200	-	-			1	4,7
75	173	250	-	-			1	4,7
90	208	300	-	-			1	4,7
110	242	350	-	-			1	8
132	310	450	-	-			1	8
160	415	600	-	-			1	8

Wiring Diagram



Latch for Contactors 4-pole see page 54

1) Other coil voltages on request

2) Coil voltage range and non-standard coil voltages see page 57

3) DC Operated with double winding coil, max. 3 additional aux. contacts

4) with integrated coil suppressor (AC/DC coil)

Capacitor Switching Contactors

for use with reactive or non-reactive capacitor banks



Rated Operational Power at 50/60Hz

Ambient Temperature

50°C		60°C	
380V	415V	660V	380V
400V	440V	690V	400V
kVAr	kVAr	kVAr	kVAr

Aux. Contacts
Built-in Add.
NO NC pcs.

Type

Coil voltage ¹⁾
230 220-240V 50Hz
Pack Weight
pcs. kg/pc.

0-12,5	0-13	0-20	0-12,5	0-13	0-20	1	-	1 ²⁾	K3-18NK10 ...	1	0,34
0-12,5	0-13	0-20	0-12,5	0-13	0-20	-	-	1 ²⁾	K3-18NK01 ...	1	0,34
0-12,5	0-13	0-20	0-12,5	0-13	0-20	1	-	1 ²⁾	K3-18NBK10 ...	1	0,40
0-12,5	0-13	0-20	0-12,5	0-13	0-20	-	-	1 ²⁾	K3-18NBK01 ...	1	0,40
10-20	10,5-22	17-33	10-20	10,5-22	17-33	-	-	3 ³⁾	K3-24K00 ...	1	0,62
10-25	10,5-27	17-41	10-25	10,5-27	17-41	-	-	3 ³⁾	K3-32K00 ...	1	0,62
20-33,3	23-36	36-55	20-33,3	23-36	36-55	-	-	3 ³⁾	K3-50K00 ...	1	1,0
20-50	23-53	36-82	20-50	23-53	36-82	-	-	3 ³⁾	K3-62K00 ...	1	1,0
20-75 ⁴⁾	23-75 ⁴⁾	36-120 ⁴⁾	20-60	23-64	36-100	-	-	3 ³⁾	K3-74K00 ...	1	1,0
33-80	36-82	57-120	33-75	36-77	57-120	-	-	6 ⁵⁾	K3-90K00 ... / VS ⁷⁾	1	2,3
33-100 ⁶⁾	36-103 ⁶⁾	57-148 ⁶⁾	33-90 ⁶⁾	36-93 ⁶⁾	57-148 ⁶⁾	-	-	6 ⁵⁾	K3-115K00 ... / VS ⁷⁾	1	2,3

Specification: Contactors K3-..K are suitable for switching low-inductive and low loss capacitors in capacitor banks (IEC70 and 831, VDE 0560) without and with reactors.

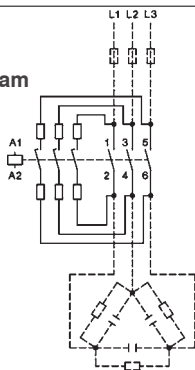
Capacitor switching contactors are fitted with early make contacts and damping resistors, to reduce the value of make current <math><70 \times I_e</math>.

Operating Conditions: Capacitor switching contactors are protected against contact welding for a prospective making current of $200 \times I_e$.

Technical Data acc. to IEC 947-4-1, IEC 947-5-1, EN 60947-4-1, EN 60947-5-1, VDE 0660

Type		K3-18NK	K3-18NBK ⁸⁾	K3-24K	K3-32K	K3-50K	K3-62K	K3-74K	K3-90K	K3-115K
Max. frequency of operations z	1/h	120	120	120	120	120	120	80	80	80
Contact life non reactive cap. banks	S x 10 ³	250	250	150	150	150	150	120	120	120
	reactive cap. banks S x 10 ³	400	400	300	300	300	300	200	200	200
Rated operational current I_e AC6b	at 50°C A	0-18	0-18	14-28	14-36	30-48	30-72	30-108	50-115	50-144
	at 60°C A	0-18	0-18	14-28	14-36	30-48	30-72	30-87	50-108	50-130
Rated operational current I _{th} AC1	at 50°C A	32	45	45	60	100	110	120	155	190
	at 60°C A	32	40	40	55	90	100	110	145	170
Overload factor acc. to EN 61921: 30% min.	at 50°C %	78	150	60	67	108	53	11	35	32
	at 60°C %	78	122	43	53	88	39	26	34	31
Fuses gL (gG)	from / to A	35 / 63	35 / 63	50 / 80	63 / 100	80 / 160	125 / 160	160/200	160/200	160/250

Typical Circuit Diagram

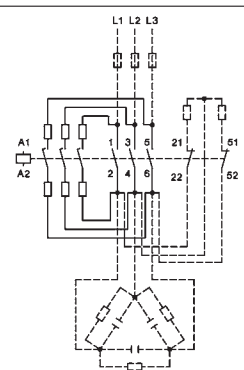


Wiring Diagram for Quick Discharge Resistors

Make sure that the current of the discharge resistors is not higher than the rated current (AC1) of the auxiliary contacts

Mounting instructions:

In the area of capacitor switching contactors, difficulty inflammable and self-extinguishing materials shall be used only, because abnormal temperatures within the area of the resistor spirals cannot be excluded.



- 1) Coil voltage range and non-standard coil voltages see page 57
- 2) 1 HN.. or HA.. snap-on
- 3) 2HB.. for side mounting and 1 HN.. or HA.. snap-on
- 4) Consider the max. thermal current of the contactor K3-74A: I_{th} 130A
- 5) 2 HB.. on the left or right side and 4 HN.. or HA.. snap-on
- 6) Consider the min. cross-section of conductor at max. load
- 7) Type 230 for AC- and DC-operating 220-240V 50/60Hz and 220V DC (with integrated coil suppressor)
Type 230VS for AC-operating 220-240V 50Hz (with integrated coil suppressor)
- 8) Cable cross sections: 2,5 - 16mm²

Auxiliary Contact Blocks for contactors K(G)3-07.. to K3-115.., type HN.. for low level switching ¹⁾



Rated Operational Current			Contacts				Type	Pack pcs.	Weight kg/pc.
AC15 230V A	AC15 400V A	AC1 690V A	NO	NC	EM	LB			
3	2	10	1	-	-	-	HN10	10	0,02
3	2	10	-	1	-	-	HN01	10	0,02
3	2	10	-	-	1	-	HN10U	10	0,02
3	2	10	-	-	-	1	HN01U	10	0,02
6	3	25	1	-	-	-	HA10	10	0,03
6	3	25	-	1	-	-	HA01	10	0,03

Auxiliary Contact Block for contactors K3-24.. to K3-115.., for low level switching ¹⁾



Rated Operational Current			mounting: 1 HB.. on left side and 1 HB.. on right side	Contacts		Type	Pack pcs.	Weight kg/pc.
AC15 230V A	AC15 400V A	AC1 690V A		NO	NC			
3	2	10		1	1	HB11	10	0,02
3	2	10		-	2	HB02	10	0,02

Auxiliary Contact Blocks for contactors K3-116.. to K3-1200.., for low level switching ¹⁾



Rated Operational Current			For contactors	Contacts		Type	Pack pcs.	Weight kg/pc.
AC15 230V A	AC15 400V A	AC1 690V A		NO	NC			
3	2	10	K3-116 to K3-316 top	1	1	HKT11	1	0,04
3	2	10	K3-116 to K3-316 top	2	2	HKT22	1	0,05
3	2	10	K3-116 to K3-316 outside	1	1	HKA11	1	0,05
6	3	16	K3-200 to K3-860 ²⁾	2 ²⁾	2	HKF22	1	0,12
6	3	16	K3-1000, K3-1200 inside	1	1	HKB11	1	0,17

Snap-on Momentary Contacts for K(G)3-07.. to K3-115.. for low level switching ¹⁾



Rated Operational Current			Specification	Contacts		Type	Pack pcs.	Weight kg/pc.
AC15 230V A	AC15 400V A	AC1 690V A		NO	NC			
3	2	10	manual operated	1	-	HTN10	10	0,02
3	2	10	manual operated	-	1	HTN01	10	0,02

Terminal Blocks for contactors K(G)3-07.. to K3-115.. and K2-..



Specification	Thermal Current I _{th} A	Type	Pack pcs.	Weight kg/pc.
2 terminals interconnected	26	K2-DK	10	0,02
2 terminals insulated	26	K2-SK	10	0,02

1) Contacts suitable for electronic circuits, according to IEC60947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA) Mirror contacts acc. IEC60947-4-1 Annex F. Technical data see page 80

2) Contact travel of make contacts adjustable, see page 81

Electronic Timer

for mounting on DIN-rail, Control voltage 24-240V AC/DC, 1 changeover contact
 OFF-delay without auxiliary voltage
 Replace Pneumatic Timer K2-TP. and K2-TA



5 Functions in one device	4 Time ranges in one device s	Rated Current AC1 250V A	Type	Pack pcs.	Weight kg/pc.
ON-delay, OFF-delay, Single shot trailing edge, Single shot leading edge, Single shot leading and trailing edge	0,1 - 1, 1 - 10, 6 - 60 a. 18 - 180	5	K3-T180 240	1	0,085

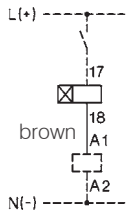
Electronic Timer On-delay for contactors K(G)3-07.. to K3-115.. and K2-..

Timer will be connected with the contactor coil, can be snapped onto the contactor and occupies 2 add-on spaces. Contactor switches On-delay.

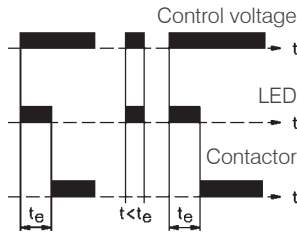


Operational Voltage V	Time Range s	Rated Current AC15 A	Type	Pack pcs.	Weight kg/pc.
24 - 60V AC/DC	1 - 30	0,75	K2-TE30 60	1	0,08
100 - 250V AC/DC	1 - 30	0,75	K2-TE30 250	1	0,08
24 - 60V AC/DC	10 - 180	0,75	K2-TE180 60	1	0,08
100 - 250V AC/DC	10 - 180	0,75	K2-TE180 250	1	0,08
24 - 60V AC/DC	30 - 600	0,75	K2-TE600 60	1	0,08
100 - 250V AC/DC	30 - 600	0,75	K2-TE600 250	1	0,08

Wiring Diagram



Timing Chart



Operation Range

Time repeat accuracy
 Recovery time (typical)

$0,8 - 1,1 \times U_s$
 $\leq 1\%$
 50ms

Voltage Drop after the time delay t_e
 (Control voltage 24V: use contactor with 20V-coil)
 Max. inrush current (peak value)

<3V
 25A <10ms

Duty Cycle

Ambient temperature
 Short circuit protection

100%
 $-40^\circ - +60^\circ\text{C}$
 2A

Interface for contactors K3-07.. to K3-74.. and K2-07.. to K2-60..



Input Voltage U_e	Power Consumption	Rated Current I_e AC15	250V AC	400V AC	Type	Pack pcs.	Weight kg/pc.
24V DC	0,35W	0,75A	0,5A		K2-IM	1	0,03

Amplifier element for contactor control by programmable controller

Fuse Holders for contactors K(G)3-07.. to K3-115.. and K2-..



Specifications	Rated Voltage	Type	Pack pcs.	Weight kg/pc.
Fuse holder for fuse 5x20mm (max. 6,3A) Fuses are not included.	250V AC	K2-F	1	0,02

Rectifier with Fuse Holder for contactors K(G)3-07.. to K3-115.. and K2-..

Specifications	Rated Voltage	Type	Pack pcs.	Weight kg/pc.
with built-in rectifier 1A	250V AC	K2-RF1	1	0,03
with built-in rectifier 3A	250V AC	K2-RF3	1	0,03

Latch for contactors K(G)3-07.. to K3-74.. and K2-..

with NC aux. contact
duty cycle 10%, max. 30 sec. AC / max. 20 sec. DC
power consumption max. 30VA

Type	Coil voltage
24	22-26V 50/60Hz
110	100-120V 50/60Hz
230	210 -250V 50/60Hz
400	360-440V 50/60Hz

For Contactors

For Contactors	Type	Pack pcs.	Weight kg/pc.
K3-07 to K3-22, K2-07 to K2-16	K2-L22 . . .	1	0,08
K3-24 to K3-40, K2-23 to K2-37, KG3-10 to KG3-40	K2-L40 . . .	1	0,08
K3-50 to K3-74, K2-45 to K2-60	K2-L74 . . .	1	0,08

Technical data see page 74

Latch / Magnetic latch for Contactors K3-151 to K3-1200 on request

Indicator Units for contactors K(G)3-07.. to K3-115.. and K2-..



Specifications	Voltage Range	Type	Pack pcs.	Weight kg/pc.
Coil Current Indicator , green (LED)	24 - 660V AC/DC	K2-ING	10	0,02
Coil Current Indicator , red (LED)	24 - 660V AC/DC	K2-INR	10	0,02
To connect in series with the contactor coil. In case of coil interruption the indication goes out. Voltage drop appr. 2 volts				
Voltage Indicator , clear (glow-disc. I.)	220 - 415V AC/DC	K2-UN	10	0,02
Voltage Indicator , red (LED)	24 - 120V AC/DC	K2-UNR	10	0,02
To connect parallel to the contactor coil. In case of applied voltage the indication also lights at coil interruption.				

Snap-On Adapter



For Type	Specification	Type	Pack pcs.	Weight kg/pc.
K2-DK, K2-SK, K2-TE, K2-TA K2-IM, K2-F, K2-RF K2-IN., K2-UN.	for snap-on mounting of accessories on 35mm DIN-rail acc. DIN EN 50022	K2-SM	10	0,009

Additional 4th Poles for contactors K3-315.. to K3-1200



For Contactors	Thermal Current I _{th} A	Type	Pack pcs.	Weight kg/pc.
K3-315, K3-450, K3-550	325	NP325	1	0,7
K3-315, K3-450, K3-550	500	NP500	1	1,3
K3-450, K3-550	760	NP760	1	1,4
K3-700, K3-860	500	NP501	1	1,3
K3-700, K3-860	1000	NP1000	1	1,6
K3-1000, K3-1200	1000	NP1001	1	1,6

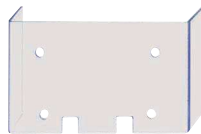
Mechanical Interlocks



Interlocks contactor with contactor Type	Type	Mounting	Type	Pack pcs.	Weight kg/pc.
K3-07 to K3-40 KG3-07 to KG3-22 KG3-24 to KG3-40 K2-07 to K2-37	K3-07 to K3-40 KG3-07 to KG3-22 KG3-24 to KG3-40 K2-07 to K2-37	horizontal	LG10889 ¹⁾	10	0,006
K3-24 to K3-74 K2-23 to K2-60	K3-50 to K3-74 K2-45 to K2-60	horizontal	LG10890 ¹⁾	1	0,010
K3-90, K3-115	K3-90, K3-115	horizontal	LG11478 ¹⁾	1	0,010
K65 to K110	K65 to K110	horizontal	LG8511	1	0,076
K3-116 to K3-316	K3-116 to K3-316	horizontal	LG11223H	1	0,06
K3-315 to K3-550	K3-315 to K3-550	horizontal	LG10400H	1	0,8
K3-315 to K3-550	K3-315 to K3-550	vertical	LG10400V	1	0,8
K3-450, K3-550	K3-700, K3-860	horizontal	LG10399H	1	1,6
K3-450, K3-550	K3-700, K3-860	vertical	LG10399V	1	0,9
K3-700, K3-860	K3-700, K3-860	horizontal	LG10402H	1	1,5
K3-700, K3-860	K3-700, K3-860	vertical	LG10402V	1	0,9
K3-700, K3-860	K3-1000, K3-1200	horizontal	LG10401H	1	1,9
K3-700, K3-860	K3-1000, K3-1200	vertical	LG10401V	1	1,6
K3-1000, K3-1200	K3-1000, K3-1200	horizontal	LG10403H	1	1,8
K3-1000, K3-1200	K3-1000, K3-1200	vertical	LG10403V	1	1,5

1) clamps for mounting incl.

Terminal Covers for terminal protection according to DIN 57106, VBG 4



For Contactors	Specification	Type	Pack pcs.	Weight kg/pc.
K65 to K110 (spare part)	for 6 terminals	LG9333	1	0,045
K3-151, K3-176	3-pole for 3 terminals	LG10404	1	0,12
K3-116 to K3-176	4-pole for 4 terminals	LG104044	1	0,14
K3-210, K3-260, K3-316	for 3 terminals	LG11457	1	0,14
K3-200	for 3 terminals	LG10405	1	0,18
K3-315, K3-450	for 3 terminals	LG10406	1	0,28
K3-550	for 3 terminals	LG10407	1	0,34
K3-700	for 3 terminals	LG10408	1	0,39
K3-860	for 3 terminals	LG10409	1	0,49

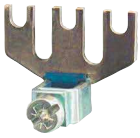
Additional Terminals



For Contactors	Cable Cross-sections to clamp mm ² solid or stranded	flexible	flex. with multi- core cable end	Type	Pack pcs.	Weight kg/pc.
Additional Terminal Single Pole, with fingertouch protection						
K(G)3-10 to K(G)3-22	0,75 - 10	0,75 - 6	0,75 - 6	LG9339N	6	0,009
K2-09 to K2-16						
K3-151 to K3-176		16 - 120	+ 16 - 95	LG11224	1	0,10

1) Inclusively mounting clamps

Parallel Connectors



For Contactors	Cable Cross-sections to clamp mm ² solid or stranded	flexible	flex. with multi- core cable end	Type	Pack pcs.	Weight kg/pc.
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Parallel Connectors, 3 Poles Parallel

Current-carrying capacity: 2,5 x AC1-value of the contactor

K(G)3-10 to K(G)3-22	terminal hole for screw M5			LG9241	50	0,004
K2-09 to K2-16						
K2-23 to K2-37	4 - 35	6 - 25	4 - 25	LG5587	10	0,022

Parallel Connectors, 4 Poles Parallel

Current-carrying capacity: 3,2 x AC1-value of the contactor

K(G)3-10 to K(G)3-22	terminal hole for screw M5			LG7360	10	0,006
K2-09 to K2-16						

Suppressor Units



Voltage Range V	Mounting	Type	Pack pcs.	Weight kg/pc.
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RC-units for contactors K3-07 - K3-74

12 - 48V AC/DC	to snap	1600nF / 22 Ohm	RC-K3N 24	10	0,01
48 - 127V AC/DC	on the	680nF / 270 Ohm	RC-K3N 110	10	0,01
110 - 230V AC/DC	contactor	220nF / 2200 Ohm	RC-K3N 230	10	0,01
230 - 415V AC/DC		120nF / 620 Ohm	RC-K3N 400	10	0,01

RC-units for contactors K3-07 - K3-74 and reversing contactors K3NWU10 - K3WU74

12 - 48V AC/DC	to snap	1600nF / 22 Ohm	RC-K3NW 24	10	0,01
48 - 127V AC/DC	on the	680nF / 270 Ohm	RC-K3NW 110	10	0,01
110 - 230V AC/DC	contactor	220nF / 2200 Ohm	RC-K3NW 230	10	0,01
230 - 415V AC/DC		120nF / 620 Ohm	RC-K3NW 400	10	0,01

Mounting Parts



Description	For Type	Specification	Type	Pack pcs.	Weight kg/pc.
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Clamp, no distance	K3-07 to K3-115 K2-07 to K2-37	To join contactors without distance, 2 pieces required	P426-1	50	0,001
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Clamp, 7mm distance	K3-07 to K3-115 K2-07 to K2-37	To join contactors with 7mm distance, 2 pieces required	P418-1	10	0,002
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Clamp, 12mm distance	K3-07 to K3-115 K2-07 to K2-37	To join contactors with 12mm distance, 2 pieces required	P807-1	10	0,002
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Clamp asymmetric	K3-07 to K3-40 with K3-50 to K3-74	To join contactors with 12mm distance, 2 pieces required	P785-1	10	0,002
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Retention clamp	K3-10 to K3-74	To close contactors	P725		
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Marking System for contactors K3-07.. to K3-115.., K2-.. and aux. contact blocks HN and HA



Description	Specification	Type	Pack pcs.	Weight kg/100pc
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Marking Plate	2-section without marking, divisible	P487-1	100	0,025
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Marking Plate	3-section without marking, divisible	P971-1	100	0,038
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Marking Plate	4-section without marking, divisible	P245-1	100	0,050
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Marking Plate	marked, choice of K1...K32	P245-K..	100	0,013
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Coil voltages for AC operated contactors

Type-suffix for coil-types K6/.. to K45/...
for contactor-types K3-07.. to K3-74

Suffix to contactor type	to coil type	Voltage Marking		Rated Control Voltage U _s			
		at the coil for 50Hz V	for 60Hz V	range for 50Hz min. max.		for 60Hz min. max.	
6	41.6	6		6	6,6	6,6	7,3
6,6	41.6,6	6,6		6,6	7,3	7,3	8
7,3	41.7,3	7,3		7,3	8	8	9
8	41.8	8		8	9	9	10
9	41.9	9		9	10	10	11
10	41.10	10		10	11	11	12
11	41.11	11	12	11	12	12	13,2
12	41.12	12		12	13,2	13,2	14,5
13,2	41.13	13,2		13,2	14,5	14,5	16
14,5	41.14	14,5		14,5	16	16	18
16	41.16	16		16	18	18	20
18	41.18	18		18	20	20	22
20	41.20	20		20	22	22	24
24	4.24	24	24	22	24	24	27
25	41.25	25		24	27	27	30
27	41.27	27	32	27	30	30	33
32	41.32	32	36	30	33	33	36
33	41.33	36	36	33	36	36	39
36	41.36	36	42	36	39	39	42
40	41.40	42	42	39	42	42	47
42	4.42	42	48	42	47	47	52
48	41.48	48	48	44	48	48	52
55	41.55	55	60	52	58	58	65
60	41.60	60		58	65	65	72
65	41.65	65		65	72	72	80
75	41.75	75		72	80	80	90
85	41.85	85		80	90	90	100
90	41.90	100	100	90	100	100	110
110	4.110	110	110-120	100	110	110	122
115	41.115	115	125	110	122	122	135
127	41.127	127		122	135	135	150
140	41.140	140		135	150	150	165
150	41.150	150		150	165	165	180
165	41.165	165	180-208	165	180	180	208
180	41.180	180-210 ¹⁾	200-240 ¹⁾	180	210 ¹⁾	200	240 ¹⁾
190R ²⁾	41.190	200-240	200-240	200	240	200	240
200	41.200	200-230 ¹⁾	220-240	200	230 ¹⁾	220	240
230	4.230	220-240	230-264	220	240	230	264
254	41.254	254	277	240	264	264	290
270	41.270	270		264	290	290	315
300	41.300	300		290	315	315	345
320	41.320	320		315	345	345	380
345	41.345	345-400 ¹⁾	380-440 ¹⁾	345	400 ¹⁾	380	440 ¹⁾
390R ²⁾	41.390	400-480	400-480	400	480	400	480
400	4.400	380-415	400-440	380	415	400	460
415	41.415	415-440	440-480	400	440	440	480
440	41.440	440-480	480-500	440	480	480	530
480	41.480	480-500	530-580	480	530	530	580
500	41.500	500-550	550-600	500	550	550	600
550	41.550	550-600	600	550	600	600	(650)

Standard voltages in bold type letters.

- 1) Operating range of magnet-coils: 0,85 x U_s (min. value of rated control voltage) up to 1,05 x U_s (max. value of rated control voltage).
2) Reduction of mechanical life to 10% of normal life. It is not admissible as a spare coil in a contactor for different coil voltages.

Type-suffix for coil-types K85/... and K110/...
for contactor-types K85 to K110

Suffix to contactor type	to coil type	Voltage Marking		Rated Control Voltage U _s			
		at the coil for 50Hz V	for 60Hz V	range for 50Hz min. max.		for 60Hz min. max.	
20	4.20	20	24	20	22	24	26
24	4.24	24		24	27	29	32
42	4.42	42		42	47	50	56
110	4.110	110-120		110	122	132	146
230	4.230	220-240	277	220	240	264	288
400	4.400	380-415	460-480	380	415	455	498

Type-suffix for coil-types K3-1200/..
for contactor-types K3-1000.. to K3-1200..

110	4.110	110-115	-	110	115	110	115
230	4.230	220-230	-	220	230	220	230
400	4.400	380-400	-	380	400	380	400
440	4.440	440	-	440	440	440	440

Coil voltages for AC and DC operated contactors

Type-suffix for coil-types K3-115/.. to K3-860/..
for contactor-types K3-90.. to K3-860..

Suffix to contactor type	to coil type	Voltage Marking		Rated Control Voltage U _s			
		at the coil for 50/60Hz V	for DC V	range for 50Hz min. max.		for 60Hz min. max.	
24	4.24	24	24	22	24	22	24
48	4.48	48	48	44	48	44	48
110	4.110	110-120	110	110	120	110	120
230	4.230	220-240	220	220	240	220	240
400	4.400	380-415	-	380	415	380	415

Coil voltages for AC operated contactors

Type-suffix for coil-types K3-115/..AC
for contactor-types K3-90..AC to K3-115..AC

Suffix to contactor type	to coil type	Voltage Marking		Rated Control Voltage U _s			
		at the coil for 50Hz V	for 60Hz V	range for 50Hz min. max.		for 60Hz min. max.	
110AC	4.110AC	110-122	132-146	110	122	132	146
230AC	4.230AC	220-240	277	220	240	264	288

Other coil voltages on request

Operating range of magnet-coils: 0,85 x U_s (min. value of rated control voltage) up to 1,1 x U_s (max. value of rated control voltage)

With reduced control voltage range 0,9 up to 1,0 x U_s at ambient temperature 60 - 90°C

Spare Coils for AC operated contactors



		Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.
For Contactors		4.24	24V 50Hz		
		4.42	42V 50Hz		
		4.110	110V 50Hz		
		41.180	180V 50Hz, 220V 60Hz		
		4.230	220-240V 50Hz		
		4.400	380-415V 50Hz		
		↓			
K3-07N.. up to K3-22N..		K10N/EUR		1	0,053
K3-07.. up to K3-22..		K3-6/ ...		10	0,040
K2-07.. up to K2-16..		K6/ ...		10	0,040
K3-24.. up to K3-40..		K24/ ...		1	0,085
K2-23.. up to K2-37..		K23/ ...		1	0,085
K3-50.. up to K3-74.., K2-45.., K2-60..		K45/ ...		1	0,110
K65.., K85..		K85/ ...		1	0,215
K110..		K110/ ...		1	0,220
For Contactors		Type	Coil voltage ¹⁾	pcs.	kg/pc.
		4.110	110V 50Hz, 110-115V 60Hz		
		4.230	220-230V 50Hz		
		4.400	380-400V 50Hz		
		↓			
K3-150.., K3-175..		K3-175/ ...		1	0,38
K3-1000.., K3-1200..	without feeder group ²⁾	K3-1200/ ...		1	3,12

Spare Coils for AC and DC operated contactors



		Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.
For Contactors		4.24	24V 50/60Hz / 24V DC		
		4.110	110-120V 50/60Hz / 110V DC		
		4.230	220-240V 50/60Hz / 220V DC		
		4.400	380-415V 50/60Hz		
		↓			
K3-90.., K3-115..	with feeder group	K3-115/ ...		1	0,30
K3-151.., K3-176..	with feeder group	K3-176/ ...		1	0,68
K3-210.., K3-316..	with feeder group	K3-316/ ...		1	0,68
K3-450.., K3-550..	without feeder group ²⁾	K3-550/ ...		1	1,63
K3-700.., K3-860..	without feeder group ²⁾	K3-860/ ...		1	2,44

Spare Feeder Groups for contactors K3-450.. to K3-860..

In case of changing control voltage, change coil and feeder group too



		Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.
For Contactors		110	110-120V 50/60Hz / 110V DC		
		230	220-240V 50/60Hz / 220V DC		
		400	380-415V 50/60Hz		
		↓			
K3-450.., K3-550..	K3-550/4...	K3-550/FG ...		1	0,33
K3-700.., K3-860..	K3-860/4..	K3-860/FG ...		1	0,54

1) Coil voltage range and non-standard coil voltages see page 57

2) In case of changing control voltage, change coil and feeder group too

Spare Coils for DC operated contactors



		Aux. Contact Block for double winding coil	Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.
For Contactors			47.24 47.48 47.110 47.220	24V DC 48V DC 110V DC 220V DC		
K3-07N..= up to K3-22N..=	HN01U	K10N/ ...	1	0,052		
K3-07..= up to K3-22..=	HN01U	K3-6/ ...	1	0,042		
K2-07..= up to K2-16..=	HN01U	K6/ ...	1	0,042		
K3-24..= up to K3-40..=	HN01X	K24/ ...	1	0,090		
K2-23..= up to K2-37..=	HN01X	K23/ ...	1	0,090		
K3-50..= up to K3-74..=, K2-45..=, K2-60..=	HN01Z	K45/ ...	1	0,115		
K65..=, K85..=	-	K85/ ...	1	0,220		
K110..=	-	K110/ ...	1	0,225		
For Contactors			43.110 43.220	110V DC 220V DC		
K3-1000..=, K3-1200..=	without feeder group ²⁾	K3-1200/ ...	1	3,12		

Wiring Diagrams for Coil Circuit

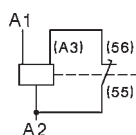
AC operated,

K3-07..
up to **K110..**



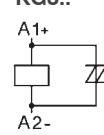
DC operated
with double winding coil

K3-07..=
up to **K3-22..=**

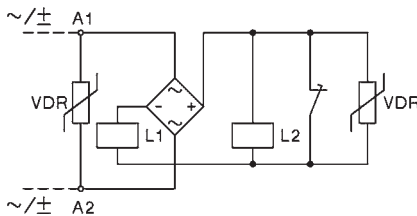


DC operated

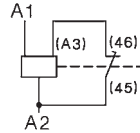
KG3..



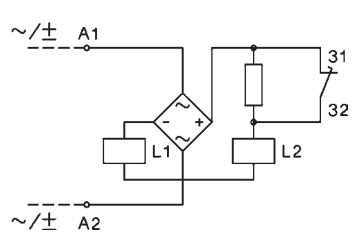
AC and DC operated
with double winding coil
K3-90A00, K3-115A00
K3-151A00, K3-176A00
K3-210A00 to K3-316A00



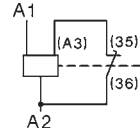
K3-24..=
to
K3-74..=



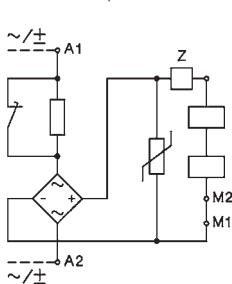
AC and DC operated
with series resistor
K3-200A21
K3-315A21



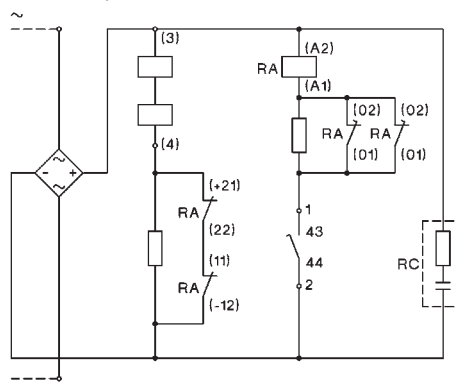
K85..=
K110..=



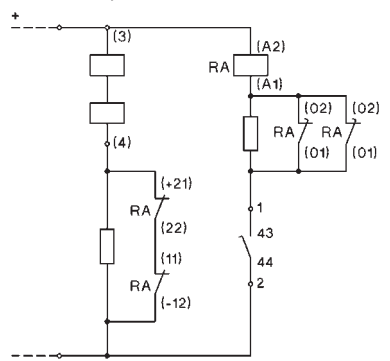
AC and DC operated
with series resistor
K3-450.. up to **K3-860..**



DC operated
with DC coil
K3-1000.., K3-1200..



AC operated
with DC coil
K3-1000.., K3-1200..



Adjustable dropout operating time for K3-450.. to K3-860..
150-200ms: Wiring see above (delivery standard)
500-1000ms: Jumper device "Z"
approx. 20ms: Special wiring see package folder

Contactors K3-1000.., K3-1200..
For control voltages up to 125V
NC contacts 21-22 and 11-12 are connected parallel,
for higher voltages contacts are connected in series (delivery standard).

1) Other coil voltages on request
2) In case of changing control voltage, change coil and feeder group too

Spare Contacts

Main Contacts for Contactors	Type	Pack pcs.	Weight kg/pc.
K85..	EK85/1	3	0,235
K110..	EK110/1	3	0,275
K3-150..	EK3-150/10	1	0,32
K3-151..	EK3-151/10	1	0,16
K3-175..	EK3-175/10	1	0,32
K3-176..	EK3-176/10	1	0,16
K3-200..	EK3-200/10	1	0,18
K3-210..	EK3-210/10	1	0,18
K3-260..	EK3-260/10	1	0,30
K3-315..	EK3-315/10	1	0,34
K3-316..	EK3-316/10	1	0,34
K3-450..	EK3-450/10	1	0,35
K3-550..	EK3-550/10	1	0,35
K3-700..	EK3-700/10	1	0,85
K3-860..	EK3-860/10	1	1,0
K3-1000..	EK3-1000/10	1	1,4
K3-1200..	EK3-1200/10	1	1,4

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74	
Rated insulation voltage U_i ¹⁾	V AC	690	690	690	690	690	690	690	830	830	830	
Making capacity I_{eff} at $U_e = 690V$ AC	A	200	200	200	200	400	500	500	700	900	900	
	1000V AC	-	-	-	-	-	-	-	-	-	-	
Breaking capacity I_{eff} 400V AC	A	180	180	200	200	380	400	400	600	800	800	
K3-10 to K3-22 $\cos\phi = 0,65$	500V AC	150	150	180	180	300	370	370	500	700	700	
K3-24 to K3-1200 $\cos\phi = 0,35$	690V AC	100	100	150	150	260	340	340	400	500	500	
	1000V AC	-	-	-	-	-	-	-	-	-	-	
Utilization category AC1												
Switching of resistive load												
Rated operational current $I_e (=I_{th})$ at 40°C, open	690V	A	25	25	32	32	50	65	80	110	120	130
Rated operational power of three-phase resistive loads 50-60Hz, $\cos\phi = 1$	220V	kW	9,5	9,5	12,2	12,2	19,0	24,7	30,4	41,9	45,7	49,5
	230V	kW	9,9	9,9	12,7	12,7	19,9	25,9	31,8	43,8	47,7	51,7
	240V	kW	10,4	10,4	13,3	13,3	20,8	27,0	33,2	45,7	49,8	54,0
	380V	kW	16,4	16,4	21,0	21,0	32,9	42,7	52,6	72,3	78,9	85,5
	400V	kW	17,3	17,3	22,1	22,1	34,6	45,0	55,4	76,1	83,0	90,0
	415V	kW	17,9	17,9	23,0	23,0	35,9	46,7	57,4	79,0	86,2	93,3
	440V	kW	19,0	19,0	24,4	24,4	38,1	49,5	60,9	83,7	91,3	99,0
	500V	kW	21,6	21,6	27,7	27,7	43,3	56,2	69,2	95,2	103,8	112,5
	660V	kW	28,5	28,5	36,5	36,5	57,1	74,2	91,3	125,6	137,0	148,4
	690V	kW	29,8	29,8	38,2	38,2	59,7	77,6	95,5	131,3	143,2	155,2
	1000V	kW	-	-	-	-	-	-	-	-	-	-
Rated operational current $I_e (=I_{th})$ at 60°C, enclosed	690V	A	25	25	32	32	40	55	65	90	100	110
Rated operational power of three-phase resistive loads 50-60Hz, $\cos\phi = 1$	220V	kW	9,5	9,5	12,2	12,2	15,2	20,9	24,7	34,3	38,1	41,9
	230V	kW	9,9	9,9	12,7	12,7	15,9	21,9	25,9	35,8	39,8	43,8
	240V	kW	10,4	10,4	13,3	13,3	16,6	22,8	27,0	37,4	41,5	45,7
	380V	kW	16,4	16,4	21,0	21,0	26,3	36,2	42,7	59,2	65,7	72,3
	400V	kW	17,3	17,3	22,1	22,1	27,7	38,1	45,0	62,3	69,2	76,1
	415V	kW	17,9	17,9	23,0	23,0	28,7	39,5	46,7	64,6	71,8	79,0
	440V	kW	19,0	19,0	24,4	24,4	30,4	41,9	49,5	68,5	76,1	83,7
	500V	kW	21,6	21,6	27,7	27,7	34,6	47,6	56,2	77,9	86,5	95,2
	660V	kW	28,5	28,5	36,5	36,5	45,7	62,8	74,2	102,8	114,2	125,6
	690V	kW	29,8	29,8	38,2	38,2	47,7	65,7	77,6	107,4	119,4	131,3
	1000V	kW	-	-	-	-	-	-	-	-	-	-
Minimum cross-section of conductor at load with $I_e (=I_{th})$	mm ²		4	4	6	6	10	16	25	35	50	50
Utilization category AC2 and AC3												
Switching of three-phase motors												
Rated operational current I_e open and enclosed	220V	A	12	15	18	22	24	32	40	50	63	74
	230V	A	11,5	14,5	18	22	24	32	40	50	62	74
	240V	A	11	14	18	22	24	32	40	50	62	74
	380-400V	A	10	14	18	22	24	32	40	50	62	74
	415V	A	9	14	18	22	23	30	40	50	62	74
	440V	A	9	14	18	22	23	30	40	50	62	74
	500V	A	8,9	11,9	15	15	22,5	28,5	28,5	44	54	64,5
	660-690V	A	6,7	9	12	12	17,5	21	21	33	42	49
	1000V	A	-	-	-	-	-	-	-	-	-	-
Rated operational power of three-phase motors 50-60Hz	220-230V	kW	3	4	5	6	6	8,5	11	12,5	18,5	22
	240V	kW	3	4	5	7	7	9	11,5	13,5	19	23
	380-400V	kW	4	5,5	7,5	11	11	15	18,5	22	30	37
	415V	kW	4,5	6	8,5	12	12	16	20	24	33	40
	440V	kW	4,5	6	8,5	12	12	16	20	24	33	40
	500V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	45
	660-690V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	45
	1000V	kW	-	-	-	-	-	-	-	-	-	-

1) Suitable at 690V for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): $U_{imp} = 8kV$.
Data for other conditions on request.

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Type	K3-90	K3-115	K3-116	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
V AC	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	690	690	690	690
A	1100	1200	1200	1500	2000	2100	2600	3200	4500	5500	7000	8600	10000	12000
A	540	600	600	720	840	1020	1200	1500	2400	3000	-	-	-	-
A	950	1100	1000	1200	1500	1600	2100	2600	4500	5500	7000	8000	8000	10000
A	850	1000	1000	1200	1500	1600	2100	2600	4500	5500	7000	8000	8000	10000
A	600	600	800	1000	800	1200	1900	2300	3200	4400	5600	6900	7000	8000
A	450	450	400	500	600	700	850	1000	-	-	-	-	-	-
A	160	200	200	250	300	350	450	600	700	800	1000	1100	1200	1350
kW	60	76	76	95	114	133	171	228	266	304	381	419	457	514
kW	63	79	79	99	119	139	179	238	279	318	398	438	478	537
kW	66	83	83	103	124	145	187	249	291	332	415	457	498	561
kW	105	131	131	165	197	230	296	394	460	526	658	724	789	888
kW	110	138	138	173	208	242	311	415	485	554	692	762	831	935
kW	115	143	143	179	215	251	323	430	503	574	718	790	862	970
kW	121	152	152	190	228	266	342	456	533	609	762	838	914	1028
kW	138	173	173	216	260	303	389	518	606	692	866	952	1039	1169
kW	182	228	228	285	343	400	514	684	800	914	1143	1257	1371	1543
kW	191	239	239	298	358	418	537	715	836	955	1195	1314	1434	1613
kW	221	277	216	345	415	433	546	727	692	911	-	-	-	-
A	145	170	170	180	200	280	360	400	550	600	800	875	960	1080
kW	55	64	64	68	76	106	137	152	209	228	304	333	365	411
kW	57	67	67	71	79	111	143	159	219	239	318	348	382	430
kW	59	70	70	74	83	116	150	166	228	249	332	363	399	448
kW	95	111	111	118	131	184	237	263	362	395	526	575	631	710
kW	100	117	117	124	138	193	249	277	381	415	554	606	665	748
kW	104	122	122	129	143	201	259	287	395	431	575	628	690	776
kW	110	129	129	137	152	213	274	304	419	457	609	666	731	823
kW	125	147	147	155	173	242	312	346	476	519	692	757	831	935
kW	165	194	194	205	228	320	412	457	628	685	914	1000	1097	1234
kW	173	202	202	215	239	334	430	478	657	717	956	1045	1147	1290
kW	166	187	216	277	346	388	499	554	692	866	-	-	-	-
mm ²	95	120	95	95	120	240	2x150	2x(30x6)	2x(40x5)	2x(50x5)	2x(60x5)	2x(60x6)	2x(60x6)	2x(60x8)
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	90	115	115	150	175	210	260	315	450	550	700	860	1000	1200
A	79	79	115	150	175	210	260	315	450	550	700	860	1000	1200
A	60	60	100	120	140	150	180	240	400	500	630	700	860	1000
A	45	45	45	60	70	85	100	125	200	250	-	-	-	-
kW	25	33	30	40	50	60	75	90	132	175	225	280	325	390
kW	27	35	35	45	55	65	80	100	140	185	235	290	335	400
kW	45	55	55	75	90	110	132	160	250	300	400	500	580	680
kW	49	63	59	80	95	115	140	180	257	315	415	515	600	710
kW	49	63	63	85	100	125	150	190	270	335	450	530	630	750
kW	55	55	75	90	100	132	160	210	300	375	500	600	720	850
kW	55	55	90	110	132	132	160	210	375	500	630	700	850	1000
kW	55	55	55	75	90	110	132	160	280	355	-	-	-	-

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74
Utilization category AC4											
Switching of squirrel cage motors, inching											
Rated operational current I_e	220V A	12	15	18	18	24	30	40	50	63	63
open and enclosed	230V A	11,5	14,5	18	18	24	30	40	50	62	62
	240V A	11	14	18	18	24	32	40	50	62	62
	380-400V A	10	14	18	18	24	32	40	50	62	62
	415V A	9	14	18	18	23	30	37	45	60	60
	440V A	9	14	18	18	23	30	37	45	55	55
	500V A	9	12	16	16	17,5	21	21	33	42	42
	660V A	7	9	9	9	17	20	20	31	40	40
	690V A	6,5	8,5	8,5	8,5	17	20	20	31	40	40
	1000V A	-	-	-	-	-	-	-	-	-	-
Rated operational power of three-phase motors 50-60Hz	220-230V kW	3	4	5	5	6	8,5	11	12,5	18,5	18,5
	240V kW	3	4	5	5	7	9	11,5	13,5	19	19
	380-400V kW	4	5,5	7,5	7,5	11	15	18,5	22	30	30
	415V kW	4,5	6	8,5	8,5	12	16	20	24	33	33
	440V kW	4,5	6	8,5	8,5	12	16	20	24	33	33
	500V kW	5,5	7,5	10	10	15	18,5	18,5	30	37	37
	660-690V kW	5,5	7,5	10	10	15	18,5	18,5	30	37	37
	1000V kW	-	-	-	-	-	-	-	-	-	-
Utilization category AC5a											
Switching of gas discharge lamps											
Rated operational current I_e per pole at 220/230V											
Fluorescent lamps, uncompensated and serial compensated											
	A	20	20	25	25	40	52	64	88	96	104
parallel compensated											
	A	7	9	9	9	18	22	22	30	40	40
dual-connection											
	A	22,5	22,5	28	28	45	58	72	98	108	117
Metal halide lamps ¹⁾ , uncompensated											
	A	12	15	19	19	30	39	48	66	72	78
parallel compensated											
	A	7	9	9	9	18	22	22	30	40	40
Mercury-vapour lamps ²⁾ , uncompensated											
	A	22,5	25	28	28	45	58	72	99	108	117
parallel compensated											
	A	7	9	9	9	18	22	22	30	40	40
Mixed light lamps ³⁾											
	A	20	20	25	25	40	52	64	88	96	104
LED-Lamps											
consider the inrush current of the lamp ballast and $\cos\phi$ of the lamp.											
max. lamps per pole ($I_{rLED} \leq I_{rn}$)						= $\frac{\text{inrush current of contactor}}{\text{inrush current of lamp/EVG}}$					
max inrush current of contactor	A	282	282	282	282	564	705	705	987	1269	1268
Utilization category AC5b											
Switching of incandescent lamps ⁴⁾											
Rated operational current I_e per pole at 220/230V	A	12,5	12,5	12,5	12,5	25	31	31	43	56	56

1) Metal halide lamps and sodium-vapour lamps (high- and low-pressure lamps)

2) High-pressure lamps

3) Blended lamps, containing a mercury high-pressure unit and a tungsten helix in a fluorescent glass bulb (daylight lamps)

4) Current inrush approx. $16 \times I_e$

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Type	K3-90	K3-115	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
A	85	98	55	63	85	100	120	150	180	230	280	340	400
A	85	98	55	63	85	100	120	150	180	230	280	340	400
A	85	98	55	63	85	100	120	150	180	230	280	340	400
A	85	85	55	63	85	100	120	150	180	230	280	340	400
A	85	85	55	63	85	100	120	150	180	230	280	340	400
A	85	85	55	63	85	100	120	150	180	230	280	340	400
A	85	85	-	-	-	-	-	-	-	-	-	-	-
A	60	60	-	-	-	-	-	-	-	-	-	-	-
A	57,5	57,5	-	-	-	-	-	-	-	-	-	-	-
A	-	-	-	-	-	-	-	-	-	-	-	-	-
kW	25	30	15	18,5	25	30	37	45	51	68	80	110	132
kW	27	32	15,5	19	26	31	38	47	53	71	83	115	137
kW	45	45	25	30	45	55	63	75	90	120	150	185	220
kW	49	49	25	33	45	55	65	80	100	132	160	200	230
kW	49	49	30	34	48	55	67	85	100	132	160	200	230
kW	55	55	25	30	55	65	75	100	110	150	185	220	257
kW	55	55	25	30	55	65	75	100	110	150	185	220	257
kW	-	-	-	-	-	-	-	-	-	-	-	-	-
A	100	120	120	140	180	220	280	360	450	570	700	850	1000
A	55	70	85	100	130	160	200	300	360	460	550	660	800
A	112	144	120	140	180	220	280	360	450	570	700	850	1000
A	85	90	95	110	140	180	230	300	380	490	610	750	890
A	55	70	75	85	110	140	170	260	300	400	480	580	700
A	112	144	120	140	180	220	280	360	450	570	700	850	1000
A	55	70	75	85	110	140	170	260	300	400	480	580	700
A	100	120	100	120	160	200	250	320	400	500	600	700	800
	$\text{max. lamps per pole } (I_{rLED} \leq I_{rn}) = \frac{\text{inrush current of contactor}}{\text{inrush current of lamp/EVG}}$												
A	1551	1692	2115	2820	2961	3666	4512	6345	7755	9870	12126	14100	16920
A	69	75	100	120	160	190	220	260	315	440	500	560	630

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts			Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74	
Utilization category AC6a														
Transformer primary switching														
at inrush		n		30	30	30	30	30	30	30	30	30	30	30
Rated operational current I_e	400V	A		4,5	5,5	7,5	7,5	10,5	13,5	13,5	20	27	33	33
Rated operational power	220-230V	kVA		1,8	2,2	3	3	4,2	5,4	5,4	8	10,7	13	13
dependent on inrush n	240V	kVA		1,9	2,3	3,1	3,1	4,3	5,6	5,6	8,3	11,2	13,5	13,5
	380-400V	kVA		3,1	3,8	5,2	5,2	7,3	9,3	9,3	13,5	18,5	22,5	22,5
For different inrush-factors x	415-440V	kVA		3,4	4,2	5,7	5,7	8	10,2	10,2	15	20,5	25	25
use the following formula:	500V	kVA		3,9	4,8	6,5	6,5	9	11,5	11,5	17	23	28	28
$P_x = P_n \cdot (n/x)$	660-690V	kVA		5,4	6,5	9	9	12,5	16	16	24	32	39	39
Utilization category AC6b														
Switching of three-phase capacitors														
Maximum inrush current (peak value)														
as multiple k of the														
capacitor rated current														
Rated operational current I_e	500V	A	k	35	25	20	20	25	25	25	25	25	20	20
Rated operational current	220-230V	kVAr		3	4,5	6	6	8,5	12	12	17	24	28	28
($\sin^2 \alpha$)	240V	kVAr		3,5	5	6,5	6,5	9,5	13	13	18,5	25	29	29
	380-400V	kVAr		5	7,5	10	10	15	20	20	29	39	46	46
For different multiples x	415-440V	kVAr		5,5	8	11	11	16	22	22	32	43	50	50
use the following formula:	500V	kVAr		7	10	13	13	20	26	26	39	50	58	58
$P_x = P_k \cdot (k/x)$	660-690V	kVAr		7	10	13	13	20	26	26	40	50	58	58
Switching of reactive capacitor banks														
Rated operational current I_e	690V	A		8	13	18	20	28	36	42	48	72	108 ¹⁾	108 ¹⁾
Rated operational power	220-230V	kVAr		2,9	5	7	7,5	11	14	16	20	28	33	33
	240V	kVAr		3,1	5,4	7	8	11	14	17	20	28	36	36
	380-400V	kVAr		5	9	12,5	13	20	25	27,5	33,3	50	75 ¹⁾	75 ¹⁾
	415-440V	kVAr		5,5	9,5	13	14	22	27	30	36	53	75 ¹⁾	75 ¹⁾
	500V	kVAr		6	11	15	17	25	30	36	40	60	75	75
	660-690V	kVAr		8	15	20	22	33	41	48	55	82	100	100
	1000V	kVAr		-	-	-	-	-	-	-	-	-	-	-
Utilization category DC1														
Switching of resistive load														
Time constant $L/R \leq 1\text{ms}$														
Rated operational current I_e	1 pole	24V	A	20	25	32	32	50	65	80	110	120	130	130
		60V	A	20	25	32	32	50	65	80	110	120	130	130
		110V	A	6	6	6	6	10	10	10	12	12	12	12
		220V	A	0,8	0,8	0,8	0,8	1,4	1,4	1,4	1,4	1,4	1,4	1,4
	3 poles in series	24V	A	20	25	32	32	50	65	80	110	120	130	130
		60V	A	20	25	32	32	50	65	80	110	120	130	130
		110V	A	20	25	32	32	50	65	80	110	120	130	130
		220V	A	16	20	20	20	30	35	35	63	80	80	80
Utilization category DC3 and DC5														
Switching of shunt motors and series motors														
Time constant $L/R \leq 15\text{ms}$														
Rated operational current I_e	1 pole	24V	A	20	25	32	32	50	65	80	110	120	130	130
		60V	A	6	6	6	6	30	30	30	60	60	60	60
		110V	A	1,2	1,2	1,2	1,2	1,8	1,8	1,8	1,8	1,8	1,8	1,8
		220V	A	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,25	0,25	0,25	0,25
	3 poles in series	24V	A	20	25	32	32	50	65	80	110	120	130	130
		60V	A	20	25	32	32	40	40	40	80	80	80	80
		110V	A	20	20	20	20	40	40	40	80	80	80	80
		220V	A	2,5	2,5	2,5	2,5	4	4	4	5	5	5	5

1) Consider resistive load (I_{tr}). see page 62

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Type	K3-90	K3-115	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
n	30	30	30	30	30	30	30	30	30	30	30	30	30
A	38	50	65	80	90	120	142	203	248	315	390	450	540
kVA	15	20	25	30	34	45	54	77	95	120	148	170	200
kVA	15,5	20,5	27	33	37	50	59	80	100	130	160	185	220
kVA	26	34	45	55	60	80	95	140	170	210	270	310	370
kVA	29	38	46	57	63	85	100	145	175	220	280	320	380
kVA	33	43	55	69	75	100	120	170	210	270	330	380	460
kVA	45	60	56	69	100	135	160	200	250	320	350	500	600
k	20	20	20	20	25	20	20	20	20	20	20	20	20
A	87	100	120	155	195	225	255	300	370	440	520	680	760
kVAr	33	38	45	60	75	90	100	115	145	170	200	260	290
kVAr	36	42	52	62	78	94	104	120	150	175	205	270	300
kVAr	57	65	80	100	130	155	170	200	250	300	350	450	500
kVAr	60	70	95	110	135	165	175	210	260	310	360	465	520
kVAr	70	80	100	130	170	194	220	260	320	380	450	590	660
kVAr	70	80	100	130	170	194	220	260	320	380	450	590	660
A	115	144	115	140	200	225	250	330	420	550	600	680	760
kVAr	45	55	43	53	76	85	95	125	160	209	228	260	290
kVAr	45	55	45	55	80	90	100	130	170	220	240	280	310
kVAr	80	100	75	90	130	145	160	210	270	350	390	440	480
kVAr	100	120	80	100	140	160	170	230	290	380	420	470	530
kVAr	105	125	95	120	170	190	210	280	350	450	500	570	640
kVAr	120	148	125	150	200	230	260	350	450	600	650	700	800
kVAr	160	200	155	200	300	340	400	500	650	-	-	-	-
A	160	200	-	-	-	-	-	-	-	-	-	-	-
A	160	200	-	-	-	-	-	-	-	-	-	-	-
A	20	25	-	-	-	-	-	-	-	-	-	-	-
A	2	2,5	-	-	-	-	-	-	-	-	-	-	-
A	160	200	200	250	350	400	450	600	760	1000	1100	1200	1350
A	160	200	200	250	350	400	450	600	760	1000	1100	1200	1350
A	160	200	150	170	250	280	315	400	480	560	630	800	900
A	100	160	80	100	150	180	200	250	315	400	450	500	600
A	160	200	-	-	-	-	-	-	-	-	-	-	-
A	85	110	-	-	-	-	-	-	-	-	-	-	-
A	2	2,5	-	-	-	-	-	-	-	-	-	-	-
A	0,5	0,5	-	-	-	-	-	-	-	-	-	-	-
A	160	200	-	-	-	-	-	-	-	-	-	-	-
A	100	110	-	-	-	-	-	-	-	-	-	-	-
A	100	110	-	-	-	-	-	-	-	-	-	-	-
A	7	8	-	-	-	-	-	-	-	-	-	-	-

Contactors, Motor-Starters

Circuit Breakers

Manual Motor-Starters

Switches

AC-Main Switches




DC-Switch Disconnectors

Push Buttons

Representatives, Suppliers

Contactors

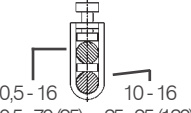






Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74
Maximum ambient temperature											
Operation	open	°C -40 to +60 (+90) ¹⁾									
	enclosed	°C -40 to +40									
with thermal overload relay	open	°C -25 to +60									
	enclosed	°C -25 to +40									
Storage		°C -50 to +90									
Short circuit protection											
for contactors without thermal overload relay											
Coordination-type "1" according to IEC 947-4-1											
Contact welding without hazard of persons											
max. fuse size	gL (gG) A	63	63	63	63	100	100	100	160	160	160
Coordination-type "2" according to IEC 947-4-1											
Light contact welding accepted											
max. fuse size	gL (gG) A	25	35	35	35	50	50	50	100	125	125
Contact welding not accepted											
max. fuse size	gL (gG) A	16	16	16	16	25	35	35	50	63	63
For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size.											
Cable cross-sections											
for contactors without thermal overload relay											
1 cable per clamp											
main connector	solid or stranded	mm ²									
	flexible	mm ²	0,75 - 6			1,5 - 25			4 - 50		
	flexible with multicore cable end	mm ²	1 - 4			2,5 - 16			10 - 35		
2 cables per clamp											
main connector	solid or stranded	mm ²	6+(1-6) / 4+(0,75-4)			16+(2,5-16) / 10+(4-16)			50+4 / 35+6 / 25+(6-16)		
	flexible	mm ²	2,5+(0,75-2,5) / 1,5+(0,75-1,5)			6+(4-16) / 4+(2,5-16)			16+(6-16) / 10+(6-16)		
		mm ²	6+(1,5-4) / 4+(1-4)			16+(2,5-6) / 10+(4-10)			50+(4-10) / 35+(4-16)		
2,5+(0,75-2,5) / 1,5+(0,75-1,5)											
6+(4-16) / 4+(2,5-16)											
25+(4-25) / 16+(4-16)											
Frequency of operations z											
Contactors without thermal overload relay											
without load	1/h	10000			7000			7000			
AC3, I _e	1/h	600			600			400			
AC4, I _e	1/h	120			120			120			
DC3, I _e	1/h	600			600			400			
Mechanical life											
AC operated	S x 10 ⁶	10			10			10			
DC operated	S x 10 ⁶	10			10			10			
DC-solenoid operated (KG3)	S x 10 ⁶	50			50			-			
Short time current											
10s-current	A	96	120	144	176	184	240	296	450	504	592
120s-current	A	42	52	58	66	80	97	110	195	203	222
Power loss per pole											
at I _e /AC3 400V	W	0,21	0,35	0,5	0,75	0,7	1,3	2	2,2	3,9	5,5
contact resistance	mOhm	2,1	1,8	1,5	1,5	1,2	1,2	1,2	1	1	1
Resistance to shock acc. to IEC 60068-2-27											
Shock time 20ms sine-wave	NO g	10	10	10	10	8	8	8	8	8	8
	NC g	6	6	6	6	-	-	-	-	-	-

1) With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced rated current I_e/AC1 according to I_e/AC3

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Type	K3-90	K3-115	K3-116	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
°C	-40 bis +60 (+90) ¹⁾													
°C	-40 to +40													
°C	-25 to +60													
°C	-25 to +40													
°C	-50 to +90													
A	250	250	200	250	315	400	450	500	630	630	800	1000	1000	1250
A	160	200	160	200	250	315	400	400	500	560	-	-	-	-
A	100	125	125	160	200	250	315	-	-	-	-	-	-	-
mm ²														
mm ²	0,5 - 16	10 - 16	busbar 18 x 4 screw M8		busbar 25 x 6 screw M10		busbar 30 x 5 screw M12		busbar 40 x 6 screw M12		busbar 50 x 8 screw M12		busbar 50 x 8 screw M14	
mm ²	0,5 - 70 (95)	25 - 95 (120)												
mm ²	0,5 - 70	10 - 95												
mm ²	0,5 - 95 + 10 - 120													
mm ²	0,5 - 70 + 25 - 95													
AWG	18 - 10	-												
AWG	18 - 3/0	8 - 4/0												
AWG	-													
AWG	18 - 3/0 + 8 - 4/0													
1/h	3000		1200		1200		1200		1200		300		300	
1/h	300		240		150		50		25		20		-	
1/h	120		-		-		-		-		-		-	
1/h	300		-		-		-		-		-		-	
S x 10 ⁶	5		10		5		5		5		5 ³⁾		5 ³⁾	
S x 10 ⁶	5		10		5		5		5		5 ³⁾		5 ³⁾	
S x 10 ⁶	-		-		-		-		-		-		-	
A	680	880	920	1200	1400	1800	2200	2600	3600	4400	5600	6900	8000	9600
A	275	330	410	500	575	800	900	1000	1400	1750	2200	2600	3000	3600
W	4,8	7,9	7,9	9	11	8	11	14,9	26,3	33,3	49	59,2	60	72
mOhm	0,6	0,5	0,5	0,4	0,35	0,18	0,16	0,15	-	-	-	-	-	-
g	7	7	-	-	-	-	-	-	-	-	-	-	-	-
g	5	5	-	-	-	-	-	-	-	-	-	-	-	-

1) With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced rated current I_b/AC1 according to I_b/AC3

2) With reduced control voltage range 1,0 x U_s and with reduced rated current I_b/AC1 according to I_b/AC3

3) After each 1x10⁶ operations magnetic core and built-in auxiliary contact block must be changed

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Auxiliary Contacts	Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74
Rated insulation voltage U_i ¹⁾	V~	690				-			-		
Thermal rated current I_{th} to 690V											
Ambient temperature	40°C A	10				-			-		
	60°C A	6				-			-		
Utilization category AC15											
Rated operational current I_e	220-240V A	3				-			-		
	380-415V A	2				-			-		
	440V A	1,6				-			-		
	500V A	1,2				-			-		
	660-690V A	0,6				-			-		
Utilization category DC13											
Rated operational current I_e	60V A	3,5				-			-		
	110V A	0,5				-			-		
	220V A	0,1				-			-		
Short circuit protection short-circuit current 1kA, contact welding not accepted max. fuse size			For contactors with thermal overload relay the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse.								
	gL (gG) A	20				-			-		
Control Circuit											
Power consumption of coils											
AC operated	inrush VA	33-45				90-115			140-165		
	sealed VA	7-10				9-13			13-18		
	W	2,6-3				2,7-4			5,4-7		
DC operated	inrush W	75				140			200		
double winding coil	sealed W	2				2			6		
DC solenoid operated (KG3)	inrush W	3				4			-		
	sealed W	3				4			-		
Operation range of coils in multiples of control voltage U_c											
	AC operated	0,85-1,1				0,85-1,1			0,85-1,1		
	DC operated	0,8-1,1				0,8-1,1			0,8-1,1		
Switching time at control voltage $U_c \pm 10\%$ ²⁾³⁾											
AC operated	make time ms	8-16				10-25			12-28		
	release time ms	5-13				8-15			8-15		
	arc duration ms	10-15				10-15			10-15		
DC operated	make time ms	8-12				10-20			12-23		
double winding coil	release time ms	8-13				10-15			10-18		
	arc duration ms	10-15				10-15			10-15		
DC solenoid operated (KG3)	make time ms	65 - 85				65 - 85			-		
	release time ms	20 - 30 ⁴⁾				20 - 30 ⁴⁾			-		
	arc duration ms	10-15				10-15			-		
Cable cross-section											
Auxiliary connector	solid mm ²	0,75-6				-			-		
	flexible mm ²	1-4				-			-		
	flexible with multicore cable end mm ²	0,75-4				-			-		
Magnet coil	solid mm ²	0,75-2,5				0,75-2,5			0,75-2,5		
	flexible mm ²	0,5-2,5				0,5-2,5			0,5-2,5		
	flexible with multicore cable end mm ²	0,5-1,5				0,5-1,5			0,5-1,5		
Clamps per pole		2				2			2		
Auxiliary connector	solid AWG	18 - 10				-			-		
	flexible AWG	18 - 10				-			-		
Magnet coil	solid AWG	14 - 12				14 - 12			14 - 12		
	flexible AWG	18 - 12				18 - 12			18 - 12		
Clamps per pole		2				2			2		

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): $U_{imp} = 8kV$. Data for other conditions on request

2) Total breaking time = release time + arc duration

3) Values for delay of the release time of the make contact and the make time of the break contact will be increased, if magnet coils are protected against voltage peaks (varistor, RC-unit, diode-unit)

4) with built-in coil suppressor 5) for contactors KG3-..A.. only

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Type	K3-90	K3-115	K3-116	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
V~	-			-		-			690		690		690	
A	-			-		-			10		10		10	
A	-			-		-			-		-		-	
-	-			-		-			-		-		-	
A	-			-		-			3		3		3	
A	-			-		-			2		2		2	
A	-			-		-			1,5		1,5		1,5	
A	-			-		-			1,5		1,5		1,5	
A	-			-		-			1		1		1	
A	-			-		-			-		-		-	
A	-			-		-			1		1		1	
A	-			-		-			0,5		0,5		0,5	
A	-			-		-			10		10		10	
VA	165-220			350		360			800-950		1350-1600		2400	
VA	2,5-5			5		5			9-11		21-25		70	
W	2,5-5			5		5			9-11		21-25		70	
W	250			350		360			700-850		1300-1550		2100	
W	5			5		5			8-10		18-22		60	
W	-			-		-			-		-		-	
W	-			-		-			-		-		-	
ms	0,85-1,1 0,8-1,1			0,85-1,1 0,85-1,1		0,85-1,1 0,85-1,1			0,85-1,1 0,85-1,1		0,85-1,1 0,85-1,1		0,85-1,1 0,85-1,1	
ms	20-35			30-60		40-60			50-100		50-100		50-100	
ms	35-50			30-80		15-45			150-200 / 500-1000 ¹⁾		25-50		25-50	
ms	10-15			-		-			-		-		-	
ms	20-35			30-60		40-60			-		-		-	
ms	35-50			30-80		15-45			-		-		-	
ms	10-15			-		-			-		-		-	
ms	-			-		-			-		-		-	
ms	-			-		-			-		-		-	
ms	-			-		-			-		-		-	
mm ²	-			-		-			0,75-2,5		0,75-2,5		0,75-2,5	
mm ²	-			-		-			0,75-2,5		0,75-2,5		0,75-2,5	
mm ²	-			-		-			-		-		-	
mm ²	0,75-2,5			1-2,5		1-2,5			1-2,5		1-2,5		1-2,5	
mm ²	0,5-2,5			1-2,5		1-2,5			1-2,5		1-2,5		1-2,5	
mm ²	0,5-1,5			-		-			-		-		-	
	2			2		2			2		2		2	
AWG	-			-		-			16 - 12		16 - 12		16 - 12	
AWG	-			-		-			16 - 12		16 - 12		16 - 12	
AWG	14 - 12			16 - 12		16 - 12			16 - 12		16 - 12		16 - 12	
AWG	18 - 12			16 - 12		16 - 12			16 - 12		16 - 12		16 - 12	
	2			2		2			2		2		2	

1) Normal or delayed drop is adjustable

Contactors, Motor-Starters
 Circuit Breakers
 Manual Motor-Starters
 Switches
 AC-Main Switches
 DC-Switch Disconnectors
 Push Buttons
 Representatives, Suppliers

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K2-09	K2-12	K2-16	K2-23	K2-30	K2-37	K2-45	K2-60	K85	K110
Rated insulation voltage U_i ¹⁾	V~	690	690	690	690	690	690	690	690	750	750
Making capacity I_{eff} at $U_e = 690V\sim$	A	200	200	200	400	500	500	700	900	1100	1200
Breaking capacity I_{eff} 400V~	A	180	180	200	380	400	400	600	800	950	1100
K2-09 to K2-16 $\cos\phi = 0,65$ 500V AC	A	150	150	180	300	370	370	500	700	850	1100
K2-23 to K3-1200 $\cos\phi = 0,35$ 690V AC	A	100	100	150	260	340	340	400	500	600	600
	1000V~	A	-	-	-	-	-	-	-	-	-
Utilization category AC1											
Switching of resistive load											
Rated operational current $I_e (=I_{th})$ at 40°C, open	A	25	25	25	45	50	50	80	100	150	170
Rated operational power of three-phase resistive loads 50-60Hz, $\cos\phi = 1$	220V kW	9,5	9,5	9,5	17	19	19	30	38	57	64
	230V kW	10	10	10	18	20	20	31,5	40	59	67
	240V kW	10,5	10,5	10,5	18,5	20,5	20,5	33	41	62	70
	380V kW	16,5	16,5	16,5	29,5	33	33	52	65	98	111
	400V kW	17,5	17,5	17,5	31	34,5	34,5	55	69	103	117
	415V kW	18	18	18	32	36	36	57	71	107	122
	440V kW	19	19	19	34	38	38	61	76	114	129
	500V kW	21,5	21,5	21,5	39	43	43	69	86	130	147
	660V kW	28,5	28,5	28,5	51	57	57	91	114	171	194
	690V kW	29,5	29,5	29,5	53,5	60	60	95	119	179	203
Rated operational current $I_e (=I_{th})$ at 60°C, enclosed	A	20	25	25	35	40	40	63	80	100	125
Rated operational power of three-phase resistive loads 50-60Hz, $\cos\phi = 1$	220V kW	7,5	9,5	9,5	13	15	15	24	30	38	47
	230V kW	8	10	10	13,5	16	16	25	31,5	40	49
	240V kW	8	10,5	10,5	14,5	16,5	16,5	26	33	41	52
	380V kW	13	16,5	16,5	23	26	26	41	52	65	82
	400V kW	13,5	17,5	17,5	24	27,5	27,5	43	55	69	86
	415V kW	14	18	18	25	28,5	28,5	45	57	71	89
	440V kW	15	19	19	26,5	30	30	48	61	71	95
	500V kW	17	21,5	21,5	30	34	34	54	69	86	116
	660V kW	22,5	28,5	28,5	40	45	45	72	91	114	142
	690V kW	23,5	29,5	29,5	42	48	48	75	95	119	149
Minimum cross-section of conductor at load with $I_e (=I_{th})$	mm ²	4	4	4	10	10	10	25	35	50	70
Utilization category AC2 and AC3											
Switching of three-phase motors											
Rated operational current I_e open and enclosed	220V A	12	15	18	23	30	37	45	63	85	110
	230V A	11,5	14,5	17,5	23	30	37	45	61	85	110
	240V A	11	14	17	23	30	37	45	60	85	110
	380-400V A	10	12	16	23	30	37	45	60	85	110
	415-440V A	9	12	16	23	30	37	45	60	85	110
	500V A	9	12	16	23	30	30	45	55	85	110
	660V A	7	9	9	17,5	21	21	33	42	60	60
	690V A	6,5	8,5	8,5	17	20	20	31	40	58	58
Rated operational power of three-phase motors 50-60Hz	220-230V kW	3	4	5	6	8,5	11	12,5	18,5	25	33
	240V kW	3	4	5	7	9	11,5	13,5	19	27	35
	380-400V kW	4	5,5	7,5	11	15	18,5	22	30	45	55
	415V kW	4,5	6	8,5	12	16	20	24	33	49	63
	440V kW	4,5	6	8,5	12	16	20	24	33	49	63
	500V kW	5,5	7,5	10	15	18,5	18,5	30	37	55	55
	660-690V kW	5,5	7,5	7,5	15	18,5	18,5	30	37	55	55

1) Suitable at 690V for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): $U_{imp} = 8kV$.
Data for other conditions on request.

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K2-09	K2-12	K2-16	K2-23	K2-30	K2-37	K2-45	K2-60	K85	K110
Utilization category AC4											
Switching of squirrel cage motors, inching											
Rated operational current I_e	220V A	12	15	16	23	30	37	45	63	85	98
open and enclosed	230V A	11,5	14,5	16	23	30	37	45	61	85	98
	240V A	11	14	16	23	30	37	45	60	85	98
	380-400V A	10	12	16	23	30	37	45	60	85	85
	415V A	9	12	16	21	28	37	45	60	85	85
	440V A	9	12	16	21	28	37	45	60	85	85
	500V A	9	12	16	17	23	23	45	55	85	85
	660V A	7	9	9	13	17	17	33	42	60	60
	690V A	6,5	8,5	8,5	12,5	16,5	16,5	31	40	57,5	57,5
Rated operational power of three-phase motors	220-230V kW	3	4	5	6	8,5	11	12,5	18,5	25	30
50-60Hz	240V kW	3	4	5	7	9	11,5	13,5	19	27	32
	380-400V kW	4	5,5	7,5	11	15	18,5	22	30	45	45
	415-440V kW	4,5	6	8,5	11	15	20	24	33	49	49
	500V kW	5,5	7,5	10	11	15	15	30	37	55	55
	660-690V kW	5,5	7,5	7,5	11	15	15	30	37	55	55
Utilization category AC5a											
Switching of gas discharge lamps											
Rated operational current I_e per pole at 220/230V											
Fluorescent lamps, uncompensated	A	20	20	20	35	40	40	65	85	100	120
Fluorescent lamps, compensated	A	7	9	9	18	22	22	30	40	55	70
Fluorescent lamps, dual-connection	A	22,5	22,5	22,5	41	45	45	72	90	112	144
Metal-halide lamps ¹⁾ , uncompensated	A	12	15	15	28	30	30	50	62	85	90
Metal-halide lamps ¹⁾ , compensated	A	7	9	9	18	22	22	30	40	55	70
Mercury-vapour lamps ²⁾ , uncompensated	A	22,5	25	25	41	45	45	72	90	112	144
Mercury-vapour lamps ²⁾ , compensated	A	7	9	9	18	22	22	30	40	55	70
Mixed light lamps ³⁾	A	20	20	20	35	40	40	65	85	100	120
Utilization category AC5b											
Switching of incandescent lamps⁴⁾											
Rated operational current I_e per pole at 220/230V	A	12,5	12,5	12,5	25	31	31	43	56	69	75
Utilization category AC6a											
Transformer primary switching											
at inrush	n	30	30	30	30	30	30	30	30	30	30
Rated operational current I_e	400V A	4,5	5,5	7,5	10,5	13,5	13,5	20	27	38	50
Rated operational power dependent on inrush n	220-230V kVA	1,8	2,2	3	4,2	5,4	5,4	8	10,7	15	20
	240V kVA	1,9	2,3	3,1	4,3	5,6	5,6	8,3	11,2	15,5	20,5
	380-400V kVA	3,1	3,8	5,2	7,3	9,3	9,3	13,5	18,5	26	34
For different inrush-factors x use the following formula: $P_x = P_n \cdot (n/x)$	415-440V kVA	3,4	4,2	5,7	8	10,2	10,2	15	20,5	29	38
	500V kVA	3,9	4,8	6,5	9	11,5	11,5	17	23	33	43
	660-690V kVA	5,4	6,5	9	12,5	16	16	24	32	45	60
Utilization category DC1											
Switching of resistive load											
Time constant $L/R \leq 1ms$	1 pole 24V A	20	25	25	45	50	50	80	100	150	170
Rated operational current I_e	60V A	20	25	25	45	50	50	80	100	150	170
	110V A	6	6	6	10	10	10	12	12	20	25
	220V A	0,8	0,8	0,8	1,4	1,4	1,4	1,4	1,4	2	2,5
	2 poles in series 24V A				45	50	50				
	60V A				45	50	50				
	110V A				45	50	50				
	220V A				10	10	10				
	3 poles in series 24V A	20	25	25	45	50	50	80	100	150	170
	60V A	20	25	25	45	50	50	80	100	150	170
	110V A	20	25	25	45	50	50	80	100	150	170
	220V A	16	20	20	30	35	35	63	80	100	160

1) Metal halide lamps and sodium-vapour lamps (high- and low-pressure lamps)

2) High-pressure lamps

3) Blended lamps, containing a mercury high-pressure unit and a tungsten helix in a fluorescent glass bulb (daylight lamps)

4) Current inrush approx. $16 \times I_e$

5) With central compensation pay attention to the current inrush (capacitor switching contactors)

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts	Type	K2-09	K2-12	K2-16	K2-23	K2-30	K2-37	K2-45	K2-60	K85	K110		
Utilization category DC3 and DC5													
Switching of shunt motors and series motors													
Time constant L/R ≤15ms	1 pole	24V	A	20	25	25	45	50	50	80	100	150	170
Rated operational current I _e		60V	A	6	6	6	30	30	30	60	60	85	110
		110V	A	1,2	1,2	1,2	1,8	1,8	1,8	1,8	1,8	2	2,5
		220V	A	0,2	0,2	0,2	0,2	0,2	0,2	0,25	0,25	0,5	0,5
		2 poles in series	24V	A				45	50	50			
		60V	A				45	50	50				
		110V	A				30	30	30				
		220V	A				1,8	1,8	1,8				
	3 poles in series	24V	A	20	25	25	45	50	50	80	100	150	170
		60V	A	20	25	25	40	40	40	80	80	100	110
		110V	A	20	20	20	40	40	40	80	80	100	110
		220V	A	2,5	2,5	2,5	4	4	4	5	5	7	8
Maximum ambient temperature													
Operation	open	°C											
	enclosed	°C		-40 to +60 (+90) ¹⁾									
with thermal overload relay	open	°C		-40 to +40									
	enclosed	°C		-25 to +60									
Storage		°C		-25 to +40									
				-50 to +90									
Short circuit protection													
for contactors without thermal overload relay													
Coordination-type "1" according to IEC 947-4-1													
Contact welding without hazard of persons													
max. fuse size	gL (gG)	A		63	63	63	80	80	80	160	160	250	250
Coordination-type "2" according to IEC 947-4-1													
Light contact welding accepted													
max. fuse size	gL (gG)	A		25	35	35	50	50	50	100	125	160	200
Contact welding not accepted													
max. fuse size	gL (gG)	A		16	16	16	25	35	35	50	63	100	125
For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size.													
Cable cross-sections													
for contactors without thermal overload relay													
main connector	solid or stranded	mm ²		0,75 - 4			1,5-10 + 1,5-6			4 - 35 ²⁾		10 - 70 ²⁾	
	flexible	mm ²		0,75 - 2,5			1,5-6 + 1,5-4			6 - 25 ²⁾		10 - 70 ²⁾	
	flexible with multicore cable end	mm ²		0,5 - 2,5			1,5-6 + 1,5-4			4 - 25		10 - 35	
Cables per clamp				2			1+1			1		1	
main connector	solid	AWG		14 - 10			14 - 10 + 14 - 10			10		10	
	flexible	AWG		18 - 10			14 - 8 + 14 - 10			10 - 2		6 - 0	
Cables per clamp				2			1+1			1		1	
Frequency of operations z													
Contactors without thermal overload relay													
	without load	1/h		10000			7000			7000		3000	
	AC3, I _e	1/h		600			600			400		300	
	AC4, I _e	1/h		120			120			120		120	
	DC3, I _e	1/h		600			600			400		300	
Mechanical life													
AC operated		S x 10 ⁶		10			10			10		5	
DC operated with economy resistor		S x 10 ⁶		10			10			10		5	
Short time current													
	10s-current	A		96	120	144	184	240	296	360	504	680	880
Power loss per pole													
	at I _e /AC3 400V	W		0,21	0,26	0,4	0,63	1,1	1,7	1,8	3,6	4,3	6,0
Resistance to shock acc. to IEC 68-2-27													
Shock time 20ms sine-wave	NO	g		10	10	10	8	8	8	8	8	7	7
	NC	g		6	6	6	5	5	5	-	-	5	5

1) With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced rated current I_e/AC1 according to I_e/AC3

2) Maximum cable cross-section with prepared conductor

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Auxiliary Contacts	Type	K2-09	K2-12	K2-16	K2-23	K2-30	K2-37	K2-45	K2-60	K85	K110
Rated insulation voltage U_i 1)	V AC		690			690			-		690
Thermal rated current I_{th} to 690V											
Ambient temperature	40°C A		16			16			-		16
	60°C A		12			12			-		12
Utilization category AC15											
Rated operational current I_e	220-240V A		12			12			-		12
	380-415V A		4			4			-		6
	440V A		4			4			-		6
	500V A		3			3			-		4
	660-690V A		1			1			-		2
Utilization category DC13											
Rated operational current I_e	60V A		8			8			-		8
	110V A		1			1			-		1
	220V A		0,1			0,1			-		0,1
Short circuit protection short-circuit current 1kA, contact welding not accepted max. fuse size gL (gG) A For contactors with thermal overload relay the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse.			25			-			-		25
Control Circuit											
Power consumption of coils											
AC operated	inrush VA		33-45			90-115		140-165		280-350	350-420
	sealed VA		7-10			9-13		13-18		16-23	23-29
	W		2,6-3			2,7-4		5,4-7		4-6	6-7,3
DC operated	inrush W		75			140		200		170	320
with economic circuit	sealed W		2			2		6		2	4
Operation range of coils in multiples of control voltage U_s											
	AC operated		0,85-1,1			0,85-1,1		0,85-1,1		0,85-1,1	0,85-1,1
	DC operated		0,8-1,1			0,8-1,1		0,8-1,1		0,8-1,1	0,8-1,1
Switching time at control voltage $U_s \pm 10\%$ 2) 3)											
AC operated	make time ms		8-16			10-25		12-28		13-30	13-30
	release time ms		5-13			8-15		8-15		8-15	8-15
	arc duration ms		10-15			10-15		10-15		10-15	10-15
DC operated	make time ms		8-12			10-20		12-23		20-30	20-30
with AC magnet system	release time ms		8-13			10-15		10-18		10-18	10-18
	arc duration ms		10-15			10-15		10-15		10-15	10-15
Cable cross-section											
Auxiliary connector	solid mm ²		0,75-4			-		-		0,75-2,5	0,75-2,5
	flexible mm ²		0,75-2,5			-		-		0,75-2,5	0,75-2,5
	flexible with multicore cable end mm ²		0,5-2,5			-		-		0,5-1,5	0,5-1,5
Magnet coil	solid mm ²		0,75-2,5			0,75-2,5		0,75-2,5		0,75-2,5	0,75-2,5
	flexible mm ²		0,5-2,5			0,5-2,5		0,5-2,5		0,5-2,5	0,5-2,5
	flexible with multicore cable end mm ²		0,5-1,5			0,5-1,5		0,5-1,5		0,5-1,5	0,5-1,5
Clamps per pole			2			2		2		2	2

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): $U_{imp} = 8kV$. Data for other conditions on request

2) Total breaking time = release time + arc duration

3) Values for delay of the release time of the make contact and the make time of the break contact will be increased, if magnet coils are protected against voltage peaks (varistor, RC-unit, diode-unit)

Contactors for North America

Data according to UL508

Main Contacts (cULus)		Type	K(G)3-10	K(G)3-14	K(G)3-18	K(G)3-22	K(G)3-24	K(G)3-32	K(G)3-40	K3-50	K3-62	K3-74
Rated operational current "General Use"		A	25	25	30	30	50	65	80	110	120	130
Motor DOL 3-phase at 60Hz												
Rated operational current		600V A	10	14	18	22	22	27	34	44	52	66
Rated operational power		110-120V hp	1½	2	2	3	5	5	7½	10	10	10
		200V hp	3	3	5	5	7½	10	10	15	20	25
		220-240V hp	3	3	7½	7½	10	10	15	20	25	30
		277V hp	3	5	7½	7½	7½	10	15	20	25	30
		380-415V hp	5	5	10	10	10	15	20	25	30	40
		440-480V hp	5	7½	10	15	15	20	25	30	40	50
		550-600V hp	7½	10	15	20	20	25	30	40	50	50
Motor DOL 1-phase at 60Hz												
Rated operational current		600V A	10	14	18	22	22	27	34	44	52	66
Rated operational power of AC motors at 60Hz (1ph)		110-120V hp	½	¾	1	1½	1½	2	3	3	5	7½
		200V hp	1	1,5	2	3	3	5	7½	7½	10	15
		220-240V hp	1½	2	3	3	5	5	7½	10	15	15
		277V hp	2	3	3	5	5	7½	10	10	15	15
		380-415V hp	3	3	5	5	5	7½	10	15	20	20
		440-480V hp	3	5	5	7½	7½	10	15	20	25	25
		550-600V hp	3	5	7½	10	10	15	20	25	30	30
Motor DOL 3-phase according to ANSI A17.5												
Rated operational current		600V A	-	-	-	-	15	22	-	27	37	-
Rated operational power of 3-phase motors for elevators (500.000 operations)		110-120V hp	-	-	-	-	2	3	-	3	5	-
		200V hp	-	-	-	-	3	5	-	7½	10	-
		220-240V hp	-	-	-	-	5	7½	-	7½	10	-
		440-480V hp	-	-	-	-	10	15	-	20	25	-
		550-600V hp	-	-	-	-	10	20	-	25	30	-
Rated current 2 series contacts		600V A	-	-	-	-	22	27	-	44	52	66
Fuse Class RK5 / Short-circuit current		A/kA	50/5	50/5	70/5	90/5	90/5	125/5	175/5	200/5	250/5	300/5
Fuse Class T / Short-circuit current		A/kA	45/100	50/100	70/100	90/100	110/100	150/100	150/100	175/100	175/100	175/100
Rated voltage		V	600	600	600	600	600	600	600	600	600	600
Auxiliary Contacts (cULus)			A600	A600	A600	A600	-	-	-	-	-	-

Main Contacts (cULus)		Type	K2-09	K2-12	K2-16	K2-23	K2-30	K2-45	K2-60	K85	K110
Rated operational current "General Use"		A	25	25	25	40	40	72	90	125	150
Motor DOL 3-phase at 60Hz											
Rated operational power		110-120V hp	1½	2	2	3	5	-	-	15	-
		200V hp	2	3	3	5	7½	10	15	-	30
		220-240V hp	3	3	5	7½	10	15	20	35	40
		440-480V hp	5	7½	10	15	20	30	40	65	75
		550-600V hp	7½	10	15	20	25	40	50	85	100
Motor DOL 1-phase at 60Hz											
Rated operational power		110-120V hp	½	¾	1	1½	2	3	5	8	10
		200V hp	1	2	2	3	3	5	7½	-	20
		220-240V hp	1½	2	3	3	5	7½	10	20	20
Fuse / Short-circuit current		A/kA	30/5	40/5	50/5	60/5	110/5	175/5	175/5	-	300/5
Rated voltage		V	600	600	600	600	600	600	600	600	600
Auxiliary Contacts (cULus)			A600	A600	A600	A600	A600	-	-	A600	A600

Contactors for North America

Data according to UL508

Type	K3-90	K3-115	K3-116	K3-151	K3-176	K3-210	K3-260	K3-316	K3-450	K3-550	K3-700	K3-860	K3-1000	K3-1200
A	160	200	150	180	220	250	300	350	420	520	700	810	-	1215
A	85	99		125	150	190	240	300	300	400	550	700	-	1000
hp	15	20	-	-	-	-	-	-	-	-	-	-	-	-
hp	25	35	30	40	50	60	75	100	125	150	200	250	-	450
hp	35	40	40	50	60	75	100	125	125	150	250	300	-	450
hp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hp	50	60	-	-	-	-	-	-	-	-	-	-	-	-
hp	65	75	75	100	125	150	200	250	250	350	500	600	-	900
hp	85	100	100	125	150	200	250	300	250	350	500	600	-	900
A	86	103		125	150	-	-	-	-	-	-	-	-	-
hp	8	10	10	15	25	-	-	-	-	-	-	-	-	-
hp	15	20	20	-	-	-	-	-	-	-	-	-	-	-
hp	20	25	-	25	30	40	50	50	-	-	-	-	-	-
hp	20	25	-	-	-	-	-	-	-	-	-	-	-	-
hp	30	40	-	-	-	-	-	-	-	-	-	-	-	-
hp	40	50	-	-	-	-	-	-	-	-	-	-	-	-
hp	50	60	-	-	-	-	-	-	-	-	-	-	-	-
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A/kA	300/10	300/10	225/10	300/10	350/10	400/18	500/18	500/18	1200/18	1200/18	2000/30	2000/30	-	2000/42
A/kA	300/100 ³⁾	300/100 ³⁾	-	-	-	-	-	-	-	-	-	-	-	-
V	600	600	600	600	600	600	600	600	600	600	600	600	600	600
	-	-	-	-	-	-	-	-	A600	A600	A600	A600	-	A600

Main Contacts (cULus)	Type	K3-18NK	K3-18NBK	K3-24K	K3-32K	K3-50K	K3-62K	K3-74K	K3-90K	K3-115K	
Rated operational power of 3-phase cap. banks 110-120V at 60Hz (3ph)	200V	kVAr	0-3,5	0-3,5	3-5,5	3-7	6,5-10	6,5-15	6,5-18 ¹⁾	10-24	10-28 ²⁾
	220-240V	kVAr	0-6	0-6	4,5-10	4,5-12,5	10-16,7	10-25	10-32 ¹⁾	17-40	17-46 ²⁾
		kVAr	0-7	0-7	5,5-11	5,5-15	12,5-20	12,5-30	12,5-36 ¹⁾	20-47	20-56 ²⁾
	440-480V	kVAr	0-15	0-15	11,5-25	11,5-30	25-40	25-60	25-72 ¹⁾	40-95	40-114 ²⁾
550-600V	kVAr	0-18	0-18	14,5-30	14,5-35	31-50	31-75	31-90 ¹⁾	50-120	50-143 ²⁾	
Fuse Class RK5 / Short-circuit current	A/kA	70/5	70/5	90/5	125/5	200/5	250/5	300/5	300/10	300/10	
Fuse Class T / Short-circuit current	A/kA	80/100	80/100	110/100	150/100	175/100	175/100	175/100	300/100 ³⁾	300/100 ³⁾	
Rated voltage	V	600	600	600	600	600	600	600	600	600	
Auxiliary Contacts (cULus)		A600	A600	-	-	-	-	-	-	-	

1) Consider the max. thermal current of the contactor K3-74A: I_{th} 130A

2) Consider the min. cross-section of conductor at max. load

3) Class T and Class RK1

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Contact Life

For selection of the suitable contactor-type according to supply voltage, power rating and application (utilization category AC1, AC3 or AC4) use contact life characteristic diagram.

For the most common supply voltages four scales of power ratings P_n are provided for each utilization category.

Select contactor-type according to utilization category **AC3** (breaking current $I_a = I_e$) using the **motor rating** scales to the right, according to utilization category **AC4** (breaking current $I_a = 6 \times I_e$) using the **motor rating** scales to the left. ¹⁾

Select contactor-type according to utilization category **AC1** (breaking current $I_a = I_e/AC1$) using the **breaking current** scale. ¹⁾

For contactors frequently used under AC3/AC4-mixed service conditions calculate contact life with the formula:

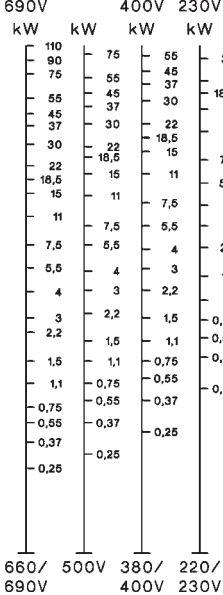
$$M = \frac{AC3}{1 + \frac{\%AC4}{100} \times \left(\frac{AC3}{AC4} - 1 \right)}$$

M = Contact life (switching cycles) for AC3/AC4-mixed operations
 AC3 = Contact life (switching cycles) for AC3 operations (normal switching conditions). Breaking current $I_a =$ rated motor current I_n .
 AC4 = Contact life (switching cycles) for AC4 operations (inching). Breaking current $I_a =$ multiples of rated motor current I_n .
 %AC4 = Percents of AC4-operations related to the total cycles.

Motor Rating

$P_n = AC4$

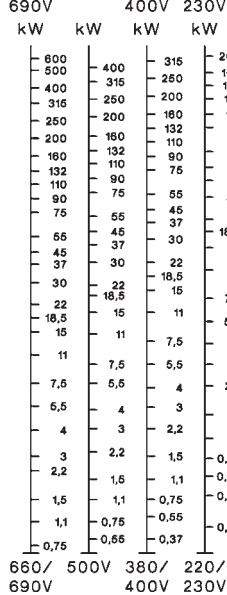
660/ 500V 380/ 220/
690V 400V 230V



Motor Rating

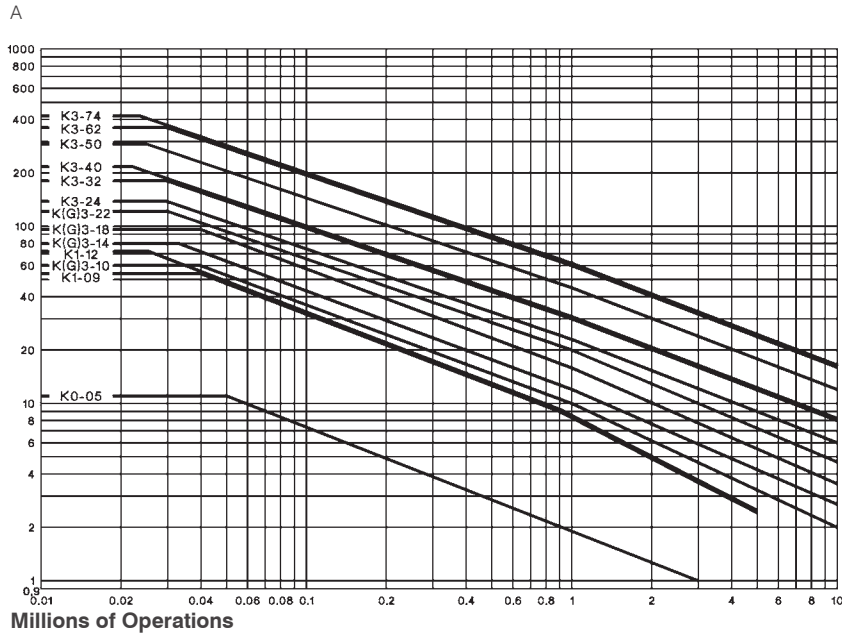
$P_n = AC3$

660/ 500V 380/ 220/
690V 400V 230V



Breaking Current

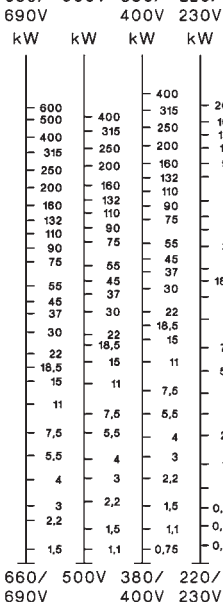
$I_a (= I_e = AC1)$



Motor Rating

$P_n = AC4$

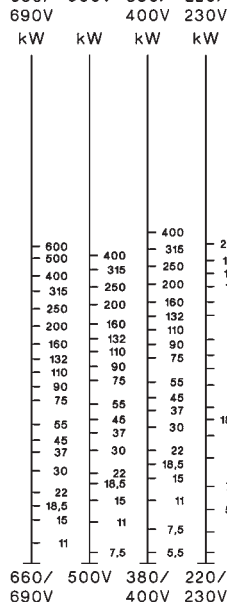
660/ 500V 380/ 220/
690V 400V 230V



Motor Rating

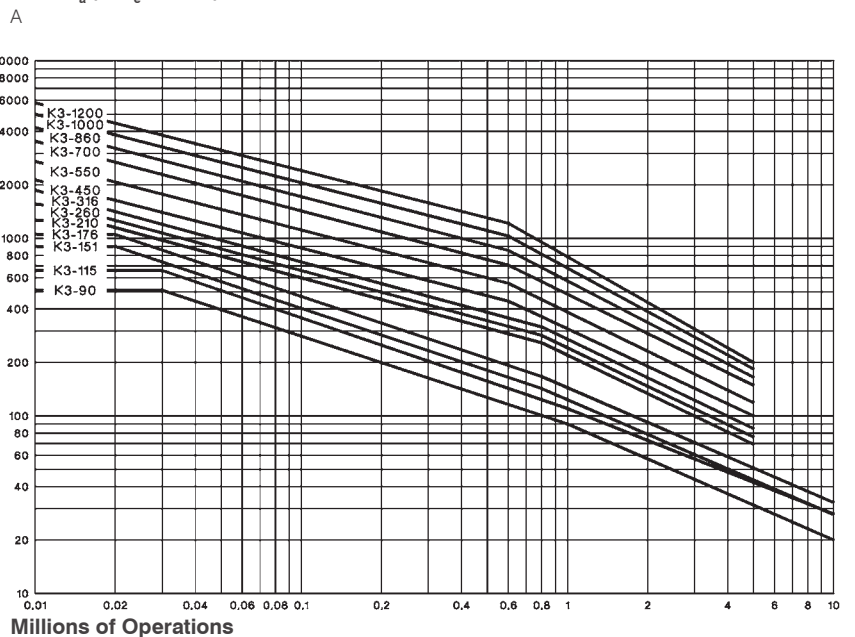
$P_n = AC3$

660/ 500V 380/ 220/
690V 400V 230V



Breaking Current

$I_a (= I_e = AC1)$



1) Pay attention to the approved rated values of the selected contactor according to the national approvals

Contactors

Utilization Categories

For easier choice of devices and in order to make the comparison of different products simpler are utilization categories for contactors and motor-starters according to IEC 947-4-1 and VDE 0660 Part

102, for control circuit devices and switching elements according to IEC 947-5-1 and VDE 0660 Part 200 determined. The table offers different utilization categories, typical applications and assorted test conditions.

Type of current	Category	Typical applications	Rated operational current	Test conditions for the number of on-load operating cycles						Test conditions for making and breaking capacities					
				Make			Break			Make			Break		
				I_e/I_e	U/U_e	$\cos\phi$	I_e/I_e	U/U_e	$\cos\phi$	I_e/I_e	U/U_e	$\cos\phi$	I_e/I_e	U/U_e	$\cos\phi$
Alternating Current	AC1	Non-inductive or slightly inductive loads resistance furnaces	all values	1	1	0,95	1	1	0,95	1,5	1,05	0,8	1,5	1,05	0,8
	AC2	Slip-ring motors: starting, switching off	all values	2,5	1	0,65	2,5	1	0,65	4	1,05	0,65	4	1,05	0,65
	AC3	Squirrel-cage motors: starting, switching off motors during running	$17A < I_e \leq 17A$ $I_e > 100A$	6 6 6	1 1 1	0,65 0,35 0,35	1 1 1	0,17 0,17 0,17	0,65 0,35 0,35	10 10 10	1,05 1,05 1,05	0,45 0,45 0,35	8 8 8	1,05 1,05 1,05	0,45 0,45 0,35
	AC4	Squirrel-cage motors: starting, plugging, inching	$17A < I_e \leq 17A$ $I_e > 100A$	6 6 6	1 1 1	0,65 0,35 0,35	6 6 6	1 1 1	0,65 0,35 0,35	12 12 12	1,05 1,05 1,05	0,45 0,45 0,35	10 10 10	1,05 1,05 1,05	0,45 0,45 0,35
	AC5a	Switching of electric discharge lamp controls	all values	-	-	-	-	-	-	3	1,05	0,45	3	1,05	0,45
	AC5b	Switching of incandescent lamps	all values	-	-	-	-	-	-	1,5	1,05	¹⁾	4	1,05	¹⁾
	AC6a	Switching of transformers	$I_e \leq 100A$ $I_e > 100A$	- -	- -	- -	- -	- -	- -	4,5 4,5	1,05 1,05	0,45 0,35	3,6 3,6	1,05 1,05	0,45 0,35
	AC6b	Switching of capacitors	-	-	-	-	-	-	-	²⁾			²⁾		
	AC7a	Slightly inductive loads in household appliances and similar applications	all values	-	-	-	-	-	-	1,5	1,05	0,8	1,5	1,05	0,8
	AC7b	Motor loads for household applications	$I_e \leq 100A$ $I_e > 100A$	- -	- -	- -	- -	- -	- -	8 8	1,05 1,05	0,45 0,35	6 6	1,05 1,05	0,45 0,35
	AC8a	Hermetic refrigerant compressor motor control with manual resetting of overload releases	$I_e \leq 100A$ $I_e > 100A$	- -	- -	- -	- -	- -	- -	6 6	1,05 1,05	0,45 0,35	6 6	1,05 1,05	0,45 0,35
	AC8b	Hermetic refrigerant compressor motor control with automatic resetting of overload releases	$I_e \leq 100A$ $I_e > 100A$	- -	- -	- -	- -	- -	- -	6 6	1,05 1,05	0,45 0,35	6 6	1,05 1,05	0,45 0,35
	AC12	Control of resistive loads and solid state loads with isolation by opto couplers	all values	-	-	-	-	-	-	1	1	0,9	1	1	0,9
	AC13	Control of solid state loads with transformer isolation	all values	-	-	-	-	-	-	10	1,1	0,65	1,1	1,1	0,65
	AC14	Control of small electromagnetic loads ($\leq 72VA$)	-	-	-	-	-	-	-	6	1,1	0,7	6	1,1	0,7
AC15	Control of electromagnetic load ($> 72VA$)	-	10	1	0,7	1	1	0,4	10	1,1	0,3	10	1,1	0,3	
Direct Current	DC1	Non-inductive or slightly inductive loads resistance furnaces	all values	1	1	1	1	1	1	1,5	1,05	1	1,5	1,05	1
	DC3	Shunt-motors: starting, plugging, inching dynamic braking of d.c. motors	all values	2,5	1	2	2,5	1	2	4	1,05	2,5	4	1,05	2,5
	DC5	Series-motors: starting, plugging, inching dynamic braking of d.c. motors	all values	2,5	1	7,5	2,5	1	7,5	4	1,05	15	4	1,05	15
	DC6	Switching of incandescent lamps	all values	-	-	-	-	-	-	1,5	1,05	¹⁾	4	1,05	¹⁾
	DC12	Control of resistive loads and solid state loads with isolation by opto couplers	all values	-	-	-	-	-	-	1	1	1	1	1	1
	DC13	Control of electromagnets	all values	1	1	≤ 300	1	1	≤ 300	1,1	1,1	≤ 300	1,1	1,1	≤ 300
	DC14	Control of electromagnetic loads having economy resistors in circuit	all values	-	-	-	-	-	-	10	1,1	15	10	1,1	15

U_e Rated operational voltage, U Voltage before make, U_r Recovery voltage, I_e Rated operational current, I_m Current make, I_c Current broken

1) Test with incandescent lamps

2) Test conditions according to standard

Accessories

Data according to IEC 947-5-1, EN 60947-5-1, VDE 0660

Type		HN	HTN	HA	HB	HKT HKA	HKF HKB	K2-DK K2-SK	K2-TP	K2-L ²⁾	
Rated insulation voltage U_i¹⁾	V AC	690	690	690	690	690	690	690	690	690	
Thermal rated current I_{th} to bis 690V Ambient temperature	max. 40°C	A	10	10	25	10	10	16	26	10	10
	max. 60°C	A	6	6	20	6	-	-	-	-	6
Frequency of operations z	1/h	3000	-	3000	3000	-	-	-	1200	3000	
Mechanical life	$S \times 10^6$	10	10	10	10	-	-	-	1	10	
Power loss per pole at $I_e/AC1$	W	0,5	0,5	1,5	0,5	-	-	-	-	-	
Utilization category AC15											
Rated operational current I_e	220-240V	A	3	3	6	3	3	-	4	3	
	380-400V	A	2	2	3	2	2	-	3	2	
	440V	A	1,6	1,6	2	1,6	1,5	1,5	-	2	1,6
	500V	A	1,2	1,2	2	1,2	1,5	1,5	-	2	1
	660-690V	A	0,6	0,6	1	0,6	1	1	-	2	0,5
Utilization category DC13											
Rated operational current I_e	60V	A	2	2	8	2	-	-	-	2,5	2
	110V	A	0,4	0,4	1	0,4	0,5	0,5	-	1,5	0,4
	220V	A	0,1	0,1	0,1	0,1	0,2	0,2	-	0,2	0,1
Short circuit protection short-circuit current 1kA, contact welding not accepted max. fuse size		gL (gG) A	20	20	25	20	10	10	-	10	10
For contactors with thermal overload relay or auxiliary contacts the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse size.											
Cable cross-sections											
solid or stranded	mm ²	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	1-2,5	0,75-2,5	
	flexible	mm ²	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	
	flexible with multicore cable end	mm ²	0,5-1,5	0,5-1,5	0,5-1,5	0,5-1,5	0,5-1,5	0,5-1,5	0,75-2,5	0,5-1,5	
solid	AWG	14 - 12	14 - 12	14 - 12	14 - 12	14 - 12	14 - 12	14 - 12	14 - 12	14 - 12	
	flexible	AWG	18 - 12	18 - 12	18 - 12	18 - 12	18 - 12	18 - 12	18 - 12	18 - 12	
Cables per clamp			2	2	2	2	2	2	2	2	

Data according to CSA, UL and CUL

Type		HN	HTN	HA	HB..	HKA, HKT HKF	K2-DK K2-SK	K2-TP	K2-L ²⁾
Rated operational current "General Use"	A	10	10	16	10	10	-	10	-
Rated operational voltage	max. V AC	600	600	600	600	600	-	600	600
Auxiliary Contacts		A600	A600	A600	A600	A600	-	A600	Intermittent duty

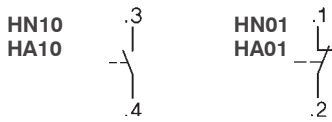
1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): $U_{imp} = 8kV$. Data for other conditions on request.

2) Command duration min. 30ms, 10% duty cycle, max. 30 sec.

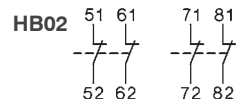
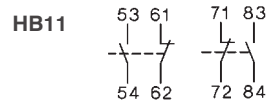
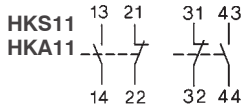
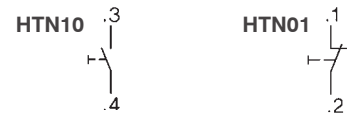
Contactors and Accessories

Wiring diagrams

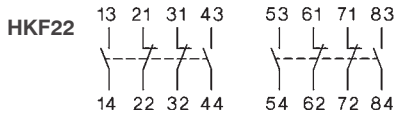
Auxiliary contact blocks



Snap-on momentary contact blocks

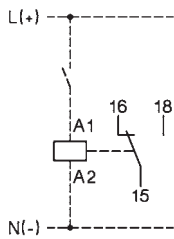


HB11, HB02:
Correct terminal marking
is given by mounting.



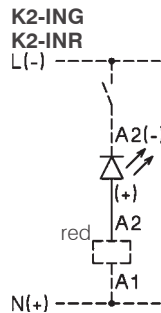
Electronic timer

K3-T180 240

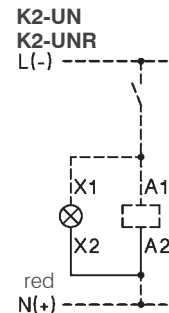


Indicator units

Coil current indicator

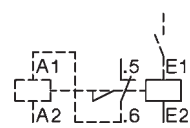


Voltage indicator



Latch

K2-L..



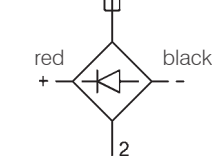
Fuse holder

K2-F



with rectifier

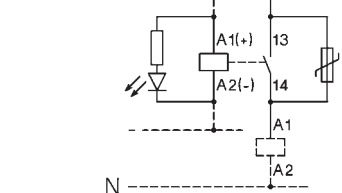
K2-RF1 K2-RF3



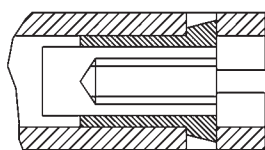
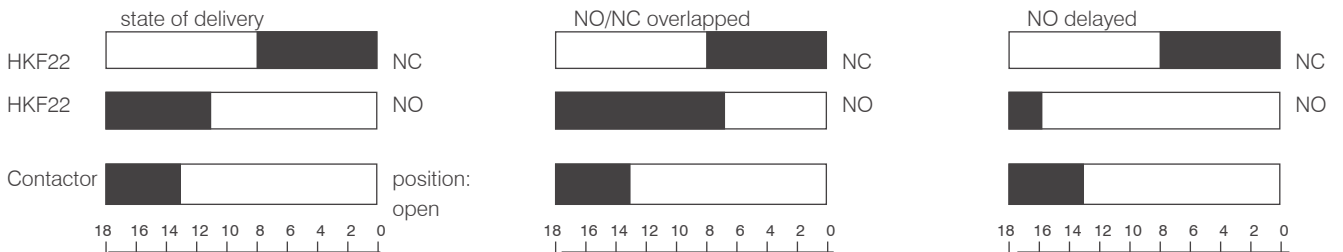
Colours mentioned in
wiring diagram refer to
the outgoing
connection wires
of the device.

Interface

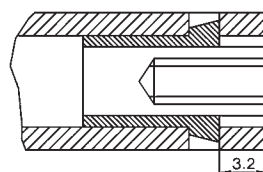
K2-IM



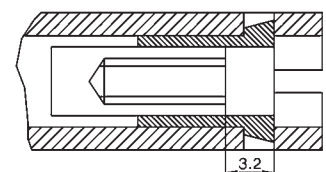
Regulation of switch position of aux. contact block HKF22 for contactors K3-450 to K3-860



Standard position of regulation screw



Regulation screw position (unscrew by 4 turns)



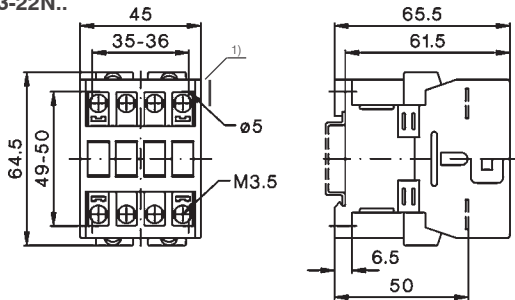
Regulation screw position (screw by 4 turns)

Contactors

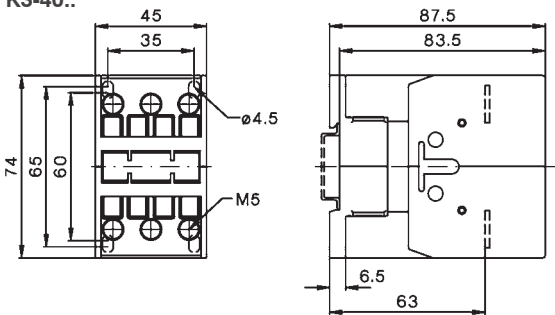
Dimensions

AC operated

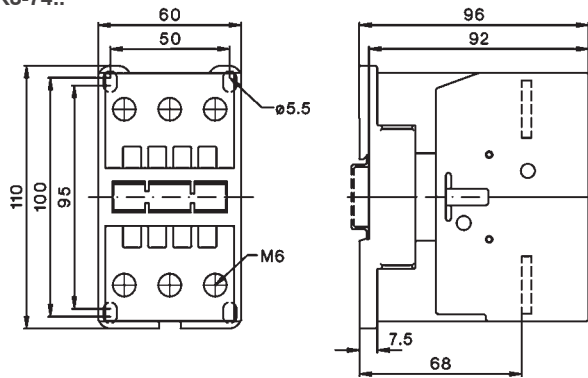
K3-10N..
K3-14N..
K3-18N..
K3-22N..



K3-24..
K3-32..
K3-40..

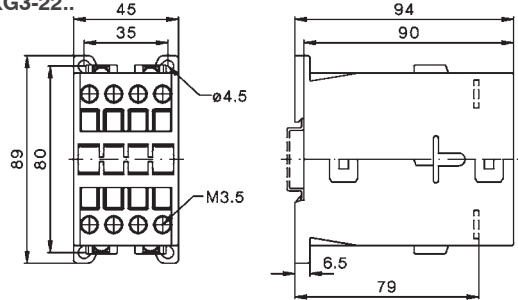


K3-50..
K3-62..
K3-74..

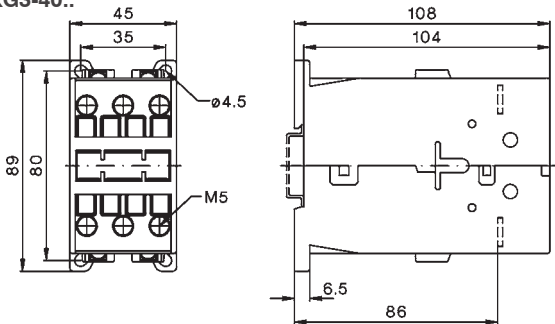


DC operated

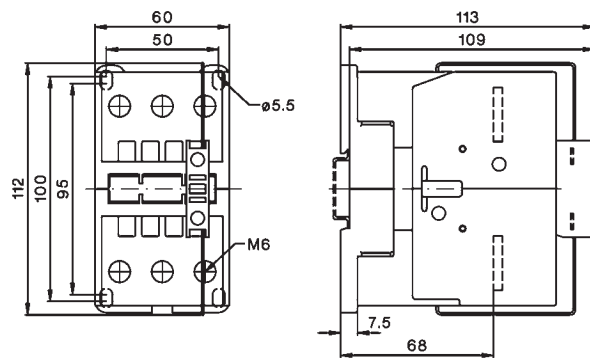
KG3-10..
KG3-14..
KG3-18..
KG3-22..



KG3-24..
KG3-32..
KG3-40..

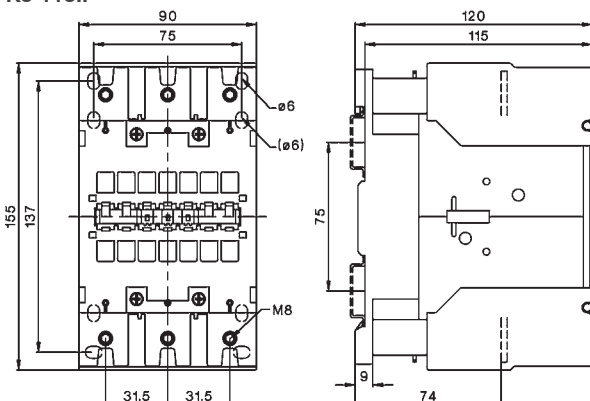


K3-50..=
K3-62..=
K3-74..=



AC and DC operated

K3-90..
K3-115..

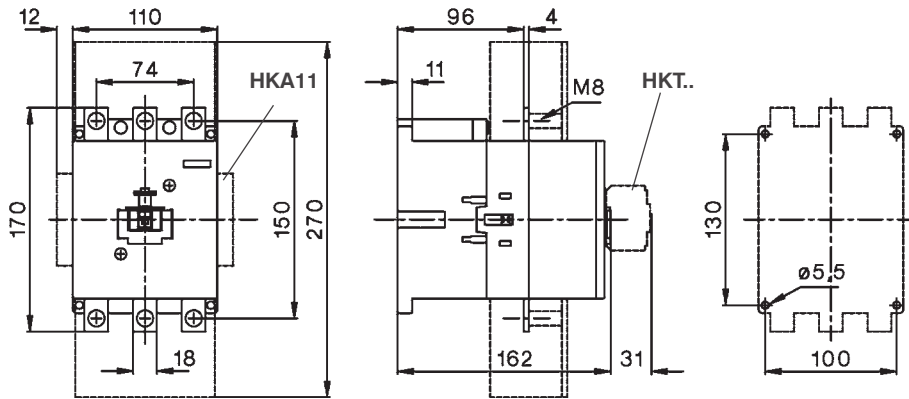


1) Minimum side distance to
conductive parts for coil voltage:
500V $U_{imp}=6kV$ 2mm
660-690V $U_{imp}=8kV$ 4,5mm

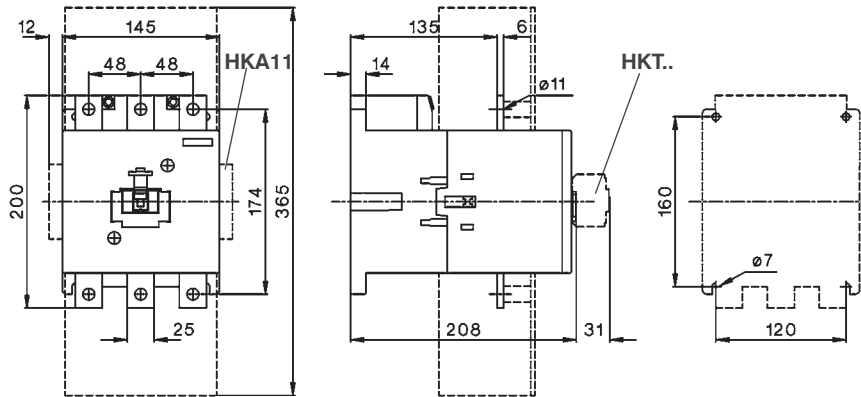
Contactors

Dimensions, AC operated, DC operated

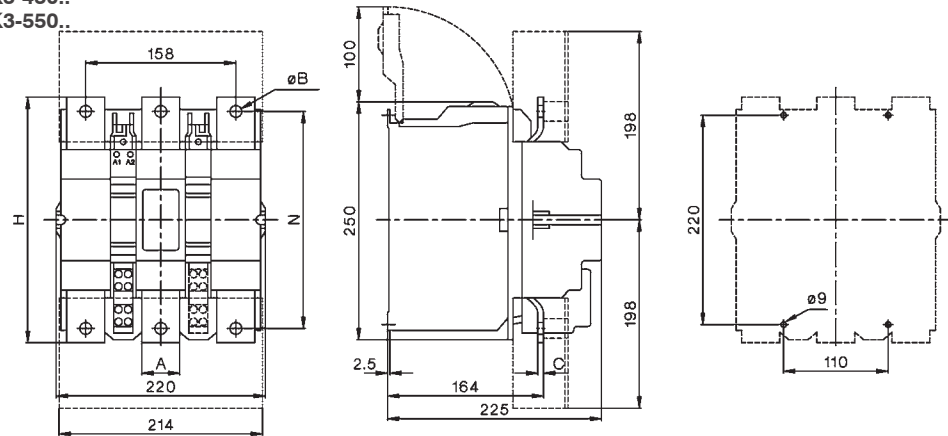
K3-151..
K3-176..



K3-210..
K3-260..
K3-316..

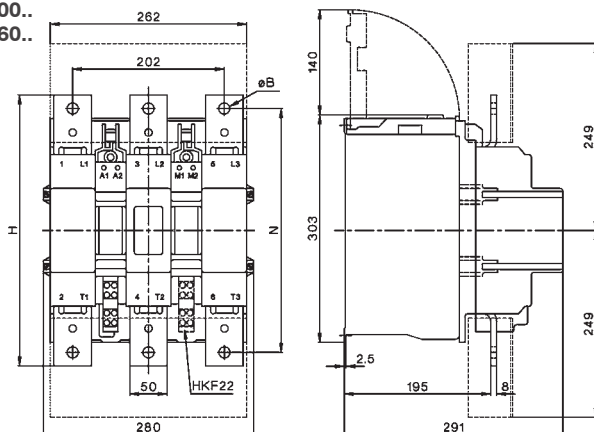


K3-450..
K3-550..



Type	A	B	C	H	N
K3-450	40	10,5	4	233	206
K3-550	40	12,5	6	258	228

K3-700..
K3-860..



Type	B	H	N
K3-700	13	310	277
K3-860	15	361	325

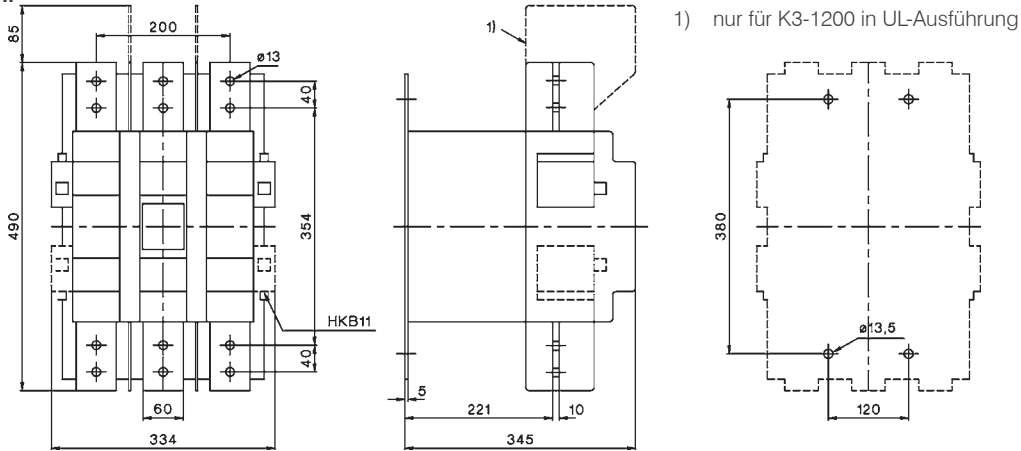
Contactors

Dimensions

AC operated, DC operated

K3-1000..

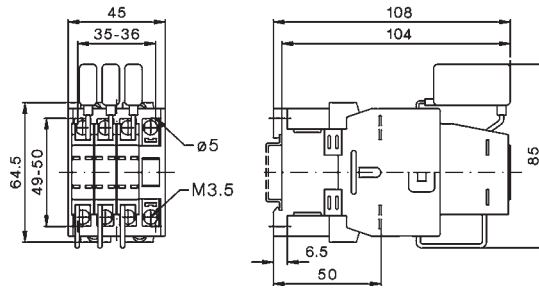
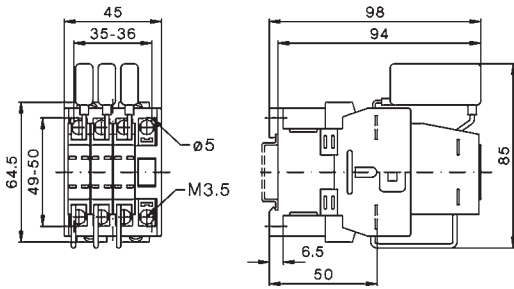
K3-1200..



Capacitor Switching Contactors, AC operated

K3-18NK..

K3-18NBK..



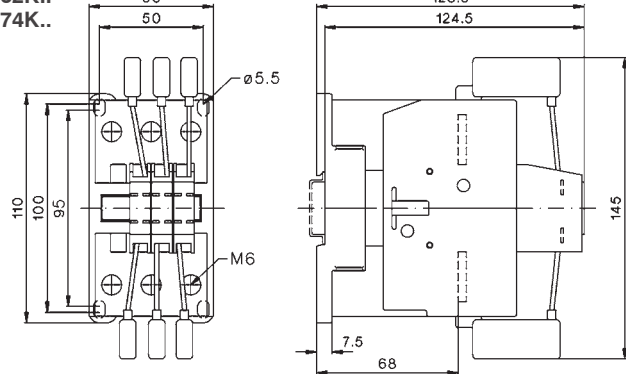
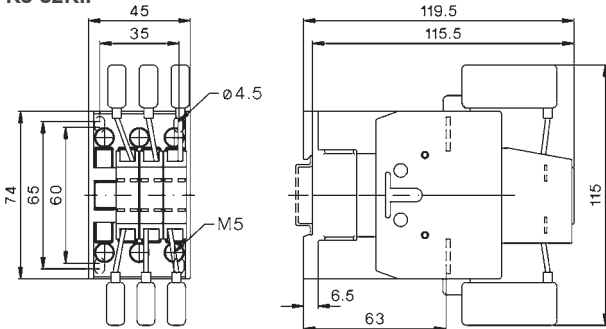
K3-24K..

K3-32K..

K3-50K..

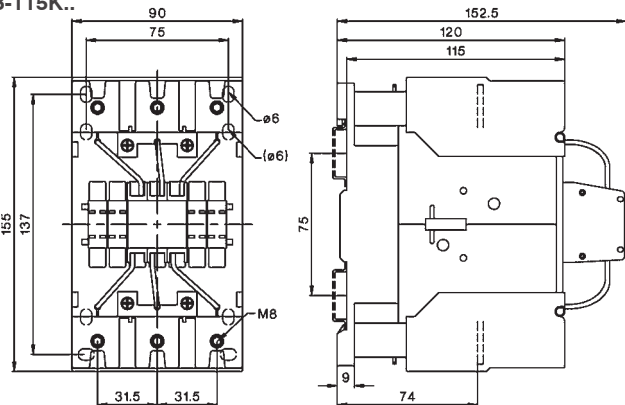
K3-62K..

K3-74K..



K3-90K..

K3-115K..

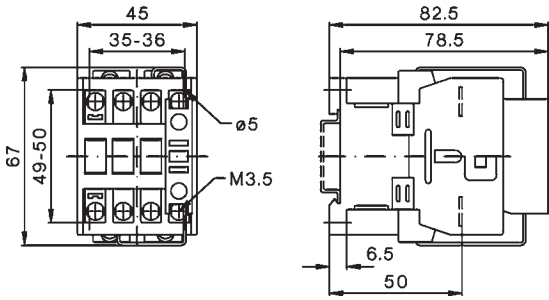


Contactors

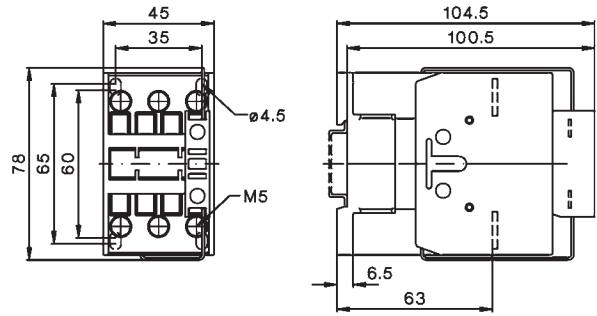
Dimensions

Contactors DC operated

- K3-10N..=
- K3-14N..=
- K3-18N..=
- K3-22N..=

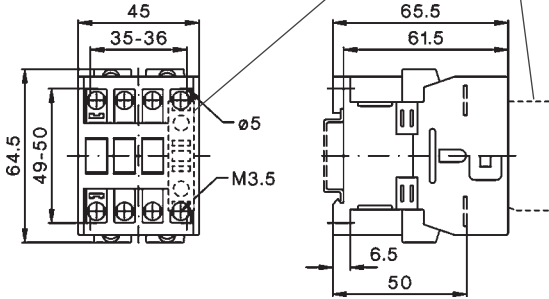


- K3-24..=
- K3-32..=
- K3-40..=

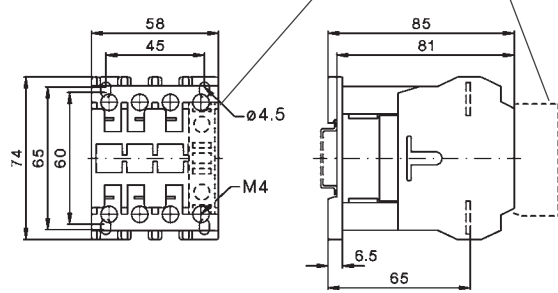


Contactors 4-pole, AC operated / DC operated

- K3-10NA00-40
- K3-14NA00-40
- K3-18NA00-40
- K3-22NA00-40

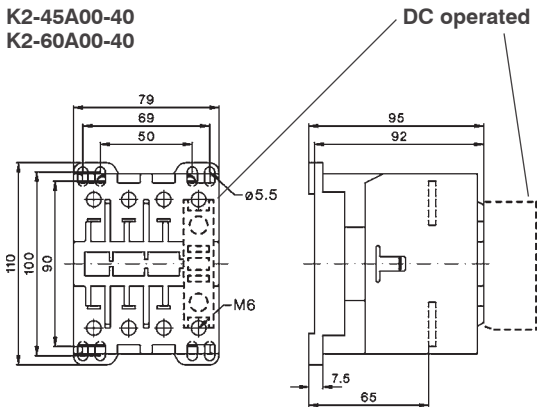


- K2-23A00-40
- K2-30A00-40
- K2-37A00-40

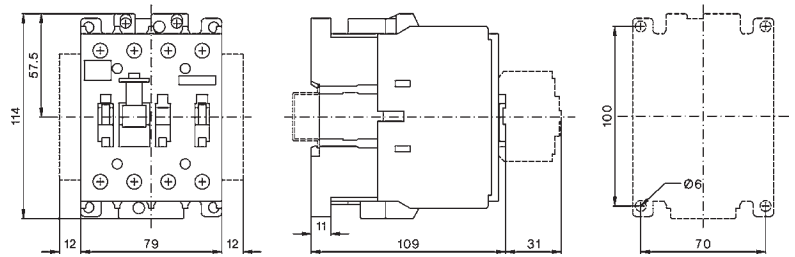


Contactors 4-pole, AC operated / DC operated

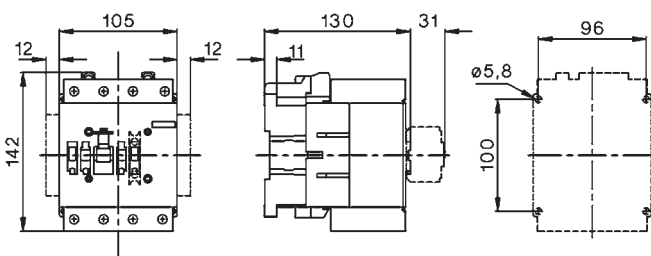
- K2-45A00-40
- K2-60A00-40



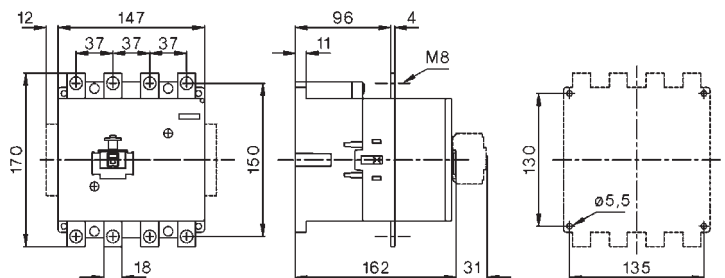
- K3-41A00-40



- K3-96A00-40



- K3-116A00-40
- K3-151A00-40
- K3-176A00-40



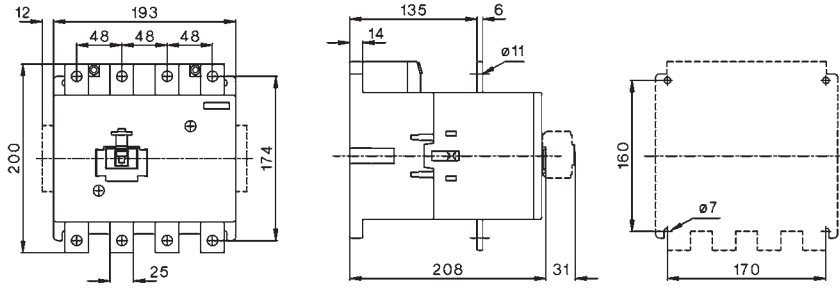
Contactors

Contactors 4-pole, AC and DC operated

K3-210A00-40

K3-260A00-40

K3-316A00-40



Dimensions Accessories

Aux. cont. blocks, terminal blocks

Snap-on momentary cont. blocks

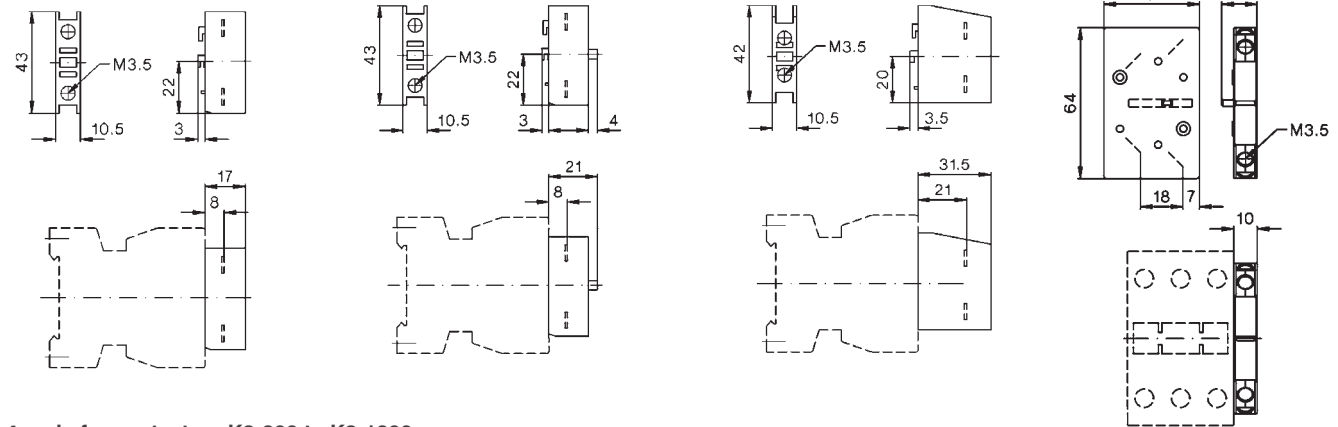
Auxiliary contact blocks

HN10, HN01 K2-SK, K2-DK

HTN10, HTN01

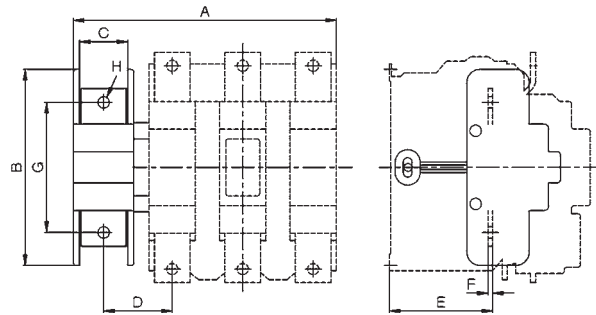
HA10, HA01

HB11, HB02



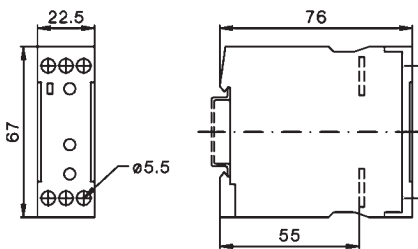
4. pole for contactors K3-200 to K3-1200

Type	A	B	C	D	E	F	G	H
NP175	223	148	26	52	98	5	122	M8
NP350	223	148	26	52	98	5	122	M8
NP325	262	148	26	55	116	5	122	M10
NP500	294	220	53	72	138	5	152	M12
NP760	294	220	53	72	138	5	152	M12
NP501	348	220	53	73	145	5	152	M12
NP1000	348	220	53	73	145	8	152	M12
NP1001	410	220	53	110	157	8	152	M12



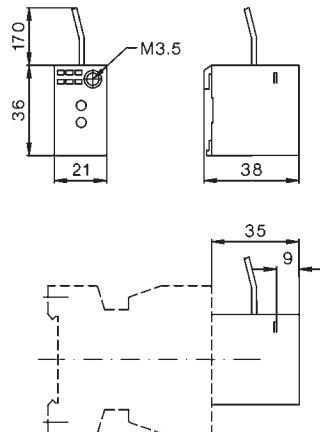
Electronic timer

K3-T180 240



Electronic timer on-delay

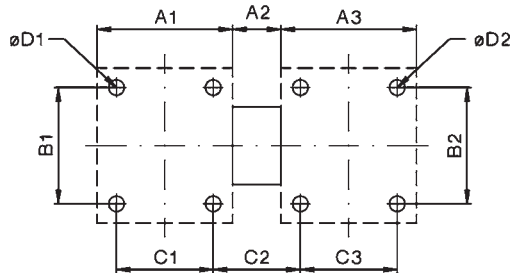
K2-TE..



Contactors

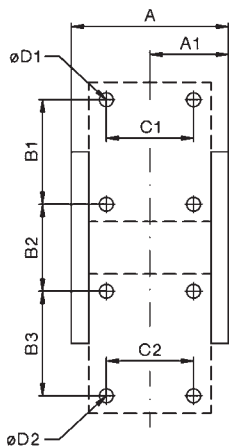
Dimensions Accessories

Mechanical interlocks

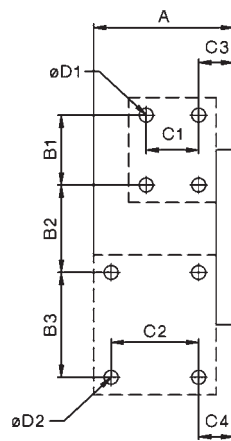


Type	Contactor 1	Contactor 2	A1	A2	A3	B1	B2	C1	C2	C3	D1	D2	
LG10889	K3-07 to K3-40	K3-07 to K3-40	45	7	45	50	50	35	17	35	4,5	4,5	
LG10889	KG3-07 to KG3-22	KG3-07 to KG3-22	45	7	45	80	50	35	17	35	4,5	4,5	
LG10889	KG3-24 to KG3-40	KG3-22 to KG3-40	45	7	45	80	50	35	17	35	4,5	4,5	
LG10890	K3-50 to K3-74	K3-24 to K3-40	60	12	55	100	65	50	22	45	5,5	4,5	
LG10890	K3-50 to K3-74	K3-50 to K3-74	60	12	60	100	100	50	22	50	5,5	5,5	
LG11478	K3-90 to K3-115	K3-90 to K3-115	90	12	90	100	100	75	27	75	5,5	5,5	
LG8511	K65 - K110	K65 - K110	90	12	90	100	100	75	27	75	6	6	
LG11223H	K3-151, -176	K3-151, -176	110	30	110	130	130	100	40	100	6	6	3-pole contactor
LG11223H	K3-116,-151, -176	K3-116,-151, -176	147	30	147	130	130	135	42	135	6	6	4-pole contactor
LG11223H	K3-210, -260, -316	K3-210, -260, -316	145	30	145	160	160	120	55	120	6	6	3-pole contactor
LG11223H	K3-210, -260, -316	K3-210, -260, -316	193	30	193	160	160	170	55	170	6	6	4-pole contactor
LG10400H	K3-450, K3-550	K3-450, K3-550	220	42	220	220	220	110	152	110	9	9	
LG10402H	K3-700, -860	K3-700, -860	280	32	280	280	280	175	137	175	11	11	
LG10403H	K3-1000, -1200	K3-1000, -1200	334	46	334	380	380	120	260	120	13,5	13,5	
LG10399H	K3-450, -550	K3-700, -860	220	37	280	220	280	110	144,5	175	9	11	
LG10401H	K3-700, -860	K3-1000, -1200	280	73	334	280	380	175	232,5	120	11	13,5	

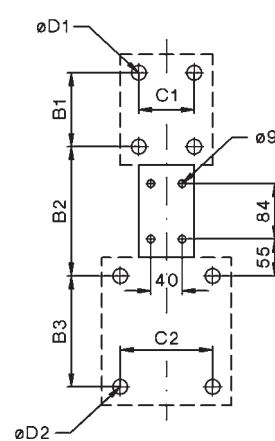
LG10400V, LG10402V



LG10399V



LG10403V, LG10401V



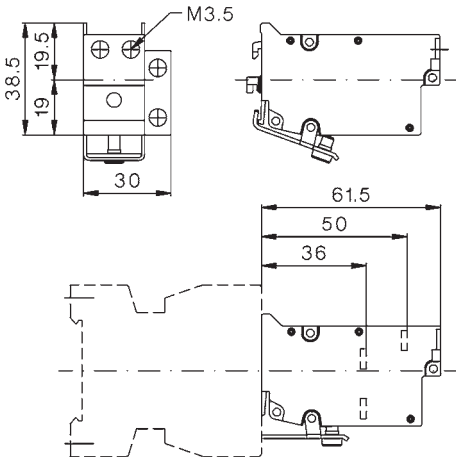
Type	Contactor 1	Contactor 2	A	A1	B1	B2	B3	C1	C2	C3	C4	D1	D2
LG10400V	K3-315 - K3-550	K3-315 - K3-550	250	134	220	94	220	110	110	-	-	9	9
LG10402V	K3-700, -860	K3-700, -860	302	162	280	200	280	175	175	-	-	11	11
LG10403V	K3-1000, -1200	K3-1000, -1200	-	-	380	280	380	120	120	-	-	13,5	13,5
LG10399V	K3-450, -550	K3-700, -860	302	-	220	150	280	110	175	51	74,5	9	11
LG10401V	K3-700, -860	K3-1000, -1200	-	-	280	240	380	175	120	-	-	11	13,5

Contactors

Dimensions Accessories

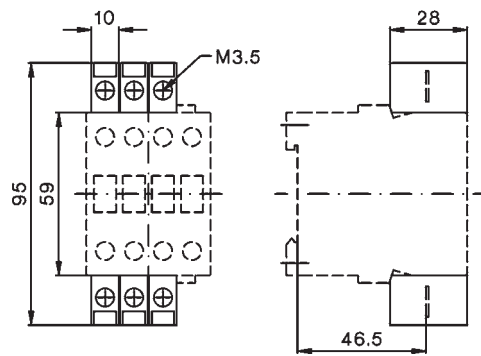
Latch

K2-L..



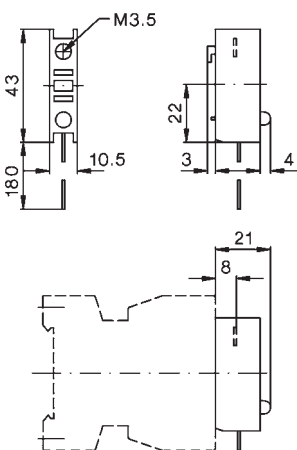
Contactors with additional terminals

LG9339N (2 x 3 pieces) for K3-10N. to K3-22N.



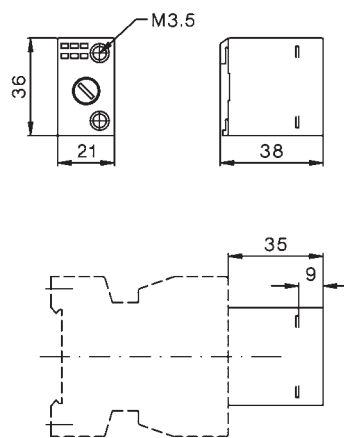
Indicator units

K2-ING, K2-INR K2-UN, K2-UNR



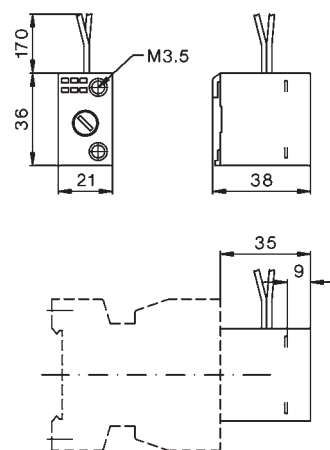
Fuse holder

K2-RF



Fuse holder with rectifier

K2-RF1 K2-RF3

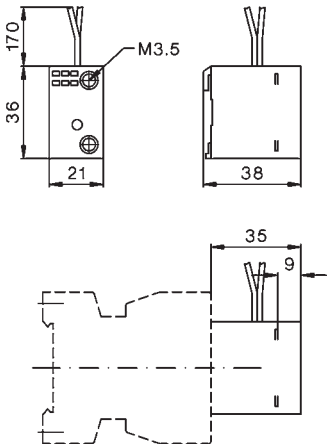


Contactors

Dimensions Accessories

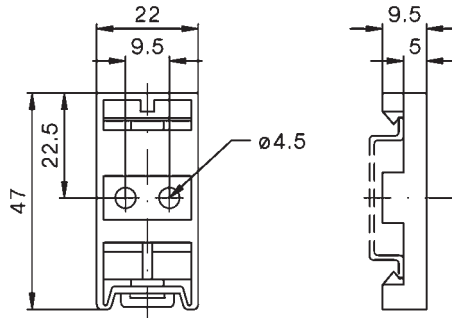
Interface

K2-IM



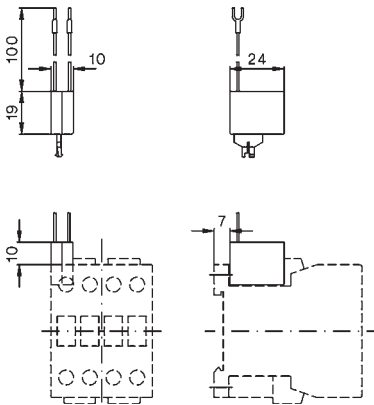
Snap-on adapter

K2-SM

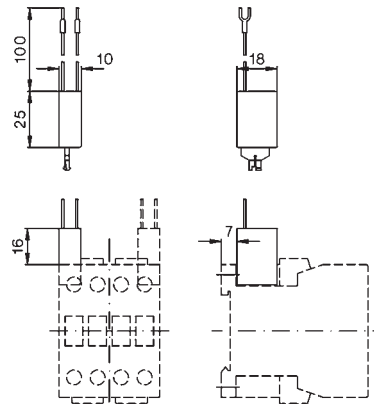


Suppressor units

RC-K3N ..



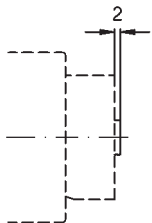
RC-K3NW ..



Marking systems

marking label

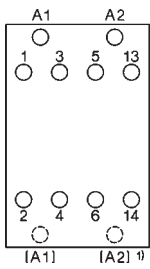
P487-1 or **P245-**.



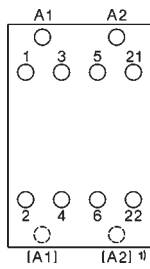
Contactors

Position of terminals

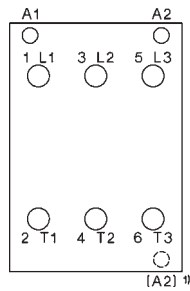
K3-10ND10
K3-14ND10
K3-18ND10
K3-22ND10
K3-18NK10



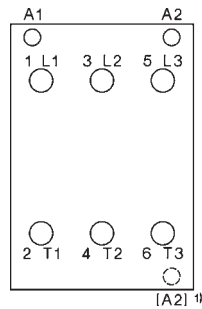
K3-10ND01
K3-14ND01
K3-18ND01
K3-22ND01
K3-18NK01



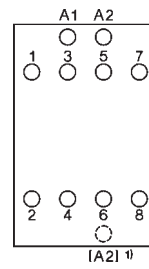
K3-24A00, K3-24K00
K3-32A00, K3-32K00
K3-40A00



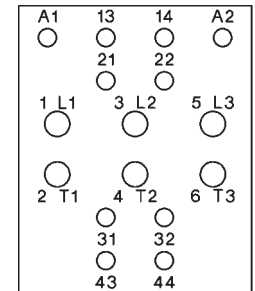
K3-50A00, K3-50K00
K3-62A00, K3-62K00
K3-74A00, K3-74K00



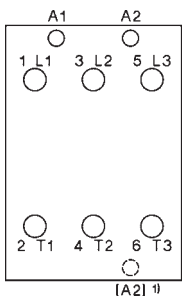
K3-10NA00-40
K3-14NA00-40
K3-18NA00-40
K3-22NA00-40
K2-23A00-40 to
K2-60A00-40



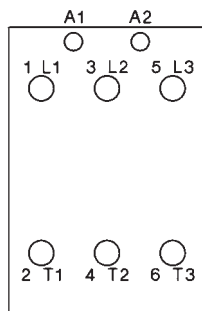
K85A22
K110A22



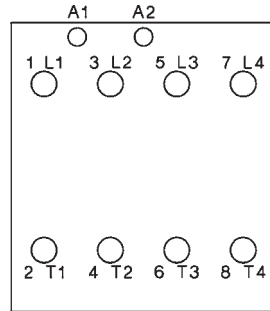
K3-90A00
K3-115A00



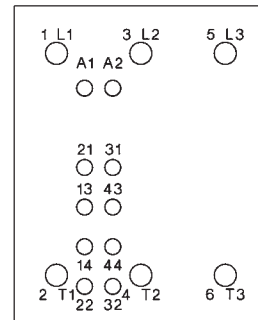
K3-151A00
K3-176A00
K3-210A00
K3-260A00
K3-316A00



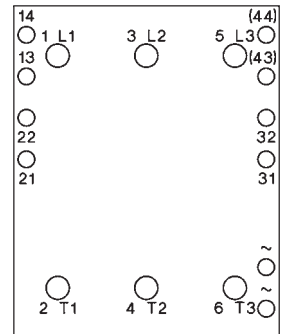
K3-116A00-40
K3-151A00-40
K3-176A00-40
K3-210A00-40
K3-260A00-40
K3-316A00-40



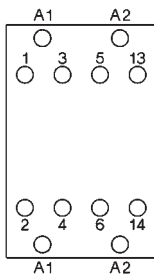
K3-450A22
K3-550A22
K3-700A22
K3-860A22



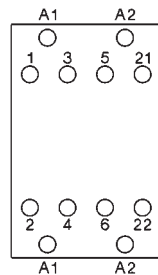
K3-1000A12
K3-1200A12



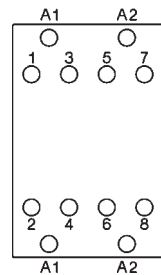
KG3-10A10
KG3-14A10
KG3-18A10
KG3-22A10



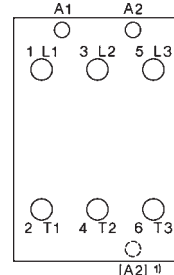
KG3-10A01
KG3-14A01
KG3-18A01
KG3-22A01



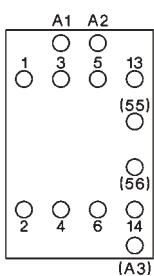
KG3-10A00-40
KG3-14A00-40
KG3-18A00-40
KG3-22A00-40



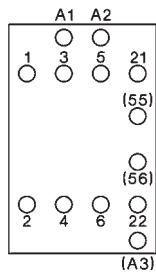
KG3-24A00
KG3-32A00
KG3-40A00



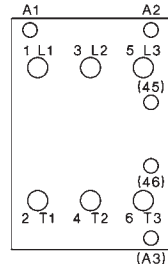
K3-10ND10=
K3-14ND10=
K3-18ND10=
K3-22ND10=



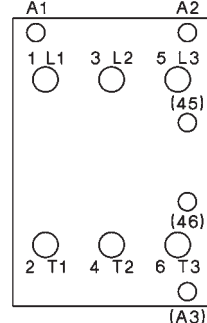
K3-10ND01=
K3-14ND01=
K3-18ND01=
K3-22ND01=



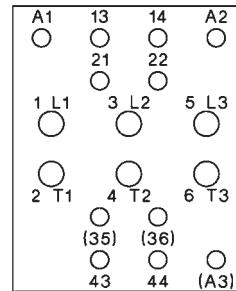
K3-24A00=
K3-32A00=
K3-40A00=



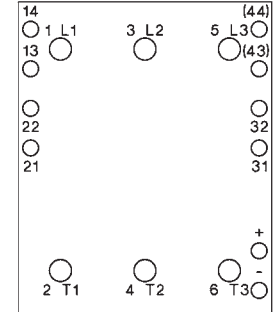
K3-50A00=
K3-62A00=
K3-74A00=



K85A21=
K110A21=



K3-1000A12=
K3-1200A12=



1) Type-suffix "EUR" with additional coil terminal
Ordering example: K3-10ND10 EUR 230