Contactors
Low Voltage Switching Solutions

Innovative. Smart. Sustainable.

iskra.eu

Iskra Contactors

Iskra contactors deliver precision, durability, and versatility across a wide spectrum of applications—from compact, sophisticated installations to heavy-duty industrial power systems. Whether optimizing motor control, lighting, or reactive power compensation, our modular designs and broad series catalogue ensure tailored solutions that exceed performance expectations.

The portfolio includes all types of contactors, from 2.2 kW up to 335 kW. They can be operated with control voltages ranging from 12 V to 500 V. Accessories include various auxiliary contacts, mechanical interlocks, RC suppressors, thermal overload relays, and assembly equipment. Special contactors are available for switching capacitor banks from 12.5 kvar up to 60 kvar.

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Miniature Contactors

Miniature contactors are electrically remote controlled switches used for switching a power circuit. Contactors are mainly used for switching electric motors, building automation systems and applications including use in machines.

For universal switching

- All kind of motors
- Building automation systems
- Applications include use in machines

Advanced operation

- Control combinations

Other benefits

- A wide variety of snap-on auxiliary switch blocks and accessories
- AC or real DC drive with low consumption
- High contact reliability at low voltage
- Two contactor widths: 35 and 45 mm
- Degree of protection IP20
- K07F version for fast-on connection or K07X contactors with soldering pins
- Possibility of direct connection of the BR 6 bimetal relay for protection against overload and in case of phase failure
- Version with all four main contacts (Sp4)
- Wide range of control voltages is available

K03M, K07M, K07MF, K07MX, K07MG, K07MGF, K07MGX, K08M, K08MG characteristics

Technical data	Symbol	Unit	K03M	K07M K07MF K07MX	K07MG K07MGF K07MGX	K08MG	K08M
General							
Standards				IEC/EN 60947-5-1, IEC 60947-4-1, UL 508			
Approvals				CE, UL, CSA, EAC		CE, EAC	
Module width		mm	35	45	45	45	45
Number of poles				4			
Degree of protection				IP20			
Pollution degree				3			
Climatic conditions				95 % relative humidity			
Ambient temperature							
open		°C		-20 … +60			
closed		°C		-20 … +45			
Storage temperature		°C		-30 … +80			
Maximum altitude [1]		m		2.000			
Noise level (operation)		dB		30			
Number of contactors or switches side-by-side							
≤ 40		°C		no limitation			
(40 … 55)		°C		no limitation			
Noise level (operation)		dB	30	30	20	20	20
Maximum operating frequency with no load		op. c./h		3.000			
Mechanical endurance		op. c.		10.000.000			
Weight		g	160	170	215	215	170
Main circuit							
Contact reliability				≥ 17 V; ≥ 50 mA			
Power dissipation per pole		W		1.2			
Overload current withstand capability 10s		A	68	90.4	90.4	124	124
Maximum back-up fuse for short-circuit protection							
gL and gG - coordination type 2	I_v	A		25			
Rated insulation voltage	U_i	V		690			
Rated impulse withstand voltage	U_{imp}	kV		6			
Rated operational voltage	U_e	V		690			
Rated frequency	f	Hz		50/60			
Thermal current	I_{th}	A		20			
Rated operational current for AC-1, AC-7a and AC-21	I_e	A		20			
Operational power for AC-1, AC-7a and AC-21							
single-phase 230 V	P_e	kW		4.4			
three-phase 230 V	P_e	kW		7.5			
three-phase 400 V	P_e	kW		13			
three-phase 500 V	P_e	kW		17.5			
three-phase 690 V	P_e	kW		22			
Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h		600			
Electrical endurance for AC-1, AC-7a and AC-21		op. c.		200.000			
Rated operational current for AC-2	I_e	A		32			
Operational power for AC-3, AC-3e, AC-7b and AC-23							
single-phase 230 V	P_e	kW	0.75	1.1	1.1	1.1	1.1
three-phase 230 V	P_e	kW	2	3	3	3.7 (3*)	3.7 (3*)
three-phase 400 V	P_e	kW	4	5.5	5.5	7.5 (5.5*)	7.5 (5.5*)
three-phase 500 V	P_e	kW	4	5.5	5.5	5.5	5.5
three-phase 690 V	P_e	kW	4	5.5	5.5	5.5	5.5
Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h		600			
Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.		1.000.000			
Rated operational current for AC-4 (at 400 V)	I_e	A	/	5	5	5	5
Operational power for AC-4							
three-phase 230 V	P_e	kW	/	0.75	0.75	0.75	0.75
three-phase 400 V	P_e	kW	/	2.2	2.2	2.2	2.2
three-phase 500 V	P_e	kW	/	1.5	1.5	1.5	1.5
three-phase 690 V	P_e	kW	/	1.5	1.5	1.5	1.5
Maximum operating frequency for AC-4		op. c./h		300			
Electrical endurance for AC-4		op. c.		100.000			

[1] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

K03M, K07M, K07MF, K07MX, K07MG, K07MGF, K07MGX, K08M, K08MG characteristics

Technical data	Symbol	Unit	K03M	K07M K07MF K07MX	K07MG K07MGF K07MGX	K08MG	K08M
Main circuit							
Rated motor power according to standards UL and CSA							
single-phase 110 V	P_e	HP	1/3	1/2	1/2	1/2	1/2
single-phase 230 V			3/4	1.5	1.5	1.5	1.5
three-phase 230 V			2	3	3	3	3
three-phase 460 V			3	5	5	5	5
three-phase 575 V			5	7.5	7.5	7.5	7.5
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF			30		
Maximum operating frequency for AC-6b and AC-7c		op. c./h			600		
Electrical endurance for AC-6b and AC-7c		op. c.			100.000		
Terminal capacity							
rigid (solid and stranded)	S	mm^2			0.75 ... 2.5		
flexible					0.5 ... 2.5		
Length of removed wire insulation		mm			10		
Screw					M3.5		
Screw head					PZ2		
Tightening torque		Nm			1.2		
Auxiliary circuit							
Power dissipation per pole		W			1.2		
Maximum back-up fuse for short-circuit protection							
gL and gG - coordination type 2 (at prospective current 3 kA)	I_v	A			20		
Rated insulation voltage	U_i	V			690		
Rated operational current for AC-15							
single-phase 230 V	I_e	A			6		
single-phase 400 V					4		
single-phase 500 V					2		
single-phase 690 V					1		
Maximum operating frequency for AC-15		op. c./h			1.200		
Electrical endurance for AC-15		op. c.			1.000.000		
Rated operational current for DC-13							
1 pole ... 24 V DC/110 V DC		A			4 / 0.25		
Maximum operating frequency for DC-13		op. c./h			1.200		
Terminal capacity							
rigid (solid and stranded)	S	mm^2			0.75 ... 2.5		
flexible					0.5 ... 2.5		
Length of removed wire insulation		mm			10		
Screw					M3.5		
Screw head					PZ2		
Tightening torque		Nm			1.2		

K03M, K07M, K07MF, K07MX, K07MG, K07MGF, K07MGX, K08M, K08MG characteristics

Technical data	Symbol	Unit	K03M	K07M K07MF K07MX	K07MG K07MGF K07MGX	K08MG	K08M
Coil							
Range of control voltage for switch-on	U_c	%	85 ... 110				
Range of control voltage for drop out	U_c	%	20 ... 75		10 ... 75		20 ... 75
Kind of voltage			AC		DC		AC
Standard control voltages	U_c	V	1)	2)	3)		2)
Frequency of AC control voltage	f	Hz	50/60		/		50/60
Control mode			remote control with U_c				
Coil consumption							
switch-on		VA / W	39/34		/		39/34
operation			8.1/4		3		8.1/4
Delays							
make		ms	10 ... 15	10 ... 15	25 ... 30	25 ... 30	10 ... 15
brake			6 ... 15	5 ... 10	10 ... 25	10 ... 25	5 ... 15
Terminal capacity							
rigid (solid and stranded)		mm^2	0.75 ... 2.5				
flexible			0.5 ... 2.5				
Length of removed wire insulation		mm	10				
Screw			M3.5				
Screw head			PZ2				
Tightening torque		Nm	1.2				
Safety							
MTTF - Mean time to failure		h	AC-1: 5.000				
MTTF = $1/\lambda$ = B10/(0.1 n_{op})			AC-3: 25.000				
$MTTF_d$ - Mean time to failure dangerous		h	AC-1: 6.666				
$MTTF_d = 1/\lambda$ = B10/(0.1 n_{op})			AC-1: 33.333				
B10 - Number of operating cycles until 10 % of devices fail		op. c.	AC-1: 150.000				
			AC-3: 750.000				
$B10_d$ - No. of operating cycles until 10 % of devices dangerous		op.c.	AC-3: 200.000				
$B10_d$ = B10/ratio of dangerous failures			AC-3: 1000.000				
λ - Failure rate		1 / h	AC-1: 0.0002				
λ = (0.1 n_{op}) / B10			AC-3: 0.00004				
λ_d - Failure rate		1 / h	AC-1: 0.00015				
λ_d = (0.1 n_{op}) / $B10_d$			AC-3: 0.00003				
Ratio of dangerous failures		%	75				
n_{op} - Operating cycles (operating cycles/h)		op. c. / h	300				

[1] 6, 12, 24, 42, 48, 110/125, 220/240, 380/415, 440/460, 550V
[2] 6, 12, 24, 42, 48, 110/125, 220/240, 380/415, 440/460, 500, 690V
[3] 6, 12, 24, 48, 60, 72, 110, 125, 220, 250V

K03C, K07C, K07CF, K07CX, K07CG, K07CGF, K07CGX characteristics

Technical data	Symbol	Unit	K03C	K07C K07CF K07CX	K07CG K07CGF K07CGX
General					
Standards				IEC/EN 60947-5-1, UL 508	
Approvals				CE, UL, CSA, EAC	
Module width		mm	35	45	
Number of poles				4	
Degree of protection				IP20	
Pollution degree				3	
Climatic conditions				95 % relative humidity	
Ambient temperature					
open		°C		-20 ... +60	
closed				-20 ... +45	
Storage temperature		°C		-30 ... +80	
Maximum altitude [1]		m		2.000	
Number of contactors or switches side-by-side					
≤ 40		°C		no limitation	
(40 ... 55)					
Noise level (operation)		dB	30	30	20
Maximum operating frequency with no load		op. c./h		3.000	
Mechanical endurance		op. c.		10.000.000	
Weight		g	160	170	215
Main circuit					
Contact reliability				≥ 17 V; ≥ 50 mA	
Maximum back-up fuse for short-circuit protection					
gL and gG - coordination type 2	I_v	A		25	
Rated insulation voltage	U_i	V		690	
Rated impulse withstand voltage	U_{imp}	kV		6	
Rated operational voltage	U_e	V		690	
Rated frequency	f	Hz		50/60	
Thermal current	I_{th}	A		20	
Rated operational current for AC-1, AC-7a and AC-21	I_e	A		20	
Rated operational current for AC-15					
single-phase 230 V	I_e	A		6	
single-phase 400 V				4	
single-phase 500 V				2	
single-phase 690 V				1	
Maximum operating frequency for AC-15		op. c./h		1.200	
Electrical endurance for AC-15		op. c.		1.000.000	
Rated operational current for DC-13					
1 pole ... 24 V DC/110 V DC		A		4 / 0.25	
Maximum operating frequency for DC-13		op. c./h		1.200	
Terminal capacity					
rigid (solid and stranded)	S	mm^2		0.75 ... 2.5	
flexible				0.5 ... 2.5	
Length of removed wire insulation		mm		10	
Screw				M3.5	
Screw head				PZ2	
Tightening torque		Nm		1.2	

[1] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

K03C, K07C, K07CF, K07CX, K07CG, K07CGF, K07CGX characteristics

Technical data	Symbol	Unit	K03C	K07C K07CF K07CX	K07CG K07CGF K07CGX
Coil					
Range of control voltage for switch-on	U_c	%		85 ... 110	
Range of control voltage for drop out	U_c	%		20 ... 75	10 ... 75
Kind of voltage				AC	DC
Standard control voltages	U_c	V	1)	2)	3)
Frequency of AC control voltage	f	Hz		50/60	/
Control mode				remote control with U_c	
Coil consumption					
switch-on		VA / W		39/34	- / 3
operation		VA / W		8.1/4	- / 3
Delays					
make		ms	10 ... 15	10 ... 15	25 ... 30
brake		ms	6 ... 15	5 ... 10	10 ... 25
Terminal capacity					
rigid (solid and stranded)		mm^2		0.75 ... 2.5	
flexible		mm^2		0.5 ... 2.5	
Length of removed wire insulation		mm		10	
Screw				M3.5	
Screw head				PZ2	
Tightening torque		Nm		1.2	
Safety					
MTTF - Mean time to failure		h		AC-15: 12.500	
MTTF = 1/λ = B10/(0.1 n_{op})		h		AC-13: 10.000	
$MTTF_d$ - Mean time to failure dangerous		h		AC-15: 16.666	
$MTTF_d$ = 1/λ = B10/(0.1 n_{op})		h		AC-13: 13.333	
B10 - Number of operating cycles until 10 % of devices fail		op. c.		AC-15: 750.000	
		op. c.		AC-13: 600.000	
$B10_d$ - No. of operating cycles until 10 % of devices dangerous		op.c.		AC-15: 1.000.000	
$B10_d$ = B10/ratio of dangerous failures		op.c.		AC-13: 800.000	
λ - Failure rate		1 / h		AC-15: 0.00008	
λ = (0.1 n_{op}) / B10		1 / h		AC-13: 0.0001	
λ_d - Failure rate		1 / h		AC-15: 0.00006	
λ_d = (0.1 n_{op}) / $B10_d$		1 / h		AC-13: 0.000075	
Ratio of dangerous failures		%		75	
n_{op} - Operating cycles (operating cycles/h)		op. c. / h		600	

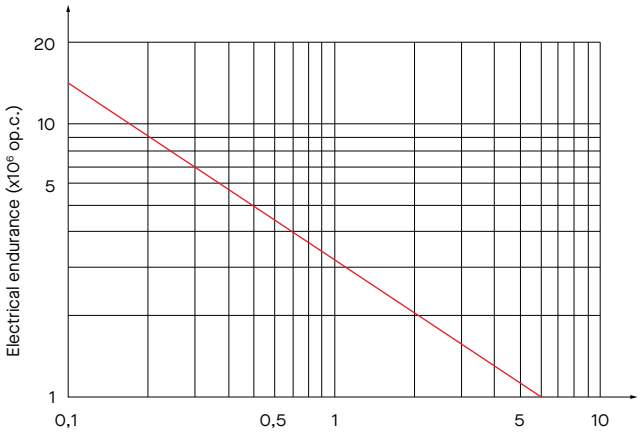
[1] 6, 12, 24, 42, 48, 110/125, 220/240, 380/415, 440/460, 550V
[2] 6, 12, 24, 42, 48, 110/125, 220/240, 380/415, 440/460, 500, 690V
[3] 6, 12, 24, 48, 60, 72, 110, 125, 220, 250V

Electrical endurance

K03M, K07M, K07MF, K07MX, K07MG, K07MGF, K07MGX, K08M, K08MG

Diagram 1
Electrical endurance of contactor relays and auxiliary contacts of motor contactors

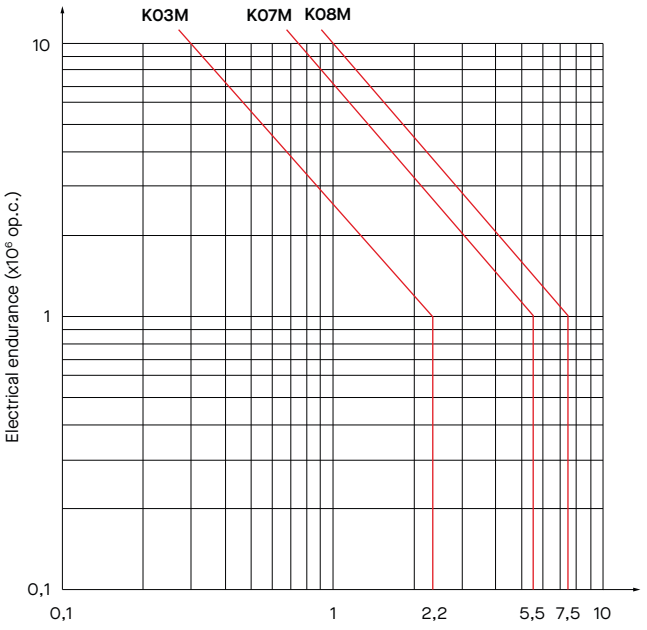
Utilization category: AC-15



AC-15 Breaking current I_e (A) at 230 V
Operation frequency: 1200 op.c./h

Diagram 2
Electrical endurance of main contacts of motor contactors

Utilization category: AC-3, AC-3e



AC-3 Motor rated power (kW) at 400 V, 50 Hz
Operation frequency: 600 op.c./h

Miniature contactor characteristics

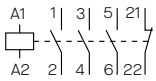
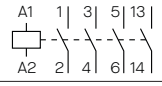
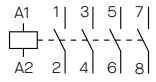
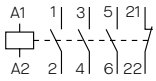
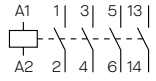
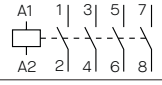
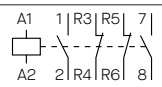
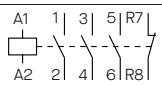
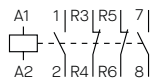
Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (4-pole, 35 mm widths)						
KO3C-22 Q7	6	380/415 V	A1 13 21 31 43 / A2 14 22 32 44	30.041.215	160	10
KO3C-22 M7	6	220/240 V		30.041.156	160	10
KO3C-22 B7	6	24 V		30.040.307	160	10
KO3C-31 Q7	6	380/415 V	A1 13 21 33 43 / A2 14 22 34 44	30.041.216	160	10
KO3C-31 M7	6	220/240 V		30.041.155	160	10
KO3C-31 B7	6	24 V		30.040.306	160	10
KO3C-40 Q7	6	380/415 V	A1 13 23 33 43 / A2 14 24 34 44	30.041.217	160	10
KO3C-40 M7	6	220/240 V		30.041.154	160	10
KO3C-40 B7	6	24 V		30.040.310	160	10
AC-15 acc. to IEC/EN 60947-5-1 (4-pole, 45 mm widths)						
KO7C-22 Q7	6	380/415 V		30.041.291	180	10
KO7C-22 M7	6	220/240 V		30.041.124	180	10
KO7C-22 B7	6	24 V		30.040.701	180	10
KO7CF-22 Q7	6	380/415 V	A1 13 21 31 43 / A2 14 22 32 44	30.041.292	180	10
KO7CF-22 M7	6	220/240 V		30.041.189	180	10
KO7CF-22 B7	6	24 V		30.041.293	180	10
KO7CX-22 Q7	6	380/415 V		30.041.298	180	10
KO7CX-22 M7	6	220/240 V		30.041.299	180	10
KO7CX-22 B7	6	24 V		30.041.300	180	10
KO7C-31 Q7	6	380/415 V		30.041.221	180	10
KO7C-31 M7	6	220/240 V		30.041.170	180	10
KO7C-31 B7	6	24 V		30.040.339	180	10
KO7CF-31 Q7	6	380/415 V	A1 13 21 33 43 / A2 14 22 34 44	30.041.294	180	10
KO7CF-31 M7	6	220/240 V		30.041.190	180	10
KO7CF-31 B7	6	24 V		30.041.295	180	10
KO7CX-31 Q7	6	380/415 V		30.041.301	180	10
KO7CX-31 M7	6	220/240 V		30.041.302	180	10
KO7CX-31 B7	6	24 V		30.041.303	180	10
KO7C-40 Q7	6	380/415 V		30.041.222	180	10
KO7C-40 M7	6	220/240 V		30.041.125	180	10
KO7C-40 B7	6	24 V		30.040.340	180	10
KO7CF-40 Q7	6	380/415 V	A1 13 23 33 43 / A2 14 24 34 44	30.041.296	180	10
KO7CF-40 M7	6	220/240 V		30.041.136	180	10
KO7CF-40 B7	6	24 V		30.041.297	180	10
KO7CX-40 Q7	6	380/415 V		30.041.304	180	10
KO7CX-40 M7	6	220/240 V		30.041.305	180	10
KO7CX-40 B7	6	24 V		30.041.306	180	10
acc. to IEC/EN 60947-5-1 (4-pole, 45 mm widths)						
KO7CG-22 MD	6	220 V		30.040.110	220	10
KO7CG-22 ED	6	48 V		30.040.109	220	10
KO7CG-22 BD	6	24 V	A1 13 21 31 43 / A2 14 22 32 44	30.040.107	220	10
KO7CGX-22 MD	6	220 V		30.041.329	220	10
KO7CGX-22 ED	6	48 V		30.041.330	220	10
KO7CGX-22 BD	6	24 V		30.041.331	220	10
KO7CG-31 MD	6	220 V		30.040.106	220	10
KO7CG-31 ED	6	48 V		30.040.105	220	10
KO7CG-31 BD	6	24 V	A1 13 21 33 43 / A2 14 22 34 44	30.040.103	220	10
KO7CGX-31 MD	6	220 V		30.041.332	220	10
KO7CGX-31 ED	6	48 V		30.041.333	220	10
KO7CGX-31 BD	6	24 V		30.041.334	220	10
KO7CG-40 MD	6	220 V		30.040.102	220	10
KO7CG-40 ED	6	48 V		30.040.101	220	10
KO7CG-40 BD	6	24 V	A1 13 23 33 43 / A2 14 24 34 44	30.040.099	220	10
KO7CGX-40 MD	6	220 V		30.041.335	220	10
KO7CGX-40 ED	6	48 V		30.041.336	220	10
KO7CGX-40 BD	6	24 V		30.041.337	220	10

AC

AC

DC

Miniature contactor characteristics

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 35 mm widths)						
K03M-01 Q7	8.5	380/415 V		30.041.218	160	10
K03M-01 M7	8.5	220/240 V		30.041.157	160	10
K03M-01 B7	8.5	24 V		30.040.277	160	10
K03M-10 Q7	8.5	380/415 V		30.041.220	160	10
K03M-10 M7	8.5	220/240 V		30.041.153	160	10
K03M-10 B7	8.5	24 V		30.040.279	160	10
K03M-10/Sp4 Q7	8.5	380/415 V		30.041.290	160	10
K03M-10/Sp4 M7	8.5	220/240 V		30.041.144	160	10
K03M-10/Sp4 B7	8.5	24 V		30.041.023	160	10
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)						
K07M-01 Q7	11.3	380/415 V		30.041.274	180	10
K07M-01 M7	11.3	220/240 V		30.041.172	180	10
K07M-01 B7	11.3	24 V		30.040.743	180	10
K07MF-01 Q7	11.3	380/415 V		30.041.312	180	10
K07MF-01 M7	11.3	220/240 V		30.041.192	180	10
K07MF-01 B7	11.3	24 V		30.040.196	180	10
K07MX-01 Q7	11.3	380/415 V		30.041.318	180	10
K07MX-01 M7	11.3	220/240 V		30.041.319	180	10
K07MX-01 B7	11.3	24 V		30.041.320	180	10
K08M-01 Q7	15.5	380/415 V		30.041.323	180	10
K08M-01 M7	15.5	220/240 V		30.041.324	180	10
K08M-01 B7	15.5	24 V		30.041.325	180	10
K07M-10 Q7	11.3	380/415 V		30.041.231	180	10
K07M-10 M7	11.3	220/240 V		30.041.173	180	10
K07M-10 B7	11.3	24 V		30.040.700	180	10
K07MF-10 Q7	11.3	380/415 V		30.041.313	180	10
K07MF-10 M7	11.3	220/240 V		30.041.193	180	10
K07MF-10 B7	11.3	24 V		30.041.314	180	10
K07MX-10 Q7	11.3	380/415 V		30.041.321	180	10
K07MX-10 M7	11.3	220/240 V		30.041.322	180	10
K07MX-10 B7	11.3	24 V		30.041.148	180	10
K08M-10 Q7	15.5	380/415 V		30.041.326	180	10
K08M-10 M7	15.5	220/240 V		30.041.327	180	10
K08M-10 B7	15.5	24 V		30.041.328	180	10
K07M-10/Sp4 Q7	11.3	380/415 V		30.041.273	180	10
K07M-10/Sp4 M7	11.3	220/240 V		30.041.146	180	10
K07M-10/Sp4 B7	11.3	24 V		30.041.045	180	10
K07M-22/Sp4 Q7	10	380/415 V		30.041.307	180	10
K07M-22/Sp4 M7	10	220/240 V		30.041.176	180	10
K07M-22/Sp4 B7	10	24 V		30.041.076	180	10
K07M-04/Sp4 Q7	11.3	380/415 V		30.041.241	180	10
K07M-04/Sp4 M7	11.3	220/240 V		30.041.177	180	10
K07M-04/Sp4 B7	11.3	24 V		30.041.060	180	10
K07M-01/Sp4 Q7	11.3	380/415 V		30.041.223	180	10
K07M-01/Sp4 M7	11.3	220/240 V		30.041.175	180	10
K07M-01/Sp4 B7	11.3	24 V		30.041.308	180	10
K07MF-22 Q7	10	380/415 V		30.041.309	180	10
K07MF-22 M7	10	220/240 V		30.041.310	180	10
K07MF-22 B7	10	24 V		30.041.311	180	10
K07MX-22 Q7	10	380/415 V		30.041.315	180	10
K07MX-22 M7	10	220/240 V		30.041.316	180	10
K07MX-22 B7	10	24 V		30.041.317	180	10

AC

AC

Tags in title:

M - motor contactor
C - contactor relay
Sp4 - version with all four main contacts
F - contactor for fast-on connection
X - contactor with soldering pins

Miniature contactor characteristics

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)						
K07MG-01 Q7	11.3	220 V		30.040.098	220	10
K07MG-01 M7	11.3	48 V		30.040.097	220	10
K07MG-01 B7	11.3	24 V		30.040.095	220	10
K07MGX-01 Q7	11.3	220 V	A1 1 3 5 21 / A2 2 4 6 22	30.041.344	220	10
K07MGX-01 M7	11.3	48 V		30.041.345	220	10
K07MGX-01 B7	11.3	24 V		30.041.069	220	10
K08MG-01 Q7	15.5	220 V		30.041.347	220	10
K08MG-01 M7	15.5	48 V		30.041.348	220	10
K08MG-01 B7	15.5	24 V		30.041.349	220	10
K07MG-10 Q7	11.3	220 V		30.040.094	220	10
K07MG-10 M7	11.3	48 V		30.040.093	220	10
K07MG-10 B7	11.3	24 V		30.040.091	220	10
K07MGX-10 Q7	11.3	220 V	A1 1 3 5 13 / A2 2 4 6 14	30.040.092	220	10
K07MGX-10 M7	11.3	48 V		30.041.346	220	10
K07MGX-10 B7	11.3	24 V		30.041.090	220	10
K08MG-10 Q7	15.5	220 V		30.041.350	220	10
K08MG-10 M7	15.5	48 V		30.041.351	220	10
K08MG-10 B7	15.5	24 V		30.041.352	220	10
K07MG-10/Sp4 Q7	11.3	220 V	A1 1 3 5 7 / A2 2 4 6 8	30.041.068	220	10
K07MG-10/Sp4 M7	11.3	48 V		30.041.287	220	10
K07MG-10/Sp4 B7	11.3	24 V		30.040.703	220	10
K07MG-22/Sp4 Q7	10	220 V	A1 1 R3 R5 7 / A2 2 R4 R6 8	30.041.243	220	10
K07MG-22/Sp4 M7	10	48 V		30.041.339	220	10
K07MG-22/Sp4 B7	10	24 V		30.041.105	220	10
K07MG-04/Sp4 Q7	11.3	220 V	A1 R1 R3 R5 R7 / A2 R2 R4 R6 R8	30.041.340	220	10
K07MG-04/Sp4 M7	11.3	48 V		30.041.341	220	10
K07MG-04/Sp4 B7	11.3	24 V		30.041.140	220	10
K07MG-01/Sp4 Q7	11.3	220 V	A1 1 3 5 R7 / A2 2 4 6 R8	30.041.070	220	10
K07MG-01/Sp4 M7	11.3	48 V		30.041.342	220	10
K07MG-01/Sp4 B7	11.3	24 V		30.041.343	220	10

DC

Tags in title:

M - motor contactor
C - contactor relay
Sp4 - version with all four main contacts
F - contactor for fast-on connection
X - contactor with soldering pins

Ordering data

Standard control voltages and designations (AC), for contactors KNL6 - KNL38

V (50/60 Hz)	24	42	48	110/125	220/240	380/415	440	500
Designations	B7	D7	E7	F7	M7	Q7	R7	S7

Standard control voltages and designations (DC), for contactors KNL6G - KNL38G

V	12	24	48	60	72	110	125	220	240
Designations	JD	BD	ED	ND	SD	FD	GD	MD	MUD

K07M - 01 - M7

- M7 — Control voltage
- 01 — Version of contacts
- K07M — Type

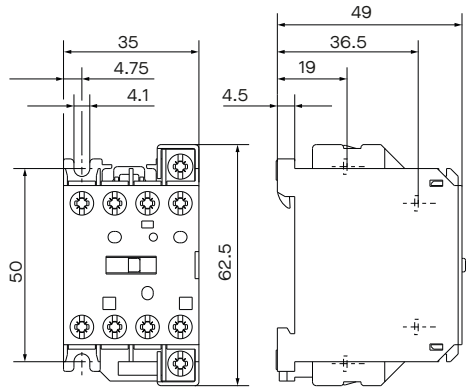
Note:

The type designation and control voltage are stated when ordering the contactors.
When ordering snap-on auxiliary switch blocks, only the type is stated.

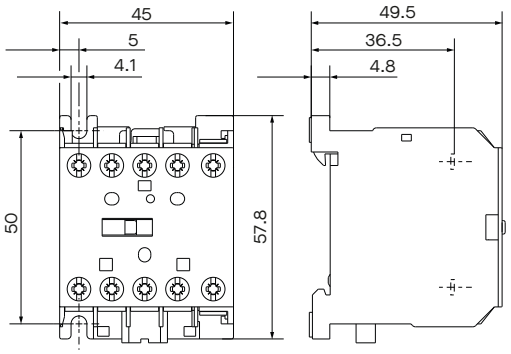
Example: **ND4M-22**

Dimensions
(mm)

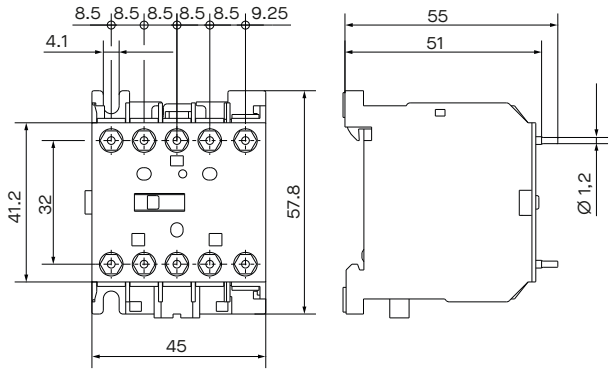
K03C, K03M, K03MX



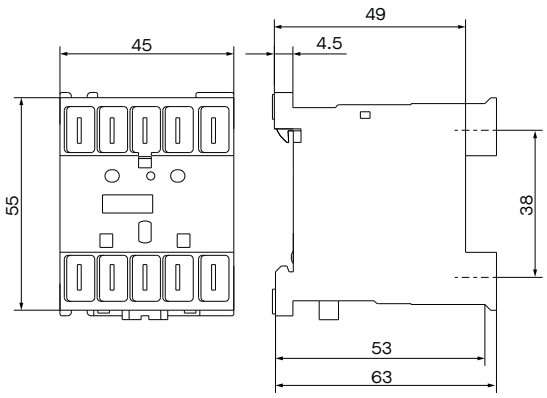
K07C, K07M, K08M, K07CG, K07MG, K08MG



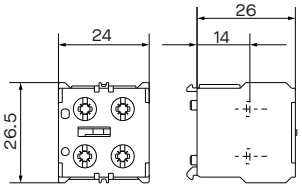
K07CX, K07CGX, K07MX, K07MGX



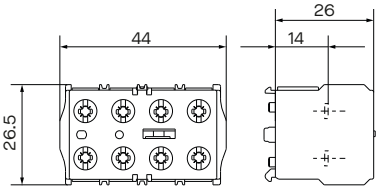
K07CF, K07MF, K07MGF, K07CGF



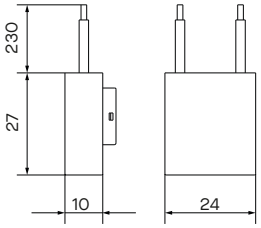
ND2
Two pole snap-on auxiliary switch blocks



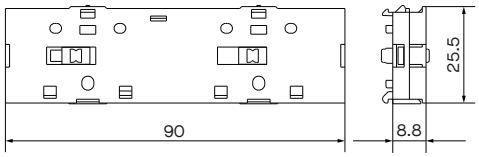
ND4
Four pole snap-on auxiliary switch blocks



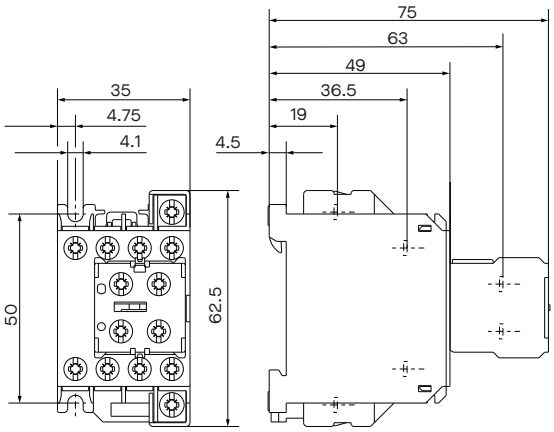
RC, DI suppressor



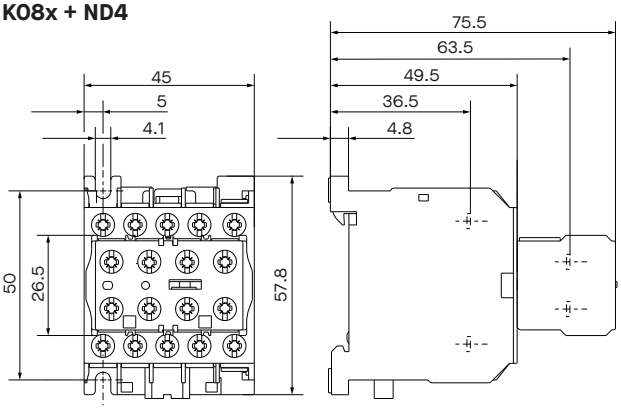
MB7
Mechanical interlock



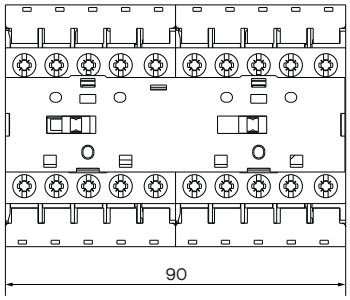
KO3x + ND2

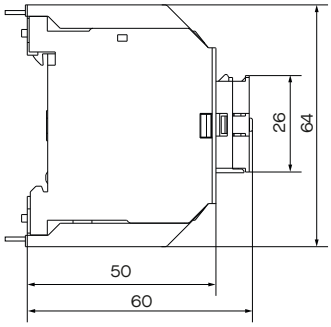


KO7x + ND4
KO8x + ND4



KO7x + MB7 + LB7
KO8x + MB7 + LB7





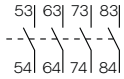
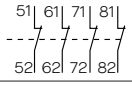
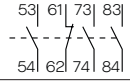
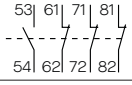
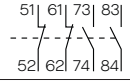
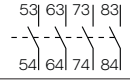
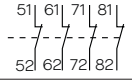
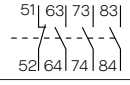
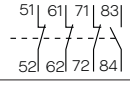
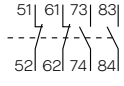
Miniature contactor accessories

Snap-on auxiliary switch blocks

Technical data	Symbol	Unit	ND2C ND2M	ND2C ND2M
General				
Standards			IEC/EN 60947-5-1, VDE 0660, UL 508	
Approvals			CE, UL, CSA	
Module width			1	2
Number of poles			2	4
Degree of protection			IP20	
Pollution degree			3	
Maximum altitude [1]		m	2.000	
Maximum operating frequency with no load		op. c./h	3.000	
Mechanical endurance		op. c.	10.000.000	
Weight		g	20	40
Auxiliary circuit				
Contact reliability			≥ 17 V; ≥ 50 mA	
Maximum back-up fuse for short-circuit protection gL and gG				
coordination type 2		A	20	
Rated insulation voltage	U_i	V	690	
Rated impulse withstand voltage	U_{imp}	kV	6	
Rated operational voltage	U_e	V	690	
Rated frequency	f	Hz	50 / 60	
Thermal current	I_{th}	A	20	
Rated operational current for AC-15				
single-phase 230 V	I_e	A	6	
single-phase 400 V			4	
single-phase 500 V			2	
single-phase 690 V			1	
Maximum operating frequency for AC-15		op. c./h	1.200	
Electrical endurance for AC-15		op. c.	500.000	
Switching of auxiliary loads acc. to standard UL and CSA			A600, R300	
Rated operational current for DC-13				
1 pole ... 24 V DC / 110 V DC		A	3 / 0.15	
Maximum operating frequency for DC-13		op. c./h	1.200	
Electrical endurance for DC-13		op. c.	500.000	
Terminal capacity				
rigid (solid and stranded)	S	mm²	0.75 ... 2.5	
flexible			0.5 ... 2.5	
Length of removed wire insulation		mm	10	
Screw			M3.5	
Screw head			PZ2	
Tightening torque		Nm	1.2	

[1] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

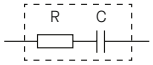
Snap-on auxiliary switch block characteristics

Type	Rated Current I_e (A)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (2-pole)					
ND2C-20	6		38.421.982	20	60
ND2C-02	6		38.421.984	20	60
ND2C-11	6		38.421.983	20	60
ND2M-20	6		38.423.465	20	60
ND2M-02	6		38.421.981	20	60
ND2M-11	6		38.421.980	20	60
AC-15 acc. to IEC/EN 60947-5-1 (4-pole)					
ND4C-40	6		38.421.975	36	40
ND4C-04	6		38.421.979	36	40
ND4C-31	6		38.421.976	36	40
ND4C-13	6		38.421.978	36	40
ND4C-22	6		38.421.977	36	40
ND4M-40	6		38.423.466	36	40
ND4M-04	6		38.423.467	36	40
ND4M-31	6		38.421.972	36	40
ND4M-13	6		38.421.974	36	40
ND4M-22	6		38.421.973	36	40

Mechanical interlock characteristics

Type	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
MB7	38.422.210	38.421.982	12	10

RC suppressor

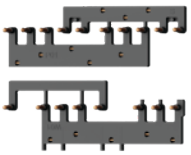
Type	Control voltage U_c (V)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (2-pole)					
RC1-K0X	12 - 48		30.017.070	16	10
RC2-K0X	48 - 250		30.017.071	16	10
RC3-K0X	250 - 380		30.017.072	16	10
RC4-K0X	380 - 600		30.017.073	16	10

DI suppressor (for DC contactors)

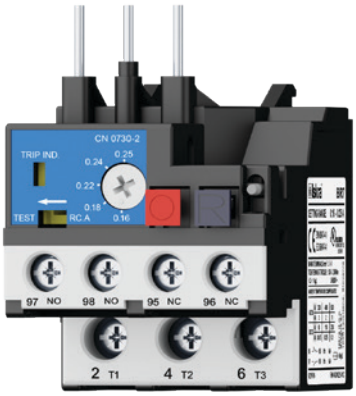
Type	Control voltage U_c (V)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
DI-K0X	6 - 250		30.017.080	16	10

Rigid connecting kits

Type	Description	Ordering No.	Weight (g)	Packaging (pcs)
WK 1.1	For reversing switch, suitable for contactors: 2.2 - 5.5 kW (for miniature contactors K03, K07) (max. current 16 A)	655.200.013	26	1
WK 1.2	For star-delta starters, suitable for contactors: 2.2-5.5 kW (for miniature contactors K03, K07) (max. current 16 A), 5 terminals in line (3 main terminals, 1 auxiliary terminal, 1 coil terminal)	655.200.017	18	1



BR7
Thermal Overload Relay



Use

For use in a combination with mini-contactors for overload protection of motors with operational currents up to 12.5 A and operational voltages up to 690 V AC.

Description

Relays are three-pole protective devices. Motor current flows through a bimetal release that is built in each pole. If current value jeopardizes the motor winding, the bimetal release switches it off in time. The built-in auxiliary contacts switch. A break contact interrupts the contactor coil supply and thus indirectly also the motor circuit. The make contact can signalize disturbance, it activates an additional function, etc. The contacts are electrically isolated and can thus be used in two different circuits.

Operation

- A tripping mechanism design assures free tripping, which means that, at fulfilled conditions, switch-off can not be prevented even when the RESET button is pressed.
- A double tripping latch enables sensibility to phase failure function in compliance with IEC/EN 60947-4-1.
- The manual switch OFF and TEST functions are joined in one button. When the button is pressed, the break function is performed (the break contact is opened). When the button is pulled out, the operation of testing control elements is performed (both contacts switch).
- The RESET button is provided with elements enabling selection between a manual and automatic reset to initial position.
- The delivered relays enable manual reset.
- The setting scale shows the motor nominal current. In compliance with the standards, tripping shall not occur at 1.05-time set current, while at 1.2-time set current the relay operation shall be reliable.
- The relay short-circuit protection is enabled with back-up fuses. Their maximal permitted values are stated in the table.
- Connection terminals of load and control currents are placed separately, which reduces the risk of wrong connection.

BR7 characteristics

Technical data		Symbol	Unit	BR7	
General					
Standards				IEC/EN 60947, VDE 0660, UL	
Ambient temperature					
	open		°C	-20 ... +50	
	closed			-25 ... +40	
Storage temperature			°C	-30 ... +80	
Maximum altitude [1]			m	2.000	
Noise level (operation)			dB	30	
Terminal capacity					
	solid or stranded			1 x 0.75 mm² to 2 x 2.5 mm²	
	flexible			1 x 0.75 mm² to 2 x 2.5 mm²	
	flexible with end sleeve			1 x 0.5 mm² to 2 x 1.5 mm²	
Main circuit					
Rated insulation voltage		U_i	V	690	
Rated impulse withstand voltage		U_{imp}	kV	6	
Rated operational voltage		U_e	V AC	690	
Conventional thermal current		I_{th}	A	identical to the upper setting range limit	
Over-voltage category				III	
Pollution degree				3	
Trip class in compliance with IEC/EN 60947-4-1			A	10	
Power loss				approx. 2 W / pole	
Compensation of ambient temperature influence				in compliance with fig.7; IEC/EN 60947-4-1	
Auxiliary circuit					
Rated insulation voltage		U_i	V	690	
Rated impulse withstand voltage		U_{imp}	kV	6	
Rated operational voltage		U_e		500 V AC / 220 V DC	
Conventional thermal current (both contacts)		I_{th}	A	6	
Over-voltage category				III	
Pollution degree				3	
Rated operational currents		I_e	A		
Utilization category AC-15				make contact	break contact
	220/240 V			1.5 A	1.5 A
	380/415 V			0.5 A	0.7 A
	500 V			0.3 A	0.5 A
Utilization category DC-13				both contacts	
	24 V			0.9 A	
	60 V			0.75 A	
	110 V			0.4 A	
	220 V			0.2 A	

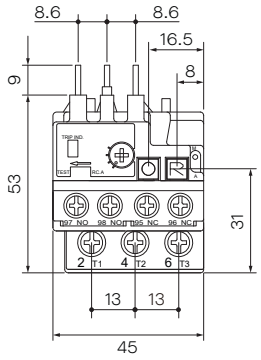
[1] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

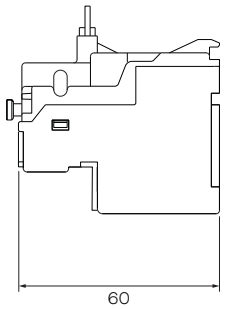
BR7 characteristics

Type	Setting range (A)	Ordering No.	Weight (g)	Packaging (pcs)
BR7-0.16	0.1 ... 0.16	786.050.567	100	11
BR7-0.25	0.16 ... 0.25	786.050.568	100	11
BR7-0.4	0.25 ... 0.4	786.050.569	100	11
BR7-0.5	0.35 ... 0.5	786.050.570	100	11
BR7-0.63	0.45 ... 0.63	786.050.571	100	11
BR7-0.8	0.55 ... 0.8	786.050.572	100	11
BR7-1	0.75 ... 1	786.050.573	100	11
BR7-1.3	0.9 ... 1.3	786.050.574	100	11
BR7-1.6	1.1 ... 1.6	786.050.575	100	11
BR7-2	1.4 ... 2	786.050.576	100	11
BR7-2.5	1.8 ... 2.5	786.050.577	100	11
BR7-3.2	2.3 ... 3.2	786.050.578	100	11
BR7-4	2.9 ... 4	786.050.579	100	11
BR7-4.8	3.5 ... 4.8	786.050.580	100	11
BR7-6.3	4.5 ... 6.3	786.050.581	100	11
BR7-7.5	5.5 ... 7.5	786.050.582	100	11
BR7-10	7 ... 10	786.050.583	100	11
BR7-12.5	9 ... 12.5	786.050.584	100	11

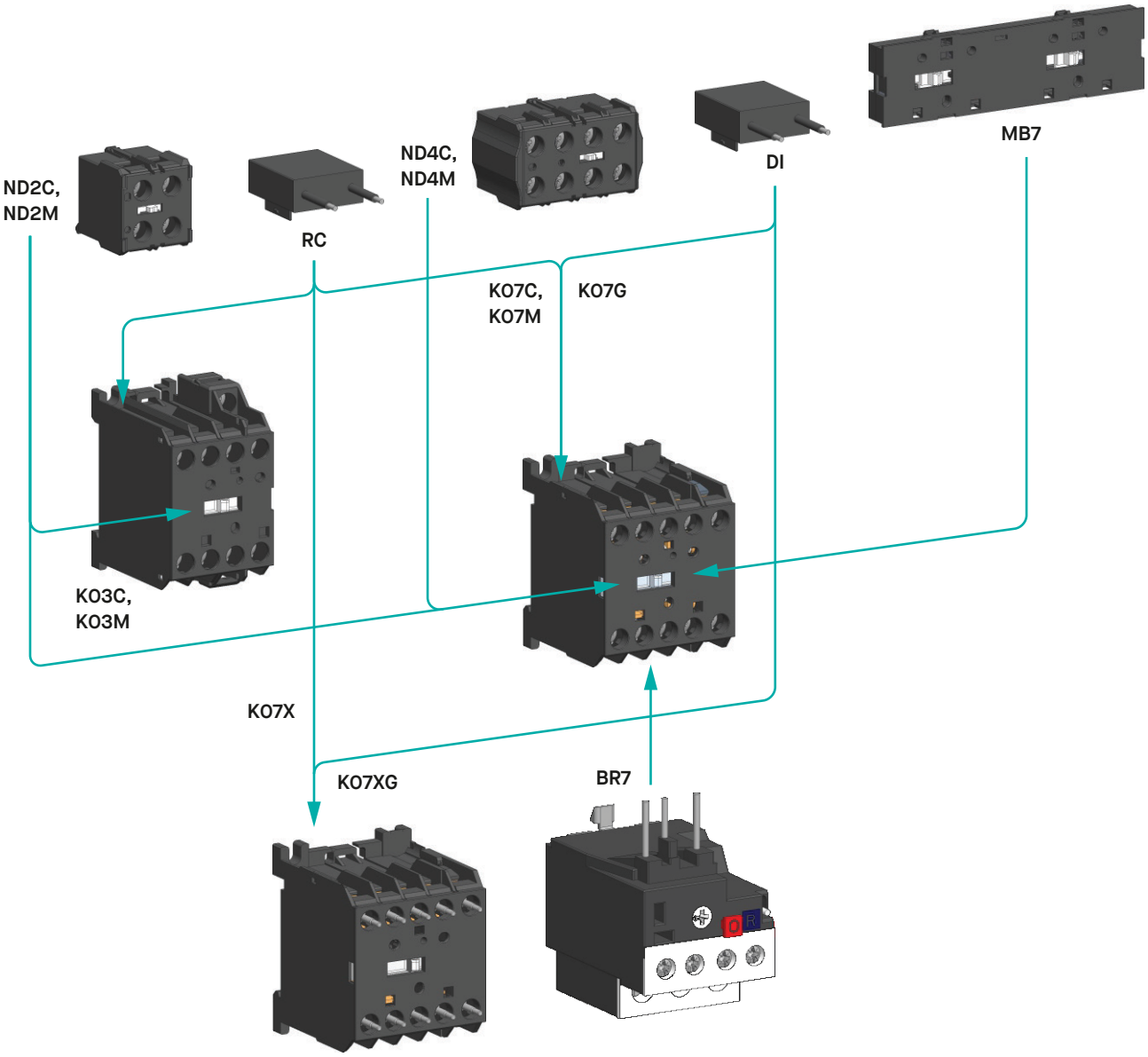
Dimensions

(mm)





Mounting positions of accessories



KNL6(G) - KNL38(G)
Contactors

Contactors are electrically remote controlled switches used for switching a power circuit. Contactors are mainly used for switching electric motors and other resistive, inductiove and capacitive loads.

For universal switching

- All kind of electric motors
- Electric heating
- Lights and lightning
- Capacitors
- Other eletrical loads

Advanced operation

- Control combinations

Other benefits

- High contact reliabillity at low voltages
- High electrical and mechanical endurance and high switching capacity
- Wide range of control voltages is available

KNL6(G) characteristics

Technical data	Symbol	Unit	KNL6	KNL6G
General				
Standards			IEC/EN 60947-5-1, IEC 60947-4-1, UL 508	
Approvals			CE, UL, CSA, EAC	CE, EAC
Module width		mm	45	45
Number of poles			4	
Degree of protection			IP20	
Pollution degree			3	
Climatic conditions			95 % relative humidity	
Ambient temperature				
open		°C	-20 … +55	
closed			-20 … +45	
Storage temperature		°C	-30 … +80	
Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2.000	
Number of contactors or switches side-by-side				
≤ 40 °C			no limitation	
(40 … 55) °C				
Noise level (operation)		dB	30	20
Maximum operating frequency with no load		op. c./h	3.000	
Mechanical endurance		op. c.	10.000.000	
Weight		g	300	300
Main circuit				
Contact reliability			≥ 17 V; ≥ 50 mA	
Maximum back-up fuse for short-circuit protection gL and gG				
coordination type 2		A	20	
Rated insulation voltage	U_i	V	690	
Rated impulse withstand voltage	U_{imp}	kV	6	
Rated operational voltage	U_e	V	690	
Rated frequency	f	Hz	50/60	
Thermal current	I_{th}	A	20	
Rated operational current for AC-1, AC-7a and AC-21	I_e	A	20	
Maximum back-up fuse for short-circuit protection gL and gG				
coordination type 2		A	20	
Rated operational current for AC-15				
single-phase 230 V	I_c	A	6	
single-phase 400 V			4	
single-phase 500 V			2	
single-phase 690 V			1	
Maximum operating frequency for AC-15		op. c./h	1.200	
Electrical endurance for AC-15		op. c.	1.000.000	
Rated operational current for DC-13				
1 pole … 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC		A	10 / 6 / 4 /0.9 / 0.4	
Maximum operating frequency for DC-13		op. c./h	1.200	
Terminal capacity				
rigid (solid and stranded)	S	mm^2	0.75 … 6	
flexible			0.5 … 6	
Length of removed wire insulation		mm	10	
Screw			M3.5	
Screw head			PZ2	
Tightening torque		Nm	1.4	

KNL6(G) characteristics

Technical data	Symbol	Unit	KNL6	KNL6G
Coil				
Range of control voltage for switch-on	U_c	%	85 ... 110	
Range of control voltage for drop out	U_c	%	20 ... 75	10 ... 75
Kind of voltage			AC	DC
Standard control voltages	U_c	V	1)	2)
Frequency of AC control voltage	f	Hz	50/60	/
Control mode			remote control with U_c	
Coil consumption				
switch-on		VA/W	66/48	-/110
operation			8/2.5	-/3
Delays				
make		ms	10 ... 25	10 ... 20
brake			10 ... 15	5 ... 15
Terminal capacity				
rigid (solid and stranded)		mm^2	0.75 ... 4	
flexible			0.75 ... 4	
Length of removed wire insulation		mm	10	
Screw			M3.5	
Screw head			PZ2	
Tightening torque		Nm	1.4	
Safety				
MTTF - Mean time to failure	AC-15	h	12.500	
$MTTF = 1/\lambda_d = B10_d/(0.1\ n_{op})$	DC-13		10.000	
$MTTF_d$ - Mean time to failure dangerous	AC-15	h	16.666	
$MTTF_d = 1/\lambda_d = B10_d/(0.1\ n_{op})$	DC-13		13.333	
B10 - Number of operating cycles until 10 % of devices fail	AC-15	op.c.	750.000	
	DC-13		600.000	
$B10_d$ = B10/ratio of dangerous failures	AC-15	op.c.	1.000.000	
	DC-13		800.000	
λ - Failure rate	AC-15	1/h	0.00008	
$\lambda = (0.1\ n_{op})/B10$	DC-13		0.0001	
λ_d - Failure rate dangerous	AC-15	1/h	0.00006	
$\lambda_d = (0.1\ n_{op})/B10_d$	DC-13		0.000075	
Ratio of dangerous failures		%	75	
n_{op} - Operating cycles (operating cycles/h)		op. c./h	600	

[1] 12,24,48,110/125,220/240,380/415,440/460,480/520,550/600 V

[2] 12,24,48,60,72,110,125,220,240 V

KNL9(G) - KNL12(G) characteristics

Technical data	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G
General						
Standards			IEC/EN 60947-5-1, IEC 60947-4-1, UL 508			
Approvals			CE, UL, CSA, EAC	CE, EAC	CE, UL, CSA, EAC	CE, EAC
Module width		mm	45			
Number of poles			4			
Degree of protection			IP20			
Pollution degree			3			
Climatic conditions			95 % relative humidity			
Ambient temperature						
open		°C	-25 ... +55			
closed		°C	-25 ... +45			
Storage temperature		°C	-30 ... +80			
Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2.000			
Number of contactors or switches side-by-side						
≤ 40 °C			no limitation			
(40 ... 55) °C						
Noise level (operation)		dB	30	20	30	20
Maximum operating frequency with no load		op. c./h	3.000			
Mechanical endurance		op. c.	10.000.000			
Weight		g	300			
Main circuit						
Contact reliability			≥ 17 V; ≥ 50 mA			
Power dissipation per pole		W	1.3			
Overload current withstand capability						
10 s		A	72	72	96	96
5 s		A	90	90	120	120
1 s		A	110	110	140	140
0.001 s		A	220	220	330	330
Maximum back-up fuse for short-circuit protection gL and gG coordination type 2		A	25			
Rated insulation voltage	U_i	V	690			
Rated impulse withstand voltage	U_{imp}	kV	6			
Rated operational voltage	U_e	V	690			
Rated frequency	f	Hz	50/60			
Thermal current	I_{th}	A	25			
Rated operational current for AC-1, AC-7a and AC-21	I_e	A	25			
Operational power for AC-1, AC-7a and AC-21						
single-phase 230 V	P_e	kW	5.5			
three-phase 230 V	P_e	kW	9			
three-phase 400 V	P_e	kW	16			
three-phase 500 V	P_e	kW	20			
three-phase 690 V	P_e	kW	28			
Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600			
Electrical endurance for AC-1, AC-7a and AC-21		op. c.	200.000			
Rated operational current for AC-3, AC-3e, AC-7b and AC-23 (at 400 V)	I_e	A	9	9	12	12
Operational power for AC-3, AC-3e, AC-7b and AC-23						
single-phase 230 V	P_e	kW	1.1	1.1	1.5	1.5
three-phase 230 V	P_e	kW	2.2	2.2	3	3
three-phase 400 V	P_e	kW	4	4	5.5	5.5
three-phase 500 V	P_e	kW	5.5	5.5	5.5	5.5
three-phase 690 V	P_e	kW	5.5	5.5	7.5	7.5
Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h	600			
Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.	1.000.000			
Rated operational current for AC-4 (at 400 V)	I_e	A	3.6	3.6	4.9	4.9

KNL9(G) - KNL12(G) characteristics

Technical data	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G
Main circuit						
Operational power for AC-4						
three-phase 230 V	P_e	kW	0.75	0.75	1.1	1.1
three-phase 400 V	P_e	kW	1.5	1.5	2.2	2.2
three-phase 500 V	P_e	kW	1.5	1.5	2.2	2.2
three-phase 690 V	P_e	kW	1.5	1.5	2.2	2.2
Maximum operating frequency for AC-4		op. c./h	300			
Electrical endurance for AC-4		op. c.	300.000			
Rated motor power according to standards UL and CSA						
single-phase 115 V	P_e	HP	3/4	3/4 [1]	1	1 [1]
single-phase 230 V	P_e	HP	1.5	1.5 [1]	2	2 [1]
three-phase 230 V	P_e	HP	3	3 [1]	3	3 [1]
three-phase 460 V	P_e	HP	5	5 [1]	5	5 [1]
three-phase 575 V	P_e	HP	7.5	7.5 [1]	7.5	7.5 [1]
Electrical endurance for motors acc. to UL and CSA		op. c.	1.000.000			
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	50	50	66	66
Maximum operating frequency for AC-6b and AC-7c		op. c./h	600			
Switching of capacitors AC-6b and AC-7c (at 230 V)		op. c.	100.000			
Rated operational current for DC-1 (L/R ≤ 1 ms)						
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	15 / 6 / 4			
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	18 / 12 / 8			
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	20 / 15 / 10			
Maximum operating frequency for DC-1		op. c./h	300			
Rated operational current for DC-3 (L/R ≤ 2 ms)						
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	12 / 2 / 0.75			
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	15 / 8 / 1.5			
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	18 / 12 / 6			
Maximum operating frequency for DC-3		op. c./h	300			
Rated operational current for DC-5 (L/R ≤ 7.5 ms)						
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	12 / 2 / 0.75			
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	15 / 8 / 1.5			
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	18 / 12 / 6			
Maximum operating frequency for DC-5		op. c./h	300			
Terminal capacity						
rigid (solid and stranded)	S	mm^2	0.75 ... 6			
flexible	S	mm^2	0.5 ... 6			
Length of removed wire insulation		mm	10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			
Auxiliary circuit						
Maximum back-up fuse for short-circuit protection gL and gG						
coordination type 2		A	20			
Rated insulation voltage	U_i	V	690			
Rated operational current for AC-15						
single-phase 230 V	I_e	A	6			
single-phase 400 V	I_e	A	4			
single-phase 500 V	I_e	A	2			
single-phase 690 V	I_e	A	1			
Maximum operating frequency for AC-15		op. c./h	1.200			
Electrical endurance for AC-15		op. c.	1.000.000			
Rated operational current for DC-13:						
1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC		A	10 / 6 / 4 /0.9 / 0.4			
Maximum operating frequency for DC-13		op. c./h	1.200			
Terminal capacity						
rigid (solid and stranded)	S	mm^2	0.75 ... 6			
flexible	S	mm^2	0.5 ... 6			
Length of removed wire insulation			10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			

[1] No UL/CSA ratings; data only for indication and reference purposes only

KNL9(G) - KNL12(G) characteristics

Technical data	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G
Coil						
Range of control voltage for switch-on	U_c	%	85 ... 110			
Range of control voltage for drop out	U_c	%	20 ... 75	10 ... 75	20 ... 75	10 ... 75
Kind of voltage			AC	DC	AC	DC
Standard control voltages	U_c	V	1)	2)	1)	2)
Frequency of AC control voltage	f	Hz	50/60	/	50/60	/
Control mode			remote control with U_c			
Coil consumption						
switch-on		VA/W	66/48	-/110	66/48	-/110
operation			8/2.5	-/3	8/2.5	-/3
Delays						
make		ms	10 ... 25	10 ... 20	10 ... 25	10 ... 20
brake			10 ... 15	5 ... 15	10 ... 15	5 ... 15
Terminal capacity						
rigid (solid and stranded)		mm^2	0.75 ... 4			
flexible			0.5 ... 2.5			
Length of removed wire insulation		mm	10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			
Safety						
MTTF - Mean time to failure	AC-1	h	5.000			
MTTF = $1/\lambda$ = B10/(0.1 n_{op})	AC-3		25.000			
$MTTF_d$ - Mean time to failure dangerous	AC-1	h	6.666			
$MTTF_d = 1/\lambda_d = B10_d /(0.1\ n_{op})$	AC-3		33.333			
B10 - Number of operating cycles until 10 % of devices fail	AC-1	op. c.	150.000			
	AC-3		750.000			
$B10_d$ - Number of operating cycles until 10 % of device dangerous	AC-1	op. c.	200.000			
$B10_d$ = B10/ratio of dangerous failures	AC-3		1.000.000			
λ - Failure rate	AC-1	1/h	0.0002			
$\lambda = (0.1\ n_{op})/B10$	AC-3		0.00004			
λ_d - Failure rate dangerous	AC-1	1/h	0.00015			
$\lambda_d = (0.1\ n_{op})/B10_d$	AC-3		0.00003			
Ratio of dangerous failures		%	75			
n_{op} - Operating cycles (operating cycles/h)		op. c./h	300			

[1] 12,24,48,110/125,220/240,380/415,440/460,480/520,550/600 V

[2] 12,24,48,60,72,110,125,220,240 V

KNL16(G) - KNL18(G) characteristics

Technical data	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G
General						
Standards			IEC/EN 60947-5-1, IEC 60947-4-1, UL 508			
Approvals			CE, UL, CSA, EAC	CE, EAC	CE, EAC	CE, EAC
Module width		mm	45			
Number of poles			4			
Degree of protection			IP20			
Pollution degree			3			
Climatic conditions			95 % relative humidity			
Ambient temperature						
open		°C	-25 … +55			
closed			-25 … +45			
Storage temperature		°C	-30 … +80			
Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2.000			
Number of contactors or switches side-by-side						
≤ 40 °C			no limitation			
(40 … 55) °C						
Noise level (operation)		dB	30	20	30	20
Maximum operating frequency with no load		op. c./h	3.000			
Mechanical endurance		op. c.	10.000.000			
Weight		g	300			
Main circuit						
Contact reliability			≥ 17 V; ≥ 50 mA			
Power dissipation per pole			1.3	1.3	1.9	1.9
Overload current withstand capability						
10 s		A	128	128	144	144
5 s			150	150	170	170
1 s			180	180	200	200
0.001 s			450	450	500	500
Maximum back-up fuse for short-circuit protection gL and gG coordination type 2		A	35			
Rated insulation voltage	U_i	V	690			
Rated impulse withstand voltage	U_{imp}	kV	6			
Rated operational voltage	U_e	V	690			
Rated frequency	f	Hz	50/60			
Thermal current	I_{th}	A	25	25	32	32
Rated operational current for AC-1, AC-7a and AC-21	I_e	A	25	25	32	32
Operational power for AC-1, AC-7a and AC-21						
single-phase 230 V	P_e	kW	5.5		7	
three-phase 230 V			9		12	
three-phase 400 V			16		21	
three-phase 500 V			20		26	
three-phase 690 V			28		36	
Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600			
Electrical endurance for AC-1, AC-7a and AC-21		op. c.	200.000			
Rated operational current for AC-3, AC-3e, AC-7b and AC-23	I_e	A	16	16	18	18
Operational power for AC-3, AC-3e, AC-7b and AC-23						
single-phase 230 V	P_e	kW	2.2	2.2	2.2	2.2
three-phase 230 V			4	4	4	4
three-phase 400 V			7.5	7.5	9	9
three-phase 500 V			7.5	7.5	9	9
three-phase 690 V			7.5	7.5	9	9
Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h	600			
Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.	900.000		800.000	

KNL16(G) - KNL18(G) characteristics

Technical data	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G
Main circuit						
Rated operational current for AC-4	I_e	A	6.5	6.5	6.5	6.5
Operational power for AC-4						
three-phase 230 V	P_e	kW	1.5	1.5	1.5	1.5
three-phase 400 V			3	3	3	3
three-phase 500 V			3	3	3	3
three-phase 690 V			3	3	3	3
Maximum operating frequency for AC-4		op. c./h	300			
Electrical endurance for AC-4		op. c.	300.000			
Rated motor power according to standards UL and CSA						
single-phase 115 V	P_e	HP	1.5	1.5 [1]	1.5 [1]	1.5 [1]
single-phase 230 V			3	3 [1]	3 [1]	3 [1]
three-phase 230 V			5	5 [1]	5 [1]	5 [1]
three-phase 460 V			7.5	7.5 [1]	7.5 [1]	7.5 [1]
three-phase 575 V			10	10 [1]	10 [1]	10 [1]
Electrical endurance for motors acc. to UL and CSA		op. c.	900.000		800.000	
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	88 [2]	88	100	100
Maximum operating frequency for AC-6b and AC-7c		op. c./h	600			
Switching of capacitors AC-6b and AC-7c (at 230 V)		op. c.	100.000			
Rated operational current for DC-1 (L/R ≤ 1 ms)						
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	15 / 6 / 4			
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			18 / 12 / 8			
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			20 / 15 / 10			
Maximum operating frequency for DC-1		op. c./h	300			
Rated operational current for DC-3 (L/R ≤ 2 ms):						
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	12 / 2 / 0.75			
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			15 / 8 / 1.5			
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			18 / 12 / 6			
Maximum operating frequency for DC-5		op. c./h	300			
Terminal capacity:						
rigid (solid and stranded)	S	mm^2	0.75 ... 6			
flexible			0.5 ... 6			
Length of removed wire insulation		mm	10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			
Auxiliary circuit						
Maximum back-up fuse for short-circuit protection gL and gG						
coordination type 2		A	20			
Rated insulation voltage	U_i	V	690			
Rated operational current for AC-15:						
single-phase 230 V	I_e	A	6			
single-phase 400 V			4			
single-phase 500 V			2			
single-phase 690 V			1			
Maximum operating frequency for AC-15		op. c./h	1.200			
Electrical endurance for AC-15		op. c.	1.000.000			
Rated operational current for DC-13:						
1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC		A	10 / 6 / 4 /0.9 / 0.4			
Maximum operating frequency for DC-13		op. c./h	1.200			

[1] No UL/CSA ratings; data only for indication and reference purposes only

[2] 300 for KNL16St4

KNL16(G) - KNL18(G) characteristics

Technical data	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G
Auxiliary circuit						
Terminal capacity						
rigid (solid and stranded)	S	mm^2	0.75 ... 6			
flexible			0.5 ... 6			
Length of removed wire insulation		mm	10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			
Coil						
Range of control voltage for switch-on	U_c	%	85 ... 110			
Range of control voltage for drop out	U_c	%	20 ... 75	10 ... 75	20 ... 75	10 ... 75
Kind of voltage			AC	DC	AC	DC
Standard control voltages	U_c	V	1)	2)	1)	2)
Frequency of AC control voltage	f	Hz	50/60	/	50/60	/
Control mode			remote control with U_c			
Coil consumption						
switch-on		VA/W	66/48	-/110	66/48	-/110
operation			8/2.5	-/3	8/2.5	-/3
Delays						
make		ms	10 ... 25	10 ... 20	10 ... 25	10 ... 20
brake			10 ... 15	5 ... 15	10 ... 15	5 ... 15
Terminal capacity						
rigid (solid and stranded)		mm^2	0.75 ... 4			
flexible			0.75 ... 4			
Length of removed wire insulation		mm	10			
Screw			M3.5			
Screw head			PZ2			
Tightening torque		Nm	1.4			
Safety						
MTTF - Mean time to failure	AC-1	h	5.000			
$MTTF = 1/\lambda = B10/(0.1\ n_{op})$	AC-3		22.500		20.000	
$MTTF_d$ - Mean time to failure dangerous	AC-1	h	6.666			
$MTTF_d = 1/\lambda_d = B10_d/(0.1\ n_{op})$	AC-3		30.000		26.666	
B10 - Number of operating cycles until 10 % of devices fail	AC-1	op. c.	150.000			
	AC-3		675.000		600.000	
$B10_d$ - Number of operating cycles until 10 % of device dangerous	AC-1	op. c.	200.000			
$B10_d$ = B10/ratio of dangerous failures	AC-3		900.000		800.000	
λ - Failure rate	AC-1	1/h	0.0002			
$\lambda = (0.1\ n_{op})/B10$	AC-3		0.000044		0.00005	
λ_d - Failure rate dangerous	AC-1	1/h	0.00015			
$\lambda_d = (0.1\ n_{op})/B10_d$	AC-3		0.00003		0.00004	
Ratio of dangerous failures		%	75			
n_{op} - Operating cycles (operating cycles/h)		op. c./h	300			

1) 12,24,48,110/125,220/240,380/415,440/460,480/520,550/600 V

2) 12,24,48,60,72,110,125,220,240 V

KNL22(G) - KNL38(G) characteristics

Technical data	Symbol	Unit	KNL22	KNL22G NPLG/NDLG	KNL30	KNL30G NPLG/NDLG	KNL38	KNL38G NPLG/NDLG
General								
Standards			IEC/EN 60947-5-1, IEC 60947-4-1, UL 508					
Approvals			CE, UL, CSA, EAC	CE, EAC	CE, UL, CSA, EAC	CE, EAC	CE, EAC	CE, EAC
Module width		mm	45	56/45	45	56/45	45	56/45
Number of poles			3					
Degree of protection			IP20					
Pollution degree			3					
Climatic conditions			95 % relative humidity					
Ambient temperature								
open		°C	-25 … +55					
closed		°C	-25 … +45					
Storage temperature		°C	-30 … +80					
Maximum altitude		m	2.000					
Number of contactors or switches side-by-side								
≤ 40 °C			no limitation					
(40 … 55) °C			no limitation					
Noise level (operation)		dB	30	20	30	20	30	20
Maximum operating frequency with no load		op. c./h	3.000					
Mechanical endurance		op. c.	10.000.000					
Weight		g	320	360/410	320	360/410	320	360/410
Main circuit								
Contact reliability			≥ 17 V; ≥ 50 mA					
Power dissipation per pole		W	2.3					
Overload current withstand capability								
10 s		A	176	176	240	240	304	304
5 s		A	220	220	280	280	320	320
1 s		A	250	250	330	330	350	350
0.001 s		A	600	600	900	900	900	900
Maximum back-up fuse for short-circuit protection gL and gG coordination type 2		A	50					
Rated insulation voltage	U_i	V	1000					
Rated impulse withstand voltage	U_{imp}	kV	6					
Rated operational voltage	U_e	V	1000					
Rated frequency	f	Hz	50/60					
Thermal current	I_{th}	A	35	35	35	35	45	45
Rated operational current for AC-1, AC-7a and AC-21	I_e	A	35	35	35	35	45	45
Operational power for AC-1, AC-7a and AC-21								
single-phase 230 V	P_e	kW	8				10	
three-phase 230 V	P_e	kW	13				17	
three-phase 400 V	P_e	kW	23				29	
three-phase 500 V	P_e	kW	28				37	
three-phase 690 V	P_e	kW	40				50	
Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600					
Electrical endurance for AC-1, AC-7a and AC-21		op. c.	200.000					
Rated operational current for AC-3, AC-3e, AC-7b and AC-23 (at 400 V)	I_e	A	22	20	30	30	38	38
Operational power for AC-3, AC-3e, AC-7b and AC-23								
single-phase 230 V	P_e	kW	2.2	2.2	3.7	3.7	4	4
three-phase 230 V	P_e	kW	5.5	5.5	7.5	7.5	8	8
three-phase 400 V	P_e	kW	11	11	15	15	18.5	18.5
three-phase 500 V	P_e	kW	11	11	15	15	15	15
three-phase 690 V	P_e	kW	11	11	15	15	15	15
three-phase 1000 V	P_e	kW	11	11	15	15	15	15
Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h	600					

KNL22(G) - KNL38(G) characteristics

Technical data	Symbol	Unit	KNL22	KNL22G NPLG/NDLG	KNL30	KNL30G NPLG/NDLG	KNL38	KNL38G NPLG/NDLG
Main circuit								
Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.	800.000			400.000		
Rated operational current for AC-4 (at 400 V)	I_e	A	7.7	7.7	12.5	12.5	14	14
Operational power for AC-4								
three-phase 230 V	P_e	kW	2.2	2.2	4	4	4.5	4.5
three-phase 400 V			4	4	6.5	6.5	7.5	7.5
three-phase 500 V			4	4	6.5	6.5	6.5	6.5
three-phase 690 V			4	4	6.5	6.5	6.5	6.5
Maximum operating frequency for AC-4		op. c./h	300					
Electrical endurance for AC-4		op. c.	300.000		250.000		200.000	
Rated motor power according to standards UL and CSA								
single-phase 115 V	P_e	HP	2	2 [1)]	2	2 [1)]	2	2 [1)]
single-phase 230 V			3	3 [1)]	5	5 [1)]	5	5 [1)]
three-phase 230 V			7.5	7.5 [1)]	10	10 [1)]	10	10 [1)]
three-phase 460 V			15	15 [1)]	20	20 [1)]	20	20 [1)]
three-phase 575 V			15	15 [1)]	20	20 [1)]	20	20 [1)]
Electrical endurance for motors acc. to UL and CSA		op. c.	800.000			400.000		
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	220	220	330	330	350	350
Maximum operating frequency for AC-6b and AC-7c		op. c./h	600					
Switching of capacitors AC-6b and AC-7c (at 230 V)		op. c.	100.000					
Rated operational current for DC-1 (L/R ≤ 1 ms)								
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	28 / 7 / 4					
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			30 / 23 / 13					
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			32 / 25 / 20					
Maximum operating frequency for DC-1		op. c./h	300					
Rated operational current for DC-3 (L/R ≤ 2 ms)								
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	18 / 2 / 1					
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			23 / 13 / 2					
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			28 / 18 / 9					
Maximum operating frequency for DC-3		op. c./h	300					
Rated operational current for DC-5 (L/R ≤ 7.5 ms)								
1 pole ... 24 V DC/ 110 V DC/ 220 V DC	I_e	A	18 / 2 / 1					
2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			23 / 13 / 2					
3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC			28 / 18 / 9					
Maximum operating frequency for DC-5		op. c./h	300					
Terminal capacity								
rigid (solid and stranded)	S	mm^2	2.5 ... 10					
flexible			1.5 ... 10					
Length of removed wire insulation		mm	10					
Screw			M4					
Screw head			PZ2					
Tightening torque		Nm	1.8					

[1)] No UL/CSA ratings; data only for indication and reference purposes only

KNL22(G) - KNL38(G) characteristics

Technical data		Symbol	Unit	KNL22	KNL22G NPLG/NDLG	KNL30	KNL30G NPLG/NDLG	KNL38	KNL38G NPLG/NDLG
Coil									
Range of control voltage for switch-on		U_c	%	85 ... 110					
Range of control voltage for drop out		U_c	%	20 ... 75	10 ... 75	20 ... 75	10 ... 75	20 ... 75	10 ... 75
Kind of voltage				AC	DC	AC	DC	AC	DC
Standard control voltages		U_c	V	1)	2)	1)	2)	1)	2)
Frequency of AC control voltage		f	Hz	50/60	/	50/60	/	50/60	/
Control mode				remote control with U_c					
Coil consumption									
	switch-on		VA/W	66/48	-/110	66/48	-/110	66/48	-/110
	operation			8/2.5	-/3	8/2.5	-/3	8/2.5	-/3
Delays									
	make		ms	10 ... 20	15 ... 20	10 ... 20	15 ... 20	10 ... 20	15 ... 20
	brake			5 ... 15	5 ... 10	5 ... 15	5 ... 10	5 ... 15	5 ... 10
Terminal capacity									
	rigid (solid and stranded)		mm^2	0.75 ... 4					
	flexible			0.5 ... 2.5					
Length of removed wire insulation			mm	10					
Screw				M3.5					
Screw head				PZ2					
Tightening torque			Nm	1.4					
Safety									
MTTF - Mean time to failure		AC-1	h	5.000					
MTTF = $1/\lambda$ = B10/(0.1 n_{op})		AC-3		20.000			10.000		
$MTTF_d$ - Mean time to failure dangerous		AC-1	h	6.666					
$MTTF_d = 1/\lambda_d = B10_d /(0.1\ n_{op})$		AC-3		26.666			13.333		
B10 - Number of operating cycles until 10 % of devices fail		AC-1	op. c.	150.000					
		AC-3		600.000			300.000		
$B10_d$ - Number of operating cycles until 10 % of device dangerous		AC-1	op. c.	200.000					
$B10_d$ = B10/ratio of dangerous failures		AC-3		800.000			400.000		
λ - Failure rate		AC-1	1/h	0.0002					
$\lambda = (0.1\ n_{op})/B10$		AC-3		0.00005			0.0001		
λ_d - Failure rate dangerous		AC-1	1/h	0.00015					
$\lambda_d = (0.1\ n_{op})/B10_d$		AC-3		0.00004			0.000075		
Ratio of dangerous failures			%	75					
n_{op} - Operating cycles (operating cycles/h)			op. c./h	300					

1) 12,24,48,110/125,220/240,380/415,440/460,480/520,550/600 V

2) 12,24,48,60,72,110,125,220,240 V

Electrical endurance

Diagram 1
Electrical endurance of contactor relays

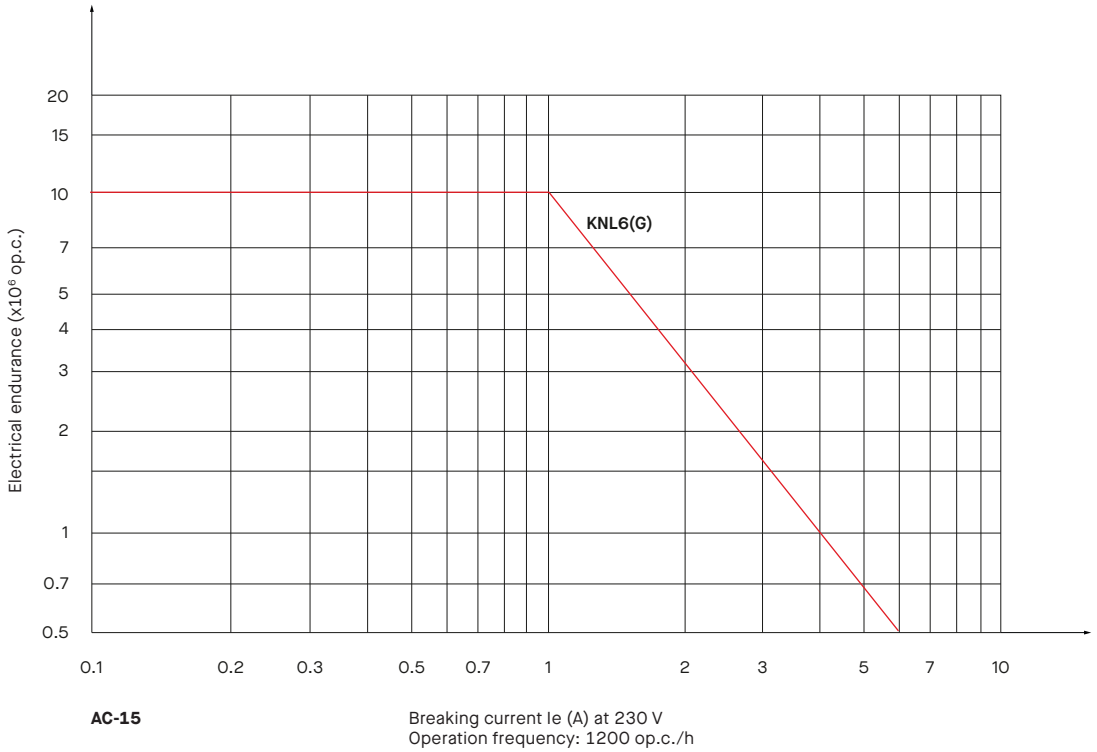


Diagram 2
Electrical endurance of motor contactors KNL9(G) - KNL38(G) – AC-3, AC-3e

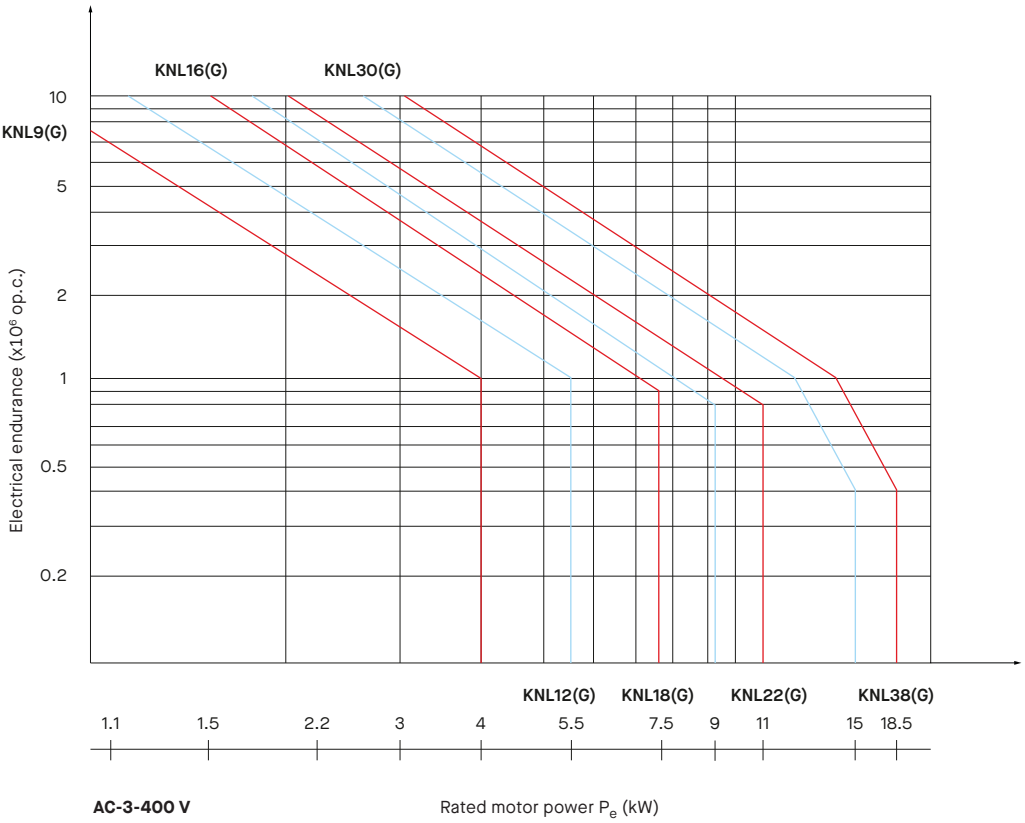
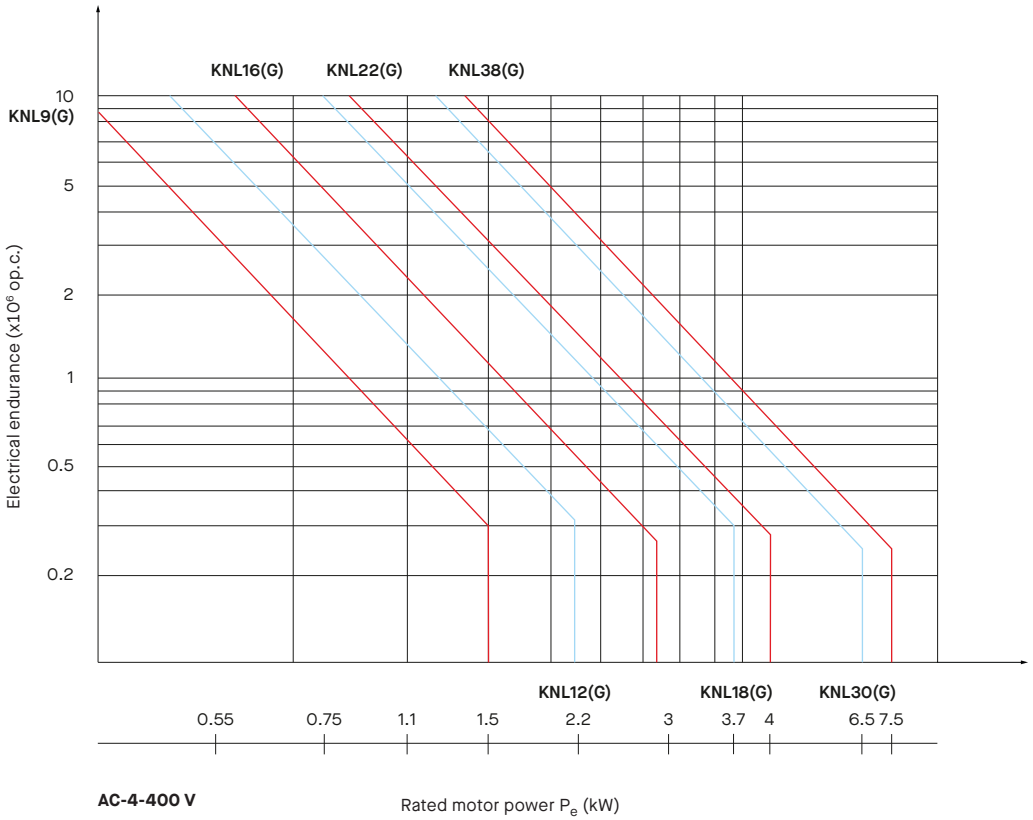


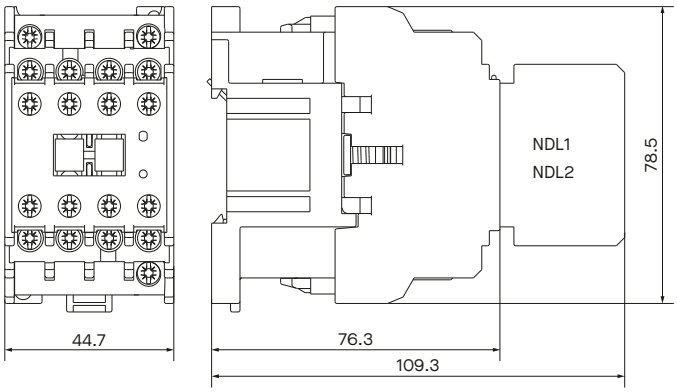
Diagram 3

Electrical endurance of motor contactors KNL9(G) - KNL38(G) –AC-4

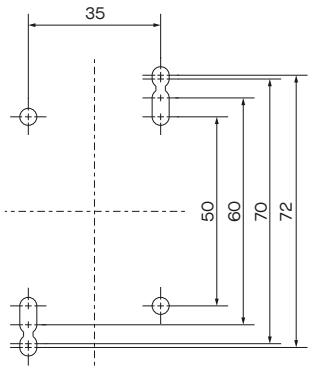


Dimensions
(mm)

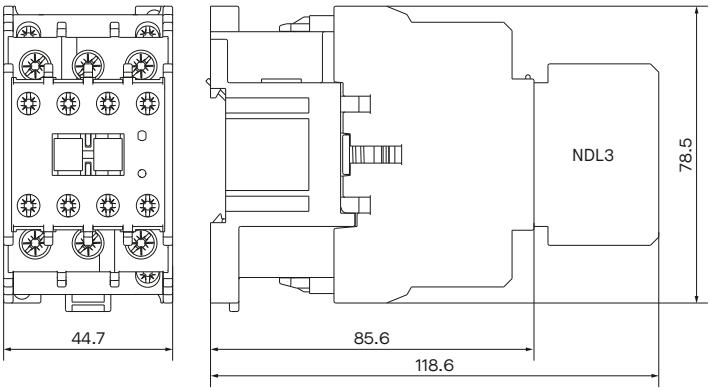
KNL6 ... KNL18



KNL6 ... KNL38
Drilling plan

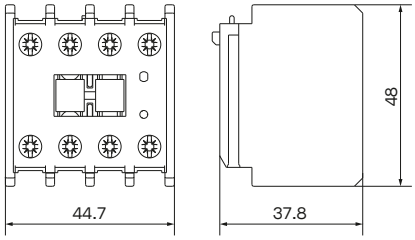


KNL22 ... KNL38



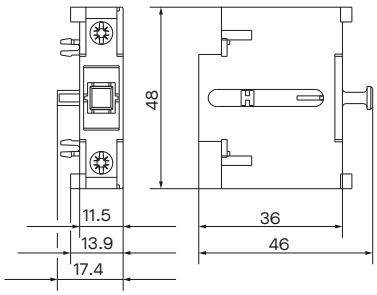
NDL1, NDL2, NDL3
Two and four-pole snap-on auxiliary switch blocks
(mounting on a basic contactor)

NDL1 - for KNL6(G)
NDL2 - for KNL9(G) - KNL18(G)
NDL3 - for KNL22(G) - KNL38(G)

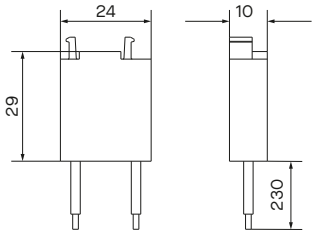


NPL1, NPL2
Single pole snap-on auxiliary switch block
(for side mounting + push button)

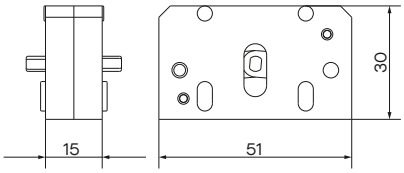
NPL1 - for KNL9(G) - KNL18(G)
NPL2 - for KNL22(G) - KNL38(G)



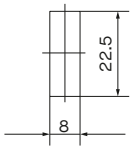
RC suppressor



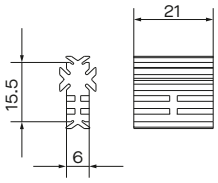
MBL mechanical interlock



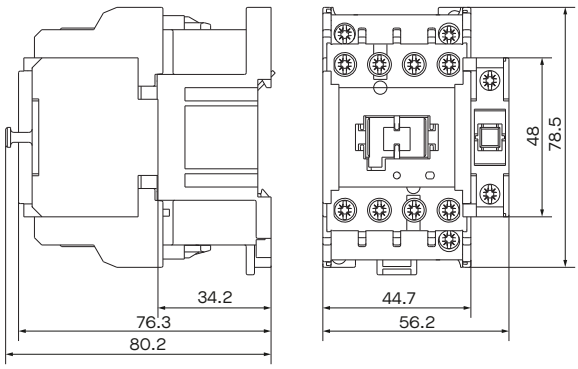
NT identification plate



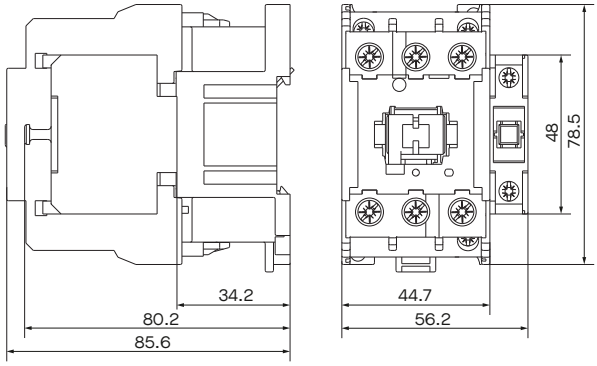
DZ distance spacer



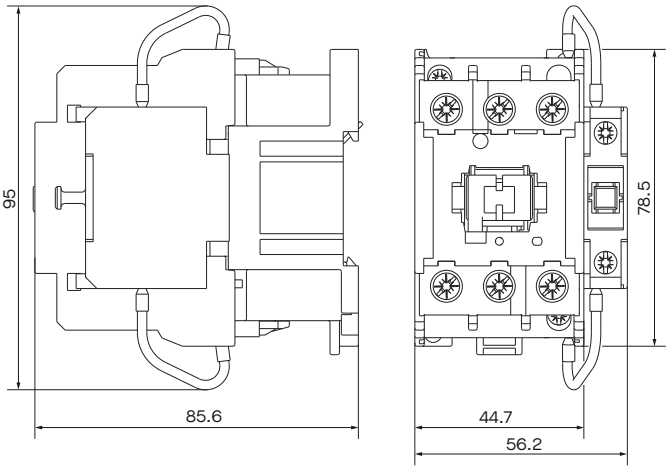
KNL9-KNL18 + NPL1



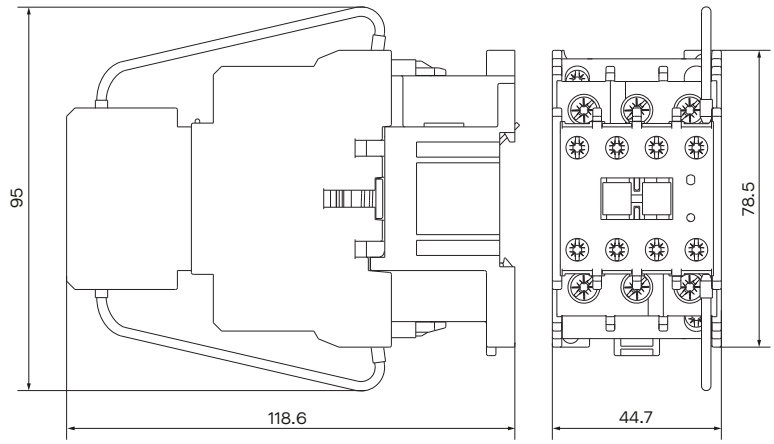
KNL22-KNL38 + NPL2



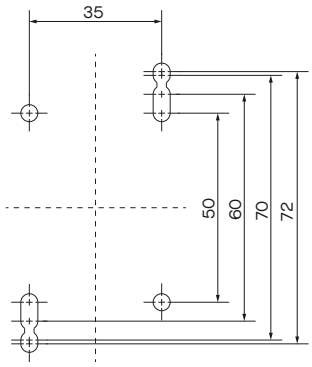
KNL22G-KNL38G + NPLG



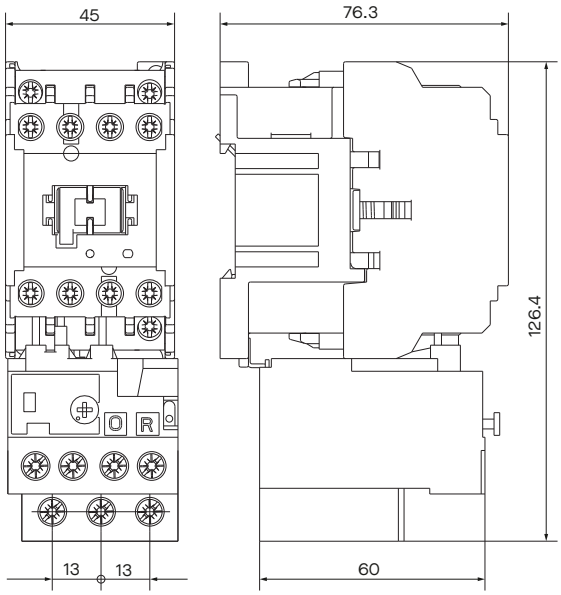
KNL22G-KNL38G + NDLG



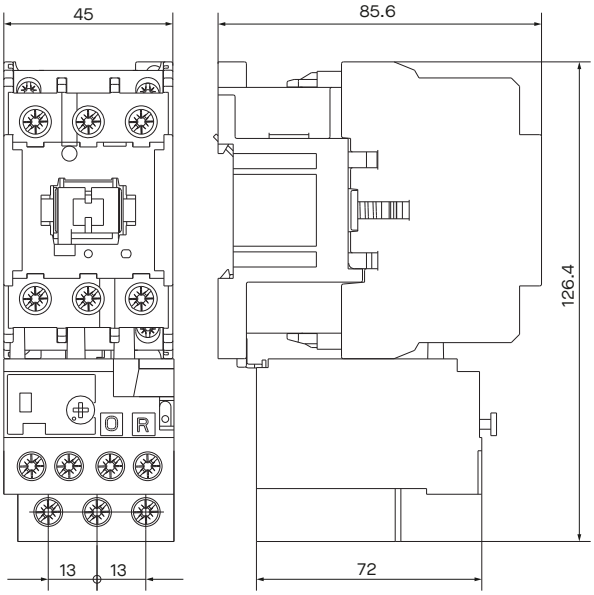
KNL6 ... KNL38
Drilling plan



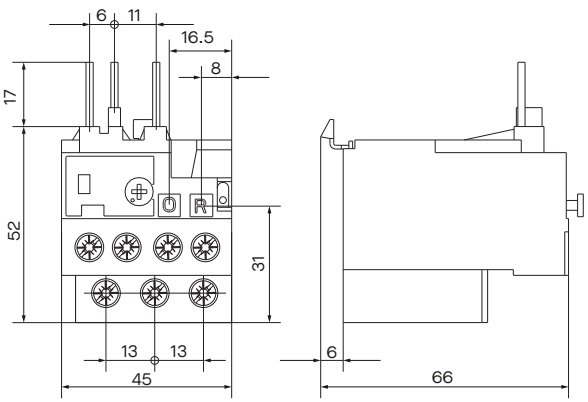
KNL6 ... KNL18 + BR16
Contactor + thermal overload relay



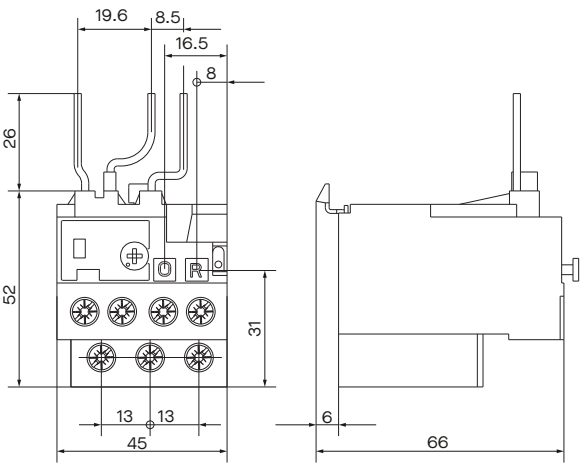
KNL22 ... KNL38 + BR30
Contactor + thermal overload relay



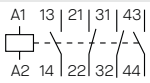
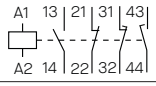
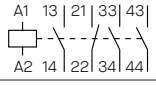
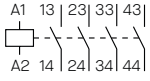
BR16 thermal overload relay



BR30 thermal overload relay

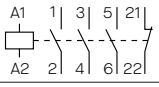
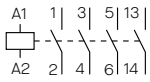
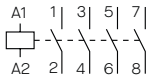
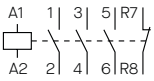
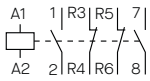
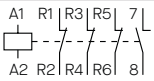
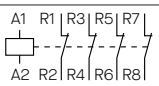


Contactor relays characteristics

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (4-pole, 35 mm widths)						
KNL6-22 Q7	6	380/415 V		30.050.631	300	10
KNL6-22 M7	6	220/240 V		30.050.486	300	10
KNL6-22 B7	6	24 V		30.050.619	300	10
KNL6-22ü Q7	6	380/415 V		30.051.046	300	10
KNL6-22ü M7	6	220/240 V		30.051.037	300	10
KNL6-22ü B7	6	24 V		30.051.047	300	10
KNL6-31 Q7	6	380/415 V		30.050.632	300	10
KNL6-31 M7	6	220/240 V		30.050.469	300	10
KNL6-31 B7	6	24 V		30.050.620	300	10
KNL6-40 Q7	6	380/415 V		30.050.700	300	10
KNL6-40 M7	6	220/240 V		30.050.468	300	10
KNL6-40 B7	6	24 V		30.050.621	300	10

AC

Motor contactors characteristics

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 35 mm widths)						
KNL9-01 Q7	9	380/415 V		30.050.639	300	10
KNL9-01 M7	9	220/240 V		30.050.475	300	10
KNL9-01 B7	9	24 V		30.050.615	300	10
KNL9-10 Q7	9	380/415 V		30.050.640	300	10
KNL9-10 M7	9	220/240 V		30.050.474	300	10
KNL9-10 B7	9	24 V		30.050.616	300	10
KNL9-10/Sp4 Q7	9	380/415 V		30.051.048	300	10
KNL9-10/Sp4 M7	9	220/240 V		30.050.736	300	10
KNL9-10/Sp4 B7	9	24 V		30.051.049	300	10
KNL9-01/Sp4 Q7	9	380/415 V		30.051.050	300	10
KNL9-01/Sp4 M7	9	220/240 V		30.051.051	300	10
KNL9-01/Sp4 B7	9	24 V		30.051.052	300	10
KNL9-22/Sp4 Q7	9	380/415 V		30.051.053	300	10
KNL9-22/Sp4 M7	9	220/240 V		30.050.864	300	10
KNL9-22/Sp4 B7	9	24 V		30.051.054	300	10
KNL9-13/Sp4 Q7	9	380/415 V		30.051.055	300	10
KNL9-13/Sp4 M7	9	220/240 V		30.051.056	300	10
KNL9-13/Sp4 B7	9	24 V		30.051.057	300	10
KNL9-04/Sp4 Q7	9	380/415 V		30.051.058	300	10
KNL9-04/Sp4 M7	9	220/240 V		30.051.041	300	10
KNL9-04/Sp4 B7	9	24 V		30.051.059	300	10

AC

* **ü** - version with early and late contacts
* **Sp4** - version with all four main contacts

Motor contactors characteristics

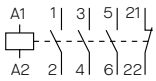
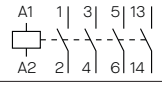
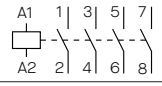
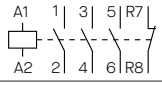
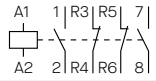
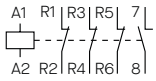
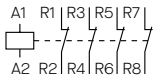
Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)						
KNL12-01 Q7	12	380/415 V	A1 1 3 5 21 / A2 2 4 6 22	30.050.657	300	10
KNL12-01 M7	12	220/240 V		30.050.656	300	10
KNL12-01 B7	12	24 V		30.050.648	300	10
KNL12-10 Q7	12	380/415 V	A1 1 3 5 13 / A2 2 4 6 14	30.050.658	300	10
KNL12-10 M7	12	220/240 V		30.050.488	300	10
KNL12-10 B7	12	24 V		30.050.649	300	10
KNL12-10/Sp4 Q7	12	380/415 V	A1 1 3 5 7 / A2 2 4 6 8	30.051.060	300	10
KNL12-10/Sp4 M7	12	220/240 V		30.050.735	300	10
KNL12-10/Sp4 B7	12	24 V		30.051.061	300	10
KNL12-01/Sp4 Q7	12	380/415 V	A1 1 3 5 R7 / A2 2 4 6 R8	30.051.062	300	10
KNL12-01/Sp4 M7	12	220/240 V		30.051.063	300	10
KNL12-01/Sp4 B7	12	24 V		30.051.064	300	10
KNL12-22/Sp4 Q7	12	380/415 V	A1 1 R3 R5 7 / A2 2 R4 R6 8	30.051.065	300	10
KNL12-22/Sp4 M7	12	220/240 V		30.050.039	300	10
KNL12-22/Sp4 B7	12	24 V		30.051.066	300	10
KNL12-13/Sp4 Q7	12	380/415 V	A1 R1 R3 R5 7 / A2 R2 R4 R6 8	30.051.067	300	10
KNL12-13/Sp4 M7	12	220/240 V		30.051.068	300	10
KNL12-13/Sp4 B7	12	24 V		30.051.069	300	10
KNL12-04/Sp4 Q7	12	380/415 V	A1 R1 R3 R5 R7 / A2 R2 R4 R6 R8	30.051.070	300	10
KNL12-04/Sp4 M7	12	220/240 V		30.051.071	300	10
KNL12-04/Sp4 B7	12	24 V		30.051.072	300	10
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)						
KNL16-01 Q7	16	380/415 V	A1 1 3 5 21 / A2 2 4 6 22	30.050.674	300	10
KNL16-01 M7	16	220/240 V		30.050.673	300	10
KNL16-01 B7	16	24 V		30.050.665	300	10
KNL16-10 Q7	16	380/415 V	A1 1 3 5 13 / A2 2 4 6 14	30.050.675	300	10
KNL16-10 M7	16	220/240 V		30.050.489	300	10
KNL16-10 B7	16	24 V		30.050.666	300	10
KNL16-10/Sp4 Q7	16	380/415 V	A1 1 3 5 7 / A2 2 4 6 8	30.050.999	300	10
KNL16-10/Sp4 M7	16	220/240 V		30.050.807	300	10
KNL16-10/Sp4 B7	16	24 V		30.051.073	300	10
KNL16-01/Sp4 Q7	16	380/415 V	A1 1 3 5 R7 / A2 2 4 6 R8	30.051.074	300	10
KNL16-01/Sp4 M7	16	220/240 V		30.050.930	300	10
KNL16-01/Sp4 B7	16	24 V		30.051.075	300	10
KNL16-22/Sp4 Q7	16	380/415 V	A1 1 R3 R5 7 / A2 2 R4 R6 8	30.051.076	300	10
KNL16-22/Sp4 M7	16	220/240 V		30.050.860	300	10
KNL16-22/Sp4 B7	16	24 V		30.051.077	300	10
KNL16-13/Sp4 Q7	16	380/415 V	A1 R1 R3 R5 7 / A2 R2 R4 R6 8	30.051.078	300	10
KNL16-13/Sp4 M7	16	220/240 V		30.050.975	300	10
KNL16-13/Sp4 B7	16	24 V		30.051.079	300	10
KNL16-04/Sp4 Q7	16	380/415 V	A1 R1 R3 R5 R7 / A2 R2 R4 R6 R8	30.051.080	300	10
KNL16-04/Sp4 M7	16	220/240 V		30.050.834	300	10
KNL16-04/Sp4 B7	16	24 V		30.051.081	300	10
KNL16-10/St4 Q7	16	380/415 V	A1 1 3 5 7 / A2 2 4 6 8	30.051.082	300	10
KNL16-10/St4 M7	16	220/240 V		30.050.984	300	10
KNL16-10/St4 B7	16	24 V		30.051.083	300	10
KNL16-01/St4 Q7	16	380/415 V	A1 1 3 5 R7 / A2 2 4 6 R8	30.051.084	300	10
KNL16-01/St4 M7	16	220/240 V		30.050.985	300	10
KNL16-01/St4 B7	16	24 V		30.051.085	300	10

AC

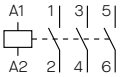
AC

* **Sp4** - version with all four main contacts
* **St4** - contactor for switching of capacitor banks

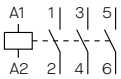
Motor contactors characteristics

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)						
KNL18-01 Q7	18	380/415 V		30.050.838	300	10
KNL18-01 M7	18	220/240 V		30.050.836	300	10
KNL18-01 B7	18	24 V		30.050.925	300	10
KNL18-10 Q7	18	380/415 V		30.050.837	300	10
KNL18-10 M7	18	220/240 V		30.050.835	300	10
KNL18-10 B7	18	24 V		30.050.924	300	10
KNL18-10/Sp4 Q7	18	380/415 V		30.050.910	300	10
KNL18-10/Sp4 M7	18	220/240 V		30.050.908	300	10
KNL18-10/Sp4 B7	18	24 V		30.051.086	300	10
KNL18-01/Sp4 Q7	18	380/415 V		30.051.087	300	10
KNL18-01/Sp4 M7	18	220/240 V		30.051.088	300	10
KNL18-01/Sp4 B7	18	24 V		30.051.089	300	10
KNL18-22/Sp4 Q7	18	380/415 V		30.051.090	300	10
KNL18-22/Sp4 M7	18	220/240 V		30.051.091	300	10
KNL18-22/Sp4 B7	18	24 V		30.051.092	300	10
KNL18-13/Sp4 Q7	18	380/415 V		30.051.093	300	10
KNL18-13/Sp4 M7	18	220/240 V		30.051.094	300	10
KNL18-13/Sp4 B7	18	24 V		30.051.095	300	10
KNL18-04/Sp4 Q7	18	380/415 V		30.051.096	300	10
KNL18-04/Sp4 M7	18	220/240 V		30.051.097	300	10
KNL18-04/Sp4 B7	18	24 V		30.051.098	300	10

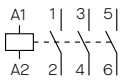
AC

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL22-00 Q7	22	380/415 V		30.050.686	320	10
KNL22-00 M7	22	220/240 V		30.050.470	320	10
KNL22-00 B7	22	24 V		30.050.609	320	10

AC

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL30-00 Q7	30	380/415 V		30.050.694	320	10
KNL30-00 M7	30	220/240 V		30.050.471	320	10
KNL30-00 B7	30	24 V		30.050.690	320	10

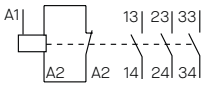
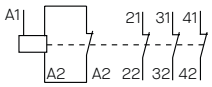
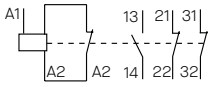
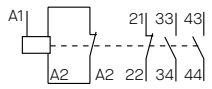
AC

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL38-00 Q7	38	380/415 V		30.051.099	320	10
KNL38-00 M7	38	220/240 V		30.051.100	320	10
KNL38-00 B7	38	24 V		30.051.101	320	10

AC

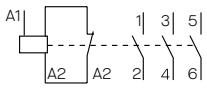
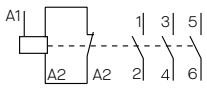
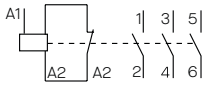
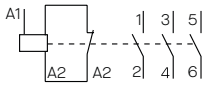
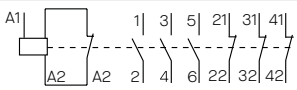
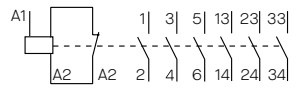
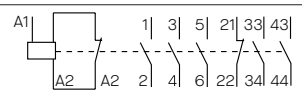
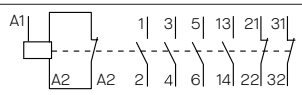
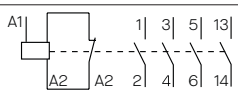
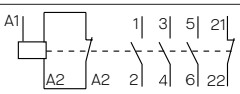
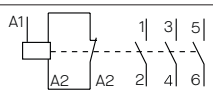
* **Sp4** - version with all four main contacts
* - All versions KNL6(G)-KNL38(G) can be cabled with one (F1) or two (F2) pole fast-on interface.
The limit when we use faston connection to the main circuit I_{thmax} = 25 A and I_{emax} = 25 A.

Contactor relays characteristics

Type	Rated Current I_e (A)	Control Voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (3-pole, 45 mm widths)						
KNL6G-30 MD	6	220 V		30.052.520	300	10
KNL6G-30 ED	6	110 V		30.052.521	300	10
KNL6G-30 BD	6	24 V		30.052.522	300	10
KNL6G-03 MD	6	220 V		30.052.523	300	10
KNL6G-03 ED	6	110 V		30.052.524	300	10
KNL6G-03 BD	6	24 V		30.052.525	300	10
KNL6G-21 MD	6	220 V		30.052.526	300	10
KNL6G-21 ED	6	110 V		30.052.527	300	10
KNL6G-21 BD	6	24 V		30.052.528	300	10
KNL6G-12 MD	6	220 V		30.052.529	300	10
KNL6G-12 ED	6	110 V		30.052.530	300	10
KNL6G-12 BD	6	24 V		30.052.531	300	10

DC

Motor contactors characteristics

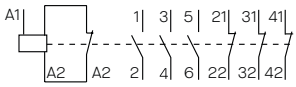
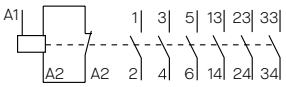
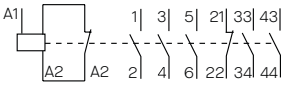
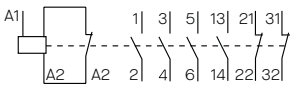
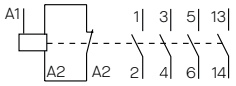
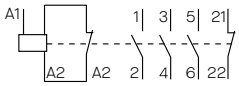
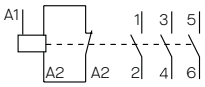
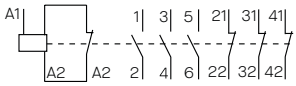
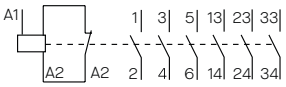
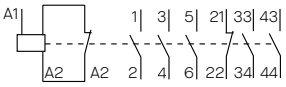
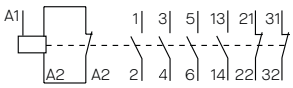
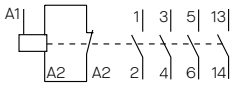
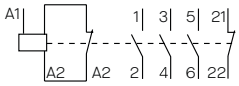
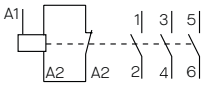
Type	Rated Current I_e (A)	Control Voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL9G-00 MD	9	220 V		30.052.532	300	10
KNL9G-00 ED	9	110 V		30.052.533	300	10
KNL9G-00 BD	9	24 V		30.052.534	300	10
KNL12G-00 MD	12	220 V		30.052.535	300	10
KNL12G-00 ED	12	110 V		30.052.536	300	10
KNL12G-00 BD	12	24 V		30.052.537	300	10
KNL16G-00 MD	16	220 V		30.052.538	300	10
KNL16G-00 ED	16	110 V		30.052.539	300	10
KNL16G-00 BD	16	24 V		30.052.540	300	10
KNL18G-00 MD	18	220 V		30.052.541	300	10
KNL18G-00 ED	18	110 V		30.052.542	300	10
KNL18G-00 BD	18	24 V		30.052.543	300	10
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL22G-00 + NDLG-03 MD	22	220 V		30.052.230	340	10
KNL22G-00 + NDLG-03 ED	22	48 V		30.052.465	340	10
KNL22G-00 + NDLG-03 BD	22	24 V		30.052.228	340	10
KNL22G-00 + NDLG-30 MD	22	220 V		30.052.222	340	10
KNL22G-00 + NDLG-30 ED	22	48 V		30.052.468	340	10
KNL22G-00 + NDLG-30 BD	22	24 V		30.052.220	340	10
KNL22G-00 + NDLG-21 MD	22	220 V		30.052.257	340	10
KNL22G-00 + NDLG-21 ED	22	48 V		30.052.470	340	10
KNL22G-00 + NDLG-21 BD	22	24 V		30.052.106	340	10
KNL22G-00 + NDLG-12 MD	22	220 V		30.052.227	340	10
KNL22G-00 + NDLG-12 ED	22	48 V		30.052.472	340	10
KNL22G-00 + NDLG-12 BD	22	24 V		30.052.225	340	10
KNL22G-00 + NDLG-10 MD	22	220 V		30.052.474	340	10
KNL22G-00 + NDLG-10 ED	22	48 V		30.052.475	340	10
KNL22G-00 + NDLG-10 BD	22	24 V		30.052.476	340	10
KNL22G-00 + NDLG-01 MD	22	220 V		30.052.477	340	10
KNL22G-00 + NDLG-01 ED	22	48 V		30.052.478	340	10
KNL22G-00 + NDLG-01 BD	22	24 V		30.052.479	340	10
KNL22G-00 + NPLG [1] MD	22	220 V		30.052.073	310	10
KNL22G-00 + NPLG [1] ED	22	48 V		30.052.480	310	10
KNL22G-00 + NPLG [1] BD	22	24 V		30.052.143	310	10

DC

DC

[1] 57 mm widths

Motor contactors characteristics

Type	Rated Current I_e (A)	Control Voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL30G-00 + NDLG-03 MD	30	220 V		30.052.097	340	10
KNL30G-00 + NDLG-03 ED	30	48 V		30.052.481	340	10
KNL30G-00 + NDLG-03 BD	30	24 V		30.052.236	340	10
KNL30G-00 + NDLG-30 MD	30	220 V		30.052.033	340	10
KNL30G-00 + NDLG-30 ED	30	48 V		30.052.483	340	10
KNL30G-00 + NDLG-30 BD	30	24 V		30.052.231	340	10
KNL30G-00 + NDLG-21 MD	30	220 V		30.052.095	340	10
KNL30G-00 + NDLG-21 ED	30	48 V		30.052.484	340	10
KNL30G-00 + NDLG-21 BD	30	24 V		30.052.119	340	10
KNL30G-00 + NDLG-12 MD	30	220 V		30.052.096	340	10
KNL30G-00 + NDLG-12 ED	30	48 V		30.052.485	340	10
KNL30G-00 + NDLG-12 BD	30	24 V		30.052.258	340	10
KNL30G-00 + NDLG-10 MD	30	220 V		30.052.486	340	10
KNL30G-00 + NDLG-10 ED	30	48 V		30.052.487	340	10
KNL30G-00 + NDLG-10 BD	30	24 V		30.052.488	340	10
KNL30G-00 + NDLG-01 MD	30	220 V		30.052.489	340	10
KNL30G-00 + NDLG-01 ED	30	48 V		30.052.490	340	10
KNL30G-00 + NDLG-01 BD	30	24 V		30.052.491	340	10
KNL30G-00 + NPLG [1]MD	30	220 V		30.052.028	310	10
KNL30G-00 + NPLG [1]ED	30	48 V		30.052.492	310	10
KNL30G-00 + NPLG [1]BD	30	24 V		30.052.169	310	10
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL38G-00 + NDLG-03 MD	38	220 V		30.052.493	340	10
KNL38G-00 + NDLG-03 ED	38	48 V		30.052.494	340	10
KNL38G-00 + NDLG-03 BD	38	24 V		30.052.495	340	10
KNL38G-00 + NDLG-30 MD	38	220 V		30.052.496	340	10
KNL38G-00 + NDLG-30 ED	38	48 V		30.052.497	340	10
KNL38G-00 + NDLG-30 BD	38	24 V		30.052.498	340	10
KNL38G-00 + NDLG-21 MD	38	220 V		30.052.499	340	10
KNL38G-00 + NDLG-21 ED	38	48 V		30.052.500	340	10
KNL38G-00 + NDLG-21 BD	38	24 V		30.052.501	340	10
KNL38G-00 + NDLG-12 MD	38	220 V		30.052.502	340	10
KNL38G-00 + NDLG-12 ED	38	48 V		30.052.503	340	10
KNL38G-00 + NDLG-12 BD	38	24 V		30.052.504	340	10
KNL38G-00 + NDLG-10 MD	38	220 V		30.052.505	340	10
KNL38G-00 + NDLG-10 ED	38	48 V		30.052.506	340	10
KNL38G-00 + NDLG-10 BD	38	24 V		30.052.507	340	10
KNL38G-00 + NDLG-01 MD	38	220 V		30.052.508	340	10
KNL38G-00 + NDLG-01 ED	38	48 V		30.052.509	340	10
KNL38G-00 + NDLG-01 BD	38	24 V		30.052.510	340	10
KNL38G-00 + NPLG [1]MD	38	220 V		30.052.511	310	10
KNL38G-00 + NPLG [1]ED	38	48 V		30.052.512	310	10
KNL38G-00 + NPLG [1]BD	38	24 V		30.052.513	310	10

DC

DC

Simultaneous application of NDLG+NPL and NDL+NPLG snap-on auxiliary switch blocks is available.

[1] 57 mm widths

KNL6(G) - KNL38(G) Accessories

Snap-on auxiliary switch blocks

Technical data	Symbol	Unit	NDL1, NDL2 NDL3, NDLG	NPL1 NPL2
General				
Standards			IEC/EN 60947-5-1, VDE 0660, UL 508	
Approvals			CE, UL, CSA [1]	
For use with			NDL1: KNL6 NDL2: KNL9-KNL18 NDL3: KNL22-KNL38 NDLG: KNL6G-KNL38G	NPL1: KNL9 - KNL18 NPL2: KNL22-KNL38
Module width			2	0.5
Number of poles			2 or 4	1
Degree of protection			IP20	
Pollution degree			3	
Ambient temperature				
open		°C	-25 ... +55	
closed		°C	-25 .... +45	
Storage temperature		°C	-30 ... +80	
Maximum altitude [2]		m	2.000	
Maximum operating frequency with no load		op. c./h	3.000	
Mechanical endurance		op. c.	10.000.000	
Weight		g	70	20
Auxiliary circuit				
Contact reliability			≥ 17 V; ≥ 50 mA	
Maximum back-up fuse for short-circuit protection gL and gG				
coordination type 2		A	16	10
Rated insulation voltage	U_i	V	690	
Rated impulse withstand voltage	U_{imp}	kV	6	
Rated operational voltage	U_e	V	690	
Rated frequency	f	Hz	50 / 60	
Thermal current	I_{th}	A	16	10
Rated operational current for AC-15				
single-phase 230 V	I_e	A	6	
single-phase 400 V	I_e	A	4	
single-phase 500 V	I_e	A	2	
single-phase 690 V	I_e	A	1	
Maximum operating frequency for AC-15		op. c./h	1.200	
Electrical endurance for AC-15		op. c.	500.000	
Switching of auxiliary loads acc. to standard UL and CSA			A600, N600	
Rated operational current for DC-13				
1 pole ... 24 V DC / 60 V DC / 110 V DC / 220 V DC		A	10 / 4 / 0.9 / 0.4	6 / 2.5 /0.5 / 0.2
Maximum operating frequency for DC-13		op. c./h	1.200	
Electrical endurance for DC-13		op. c.	500.000	
Terminal capacity				
rigid (solid and stranded)	S	mm²	0.75 ... 4	
flexible	S	mm²	0.5 ... 2.5	
Length of removed wire insulation		mm	10	
Screw			M3.5	
Screw head			PZ2	
Tightening torque		Nm	1.4	1

[1] No UL and CSA for NDLG

[2] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

BR16 and BR30 Thermal overload relay

Technical data			Symbol	Unit	BR16	BR30
General						
Standards					IEC 60947-4-1, IEC 60947-5-1, UL 508	
Approvals					CE, UL	
For use with					KNL9(G) ... KNL18(G)	KNL22(G) ... KNL38(G)
Degree of protection					IP20	
Ambient temperature						
	operating			°C	-5 ... +55	
	storage			°C	-25 .... +70	
Dimensions (WxHxD)				mm	45 x 70.5 x 60	45 x 69 x 60
Operating position					vertical	
Reset type					auto, manual	
Maximum altitude				m	2.000	
Weight				g	115	
Main circuit						
Rated insulation voltage			U_i	V	690	
Rated impulse withstand voltage			U_{imp}	kV	6	
Rated operational voltage			U_e	V	690	
Adjustable current			I_r	A	0.1 ... 20	17.5 ... 30
Rated frequency			f	Hz	50 / 60	
Overvoltage category / pollution degree acc. to IEC/EN 60947-1					III / 3	
Trip class acc. to IEC/EN 60947-4-1					10	
Temperature compensation range				°C	-5 ... +40	
Sensitivity to phase failure					yes	
Power loss at I_n			P	W	5 ... 6.5	
Terminal capacity				mm^2	1 ... 10	
Conductor insulation stripping length				mm	10	
Screw					M4	
Screw head					PZ2	
Tightening torque				Nm	1.2	
Auxiliary circuits						
Rated insulation voltage			U_i	V	690	
Rated impulse withstand voltage			U_{imp}	kV	6	
Rated operational voltage			U_e	V	AC: 500 ; DC: 230	
Overvoltage category / pollution degree acc. to IEC/EN 60947-1					III / 3	
Thermal current (both contacts)			I_{th}	A	6	
Contact electrical rating					A600 / Q300	
Rated operational current for AC-15						
	230 V				3	
	400 V	NO			2	
	500 V		I_e	A	1	
	230 V				3	
	400 V	NC			2	
	500 V				1	
Rated operational current for DC-13						
	60 V				0.45	
	110 V	both contacts	I_e	A	0.25	
	230 V				0.1	
Terminal capacity				mm^2	0.75 ... 2.5	
Conductor insulation stripping length				mm	9	
Screw					M3.5	
Screw head					PZ2	
Tightening torque				Nm	0.8	

Setting ranges and maximum permitted back-up fuses

BR16

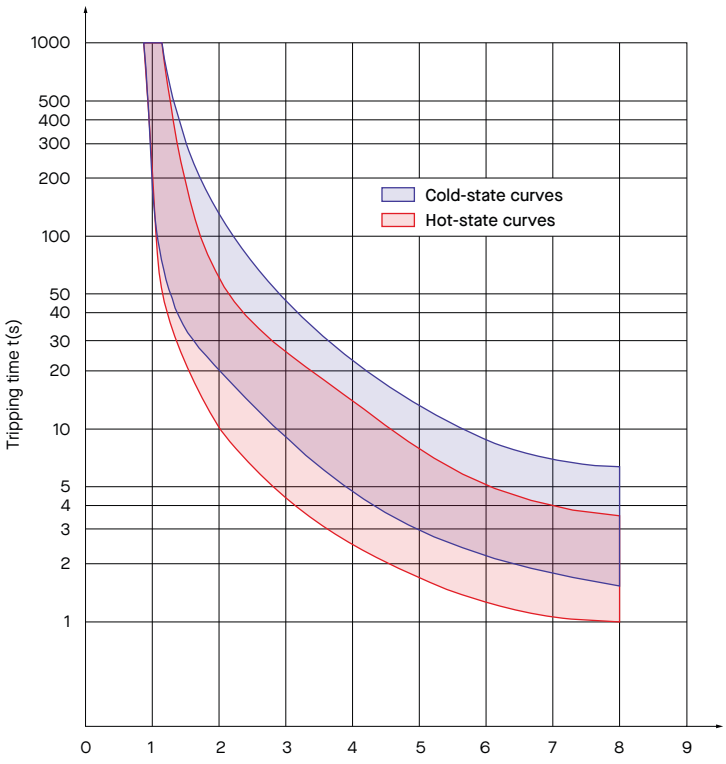
Setting range (A)	Max. back-up fuse gL/gG – UL 508 (A)	Max. back-up fuse gL/gG (A)
0.16 ... 0.25	1	1
0.25 ... 0.4	1	1
0.35 ... 0.5	1	1
0.45 ... 0.63	1	1
0.55 ... 0.8	3	2
0.75 ... 1	3	2
0.9... 1.3	3	2
1.1 ... 1.6	3	2
1.4 ... 2	6	4
1.8 ... 2.5	6	4
2.3 ... 3.2	6	4
2.9 ... 4	10	8
3.5 ... 4.8	10	8
4.5 ... 6.3	15	10
5.5 ... 7.5	15	10
7.2 ... 10	25	16
9 ... 12.5	30	20
11.3 ... 16	40	25
15 ... 20	50	35

BR30

Setting range (A)	Max. back-up fuse gL/gG – UL 508 (A)	Max. back-up fuse gL/gG (A)
17.5 ... 21.5	50	35
21 ... 25	60	40
24.5 - 30	70	50
29 ... 36	70	50
33 ... 38	70	50

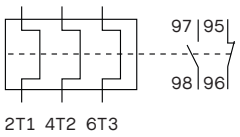
Tripping curve

BR16 and BR30



Connection diagram

BR16 and BR30



Snap-on auxiliary switch blocks

Type	Compatible with	Rated Current I_e (A)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (4-pole)						
NDL1	KNL6	6	-11	38.422.827	66	10
		6	-02	38.422.828	66	10
		6	-20	38.422.826	66	10
		6	-22	38.422.850	66	10
		6	-31	38.422.940	66	10
		6	-13	38.422.939	66	10
		6	-40	38.422.864	66	10
		6	-04	38.422.976	66	10
NDL2	KNL9, KNL12, KNL16, KNL18	6	-11	38.423.834	66	10
		6	-02	38.422.835	66	10
		6	-20	38.423.457	66	10
		6	-22	38.422.779	66	10
		6	-31	38.422.754	66	10
		6	-13	38.422.941	66	10
		6	-40	38.422.780	66	10
		6	-04	38.422.781	66	10
NDL3	KNL22, KNL30, KNL38	6	-11	38.422.836	66	10
		6	-02	38.423.014	66	10
		6	-20	38.423.470	66	10
		6	-22	38.422.943	66	10
		6	-31	38.422.851	66	10
		6	-13	38.422.942	66	10
		6	-40	38.423.390	66	10
		6	-04	38.423.374	66	10

Auxiliary switch blocks

Type	Compatible with	Rated Current I_e (A)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (single pole for side mounting)						
NPL1	KNL9 - KNL18	6	-10	38.422.751	18	1
		6	-01	38.422.752	18	1
NPL2	KNL22 - KNL38	6	-10	38.422.852	18	1
		6	-01	38.422.945	18	1

RC suppressor

Type	Compatible with	Control voltage U_c (V)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (single pole for side mounting)						
RC1-KNL	KNL6 - KNL38	12 - 48	R C	30.017.074	16	10
RC2-KNL		48 - 250		30.017.075	16	10
RC3-KNL		250 - 380		30.017.076	16	10
RC4-KNL		380 - 600		30.017.077	16	10

Mechanical interlock

Type	Compatible with	Ordering No.	Weight (g)	Packaging (pcs)
MBL	KNL6 - KNL38	38.422.853	14	10

Distance spacer

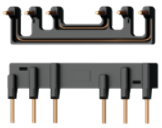
Type	Ordering No.	Weight (g)	Packaging (pcs)
DZ	37.421.996	2	10

Identification plate

Type	Ordering No.	Weight (g)	Packaging (pcs)
NT	37.425.330	1	10

Rigid connecting kits

Type	Description	Ordering No.	Weight (g)	Packaging (pcs)
WK 2.1	For reversing switch, suitable for contactors: 4-9 kW (for contactors KNL9-KNL18) (max. current 32 A), 4 terminals in line (3 main terminals, 1 auxiliary terminal)	655.200.014	40	1
WK 2.2	For star-delta starters, suitable for contactors: 4-9 kW (for contactors KNL9-KNL18) (max. current 32 A), 4 terminals in line (3 main terminals, 1 auxiliary terminal)	655.200.018	50	1
WK 4.1	For reversing switch, suitable for contactors: 11 and 18.5 kW (for contactors KNL22-KNL38) (max. current 40 A), 3 terminals in line (3 main terminals)	655.200.015	50	1
WK 4.2	For star-delta starters, suitable for contactors: 11 and 18.5 kW (for contactors KNL22, KNL38) (max. current 40 A), 3 terminals in line (3 main terminals)	655.200.019	60	1
WK 5.1	For reversing switch with mechanical interlock, suitable for contactors: 4-9 kW (for contactors KNL9-KNL18) (max. current 32 A), 4 terminals in line (3 main terminals, 1 auxiliary terminal)	655.200.016	30	1

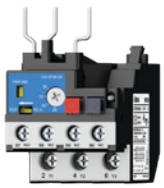


BR16 characteristics

Type	Setting range (A)	Max. backup fuse for coordination 1 (A)	Ordering No.	Weight (g)	Packaging (pcs)
Up to 20 A for KNL9 - KNL18 contactors					
BR16-0.16	0.1 ... 0.16	1	786.050.481	115	1
BR16-0.25	0.16 ... 0.25	1	786.050.482	115	1
BR16-0.4	0.25 ... 0.4	1	786.050.483	115	1
BR16-0.5	0.35 ... 0.5	1	786.050.484	115	1
BR16-0.63	0.45 ... 0.63	1	786.050.485	115	1
BR16-0.8	0.55 ... 0.8	3	786.050.486	115	1
BR16-1	0.75 ... 1	3	786.050.487	115	1
BR16-1.3	0.9 ... 1.3	3	786.050.488	115	1
BR16-1.6	1.1 ... 1.6	3	786.050.489	115	1
BR16-2	1.4 ... 2	6	786.050.490	115	1
BR16-2.5	1.8 ... 2.5	6	786.050.491	115	1
BR16-3.2	2.3 ... 3.2	6	786.050.492	115	1
BR16-4	2.9 ... 4	10	786.050.493	115	1
BR16-4.8	3.5 ... 4.8	10	786.050.494	115	1
BR16-6.3	4.5 ... 6.3	15	786.050.495	115	1
BR16-7.5	5.5 ... 7.5	15	786.050.496	115	1
BR16-10	7 ... 10	25	786.050.497	115	1
BR16-12.5	9 ... 12.5	30	786.050.498	115	1
BR16-16	11.3 ... 16	40	786.050.499	115	1
BR16-20	15 ... 20	50	786.050.500	115	1

BR30 characteristics

Type	Setting range (A)	Max. backup fuse for coordination 1 (A)	Ordering No.	Weight (g)	Packaging (pcs)
Up to 38 A for KNL22 - KNL38 contactors					
BR30-21.5	17.5 ... 21.5	50	786.050.501	115	1
BR30-25	21 ... 25	60	786.050.502	115	1
BR30-30	24.5 ... 30	70	786.050.503	115	1
BR30-36	29 ... 36	60	786.050.532	115	1
BR30-38	33 ... 38	70	786.050.533	115	1



RP connection module

Type	Thermal current (A)	Ordering No.	Weight (g)	Packaging (pcs)
for BR16 and BR 30 thermal overload relays				
RP16	40	38.422.749	50	1

Spare parts: AC coils (50/60 Hz) for KNL6 - KNL38

Type	Ordering No.	Weight (g)	Packaging (pcs)
24	38.502.343	60	1
42	38.502.346	60	1
48	38.502.347	60	1
110/125	38.502.348	60	1
220/240	38.502.272	60	1
380/415	38.502.349	60	1
440/460	38.502.585	60	1
480/520	38.502.470	60	1

Spare parts: DC coils for KNL6G - KNL38G

Type	Ordering No.	Weight (g)	Packaging (pcs)
12	38.502.516	78	1
24	38.502.397	78	1
48	38.502.399	78	1
60	38.502.400	78	1
72	38.502.464	78	1
110	38.502.401	78	1
125	38.502.528	78	1
220	38.502.386	78	1
220	38.502.386	78	1
240	38.502.402	78	1

Ordering data

Standard control voltages and designations (AC), for contactors KNL6 - KNL38

V (50/60 Hz)	24	42	48	110/125	220/240	380/415	440	500
Designations	B7	D7	E7	F7	M7	Q7	R7	S7

Standard control voltages and designations (DC), for contactors KNL6G - KNL38G

V	12	24	48	60	72	110	125	220	240
Designations	JD	BD	ED	ND	SD	FD	GD	MD	MUD

KNL16 - 10 - M7

- M7 — Control voltage
- 10 — Version of contacts
- KNL16 — Type

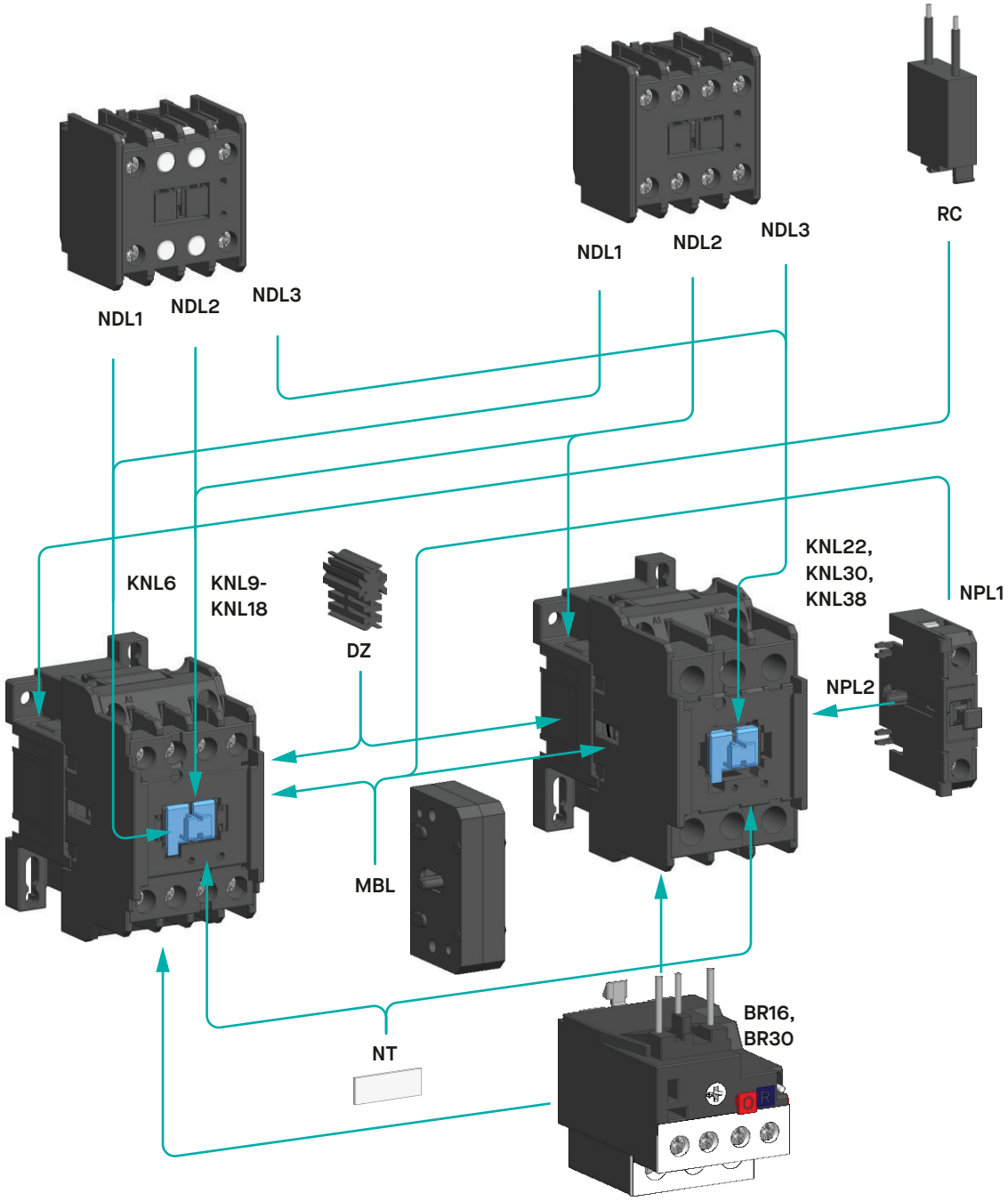
KNLG + NDL

KNL22G-00 - 22 - BD

- BD — Control voltage
- 22 — NDL snap-on auxiliary switch block
- KNL22G-00 — Type

Note: The type designation and control voltage are stated when ordering the contactors

Mounting positions of accessories



KNL43 - KNL75
Contactors

Contactors are an electrically remote controlled switches used for switching a power circuit. Those contactors are mainly used for switching electric motors, pumps, compressors, systems for energy alternative sources, lamps etc.

For universal switching

- All kind of motors
- Electric heating
- Lights and lightning
- Capacitors
- Other eletrical loads

Advanced operation

- Control combinations

Other benefits

- High contact reliabillity at low voltages
- High electrical and mechanical endurance and high switching capacity
- Wide range of control voltages is available

KNL43 - KNL75 characteristics

Technical data	Symbol	Unit	KNL43 KNL43UL	KNL63 KNL63UL	KNL75
General					
Standards			IEC/EN 60947-5-1, IEC 60947-4-1, IEC/EN 60947-1, UL 508		
Approvals			CE, EAC (UL & CSA only for KNL43UL and KNL63UL)		CE, EAC
Module width		mm		65	
Number of poles				3	
Degree of protection				IP20	
Pollution degree				3	
Climatic conditions				95 % relative humidity	
Ambient temperature					
open		°C		-20 ... +60	
closed		°C		-20 ... +45	
Storage temperature		°C		-30 ... +80	
Maximum altitude [1]		m		2.000	
Number of contactors or switches side-by-side					
≤ 40 °C				no limitation	
(40 ... 55) °C					
Noise level (operation)		dB		30	
Maximum operating frequency with no load		op. c./h		3.000	
Mechanical endurance		op. c.		3.000.000	
Weight		g		930	
Main circuit					
Contact reliability				≥ 17 V; ≥ 50 mA	
Power dissipation per pole		W	5	6	6
Overload current withstand capability					
10 s		A	344	504	528
Maximum back-up fuse for short-circuit protection					
gL and gG: coordination type 2		A	80 (125 [2])	125	125
Rated insulation voltage	U_i	V		1000	
Rated impulse withstand voltage	U_{imp}	kV		6	
Rated operational voltage	U_e	V		1000	
Rated frequency	f	Hz		50/60	
Thermal current	I_{th}	A	75 (85 [2])	85 (100 [2])	100
Rated operational current for AC-1, AC-7a and AC-21	I_e	A	75 (85 [2])	85 (100 [2])	100
Operational power for AC-1, AC-7a and AC-21					
single-phase 230 V	P_e	kW	16 (19 [2])	19 (22 [2])	22
three-phase 230 V	P_e	kW	28 (32 [2])	32 (38 [2])	38
three-phase 400 V	P_e	kW	50 (56 [2])	56 (66 [2])	66
Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h		600	
Electrical endurance for AC-1, AC-7a and AC-21		op. c.		200.000	
Rated operational current for AC-3, AC-3e, AC-7b and AC-23 (at 400 V)	I_e	A	43	63	70
Operational power for AC-3, AC-3e, AC-7b and AC-23					
single-phase 230 V	P_e	kW	5.5	7.5	9
three-phase 230 V	P_e	kW	12.5	15	18.5
three-phase 400 V	P_e	kW	22	30	37
three-phase 500 V	P_e	kW	30	40	45
three-phase 690 V	P_e	kW	30	40	45
three-phase 1000 V	P_e	kW	22	30	30
Maximum operating frequency for AC-3, AC-3e, AC-7b and AC-23		op. c./h		600	
Electrical endurance for AC-3, AC-3e, AC-7b and AC-23		op. c.	800.000	400.000	400.000
Rated operational current for AC-4 (at 400 V)	I_e	A	29	41	41

[1] U and U is reduced for 1.2 % and I for 0.4 % for every additional 100 m

[2] Ratings for KNL43/63UL version

KNL43 - KNL75 characteristics

Technical data	Symbol	Unit	KNL43 KNL43UL	KNL63 KNL63UL	KNL75
Main circuit					
Operational power for AC-4					
three-phase 400 V	P_e	kW	15	22	22
three-phase 500 V			18.5	25	25
Maximum operating frequency for AC-4		op. c./h		300	
Electrical endurance for AC-4		op. c.	40.000	20.000	20.000
Rated motor power according to standards UL and CSA					
single-phase 120 V	P_e	HP	3	5	5
single-phase 240 V			7.5	10	10
three-phase 240 V			15	20	25
three-phase 480 V			25	30	40
three-phase 600 V			30	40	50
Maximum operating frequency for motors acc. to UL and CSA		op. c./h		600	
Electrical endurance for motors acc. to UL and CSA		op. c.	800.000	400.000	400.000
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	440	660	770
Maximum operating frequency for AC-6b and AC-7c		op. c./h		600	
Electrical endurance for AC-6b and AC-7c		op. c.		100.000	
Rated operational current for DC-1 (L/R < 1 ms)					
1 pole ... 24 V DC/ 48 V DC/ 60 V DC/ 110 V DC/ 220 V DC	I_e	A		50 / 50 / 50 / 8 / 6	
2 poles in series ... 24 V DC/ 48 V DC/ 60 V DC/ 110 V DC/ 220 V DC				70 / 70 / 70 / 60 / 36	
3 poles in series ... 24 V DC/ 48 V DC/ 60 V DC/ 110 V DC/ 220 V DC				70 / 70 / 70 / 60 / 50	
Maximum operating frequency for DC-1		op. c./h		300	
Terminal capacity:					
rigid (solid and stranded)	S	mm^2		35	
flexible				25	
Length of removed wire insulation		mm		16	
Screw				M6	
Screw head				PZ2	
Tightening torque		Nm		4	
Auxiliary circuit					
Maximum back-up fuse for short-circuit protection gL and gG: coordination type 2	I_v	A		10	
Rated operational current for AC-15					
single-phase 230 V	I_e	A		6	
single-phase 400 V				4	
single-phase 500 V				2	
single-phase 690 V				1	
Maximum operating frequency for AC-15		op. c./h		1.200	
Electrical endurance for AC-15		op. c.		1.000.000	
Terminal capacity					
rigid (solid and stranded)		mm^2		1 ... 2.5	
flexible				1 ... 2.5	
Length of removed wire insulation		mm		10	
Screw				M3.5	
Screw head				PZ2	
Tightening torque		Nm		0.8	

KNL43 - KNL75 characteristics

Technical data		Symbol	Unit	KNL43 KNL43UL	KNL63 KNL63UL	KNL75
Coil						
Range of control voltage for switch-on		U_c	%		85 ... 110	
Range of control voltage for drop out		U_c	%		20 ... 75	
Kind of voltage					AC	
Standard control voltages		U_c	V		12 ... 500	
Frequency of AC control voltage		f	Hz		50/60	
Control mode					remote control with U_c	
Coil consumption						
	switch-on		VA/W		130/80	
	operation				10/3	
Delays						
	make		ms		10 ... 20	
	brake				8 ... 15	
Terminal capacity						
	rigid (solid and stranded)		mm^2		1 ... 2.5	
	flexible				1 ... 2.5	
Length of removed wire insulation			mm		11	
Screw					M3.5	
Screw head					PZ2	
Tightening torque			Nm		0.8	
Safety						
MTTF - Mean time to failure		AC-1	h		5.000	
MTTF = $1/\lambda$ = B10/(0.1 n_{op})		AC-3		20.000		10.000
$MTTF_d$ - Mean time to failure dangerous		AC-1	h		6.666	
$MTTF_d = 1/\lambda_d = B10_d /(0.1\ n_{op})$		AC-3		26.666		13.333
B10 - Number of operating cycles until 10 % of devices fail		AC-1	op. c.		150.000	
		AC-3		600.000		300.000
$B10_d$ - Number of operating cycles until 10 % of device dangerous		AC-1	op. c.		200.000	
$B10_d$ = B10/ratio of dangerous failures		AC-3		800.000		400.000
λ - Failure rate		AC-1	1/h		0.0002	
λ = (0.1 n_{op})/B10		AC-3		0.00005		0.0001
λ_d - Failure rate dangerous		AC-1	1/h		0.00015	
λ_d = (0.1 n_{op})/$B10_d$		AC-3		0.00004		0.000075
Ratio of dangerous failures			%		75	
n_{op} - Operating cycles (operating cycles/h)			op. c./h		300	

Electrical endurance

Diagram 1
Electrical endurance of motor contactors
KNL43 - KNL75, KNL43UL, KNL63UL
– **AC-3, AC-3e**

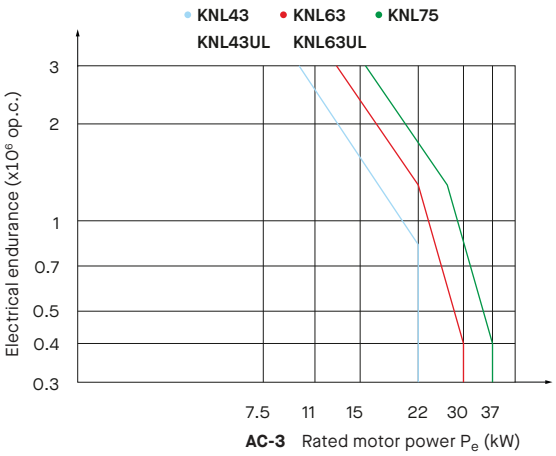
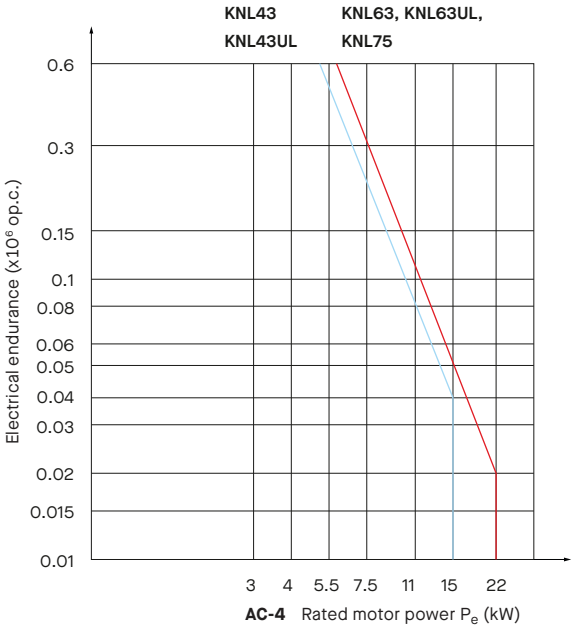


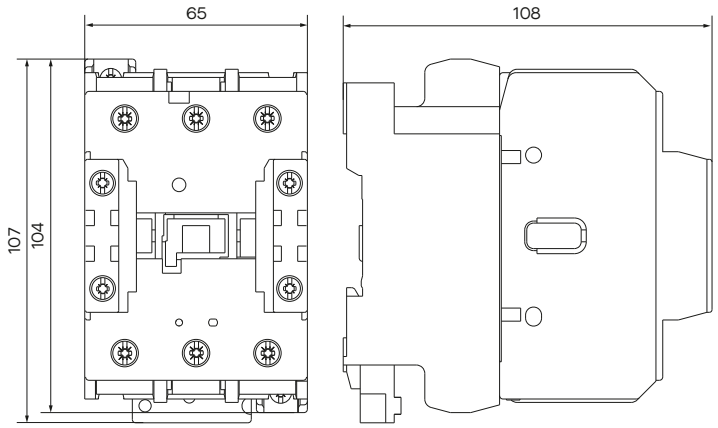
Diagram 2
Electrical endurance of motor contactors
KNL43 - KNL75, KNL43UL, KNL63UL
– **AC-4**



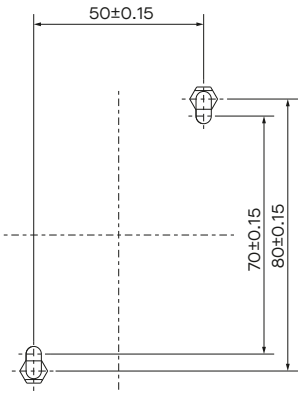
Dimensions

(mm)

KNL43 ... KNL75
KNL43UL, KNL63UL



KNL43 ... KNL75 - drilling plan
KNL43UL, KNL63UL



Motor contactors characteristics

AC

Type	Rated Current I_e (A)	Control Voltage at 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 65 mm widths)						
KNL43-11 Q7	43	380/415 V	A1 1 3 5 13 21 / A2 2 4 6 14 22	30.050.946	930	1
KNL43-11 M7	43	220/240 V		30.050.498	930	1
KNL43-11 B7	43	24 V		30.050.482	930	1
AC-3 acc. to UL 508 (3-pole, 65 mm widths)						
KNL43-11UL Q7	43	380/415 V	A1 1 3 5 13 21 / A2 2 4 6 14 22	30.051.014	930	1
KNL43-11-UL M7	43	220/240 V		30.051.012	930	1
KNL43-11-UL B7	43	24 V		30.051.004	930	1
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 65 mm widths)						
KNL63-11 Q7	63	380/415 V	A1 1 3 5 13 21 / A2 2 4 6 14 22	30.050.951	930	1
KNL63-11 M7	63	220/240 V		30.050.499	930	1
KNL63-11 B7	63	24 V		30.050.490	930	1
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)						
KNL63-11-UL Q7	63	380/415 V	A1 1 3 5 13 21 / A2 2 4 6 14 22	30.051.030	930	1
KNL63-11-UL M7	63	220/240 V		30.051.028	930	1
KNL63-11-UL B7	63	24 V		30.051.020	930	1
AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 65 mm widths)						
KNL75-11 Q7	70	380/415 V	A1 1 3 5 13 21 / A2 2 4 6 14 22	30.051.102	930	1
KNL75-11 M7	70	220/240 V		30.051.103	930	1
KNL75-11 B7	70	24 V		30.051.104	930	1

Ordering data

Standard control voltages and designations (AC), for contactors KNL43, KNL43UL, KNL63, KNL63UL, KNL75

V (50/60 Hz)	24	42	48	220/240	380/415
Designations	B7	D7	E7	M7	Q7

KNL63 - 11 - M7 - 50/60

- 50/60 — Frequency
- M7 — Control voltage
- 11 — Version of auxiliary contacts
- KNL63 — Type

Note: The type designation and control voltage are stated when ordering the contactors

KNL43 - KNL75 Accessories

Snap-on auxiliary switch blocks

Technical data		Symbol	Unit	NDL4
General				
Standards				IEC/EN 60947-5-1, VDE 0660, UL 508
Approvals				CE, UL, CSA
For use with				KNL43, KNL43UL, KNL63, KNL63UL, KNL75
Module width				2
Number of poles				2 or 4
Degree of protection				IP20
Pollution degree				3
Ambient temperature				
	open		°C	-25 ... +55
	closed			-25 .... +45
Storage temperature			°C	-30 ... +80
Maximum altitude [1]			m	2.000
Maximum operating frequency with no load			op. c./h	3.000
Mechanical endurance			op. c.	10.000.000
Weight			g	70
Auxiliary circuit				
Contact reliability				≥ 17 V; ≥ 50 mA
Maximum back-up fuse for short-circuit protection gL and gG				
	coordination type 2		A	16
Rated insulation voltage		U_i	V	690
Rated impulse withstand voltage		U_{imp}	kV	6
Rated operational voltage		U_e	V	690
Rated frequency		f	Hz	50 / 60
Thermal current		I_{th}	A	16
Rated operational current for AC-15				
	single-phase 230 V	I_e	A	6
	single-phase 400 V			4
	single-phase 500 V			2
	single-phase 690 V			1
Maximum operating frequency for AC-15			op. c./h	1.200
Electrical endurance for AC-15			op. c.	500.000
Switching of auxiliary loads acc. to standard UL and CSA				A600, N600
Rated operational current for DC-13				
1 pole ... 24 V DC / 60 V DC / 110 V DC / 220 V DC			A	10 / 4 / 0.9 / 0.4
Maximum operating frequency for DC-13			op. c./h	1.200
Electrical endurance for DC-13			op. c.	500.000
Terminal capacity				
	rigid (solid and stranded)	S	mm²	0.75 ... 4
	flexible			0.5 ... 2.5
Length of removed wire insulation			mm	10
Screw				M3.5
Screw head				PZ2
Tightening torque			Nm	1.4

[1] U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m

BR63 Thermal overload relay

Technical data			Symbol	Unit	BR63
General					
Standards					IEC 60947-4-1, IEC 60947-5-1, UL 508
Approvals					CE, UL
For use with					KNL43, KNL43UL, KNL63, KNL63UL, KNL75
Degree of protection					IP20
Ambient temperature					
	operating			°C	-5 ... +55
	storage				-25 .... +70
Dimensions (WxHxD)				mm	65 x 85.5 x 97.5
Operating position					vertical
Reset type					auto, manual
Weight				g	350
Main circuit					
Rated insulation voltage			U_i	V	690
Rated impulse withstand voltage			U_{imp}	kV	6
Rated operational voltage			U_e	V	690
Adjustable current			I_r	A	17 ... 97
Rated frequency			f	Hz	50 / 60
Overvoltage category / pollution degree acc. to IEC/EN 60947-1					III / 3
Trip class acc. to IEC/EN 60947-4-1					10
Sensitivity to phase failure					yes
Power loss at I_n			P	W	11 ... 15.5
Terminal capacity				mm^2	6 ... 35
Conductor insulation stripping length				mm	12
Screw					M5
Screw head					PZ2
Tightening torque				Nm	2.5
Auxiliary circuits					
Rated insulation voltage			U_i	V	690
Rated impulse withstand voltage			U_{imp}	kV	6
Rated operational voltage			U_e	V	AC: 600; DC: 250
Overvoltage category / pollution degree acc. to IEC/EN 60947-1					III / 3
Thermal current (both contacts)			I_{th}	A	10
Contact electrical rating					A600 / Q300
Rated operational current for AC-15					
	120 V	both contacts	I_e	A	6
	240 V				3
	380 V				1.9
	480 V				1.5
	500 V				1.4
	600 V				1.2
Rated operational current for DC-13					
	125 V	both contacts	I_e	A	0.55
	250 V				0.27
Terminal capacity				mm^2	0.75 ... 2.5
Conductor insulation stripping length				mm	8
Screw					M3.5
Screw head					PZ2
Tightening torque				Nm	0.8

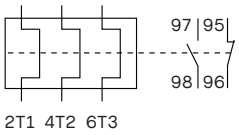
Setting ranges and maximum permitted back-up fuses

BR63 thermal overload relay

Setting range (A)	Max. back-up fuse gL/gG (A)
17 - 25	100
24.5 - 36	100
35 - 47	125
45 - 60	150
58 - 75	200
72 - 90	250
77 - 97	250

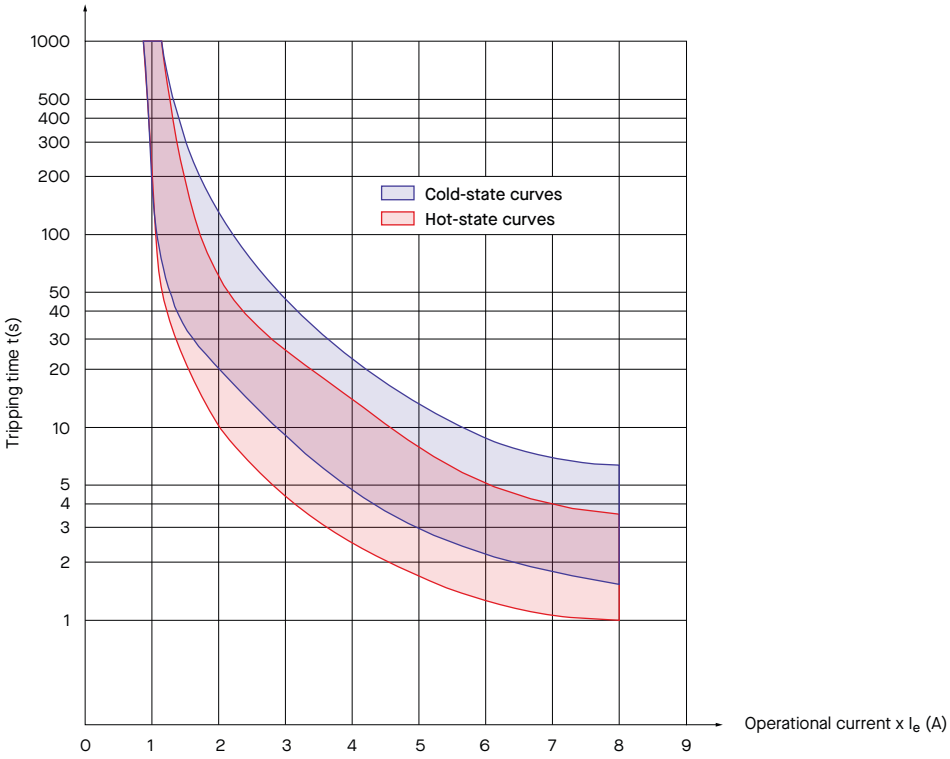
Connection diagram

BR63



Tripping curve

BR63



Snap-on auxiliary switch blocks

Type	Compatible with	Rated current I_e (A)	Rated voltage U_e (V)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (2- and 4-pole)							
NDL4	KNL43, KNL43U, LKNL63, KNL63UL, KNL75	6	230	-11	38.423.011	66	10
		6	230	-02	38.423.012	66	10
		6	230	-20	38.423.473	66	10
		6	230	-22	38.422.910	66	10
		6	230	-31	38.422.911	66	10
		6	230	-13	38.423.013	66	10
		6	230	-40	38.423.474	66	10
		6		-04	38.423.475	66	10

BR63 characteristics

Type	Setting range (A)	Max. backup fuse for coordination 1 (A)	Ordering No.	Weight (g)	Packaging (pcs)
Up to 97 A for KNL43 - KNL75, KNL43UL, KNL63UL contactors					
BR63-25	17 ... 25	100	786.050.504	350	1
BR63-36	24.5 ... 36	100	786.050.505	350	1
BR63-47	35 ... 47	125	786.050.506	350	1
BR63-60	45 ... 60	150	786.050.507	350	1
BR63-75	58 ... 75	200	786.050.508	350	1
BR63-90	72 ... 90	250	786.050.509	350	1
BR63-97	77 ... 97	250	786.050.510	350	1

RC suppressor

Type	Compatible with	Control voltage U_c (V)	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
AC-15 acc. to IEC/EN 60947-5-1 (single pole for side mounting)						
RC1-KNL	KNL43 - KNL75, KNL43UL, KNL63UL	12 - 48	R C	30.017.074	16	10
RC2-KNL		48 - 250		30.017.075	16	10
RC3-KNL		250 - 380		30.017.076	16	10
RC4-KNL		380 - 600		30.017.077	16	10

Mechanical interlock

Type	Compatible with	Ordering No.	Weight (g)	Packaging (pcs)
MBL43	KNL43 - KNL75, KNL43UL, KNL63UL	38.422.853	14	10

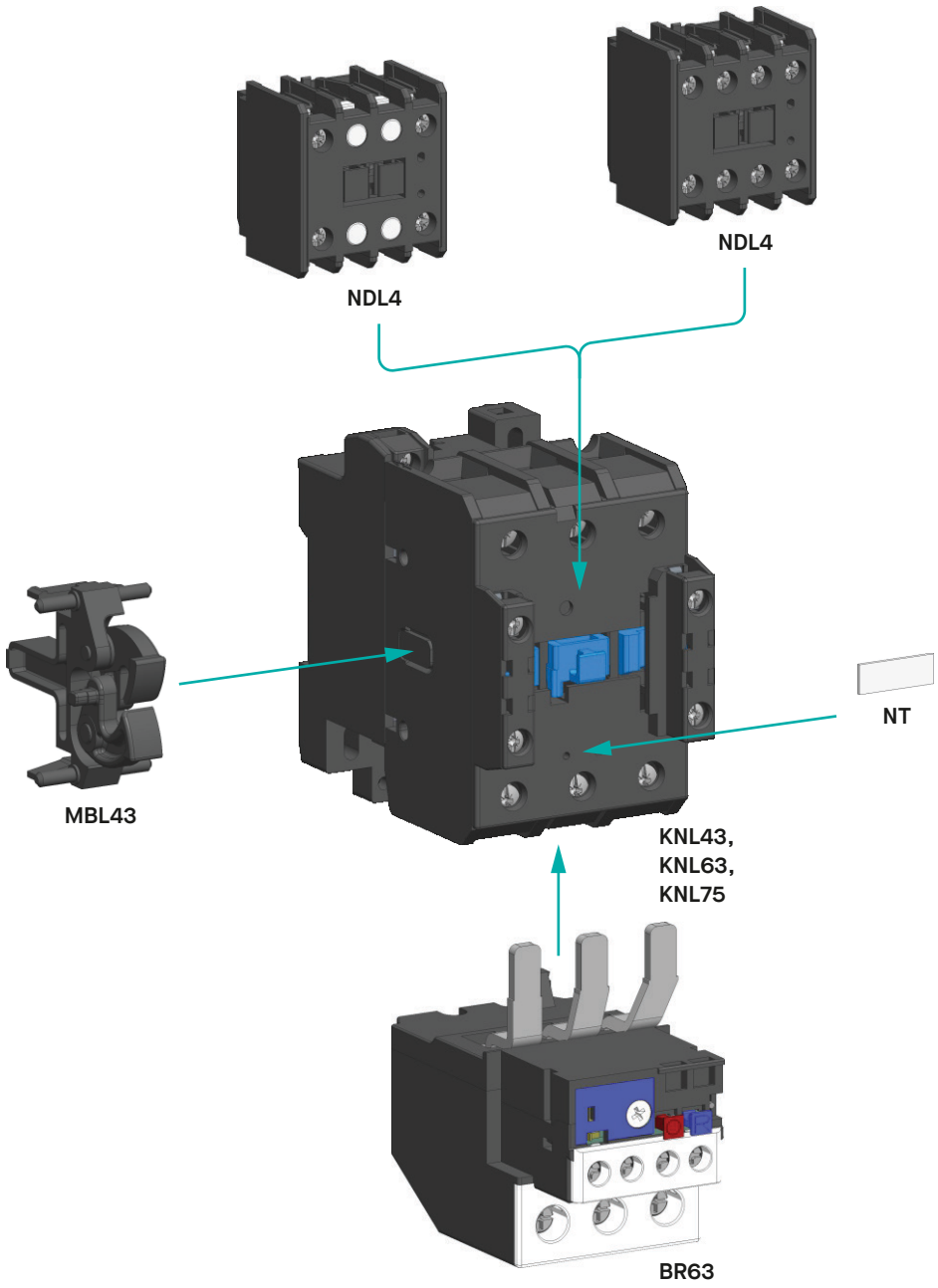
Identification plate

Type	Ordering No.	Weight (g)	Packaging (pcs)
NT	37.425.330	1	10

Spare parts: AC coils (50/60 Hz) for KNL43(UL) - KNL75(UL)

Type	Ordering No. (KNL43 - KNL75)	Ordering No. (KNL43UL - KNL75UL)	Weight (g)	Packaging (pcs)
24	38.501.841	38.502.846	60	1
42	38.502.602	38.502.850	60	1
48	38.501.987	38.502.851	60	1
220/240	38.502.286	38.502.847	60	1
380/415	38.502.610	38.502.848	60	1

Mounting positions of accessories



KNN
Heavy-duty contactors

Types

KNN80	three pole, 80 A
KNN95	three pole, 95 A
KNN110	three pole, 110 A
KNN150	three pole, 150 A
KNN175	three pole, 175 A
KNN210	three pole, 210 A
KNN260	three pole, 260 A
KNN315	three pole, 315 A
KNN450	three pole, 450 A
KNN550	three pole, 550 A
KNN700	three pole, 700 A
KNN860	three pole, 860 A

Auxiliary switches		**For use with**
NDN2-22	2 NO / 2 NC	KNN80 - KNN315
NDN2-31	3 NO / 1 NC	KNN80 - KNN315
NDN2-40	4 NO / 0 NC	KNN80 - KNN315
NPN1-11	1 NO / 1 NC	KNN80 - KNN315
NDN3-22	2 NO / 2 NC	KNN450 - KNN860

Applications

Heavy-duty contactors are designed with standard dimensions for easy integration and offer a wide range of top and side auxiliary contact blocks. They feature a horizontal mechanical interlock, allowing different contactor sizes to be interlocked up to 135A. With a supply voltage range from 12V to 690V AC, DC, or AC/DC, they ensure reliable performance in demanding applications. Ideal for particularly heavy-duty use, these contactors provide durability and flexibility for industrial environments.

Technical data

Type	Symbol	Unit	KNN80	KNN95	KNN110	KNN150	KNN175
GENERAL							
Standards					IEC/EN60947-4-1, UL508		
Coil			AC	AC	AC / DC	AC / DC	AC / DC
Width		mm		79		110	
Dimensions (H x W x D)		mm	137 × 79 × 130		162 × 79 × 130	170 × 110 × 162	
MECHANICAL DATA							
Number of poles					3		
Degree of protection				IP20 front		IP00-IP20 (Front IP20 with optional shrouds)	
Ambient temperature							
open		°C			-25 ... +70		
close					-25 ... +70		
Storage temperature		°C			-40 ... +80		
Maximum operating frequency with no load		op.c./h		3000		1200	
Mechanical endurance		op.c.			10.000.000		
Weight		kg		1.8	2.2	4	
ELECTRICAL DATA POWER CIRCUIT							
Main pole resistance		mΩ		1		0.5	0.35
Rated short time current t. amb. = 40 °C							
1 s			900	1000	1200	1500	1750
4 s		A	800	900	1200	1500	1750
10 s			640	760	920	1200	1400
15 s			500	560	800	1050	1250
Maximum back-up fuse for short-circuit protection							
gG coordination type 1 (U_e=440 V)			160	160	200	250	315
gG coordination type 2 (U_e=440 V)	P_e	kW	125	125	160	200	250
aM coordination type 2 (use associated with an overload relay)			100	125	125	160	200
Rated insulation voltage	U_i	V			1000		
Razed impulse withstand voltage	U_{imp}	kV			8		
Rated operational voltage	U_e	V			1000		
Rated frequency	f	Hz			50 / 60		
Thermal current	I_{th}	A	125	125	135	230	250
Rated operational current for							
AC-1 U_e=690V t.amb.=40°C		A	125	125	135	230	250
AC-3 U_e=440V t.amb.=55°C		A	80	95	110	150	175
Operational power for AC-1 three-phase 400 V	P_e	kW	86	86	94	159	173
Maximum operating frequency for AC-1		op. c./h			500		
Electrical endurance for AC-1		op. c.			20.000		
Rated operational current for AC-3 (at 400 V)	I_e	A	80	95	110	150	175
Operational power for AC-3							
three-phase 230 V			22	25	30	40	50
three-phase 400 V			37	45	55	75	90
three-phase 440 V	P_e	kW	45	51	63	85	100
three-phase 500 V			45	51	55	90	110
three-phase 690 V			45	51	55	110	132
three-phase 1000 V			25	30	37	75	90
Maximum operating frequency for AC-3		op. c./h	140	100	70	80	60
Electrical endurance for AC-3		op. c.			800.000		
Rated operational current for AC-4 (at 400 V)	I_e	A	35	40	45	55	63
Operational power for AC-4 three-phase 400 V	P_e	kW	17	18.5	22	25	30
Electrical endurance for AC-4		op. c.			20.000		
Rated motor power according to standards UL and CSA							
single-phase 115 V			5	7.5	10	15	15
single-phase 230 V			15	15	20	25	30
three-phase 200 V	P_e	HP	20	25	30	40	50
three-phase 230 V			25	30	40	50	60
three-phase 460 V			50	60	75	100	125
three-phase 575 V			60	75	100	125	150

Technical data

Type	Symbol	Unit	KNN80	KNN95	KNN110	KNN150	KNN175
Maximum operating frequency for motors according to UL and CSA		op. c./h	140	100	70	80	60
Electrical endurance for motors according to UL and CSA		op. c.			800.000		
Maximum operating frequency for general use according to UL and CSA		op. c./h	140	100	70	80	60
Electrical endurance for general use according to UL and CSA		op. c.			800.000		
Rated operational current for DC-1 (L/R ≤ 1 ms)							
1 pole... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC	I_e	A	80/63/ -/-/-	90/80/ -/-/-	100/90/ -/-/-	160/125/ 125/-/-	200/160/ 125/-/-
2 poles in series ... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC			90/80/ 80/-/-	100/90/ 90/-/-	110/100/ 100/-/-	160/160/ 125/125/-	200/200/ 160/160/-
3 poles in series ... 24 V DC / 75 V DC / 125 V DC / 20 V DC / 300 V DC			90/90/ 90/-/-	100/100/ 100/90/-	110/110/ 110/100/-	160/160/ 160/160/125	200/200/ 200/200/160
Connection size							
Cables	S	mm^2	1×4 ... 35 + 1×4 ... 50			2×16 ... 120 with MR3	
Bars		mm	/				2x(20×5)
Tightening torque		Nm	8			17	
ELECTRICAL DATA CONTROL CIRCUIT							
Range of control voltage for switch-on	U_c	%	85 - 110 (AC / DC)				
Range of control voltage for drop-out	U_c	%	20 - 75 (AC) / 10 - 60 (DC)				
Standard AC control voltages	U_c	V	12, 24, 240, 380-400, 690		24, 48, 110-120, 220-240, 380-415, 440-480, 600		
Standard DC control voltages	U_c	V	12, 24, 48, 110, 220, 250		24, 48, 110, 220, 250		
Frequency of AC control voltage	f	Hz	50 / 60				
Control mode			Remote control with U_c				
AC coil consumption							
pick-up		VA / W	250			350	
operation			18 / 6.3		24-125V: 4 220-600V: 19	5	
DC coil consumption							
pick-up		W	230			350	
operation			4			5	
Operating time at AC rated voltage							
pick-up		ms	12 ... 30		15 ... 50	30 ... 60	
drop-out			6 ... 15			30 ... 80	

Technical data

Type	Symbol	Unit	KNN210	KNN260	KNN315	KNN450	KNN550
GENERAL							
Standards				IEC/EN60947-4-1, UL508			
Coil				AC / DC			
Width		mm		145		220	
Dimensions (H x W x D)		mm		200 × 145 × 208		250 × 220 x 225	258 × 220 x 225
MECHANICAL DATA							
Number of poles					3		
Degree of protection				IP00-IP20 (Front IP20 with optional shrouds)			
Ambient temperature							
open		°C			-25 ... +70		
close					-25 ... +70		
Storage temperature		°C			-40 ... +80		
Maximum operating frequency with no load		op.c./h			1200		
Mechanical endurance		op.c.		8.000.000		/	
Weight		kg		7.5		13	13.5
ELECTRICAL DATA POWER CIRCUIT							
Main pole resistance		mΩ		0.15		0.13	0.11
Rated short time current t. amb. = 40 °C							
1 s		A	2100	2600	3150	4500	5500
4 s			2100	2600	3150	4500	5500
10 s			1800	2200	2600	3600	4400
15 s			1600	2000	2250	3000	3800
Maximum back-up fuse for short-circuit protection							
gG coordination type 1 (U_e=440 V)	P_e	kW	400	500	500	630	630
gG coordination type 2 (U_e=440 V)			315	400	400	500	560
aM coordination type 2 (use associated with an overload relay)			250	315	315	-	-
Rated insulation voltage	U_i	V			1000		
Razed impulse withstand voltage	U_{imp}	kV			8		
Rated operational voltage	U_e	V			1000		
Rated frequency	f	Hz			50 / 60		
Thermal current	I_{th}	A	350	450	500	700	800
Rated operational current for							
AC-1 U_e=690V t.amb.=40°C		A	350	450	500	700	800
AC-3 U_e=440V t.amb.=55°C		A	210	260	315	450	550
Operational power for AC-1 three-phase 400 V	P_e	kW	242	311	346	485	554
Maximum operating frequency for AC-1		op. c./h			500		
Electrical endurance for AC-1		op. c.					
Rated operational current for AC-3 (at 400 V)	I_e	A	210	260	315	450	550
Operational power for AC-3							
three-phase 230 V	P_e	kW	60	75	90	132	175
three-phase 400 V			110	132	160	250	315
three-phase 440 V			125	150	190	270	335
three-phase 500 V			132	160	210	300	375
three-phase 690 V			132	160	210	375	500
three-phase 1000 V			110	132	160	280	355
Maximum operating frequency for AC-3		op. c./h	140	90	60	55	55
Electrical endurance for AC-3		op. c.		800.000		600.000	
Rated operational current for AC-4 (at 400 V)	I_e	A	85	100	120	150	180
Operational power for AC-4 three-phase 400 V	P_e	kW	45	55	63	75	90
Electrical endurance for AC-4		op. c.	20.000	10.000		6.000	
Rated motor power according to UL and CSA							
single-phase 115 V	P_e	HP	20	25	25	-	-
single-phase 230 V			40	50	50	-	-
three-phase 200 V			60	75	100	125	150
three-phase 230 V			75	100	125	125	150
three-phase 460 V			150	200	250	250	350
three-phase 575 V			200	250	300	250	350

Technical data

Type	Symbol	Unit	KNN210	KNN260	KNN315	KNN450	KNN550
Maximum operating frequency for motors according to UL and CSA		op. c./h	140	90	60	55	55
Electrical endurance for motors according to UL and CSA		op. c.		800.000		600.000	
Maximum operating frequency for general use according to UL and CSA		op. c./h	140	90	60	55	55
Electrical endurance for general use according to UL and CSA		op. c.		800.000		600.000	
Rated operational current for DC-1 (L/R ≤ 1 ms)							
1 pole... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC	I_e	A	250/200/ 160/-/-	315/225/ 180/-/-	350/315/ 200/-/-	450/450/ 315/-/-	550/550/ 400/-/-
2 poles in series ... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC			250/250/ 200/200/-	315/315/ 225/225/-	350/350/ 260/260/-	450/450/ 400/315/-	550/550/ 500/400/-
3 poles in series ... 24 V DC / 75 V DC / 125 V DC / 20 V DC / 300 V DC			250/250/ 250/250/200	315/315/ 315/315/225	350/350/ 350/350/260	450/450/ 450/400/315	550/550/ 550/500/400
Connection size							
Cables	S	mm^2		2×150		2×240	
Bars		mm	2x(25×5)	2x(30×5)	2x(30×6)	2x(40×5)	2x(50×5)
Tightening torque		Nm		35			50
ELECTRICAL DATA CONTROL CIRCUIT							
Range of control voltage for switch-on	U_c	%		85 - 110 (AC / DC)			
Range of control voltage for drop-out	U_c	%		20 - 75 (AC) / 10 - 60 (DC)			
Standard AC control voltages	U_c	V		24, 48, 110-120, 220-240, 380-415, 440-480, 600			
Standard DC control voltages	U_c	V		24, 48, 110, 220, 250			
Frequency of AC control voltage	f	Hz		50 / 60			
Control mode				Remote control with U_c			
AC coil consumption							
pick-up		VA / W		360		800 ... 950	
operation				5		9 ... 11(9 ... 11)	
DC coil consumption							
pick-up		W		360		750 ... 850	
operation				5		8 ... 10	
Operating time at AC rated voltage							
pick-up		ms		40 ... 60		50 ... 100	
drop-out				40 ... 60		150 ... 200 / 500 ... 1000	

Technical data

Type	Symbol	Unit	KNN700	KNN860
GENERAL				
Standards			IEC/EN60947-4-1, UL508	
Coil			AC / DC	
Width		mm	280	
Dimensions (H x W x D)		mm	307 × 280 × 291	361 × 280 × 291
MECHANICAL DATA				
Number of poles			3	
Degree of protection			IP00-IP20 (Front IP20 with optional shrouds)	
Ambient temperature				
open		°C	-25 ... +70	
close			-25 ... +70	
Storage temperature		°C	-40 ... +80	
Maximum operating frequency with no load		op.c./h	1200	
Mechanical endurance		op.c.		
Weight		kg	26.4	27.6
ELECTRICAL DATA POWER CIRCUIT				
Main pole resistance		mΩ	0.1	0.08
Rated short time current t. amb. = 40 °C				
1 s			7000	8000
4 s		A	7000	8000
10 s			5600	6900
15 s			5000	6000
Maximum back-up fuse for short-circuit protection				
gG coordination type 1 (U_e=440 V)			800	1000
gG coordination type 2 (U_e=440 V)	P_e	kW	-	-
aM coordination type 2 (use associated with an overload relay)			-	-
Rated insulation voltage	U_i	V	1000	
Razed impulse withstand voltage	U_{imp}	kV	8	
Rated operational voltage	U_e	V	690	
Rated frequency	f	Hz	50 / 60	
Thermal current	I_{th}	A	1000	1100
Rated operational current for				
AC-1 U_e=690V t.amb.=40°C		A	1000	1100
AC-3 U_e=440V t.amb.=55°C		A	700	860
Operational power for AC-1 three-phase 400 V	P_e	kW	692	762
Maximum operating frequency for AC-1		op. c./h	200	
Electrical endurance for AC-1		op. c.	6000	
Rated operational current for AC-3 (at 400 V)	I_e	A	700	860
Operational power for AC-3				
three-phase 230 V			225	280
three-phase 400 V			400	500
three-phase 440 V	P_e	kW	450	530
three-phase 500 V			500	600
three-phase 690 V			630	710
three-phase 1000 V			-	-
Maximum operating frequency for AC-3		op. c./h	55	55
Electrical endurance for AC-3		op. c.	600.000	
Rated operational current for AC-4 (at 400 V)	I_e	A	230	280
Operational power for AC-4 three-phase 400 V	P_e	kW	120	150
Electrical endurance for AC-4		op. c.	6.000	
Rated motor power according to standards UL and CSA				
single-phase 115 V			-	-
single-phase 230 V			-	-
three-phase 200 V	P_e	HP	200	250
three-phase 230 V			250	300
three-phase 460 V			500	600
three-phase 575 V			500	600

Technical data

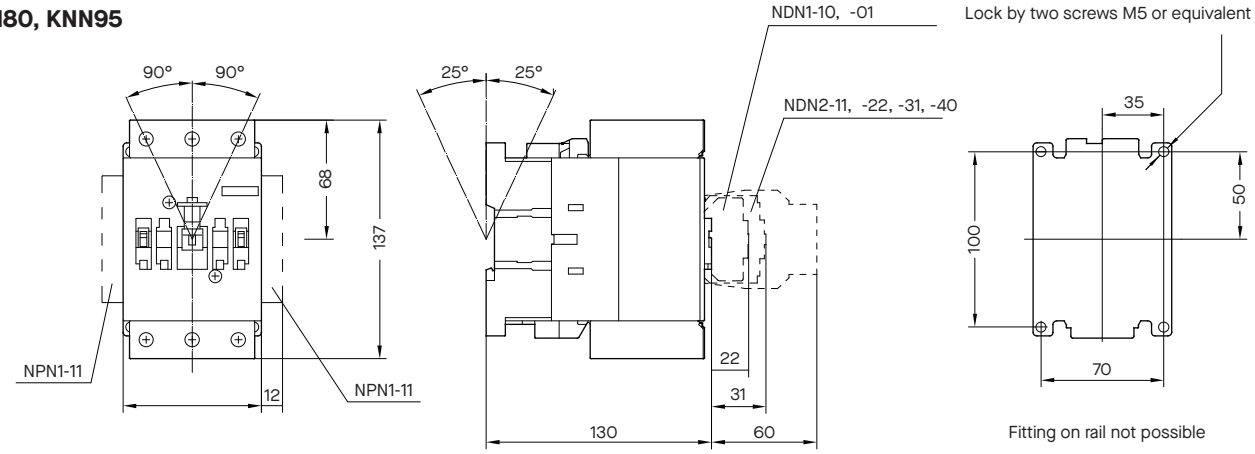
Type	Symbol	Unit	KNN700	KNN860
Maximum operating frequency for motors according to UL and CSA		op. c./h	55	
Electrical endurance for motors according to UL and CSA		op. c.	600.000	
Maximum operating frequency for general use according to UL and CSA		op. c./h	55	
Electrical endurance for general use according to UL and CSA		op. c.	600.000	
Rated operational current for DC-1 (L/R ≤ 1 ms)				
1 pole... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC	I_e	A	700/700/500/-/-	860/860/630/-/-
2 poles in series ... 24 V DC / 75 V DC / 125 V DC / 220 V DC / 300 V DC			700/700/630/630/-	860/860/700/700/-
3 poles in series ... 24 V DC / 75 V DC / 125 V DC / 20 V DC / 300 V DC			700/700/700/700/630	860/860860/860/700
Connection size				
Cables	S	mm^2	2×240	
Bars		mm	2x(60×5)	2x(60×6)
Tightening torque		Nm	60	75
ELECTRICAL DATA CONTROL CIRCUIT				
Range of control voltage for switch-on	U_c	%	85 - 110 (AC / DC)	
Range of control voltage for drop-out	U_c	%	20 - 75 (AC) / 10 - 60 (DC)	
Standard AC control voltages	U_c	V	24, 48, 110-120, 220-240, 380-415, 440-480, 600	
Standard DC control voltages	U_c	V	24, 48, 110, 220, 250	
Frequency of AC control voltage	f	Hz	50 / 60	
Control mode			Remote control with U_c	
AC coil consumption				
pick-up		VA / W	1350 - 1600	
operation			21 - 25 / (21 - 25)	
DC coil consumption				
pick-up		W	1300 - 1550	
operation			18 - 22	
Operating time at AC rated voltage				
pick-up		ms	50 ... 100	
drop-out			150 ... 200 / 500 ... 1000	

Ordering data

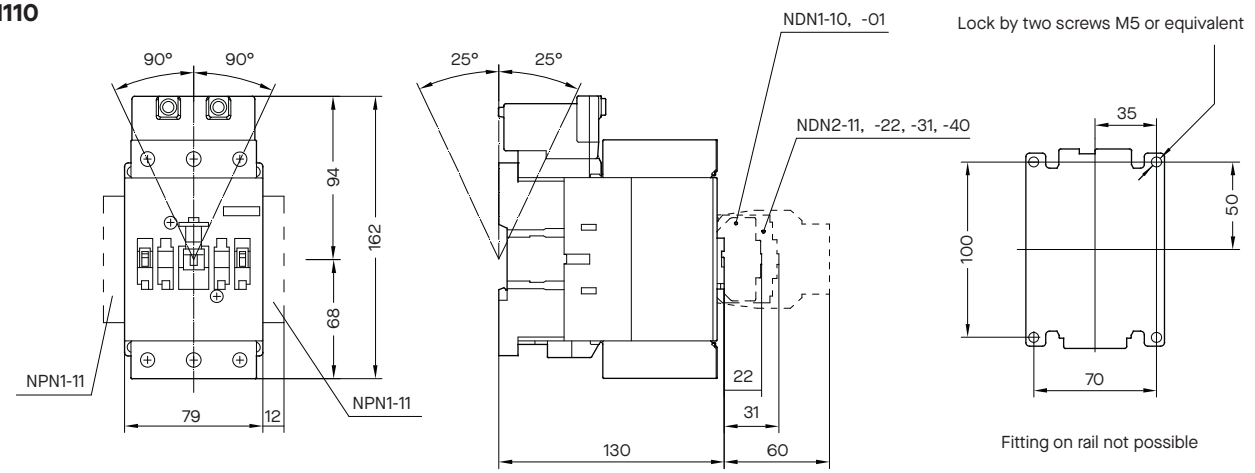
Type	Coil voltage (V)	No. of poles	Coil	Ordering No.
Contactors				
KNN80	24	3	AC	786.020.200
KNN80	48	3	AC	786.020.201
KNN80	60	3	AC	786.020.202
KNN80	110	3	AC	786.020.203
KNN80	220	3	AC	786.020.204
KNN80	240	3	AC	786.020.205
KNN80	380 / 400	3	AC	786.020.206
KNN80	400	3	AC	786.020.199
KNN80	415	3	AC	786.020.207
KNN95	24	3	AC	786.020.208
KNN95	48	3	AC	786.020.209
KNN95	60	3	AC	786.020.210
KNN95	110	3	AC	786.020.211
KNN95	220	3	AC	786.020.212
KNN95	240	3	AC	786.020.213
KNN95	380 / 400	3	AC	786.020.214
KNN95	415	3	AC	786.020.215
KNN95	440	3	AC	786.020.230
KNN110	24	3	AC / DC	786.020.216
KNN110	48	3	AC / DC	786.020.217
KNN110	60	3	AC / DC	786.020.218
KNN110	110	3	AC / DC	786.020.219
KNN110	220 - 240	3	AC / DC	786.020.220
KNN110	380 / 415	3	AC / DC	786.020.222
KNN110	440 / 480	3	AC / DC	786.020.245
KNN150	220 - 240	3	AC / DC	786.020.258
KNN150	380 / 415	3	AC / DC	786.020.259
KNN150	440 / 480	3	AC / DC	786.020.260
KNN175	220 - 240	3	AC / DC	786.020.273
KNN175	380 / 415	3	AC / DC	786.020.274
KNN210	220 - 240	3	AC / DC	786.020.349
KNN210	380 / 415	3	AC / DC	786.020.350
KNN260	220 - 240	3	AC / DC	786.020.288
KNN260	380 / 415	3	AC / DC	786.020.289
KNN315	220 - 240	3	AC / DC	786.020.351
KNN315	380 / 415	3	AC / DC	786.020.352
KNN450	220 - 240	3	AC / DC	786.020.303
KNN450	380 / 415	3	AC / DC	786.020.304
KNN550	220 - 240	3	AC / DC	786.020.316
KNN550	380 / 415	3	AC / DC	786.020.317
KNN700	220 - 240	3	AC / DC	786.020.328
KNN700	380 / 415	3	AC / DC	786.020.329
KNN860	220 - 240	3	AC / DC	
KNN860	380 / 415	3	AC / DC	

Dimensions
(mm)

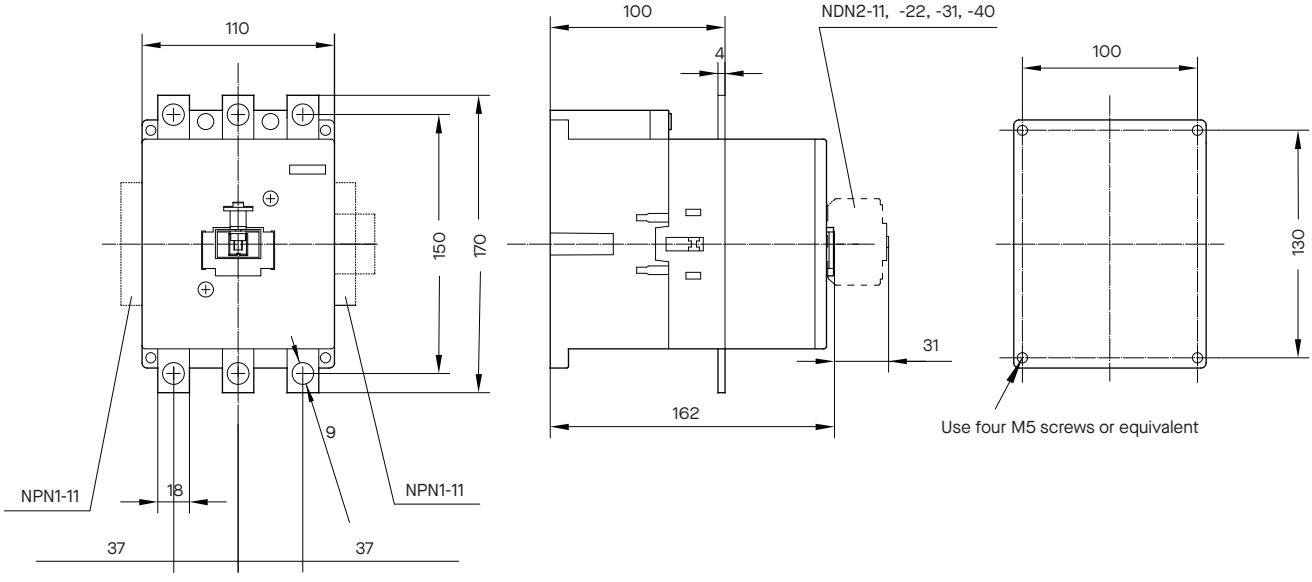
KNN80, KNN95



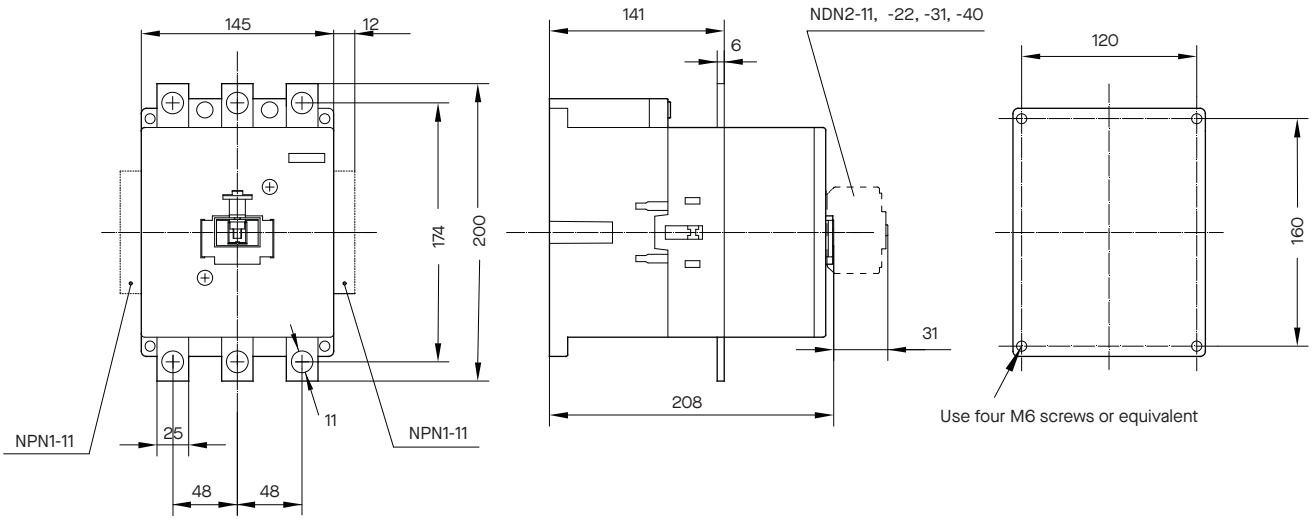
KNN110



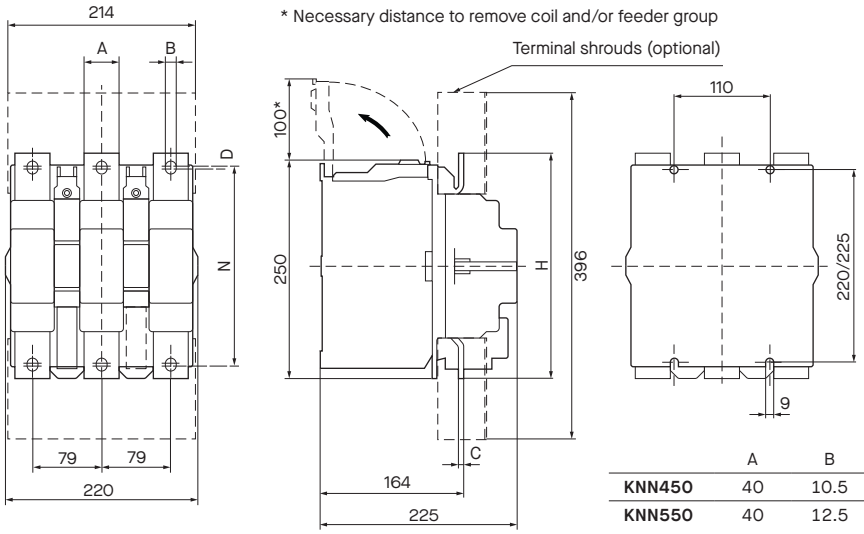
KNN150, KNN175



KNN210, KNN260, KNN315

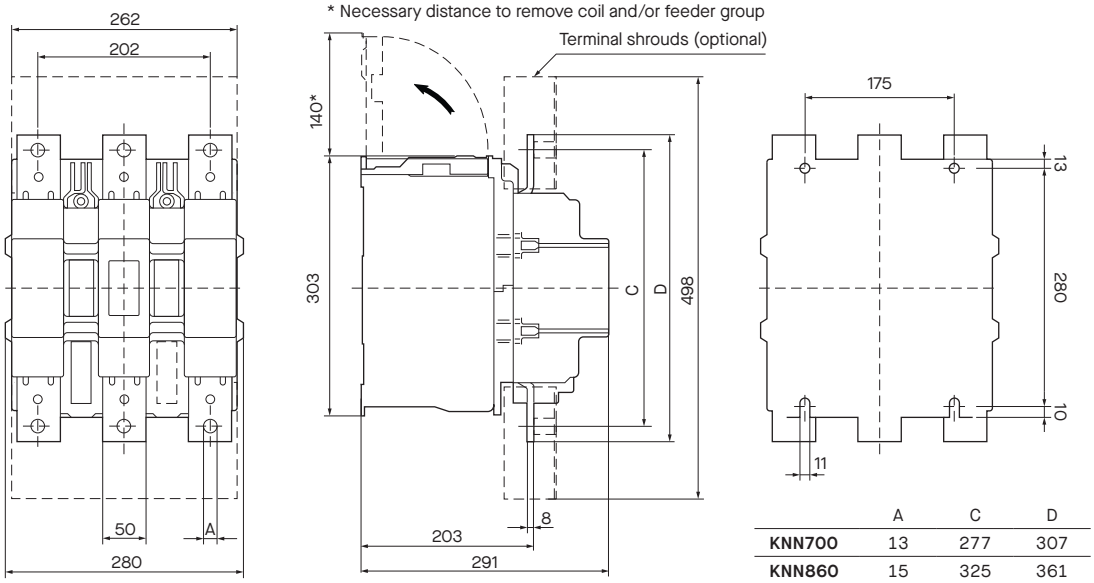


KNN450, KNN550



	A	B	C	D	N	H
KNN450	40	10.5	5	5	208	235
KNN550	40	12.5	6	3	228	258

KNN700, KNN860



	A	C	D
KNN700	13	277	307
KNN860	15	325	361

Auxiliary switch

Technical data

Type	Symbol	Unit	NDN2-22	NDN2-31	NDN2-40	NPN1-11	NDN3-22
GENERAL							
Number of contacts							
Normally open / Normally closed			2NO / 2NC	3NO / 1NC	4NO / 0NC	1NO / 1NC	2NO / 2NC
For use with			KNN80 - KNN315				
Standards			IEC/EN60947-5-1				
Approvals			UL / CSA				CE
Protection degree			IP20				
Pollution degree			3				
Ambient temperature			IP00-IP20 (Front IP20 with optional shrouds)				
open		°C	-25 ... +55				
closed			-25 ... +40				
Storage temperature		°C	-30 ... +80				
Maximum operating frequency with no load		oc. c./h.	3.000				
Mechanical endurance		op. c.	10.000.000				
Fixing			Front mounted			Side mounted	Mounted between the lower terminals
Cables size			1×1 ... 1,5 mm² / 2×1 ... 1,5 mm² / 2×1,5 ... 2,5 mm²				
Weight		kg	0.05				0.12
CHARACTERISTICS							
Rated insulation voltage	U_i	V	690				
Rated operational voltage	U_e	V	690				
Thermal current	I_{th}	A	10				16
Short time withstand current	I_{cw}		500 ms .... 60 A				
Back-up fuses			10 A gG				
Rated current AC-15							
120 V			6				
240 V			3				
400 V	I_e	A	2				
500 V			1.5				
690 V			1				
Rated current DC-13							
24 V				5		4	6
48 V				2		1.5	3
110 V	I_e	A		0.8		0.5	1
220 V				0.4		0.2	0.5

KC
Capacitor-duty contactors

Our capacitor switching systems deliver reliable reactive energy compensation for classic automation devices, meeting the stringent AC-6B utilization category standards. Designed for versatility, they support standard control voltages of 24 V, 220 V, 230 V, and 415 V at 50/60 Hz. With a long electrical lifespan and energy-saving performance that reduces watt losses during operation, they cut costs while protecting your investment. High safety standards mean no risk of dangerous voltages, and parallel switching of capacitor banks comes without de-rating. Requiring less maintenance with minimal downtime, these systems are the smart choice for efficient, cost-effective power management.

Features

- Conforms to utilization category AC-6V
- Standard control voltages:
  24 V 50/60 hz, 220 v 50/60 hz, 230 v 50/60 hz, 415 v 50/60 hz
- Saves costs of expensive replacement
- Long electrical life
- Reduces watt losses during ”on” condition, saves energy
- High safety
- No risk of dangerous voltage
- Switching of capacitor bank in parallel without de-rating
- Less maintenance and downtime
- Approvals: UL, CSA (UL not available for KC75 - KC100)

KC12, KC16, KC20, KC25, KC33, KC40, KC50, KC60, KC75, KC100 characteristics

Type	Rating at 50/60 Hz (kvar)	Current carrying capacity							Power dissipation per pole	Mechanical life		Electrical life
	< 55 °C *	220 - 240 V		400 440 V		kvar / Current rating as per UL (kvar/A)				50 or 60 Hz	50 / 60 Hz	
		kvar	Current at 220 V (A)	kvar	Current at 400 V (A)	240 V	480 V	600 V	W	Million		Operations
KC12-11	12.5	6.7	17.6	12.5	18.1	6 / 15	12.5 / 15	15 / 15	0.36	16	15	200.000
KC16-11	16.7	8.5	22.3	16.7	24.1	8 / 15	16.7 / 20	20 / 20	0.8	16	15	200.000
KC20-11	20	10	26.2	20	28.9	10 / 24	20 / 24	25 / 24	1.25	16	12	100.000
KC25-11	25	15	39.4	25	36.1	12.5 / 30	25 / 30	30 / 30	2	16	12	100.000
KC33-12	33.3	20	52.5	33.3	48.1	16.5 / 40	33.3 / 40	40 / 40	4.2	16	6	100.000
KC40-12	40	25	65.6	40	57.7	20 / 48	40 / 48	50 / 48	4.2	16	6	100.000
KC50-12	50	27	70.9	50	72.3	25 / 60	50 / 60	60 / 60	4.8	16	6	100.000
KC60-12	60	40	104.9	60	86.6	30 / 72	60 / 72	80 / 77	5.1	10	4	100.000
KC75-12	75	45	118	75	108.3	UL certification not available			7.2	8 (50 Hz only)	4	100.000
KC100-12	100	60	157.5	100	143.3				13.5		NA	100.000

* Average ambient temperature should not exceed 45 °C within the 24-hour period in acc. with IEC 60 070 and IEC 60 831

Notes:

KC12 to KC25: clip-on mounting on 35 mm wide rail

KC33 to KC100: clip-on mounting on 75 mm wide rail

Type	Rating at 50/60 Hz (kvar)	Upper block		Wire details						Coil consumption		
	< 55 °C *	Time lag between make contacts of aux block and contactor	Holding time of main contacts of aux block	Cross-sectional area	Length	Material	Lugs at contactor end	Lugs at aux block end	Tightening torque	50 Hz	60 Hz	50 / 60 Hz
		ms	ms	mm^2	mm				Nm	VA	VA	VA
KC12-11	12.5	2 - 10	5 - 12	0.292	174	PFTE coated resistance wire	Ring type lug	Pin type lug	1.2	7	7.5	8
KC16-11	16.7	2 - 10	5 - 12	0.292	174				1.7	7	7.5	8
KC20-11	20	2 - 10	5 - 12	0.292	174				1.85	7.5	7.5	8.5
KC25-11	25	2 - 10	5 - 12	0.292	174				2.5	7.5	7.5	8.5
KC33-12	33.3	2 - 10	5 - 12	0.196	245				5	20	22	26
KC40-12	40	2 - 10	5 - 12	0.196	245				5	20	22	26
KC50-12	50	2 - 10	5 - 12	0.196	245				5	20	22	26
KC60-12	60	2 - 10	5 - 12	0.196	245				9	20	22	26
KC75-12	75	2 - 10	5 - 12	0.196	245				9	20	22	26
KC100-12	100	2 - 10	5 - 12	0.196	245		Pin type lug with connector		11.3	28	/	/

Ordering data

KC 33 - 11(21) - 230 - 50/60

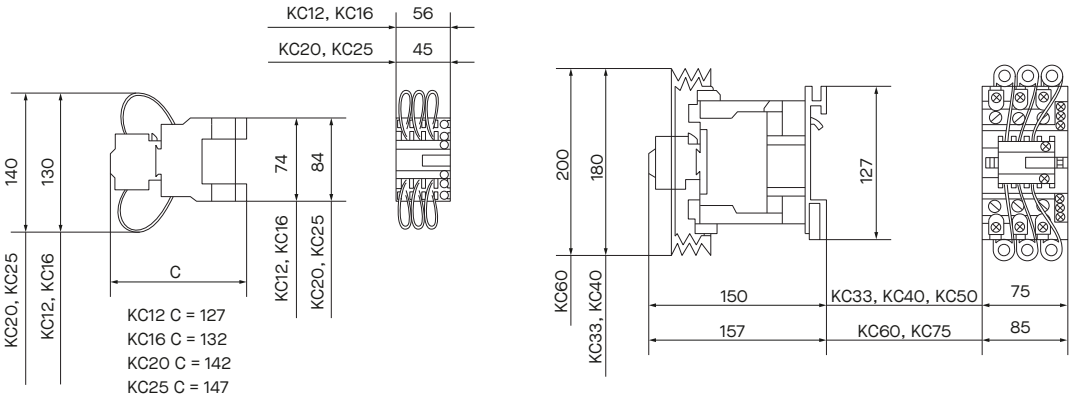
- 50/60 — Frequency (Hz)
- 230 — Control voltage V
- 11(21) — Version of contacts
- 33 — kvar
- KC — Type

Note: The type designation and control voltage are stated when ordering the contactors

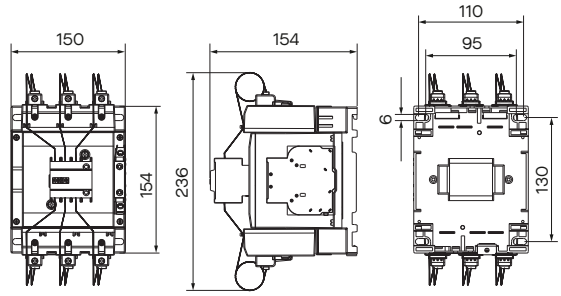
Dimensions

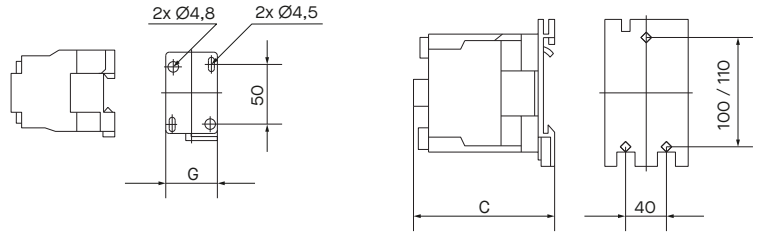
(mm)

KC12 - KC75

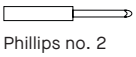


KC100





					mm	Nm	Nm
	Min ... max (mm²)						
KC12	1 ... 4	1 ... 2.5	1 ... 4	1 ... 4			1.2
KC16	1 ... 6	1 ... 4	1.5 ... 6	1.5 ... 6			1.7
KC20	1 ... 6	1 ... 4	1.5 ... 10	1.5 ... 6			1.85
KC25	1 ... 10	1.5 ... 6	1.5 ... 10	2.5 ... 10			2.5
KC33	2.5 ... 25	2.5 ... 10	2.5 ... 25	2.5 ... 16		5	
KC40	2.5 ... 25	2.5 ... 10	2.5 ... 25	2.5 ... 16		5	
KC50	2.5 ... 25	2.5 ... 10	2.5 ... 25	2.5 ... 16		5	
KC60	4 ... 50	4 ... 16	4 ... 50	4 ... 25	10	9	
KC75	4 ... 50	4 ... 16	4 ... 50	4 ... 25	10	9	
KC100	10 ... 95	10 ... 95	10 ... 95	10 ... 95	13	11.3	



AWG	mm²
16	1.31
14	2.08
12	3.31
10	5.26
8	8.37
5	21.15
4	21.15
3	26.31
2	33.62
1	42.41
1/0	53.49

KO
Auxiliary contactors

Auxiliary contactors from Iskra have high mechanical endurance, high contact reliability and provide fast and easy fixation. They are designed for switching currents by being an additional motor starter.

Auxiliary contactors will help you cut administration costs and save energy.

Benefits

- Fast and simple fixation on standard 35 mm according to EN 60 715
- Uniform marking and arrangement of connection terminals according to EN 50 011
- High mechanical endurance
- High contact realiability

Features

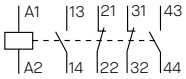
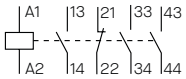
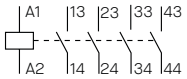
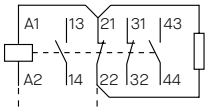
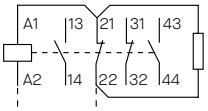
- Contactors are used for switching electric motors and other resistive, inductive and capacitive loads
- Contactors width: 43 mm
- Versions: 4- and 8-pole

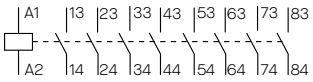
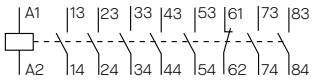
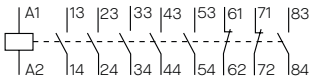
KO series characteristics

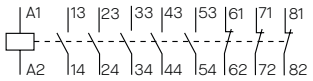
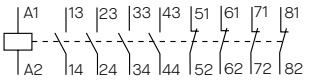
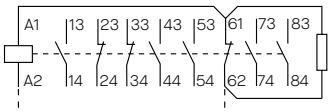
Technical data			Symbol	Unit	KO-22E, KO-22EG, KO-31E, KO-31EG, KO-40E			KO-44E, KO-44EG, KO-53E, KO-53EG, KO-62E, KO-62EG, KO-71E, KO-71EG, KO-80E				
General												
Standards					VDE 0660							
Temperature range of application												
		open		°C	-25 ... +55							
		enclosed			-25 ... +40							
Rated insulation voltage			U_i	V	500							
Rated thermal current			I_{th}	A								
AC11 Rated operating currents												
		220V	I_e	A	6							
		380 V			6							
		500 V			4							
DC11 Rated operating currents			T	ms	15			50			200	
		24 V	I_e	A	14			4			3	
		60 V			4			1			0.4	
		110 V			1.5			0.3			0.15	
		220 V			0.3			0.1			0.05	
Connection leads												
		solid	S	mm^2	1 ... 2.5							
		multi-stranded			0.75 ... 2.5							
Short-circuit protection – Max. fuse current in operation class aM according to IEC 269			I_u	A	20							
Magnetic system												
Range of control voltages			U_c	$V_{\sim}$	6 ... 500							
			U_c	$V_{=}$	6 ... 220							
Operating range			U_c	%	80 ... 110							
Coil Consumption												
	AC	switch-on	P_c	VA	35							
		operation			7							
	DC	switch-on	P_c	W	38							
		operation			6							
Type and No. of free contacts [1]												
		designation No.			22	31	40	44	53	62	71	80
		break contact			2	1	0	4	3	2	1	0
		make contact			2	3	4	4	5	6	7	8

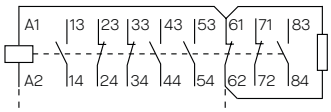
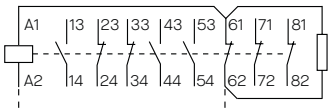
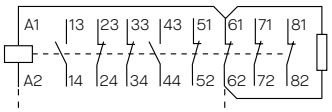
[1] The number of free break contacts is one less from the number given in the table, for versions with DC control voltage

Arrangement and designation of contacts

KO-22E / ... I	KO-31E / ... I	KO-40E / ... I	KO-22EG / ... E	KO-31EG / ... E
				

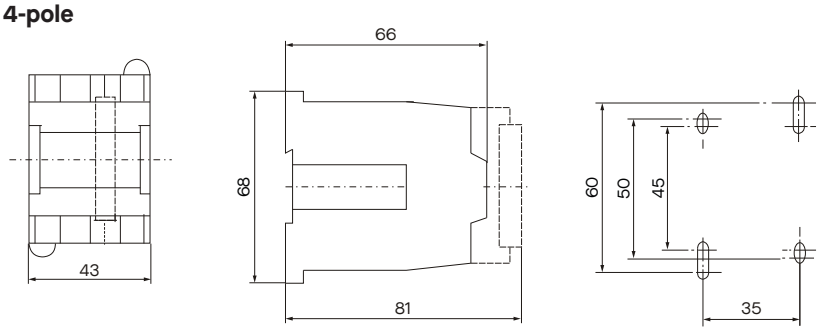
KO-80E / ... I	KO-71E / ... I	KO-62E / ... I
		

KO-53E / ... I	KO-44E / ... I	KO-71EG / ... E
		

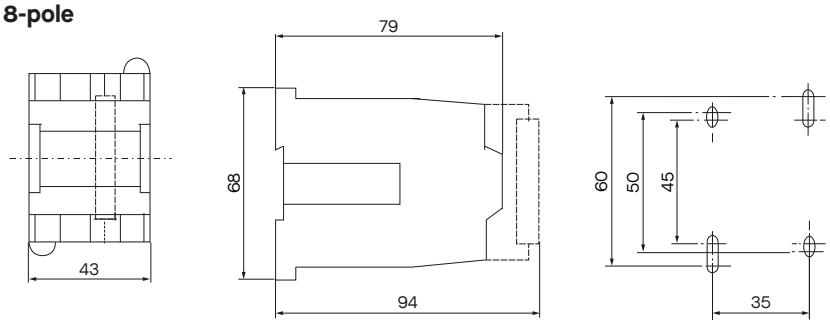
KO-62EG / ... E	KO-53E / G... E	KO-44EG / ... E
		

Dimensions
(mm)

4-pole



8-pole



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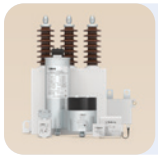

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