



Contactors are an electrically controlled switch used for switching a power circuit.

For universal switching:

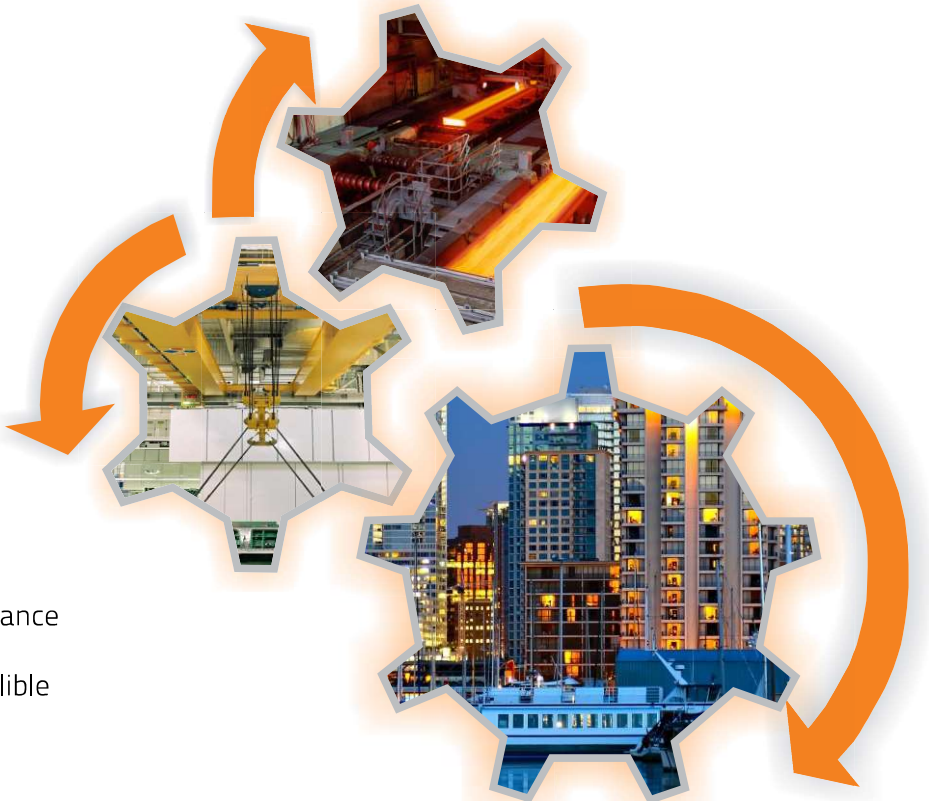
- All kind of motors
- Electric heating
- Lights and lightning
- Capacitor
- Other electrical loads

Advanced operation:

- Contactor combinations

Other benefits:

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



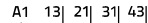
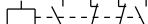
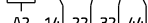
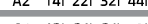
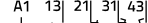

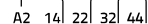
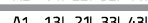
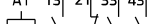

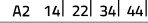
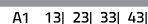
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Accessories for contactors KNL6 - KNL38	page 40
Contactors KNL43 - KNL75	page 47
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Contactors relays

AC-15 acc. to IEC/EN 60947-5-1 (4-pole, 45 mm widths)

AC

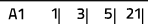
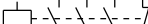


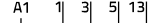
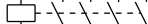
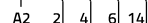

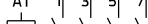
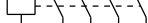
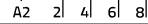








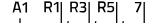
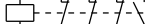
Type	Rated current I _n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL6-22	4 A	380/415 V		30.050.631	300	10
KNL6-22	4 A	220/240 V		30.050.486	300	10
KNL6-22	4 A	24 V		30.050.619	300	10
KNL6-22ü	4 A	380/415 V		30.051.046	300	10
KNL6-22ü	4 A	220/240 V		30.051.037	300	10
KNL6-22ü	4 A	24 V		30.051.047	300	10
KNL6-31	4 A	380/415 V		30.050.632	300	10
KNL6-31	4 A	220/240 V		30.050.469	300	10
KNL6-31	4 A	24 V		30.050.620	300	10
KNL6-40	4 A	380/415 V		30.050.700	300	10
KNL6-40	4 A	220/240 V		30.050.468	300	10
KNL6-40	4 A	24 V		30.050.621	300	10



Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)

AC

Type	Rated current I _n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL9-01	9 A	380/415 V		30.050.639	300	10
KNL9-01	9 A	220/240 V		30.050.475	300	10
KNL9-01	9 A	24 V		30.050.615	300	10
KNL9-10	9 A	380/415 V		30.050.640	300	10
KNL9-10	9 A	220/240 V		30.050.474	300	10
KNL9-10	9 A	24 V		30.050.616	300	10
KNL9-10/Sp4	9 A	380/415 V		30.051.048	300	10
KNL9-10/Sp4	9 A	220/240 V		30.050.736	300	10
KNL9-10/Sp4	9 A	24 V		30.051.049	300	10
KNL9-01/Sp4	9 A	380/415 V		30.051.050	300	10
KNL9-01/Sp4	9 A	220/240 V		30.051.051	300	10
KNL9-01/Sp4	9 A	24 V		30.051.052	300	10
KNL9-22/Sp4	10 A	380/415 V		30.051.053	300	10
KNL9-22/Sp4	10 A	220/240 V		30.050.864	300	10
KNL9-22/Sp4	10 A	24 V		30.051.054	300	10
KNL9-13/Sp4	9 A	380/415 V		30.051.055	300	10
KNL9-13/Sp4	9 A	220/240 V		30.051.056	300	10
KNL9-13/Sp4	9 A	24 V		30.051.057	300	10
KNL9-04/Sp4	9 A	380/415 V		30.051.058	300	10
KNL9-04/Sp4	9 A	220/240 V		30.051.041	300	10
KNL9-04/Sp4	9 A	24 V		30.051.059	300	10



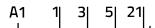
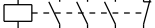


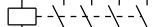
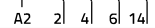

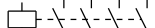
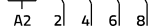
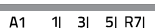
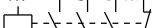

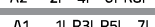
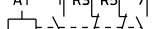
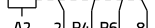
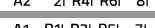
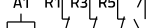
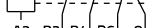
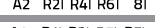
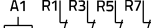
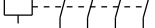
Tags in title:

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

Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)


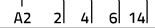
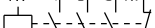
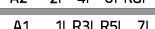
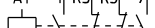
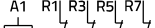
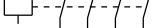
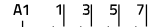
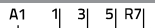
AC

Type	Rated current I _n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL12-01	12 A	380/415 V		30.050.657	300	10
KNL12-01	12 A	220/240 V		30.050.656	300	10
KNL12-01	12 A	24 V		30.050.648	300	10
KNL12-10	12 A	380/415 V		30.050.658	300	10
KNL12-10	12 A	220/240 V		30.050.488	300	10
KNL12-10	12 A	24 V		30.050.649	300	10
KNL12-10/Sp4	12 A	380/415 V		30.051.060	300	10
KNL12-10/Sp4	12 A	220/240 V		30.050.735	300	10
KNL12-10/Sp4	12 A	24 V		30.051.061	300	10
KNL12-01/Sp4	12 A	380/415 V		30.051.062	300	10
KNL12-01/Sp4	12 A	220/240 V		30.051.063	300	10
KNL12-01/Sp4	12 A	24 V		30.051.064	300	10
KNL12-22/Sp4	12 A	380/415 V		30.051.065	300	10
KNL12-22/Sp4	12 A	220/240 V		30.050.039	300	10
KNL12-22/Sp4	12 A	24 V		30.051.066	300	10
KNL12-13/Sp4	12 A	380/415 V		30.051.067	300	10
KNL12-13/Sp4	12 A	220/240 V		30.051.068	300	10
KNL12-13/Sp4	12 A	24 V		30.051.069	300	10
KNL12-04/Sp4	12 A	380/415 V		30.051.070	300	10
KNL12-04/Sp4	12 A	220/240 V		30.051.071	300	10
KNL12-04/Sp4	12 A	24 V		30.051.072	300	10



AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)

AC

Type	Rated current I _n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL16-01	16 A	380/415 V		30.050.674	300	10
KNL16-01	16 A	220/240 V		30.050.673	300	10
KNL16-01	16 A	24 V		30.050.665	300	10
KNL16-10	16 A	380/415 V		30.050.675	300	10
KNL16-10	16 A	220/240 V		30.050.489	300	10
KNL16-10	16 A	24 V		30.050.666	300	10
KNL16-10/Sp4	16 A	380/415 V		30.050.999	300	10
KNL16-10/Sp4	16 A	220/240 V		30.050.807	300	10
KNL16-10/Sp4	16 A	24 V		30.051.073	300	10
KNL16-01/Sp4	16 A	380/415 V		30.051.074	300	10
KNL16-01/Sp4	16 A	220/240 V		30.050.930	300	10
KNL16-01/Sp4	16 A	24 V		30.051.075	300	10
KNL16-22/Sp4	17 A	380/415 V		30.051.076	300	10
KNL16-22/Sp4	17 A	220/240 V		30.050.860	300	10
KNL16-22/Sp4	17 A	24 V		30.051.077	300	10
KNL16-13/Sp4	16 A	380/415 V		30.051.078	300	10
KNL16-13/Sp4	16 A	220/240 V		30.050.975	300	10
KNL16-13/Sp4	16 A	24 V		30.051.079	300	10
KNL16-04/Sp4	16 A	380/415 V		30.051.080	300	10
KNL16-04/Sp4	16 A	220/240 V		30.050.834	300	10
KNL16-04/Sp4	16 A	24 V		30.051.081	300	10
KNL16-10/St4	16 A	380/415 V		30.051.082	300	10
KNL16-10/St4	16 A	220/240 V		30.050.984	300	10
KNL16-10/St4	16 A	24 V		30.051.083	300	10
KNL16-01/St4	16 A	380/415 V		30.051.084	300	10
KNL16-01/St4	16 A	220/240 V		30.050.985	300	10
KNL16-01/St4	16 A	24 V		30.051.085	300	10



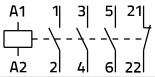
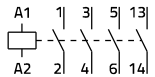
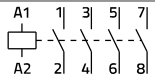
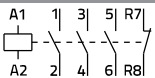
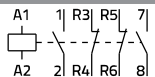
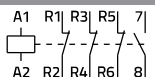
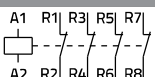
Tags in title:

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

Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (4-pole, 45 mm widths)

AC

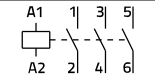
Type	Rated current I_n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL18-01	18 A	380/415 V		30.050.838	300	10
KNL18-01	18 A	220/240 V		30.050.836	300	10
KNL18-01	18 A	24 V		30.050.925	300	10
KNL18-10	18 A	380/415 V		30.050.837	300	10
KNL18-10	18 A	220/240 V		30.050.835	300	10
KNL18-10	18 A	24 V		30.050.924	300	10
KNL18-10/Sp4	18 A	380/415 V		30.050.910	300	10
KNL18-10/Sp4	18 A	220/240 V		30.050.908	300	10
KNL18-10/Sp4	18 A	24 V		30.051.086	300	10
KNL18-01/Sp4	18 A	380/415 V		30.051.087	300	10
KNL18-01/Sp4	18 A	220/240 V		30.051.088	300	10
KNL18-01/Sp4	18 A	24 V		30.051.089	300	10
KNL18-22/Sp4	17 A	380/415 V		30.051.090	300	10
KNL18-22/Sp4	17 A	220/240 V		30.051.091	300	10
KNL18-22/Sp4	17 A	24 V		30.051.092	300	10
KNL18-13/Sp4	18 A	380/415 V		30.051.093	300	10
KNL18-13/Sp4	18 A	220/240 V		30.051.094	300	10
KNL18-13/Sp4	18 A	24 V		30.051.095	300	10
KNL18-04/Sp4	18 A	380/415 V		30.051.096	300	10
KNL18-04/Sp4	18 A	220/240 V		30.051.097	300	10
KNL18-04/Sp4	18 A	24 V		30.051.098	300	10

Tags in title: Sp4 - version with all four main contacts



AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

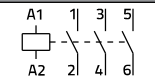
AC

Type	Rated current I_n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL22-00	22 A	380/415 V		30.050.686	320	10
KNL22-00	22 A	220/240 V		30.050.470	320	10
KNL22-00	22 A	24 V		30.050.609	320	10



AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

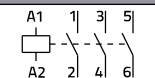
AC

Type	Rated current I_n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL30-00	30 A	380/415 V		30.050.694	320	10
KNL30-00	30 A	220/240 V		30.050.471	320	10
KNL30-00	30 A	24 V		30.050.690	320	10



AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

AC

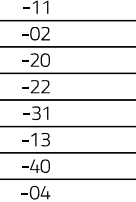
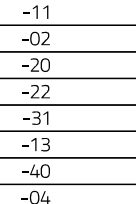
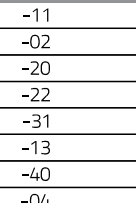
Type	Rated current I_n	Control voltage 50/60 Hz	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL38-00	38 A	380/415 V		30.051.099	320	10
KNL38-00	38 A	220/240 V		30.051.100	320	10
KNL38-00	38 A	24 V		30.051.101	320	10



Note: All versions KNL6(G)-KNL38(G) can be cabled with one (F1) or two (F2) pol faston interface.
The limit when we use faston connection to the main circuit $I_{nmax} = 25$ A and $I_{nmax} = 25$ A.

Snap-on auxiliary switch blocks

AC-15 acc. to IEC/EN 60947-5-1 (4-pole)

Type	Rated current I _e	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)	
NDL1 (for KNL6)	6 A		-11	38,422,827	66	10
			-02	38,422,828		
			-20	38,422,826		
			-22	38,422,850		
			-31	38,422,940		
			-13	38,422,939		
			-40	38,422,864		
-04	38,422,976					
NDL2 (for KNL9, KNL12, KNL16, KNL18)	6 A		-11	38,423,834	66	10
			-02	38,422,835		
			-20	38,423,457		
			-22	38,422,779		
			-31	38,422,754		
			-13	38,422,941		
			-40	38,422,780		
-04	38,422,781					
NDL3 (for KNL22, KNL30, KNL38)	6 A		-11	38,422,836	66	10
			-02	38,423,014		
			-20	38,423,470		
			-22	38,422,943		
			-31	38,422,851		
			-13	38,422,942		
			-40	38,423,390		
-04	38,423,374					



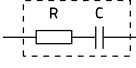
Auxiliary switch blocks

AC-15 acc. to IEC/EN 60947-5-1 (single pole for side mounting)

Type	Rated current I _e	Version	Ordering No.	Weight (g)	Packaging (pcs)
NPL1 (for KNL9-KNL18)	6 A	-10	38,422,751	18	1
NPL1 (for KNL9-KNL18)		-01	38,422,752		
NPL2 (for KNL22-KNL38)		-10	38,422,852		
NPL2 (for KNL22-KNL38)		-01	38,422,945		



RC suppressor (for KNL6 - KNL38)

Type	Control voltage U _c	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
RC1-KNL	12 - 48 V		30,017,074	16	10
RC2-KNL	48 - 250 V		30,017,075	16	10
RC3-KNL	250 - 380 V		30,017,076	16	10
RC4-KNL	380 - 600 V		30,017,077	16	10



Mechanical interlock

for KNL6 - KNL38

Type	Ordering No.	Weight (g)	Packaging (pcs)
MBL	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



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

Contactors KNL6-KNL38

Accessories



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)	655200014000	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)	655200018000	50	
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)	655200015000	50	
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)	655200019000	60	
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)	655200016000	30	



WK 2.1

BR16 thermal overload relay

up to 20 A for KNL9-KNL18 contactors

Type	Setting range (A)	Max. backup fuse for Coordination 1 (A)	Ordering No.	Weight (g)	Packaging (pcs)
BR16-0,16	0,1 ... 0,16	1	786.050.481	115	1
BR16-0,25	0,16 ... 0,25	1	786.050.482		
BR16-0,4	0,25 ... 0,4	1	786.050.483		
BR16-0,5	0,35 ... 0,5	1	786.050.484		
BR16-0,63	0,45 ... 0,63	1	786.050.485		
BR16-0,8	0,55 ... 0,8	3	786.050.486		
BR16-1	0,75 ... 1	3	786.050.487		
BR16-1,3	0,9 ... 1,3	3	786.050.488		
BR16-1,6	1,1 ... 1,6	3	786.050.489		
BR16-2	1,4 ... 2	6	786.050.490		
BR16-2,5	1,8 ... 2,5	6	786.050.491		
BR16-3,2	2,3 ... 3,2	6	786.050.492		
BR16-4	2,9 ... 4	10	786.050.493		
BR16-4,8	3,5 ... 4,8	10	786.050.494		
BR16-6,3	4,5 ... 6,3	15	786.050.495		
BR16-7,5	5,5 ... 7,5	15	786.050.496		
BR16-10	7,2 ... 10	25	786.050.497		
BR16-12,5	9 ... 12,5	30	786.050.498		
BR16-16	11,3 ... 16	40	786.050.499		
BR16-20	15 ... 20	50	786.050.500		



BR30 thermal overload relay

up to 38 A for KNL22-KNL38 contactors

Type	Setting range (A)	Max. backup fuse for Coordination 1 (A)	Ordering No.	Weight (g)	Packaging (pcs)
BR30-21,5	17,5 ... 21,5	50	786.050.501	115	1
BR30-25	21 ... 25	60	786.050.502		
BR30-30	24,5 ... 30	70	786.050.503		
BR30-36	29 ... 36	60	786.050.532		
BR30-38	33 ... 38	70	786.050.533		



Connection module

for BR16 and BR30 thermal overload relays


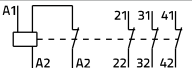
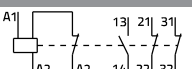
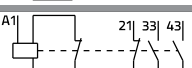
Type	Thermal current (A)	Ordering No.	Weight (g)	Packaging (pcs)
RP16	40	38.422.749	50	1



Contactor relays

AC-15 acc. to IEC/EN 60947-5-1 (3-pole, 45 mm widths)

DC

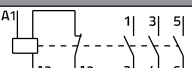
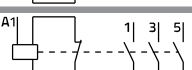
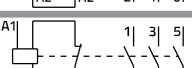
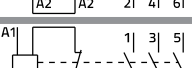
Type	Rated current I_n	Control voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL6G-30	4 A	220 V		30,052,520	300	10
KNL6G-30	4 A	110 V		30,052,521	300	10
KNL6G-30	4 A	24 V		30,052,522	300	10
KNL6G-03	4 A	220 V		30,052,523	300	10
KNL6G-03	4 A	110 V		30,052,524	300	10
KNL6G-03	4 A	24 V		30,052,525	300	10
KNL6G-21	4 A	220 V		30,052,526	300	10
KNL6G-21	4 A	110 V		30,052,527	300	10
KNL6G-21	4 A	24 V		30,052,528	300	10
KNL6G-12	4 A	220 V		30,052,529	300	10
KNL6G-12	4 A	110 V		30,052,530	300	10
KNL6G-12	4 A	24 V		30,052,531	300	10



Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

DC

Type	Rated current I_n	Control voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL9G-00	9 A	220 V		30,052,532	300	10
KNL9G-00	9 A	110 V		30,052,533	300	10
KNL9G-00	9 A	24 V		30,052,534	300	10
KNL12G-00	12 A	220 V		30,052,535	300	10
KNL12G-00	12 A	110 V		30,052,536	300	10
KNL12G-00	12 A	24 V		30,052,537	300	10
KNL16G-00	16 A	220 V		30,052,538	300	10
KNL16G-00	16 A	110 V		30,052,539	300	10
KNL16G-00	16 A	24 V		30,052,540	300	10
KNL18G-00	18 A	220 V		30,052,541	300	10
KNL18G-00	18 A	110 V		30,052,542	300	10
KNL18G-00	18 A	24 V		30,052,543	300	10



Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

DC

Type	Rated current I_n	Control voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL22G-00 + NDLG-03	22 A	220 V		30,052,230	340	10
KNL22G-00 + NDLG-03	22 A	48 V		30,052,465	340	10
KNL22G-00 + NDLG-03	22 A	24 V		30,052,228	340	10
KNL22G-00 + NDLG-30	22 A	220 V		30,052,222	340	10
KNL22G-00 + NDLG-30	22 A	48 V		30,052,468	340	10
KNL22G-00 + NDLG-30	22 A	24 V		30,052,220	340	10
KNL22G-00 + NDLG-21	22 A	220 V		30,052,257	340	10
KNL22G-00 + NDLG-21	22 A	48 V		30,052,470	340	10
KNL22G-00 + NDLG-21	22 A	24 V		30,052,106	340	10
KNL22G-00 + NDLG-12	22 A	220 V		30,052,227	340	10
KNL22G-00 + NDLG-12	22 A	48 V		30,052,472	340	10
KNL22G-00 + NDLG-12	22 A	24 V		30,052,225	340	10
KNL22G-00 + NDLG-10	22 A	220 V		30,052,474	340	10
KNL22G-00 + NDLG-10	22 A	48 V		30,052,475	340	10
KNL22G-00 + NDLG-10	22 A	24 V		30,052,476	340	10
KNL22G-00 + NDLG-01	22 A	220 V		30,052,477	340	10
KNL22G-00 + NDLG-01	22 A	48 V		30,052,478	340	10
KNL22G-00 + NDLG-01	22 A	24 V		30,052,479	340	10
KNL22G-00 + NPLG ¹⁾	22 A	220 V		30,052,073	310	10
KNL22G-00 + NPLG ¹⁾	22 A	48 V		30,052,480	310	10
KNL22G-00 + NPLG ¹⁾	22 A	24 V		30,052,143	310	10



AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

DC

Type	Rated current I_n	Control voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL30G-00 + NDLG-03	30 A	220 V		30,052,097	340	10
KNL30G-00 + NDLG-03	30 A	48 V		30,052,481	340	10
KNL30G-00 + NDLG-03	30 A	24 V		30,052,236	340	10
KNL30G-00 + NDLG-30	30 A	220 V		30,052,033	340	10
KNL30G-00 + NDLG-30	30 A	48 V		30,052,483	340	10
KNL30G-00 + NDLG-30	30 A	24 V		30,052,231	340	10
KNL30G-00 + NDLG-21	30 A	220 V		30,052,095	340	10
KNL30G-00 + NDLG-21	30 A	48 V		30,052,484	340	10
KNL30G-00 + NDLG-21	30 A	24 V		30,052,119	340	10
KNL30G-00 + NDLG-12	30 A	220 V		30,052,096	340	10
KNL30G-00 + NDLG-12	30 A	48 V		30,052,485	340	10
KNL30G-00 + NDLG-12	30 A	24 V		30,052,258	340	10
KNL30G-00 + NDLG-10	30 A	220 V		30,052,486	340	10
KNL30G-00 + NDLG-10	30 A	48 V		30,052,487	340	10
KNL30G-00 + NDLG-10	30 A	24 V		30,052,488	340	10
KNL30G-00 + NDLG-01	30 A	220 V		30,052,489	340	10
KNL30G-00 + NDLG-01	30 A	48 V		30,052,490	340	10
KNL30G-00 + NDLG-01	30 A	24 V		30,052,491	340	10
KNL30G-00 + NPLG ¹⁾	30 A	220 V		30,052,028	310	10
KNL30G-00 + NPLG ¹⁾	30 A	48 V		30,052,492	310	10
KNL30G-00 + NPLG ¹⁾	30 A	24 V		30,052,169	310	10



¹⁾ 57 mm widths

Motor contactors

AC-3 acc. to IEC/EN 60947-4-1 (3-pole, 45 mm widths)

DC

Type	Rated current I _n	Control voltage	Wiring diagram	Ordering No.	Weight (g)	Packaging (pcs)
KNL38G-00 + NDLG-03	38 A	220 V		30,052,493	340	10
KNL38G-00 + NDLG-03	38 A	48 V		30,052,494	340	10
KNL38G-00 + NDLG-03	38 A	24 V		30,052,495	340	10
KNL38G-00 + NDLG-30	38 A	220 V		30,052,496	340	10
KNL38G-00 + NDLG-30	38 A	48 V		30,052,497	340	10
KNL38G-00 + NDLG-30	38 A	24 V		30,052,498	340	10
KNL38G-00 + NDLG-21	38 A	220 V		30,052,499	340	10
KNL38G-00 + NDLG-21	38 A	48 V		30,052,500	340	10
KNL38G-00 + NDLG-21	38 A	24 V		30,052,501	340	10
KNL38G-00 + NDLG-12	38 A	220 V		30,052,502	340	10
KNL38G-00 + NDLG-12	38 A	48 V		30,052,503	340	10
KNL38G-00 + NDLG-12	38 A	24 V		30,052,504	340	10
KNL38G-00 + NDLG-10	38 A	220 V		30,052,505	340	10
KNL38G-00 + NDLG-10	38 A	48 V		30,052,506	340	10
KNL38G-00 + NDLG-10	38 A	24 V		30,052,507	340	10
KNL38G-00 + NDLG-01	38 A	220 V		30,052,508	340	10
KNL38G-00 + NDLG-01	38 A	48 V		30,052,509	340	10
KNL38G-00 + NDLG-01	38 A	24 V		30,052,510	340	10
KNL38G-00 + NPLG ¹⁾	38 A	220 V		30,052,511	310	10
KNL38G-00 + NPLG ¹⁾	38 A	48 V		30,052,512	310	10
KNL38G-00 + NPLG ¹⁾	38 A	24 V		30,052,513	310	10



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

¹⁾ 57 mm widths

Ordering data

For contactors KNL6 - KNL38

Standard control voltages and designations (AC)

V	24	42	48	110/125	220/240	380/415	440	480/520
50/60 Hz	B7	D7	E7	F7	M7	Q7	R7	S7

For contactors KNL6G - KNL38G

Standard control voltages and designations (DC)

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

KNL16 - 10 - M7

Control voltage
Version of contacts
Type

KNLG + NDL

KNL22G-00 - 22 - BD

Control voltage
NDL snap-on auxiliary switch block
Type

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

Note:

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



Technical characteristics

Dimensions



Contactors KNL6(G)

Contactors relays



TECHNICAL DATA

Type	Symbol	Unit	KNL6	KNL6G
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		°C	-20 ... +45	
Storage temperature		°C	-30 ... +80	
Maximum altitude		m	2000	
U _i and U _e is reduced for 1,2 % and I _e for 0,4 % for every additional 100 m				
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
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	
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	
operation			8/2,5	
Delays:				
make	ms		10 ... 25	
brake			10 ... 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	

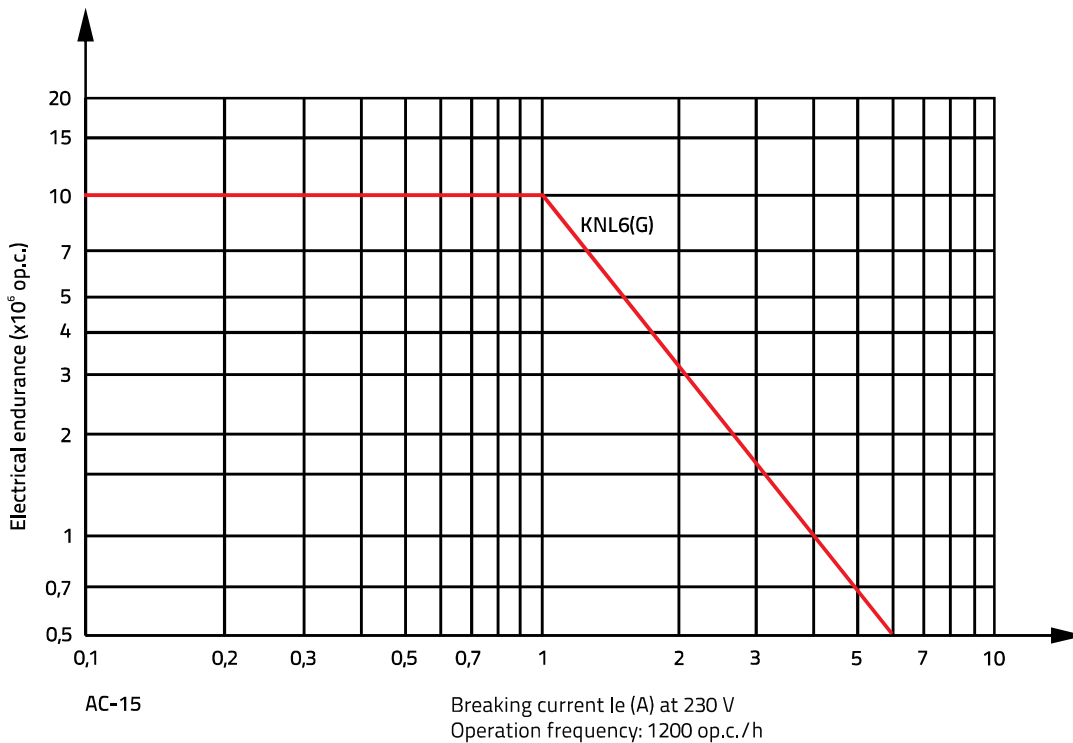
TECHNICAL DATA

Type	Symbol	Unit	KNL6	KNL6G	
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1 n_{op})$	AC-15 DC-13	h	12.500 10.000	
	MTTF _d - Mean time to failure dangerous $MTTF_d = 1/\lambda_d = B10_d/(0.1 n_{op})$	AC-15 DC-13	h	16.666 13.333	
	B10 - Number of operating cycles until 10 % of devices fail	AC-15 DC-13	op. c.	750.000 600.000	
	B10 _d - Number of operating cycles until 10 % of device dangerous $B10_d = B10/\text{ratio of dangerous failures}$	AC-15 DC-13	op. c.	1.000.000 800.000	
	λ - Failure rate $\lambda = (0.1 n_{op})/B10$	AC-15 DC-13	1/h	0.00008 0.0001	
	λ_d - Failure rate dangerous $\lambda_d = (0.1 n_{op})/B10_d$	AC-15 DC-13	1/h	0.00006 0.000075	
	Ratio of dangerous failures		%	75	
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	600	

Electrical endurance

Diagram 1

Electrical endurance of contactor relays



Contactors KNL9(G)-KNL12(G)

Motor contactors



TECHNICAL DATA

Type	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G
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	45	45	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		m	2000			
U _i and U _e is reduced for 1,2 % and I _e for 0,4 % for every additional 100 m						
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	300	300	300
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	5,5			
three-phase 230 V		P _e	9			
three-phase 400 V		P _e	16			
three-phase 500 V		P _e	20			
three-phase 690 V		P _e	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	1,1	1,1	1,5	1,5
three-phase 230 V		P _e	2,2	2,2	3	3
three-phase 400 V		P _e	4	4	5,5	5,5
three-phase 500 V		P _e	5,5	5,5	5,5	5,5
three-phase 690 V		P _e	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
Operational power for AC-4:						
three-phase 230 V		P _e	0,75	0,75	1,1	1,1
three-phase 400 V		P _e	1,5	1,5	2,2	2,2
three-phase 500 V		P _e	1,5	1,5	2,2	2,2
three-phase 690 V		P _e	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	3/4	3/4 ¹⁾	1	1 ¹⁾
single-phase 230 V		P _e	1,5	1,5 ¹⁾	2	2 ¹⁾
three-phase 230 V		P _e	3	3 ¹⁾	3	3 ¹⁾
three-phase 460 V		P _e	5	5 ¹⁾	5	5 ¹⁾
three-phase 575 V		P _e	7,5	7,5 ¹⁾	7,5	7,5 ¹⁾
Electrical endurance for motors acc. to UL and CSA		op. c.	1.000.000			

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

TECHNICAL DATA

Type	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G	
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):	I _e	A					
1 pole ... 24 V DC/ 110 V DC/ 220 V DC							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):	I _e	A					
1 pole ... 24 V DC/ 110 V DC/ 220 V DC							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-3		op. c./h	300				
Rated operational current for DC-5 (L/R ≤ 7,5 ms):	I _e	A					
1 pole ... 24 V DC/ 110 V DC/ 220 V DC							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:	S	mm ²					
rigid (solid and stranded)							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				
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:	I _e	A					
single-phase 230 V							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:	I _e	A					
1 pole ... 24 V DC/48 V DC/60 V DC/110 V DC/ 220 V DC							10 / 6 / 4 / 0,9 / 0,4
Maximum operating frequency for DC-13		op. c./h	1,200				
Terminal capacity:	S	mm ²					
rigid (solid and stranded)							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				
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:		VA/W					
switch-on							66/48
operation			8/2,5	-/3	8/2,5	-/3	
Delays:		ms					
make							10 ... 25
brake			10 ... 15	5 ... 15	10 ... 15	5 ... 15	
Terminal capacity:		mm ²					
rigid (solid and stranded)							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) 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

Contactors KNL9(G)-KNL12(G)

Motor contactors



TECHNICAL DATA

Type	Symbol	Unit	KNL9	KNL9G	KNL12	KNL12G	
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1 n_{op})$	AC-1 AC-3	h	5.000			25.000
	MTTF _d - Mean time to failure dangerous $MTTF_d = 1/\lambda_d = B10_d/(0.1 n_{op})$	AC-1 AC-3	h	6.666			33.333
	B10 - Number of operating cycles until 10 % of devices fail	AC-1 AC-3	op. c.	150.000			750.000
	B10 _d - Number of operating cycles until 10 % of device dangerous $B10_d = B10/\text{ratio of dangerous failures}$	AC-1 AC-3	op. c.	200.000			1.000.000
	λ - Failure rate $\lambda = (0.1 n_{op})/B10$	AC-1 AC-3	1/h	0.0002			0.00004
	λ_d - Failure rate dangerous $\lambda_d = (0.1 n_{op})/B10_d$	AC-1 AC-3	1/h	0.00015			0.00003
	Ratio of dangerous failures		%	75			
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	300			

TECHNICAL DATA

Type	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G
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	45	45	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		m	2000			
U _i and U _e is reduced for 1,2 % and I _e for 0,4 % for every additional 100 m						
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	300	300	300
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		A	150	150	170	170
1 s		A	180	180	200	200
0.001 s		A	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	5,5		7	
three-phase 230 V		P _e	9		12	
three-phase 400 V		P _e	16		21	
three-phase 500 V		P _e	20		26	
three-phase 690 V		P _e	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	2,2	2,2	2,2	2,2
three-phase 230 V		P _e	4	4	4	4
three-phase 400 V		P _e	7,5	7,5	9	9
three-phase 500 V		P _e	7,5	7,5	9	9
three-phase 690 V		P _e	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	
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	1.5	1.5	1.5	1.5
three-phase 400 V		P _e	3	3	3	3
three-phase 500 V		P _e	3	3	3	3
three-phase 690 V		P _e	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	1.5	1,5 ¹⁾	1,5 ¹⁾	1,5 ¹⁾
single-phase 230 V		P _e	3	3 ¹⁾	3 ¹⁾	3 ¹⁾
three-phase 230 V		P _e	5	5 ¹⁾	5 ¹⁾	5 ¹⁾
three-phase 460 V		P _e	7.5	7,5 ¹⁾	7,5 ¹⁾	7,5 ¹⁾
three-phase 575 V		P _e	10	10 ¹⁾	10 ¹⁾	10 ¹⁾
Electrical endurance for motors acc. to UL and CSA		op. c.	900,000		800,000	

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

Contactors KNL16(G)-KNL18(G)

Motor contactors



TECHNICAL DATA

Type	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G
Switching of capacitors AC-6b and AC-7c (at 230 V)	C	μF	88 (300 for KNL16St4)	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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	15 / 6 / 4 18 / 12 / 8 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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	12 / 2 / 0,75 15 / 8 / 1,5 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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	12 / 2 / 0,75 15 / 8 / 1,5 18 / 12 / 6			
Maximum operating frequency for DC-5		op. c./h	300			
Terminal capacity: rigid (solid and stranded) flexible	S	mm ²	0,75 ... 6 0,5 ... 6			
Length of removed wire insulation		mm	10			
Screw			M3,5			
Screw head			PZ2			
Tightening torque		Nm	1,4			
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 single-phase 400 V single-phase 500 V single-phase 690 V	I _e	A	6 4 2 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) flexible	S	mm ²	0,75 ... 6 0,5 ... 6			
Length of removed wire insulation		mm	10			
Screw			M3,5			
Screw head			PZ2			
Tightening torque		Nm	1,4			
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 operation		VA/W	66/48 8/2,5	-/110 -/3	66/48 8/2,5	-/110 -/3
Delays: make brake		ms	10 ... 25 10 ... 15	10 ... 20 5 ... 15	10 ... 25 10 ... 15	10 ... 20 5 ... 15
Terminal capacity: rigid (solid and stranded) flexible		mm ²	0,75 ... 4 0,75 ... 4			
Length of removed wire insulation		mm	10			
Screw			M3,5			
Screw head			PZ2			
Tightening torque		Nm	1,4			

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

TECHNICAL DATA

Type	Symbol	Unit	KNL16	KNL16G	KNL18	KNL18G	
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1 n_{op})$	AC-1 AC-3	h	5.000			
	MTTF _d - Mean time to failure dangerous $MTTF_d = 1/\lambda_d = B10_d/(0.1 n_{op})$	AC-1 AC-3	h	22.500		20.000	
	B10 - Number of operating cycles until 10 % of devices fail	AC-1 AC-3	op. c.	150.000			
	B10 _d - Number of operating cycles until 10 % of device dangerous $B10_d = B10/\text{ratio of dangerous failures}$	AC-1 AC-3	op. c.	675.000		600.000	
	λ - Failure rate $\lambda = (0.1 n_{op})/B10$	AC-1 AC-3	1/h	0.0002			
	λ_d - Failure rate dangerous $\lambda_d = (0.1 n_{op})/B10_d$	AC-1 AC-3	1/h	0.000044		0.00005	
	Ratio of dangerous failures		%	75			
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	300			
				0.00015			
				0.00003		0.00004	

Contactors KNL22(G)-KNL38(G)

Motor contactors



TECHNICAL DATA

	Type	Symbol	Unit	KNL22	KNL22G	KNL30	KNL30G	KNL38	KNL38G
					NPLG/NDLG		NPLG/NDLG		NPLG/NDLG
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		2000					
U _i and U _e is reduced for 1,2 % and I _e for 0,4 % for every additional 100 m									
Number of contactors or switches side-by-side:									
≤40 °C				no limitation					
(40 ... 55) °C									
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	
Contact reliability			≥17 V; ≥50 mA						
Power dissipation per pole		W	2,3	2,3	2,3	2,3	2,3	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			13				17		
three-phase 400 V			23				29		
three-phase 500 V			28				37		
three-phase 690 V			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	22	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			5,5	5,5	7,5	7,5	8	8	
three-phase 400 V			11	11	15	15	18,5	18,5	
three-phase 500 V			11	11	15	15	15	15	
three-phase 690 V			11	11	15	15	15	15	
three-phase 1000 V			11	11	15	15	15	15	
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			
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			

TECHNICAL DATA

Type	Symbol	Unit	KNL22	KNL22G NPLG/NDLG	KNL30	KNL30G NPLG/NDLG	KNL38	KNL38G NPLG/NDLG
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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	28 / 7 / 4 30 / 23 / 13 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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	18 / 2 / 1 23 / 13 / 2 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 2 poles in series ... 24 V DC/ 110 V DC/ 220 V DC 3 poles in series ... 24 V DC/ 110 V DC/ 220 V DC	I _e	A	18 / 2 / 1 23 / 13 / 2 28 / 18 / 9					
Maximum operating frequency for DC-5		op. c./h	300					
Terminal capacity: rigid (solid and stranded) flexible	S	mm ²	2.5 ... 10 1.5 ... 10					
Length of removed wire insulation		mm	10					
Screw			M4					
Screw head			PZ2					
Tightening torque		Nm	1.8					
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 operation		VA/W	66/48 8/2.5	-/110 -/3	66/48 8/2.5	-/110 -/3	66/48 8/2.5	-/110 -/3
Delays: make brake		ms	10 ... 20 5 ... 15	15 ... 20 5 ... 10	10 ... 20 5 ... 15	15 ... 20 5 ... 10	10 ... 20 5 ... 15	15 ... 20 5 ... 10
Terminal capacity: rigid (solid and stranded) flexible		mm ²	0.75 ... 4 0.5 ... 2.5					
Length of removed wire insulation		mm	10					
Screw			M3.5					
Screw head			PZ2					
Tightening torque		Nm	1.4					
MTTF - Mean time to failure MTTF = 1/λ = B10/(0.1 n _{op})	AC-1 AC-3	h	20.000		5.000 10.000			
MTTF _d - Mean time to failure dangerous MTTF _d = 1/λ _d = B10 _d /(0.1 n _{op})	AC-1 AC-3	h	26.666		6.666 13.333			
B10 - Number of operating cycles until 10 % of devices fail	AC-1 AC-3	op. c.	600.000		150.000 300.000			
B10 _d - Number of operating cycles until 10 % of device dangerous B10 _d = B10/ratio of dangerous failures	AC-1 AC-3	op. c.	800.000		200.000 400.000			
λ - Failure rate λ = (0.1 n _{op})/B10	AC-1 AC-3	1/h	0.00005		0.0002 0.0001			
λ _d - Failure rate dangerous λ _d = (0.1 n _{op})/B10 _d	AC-1 AC-3	1/h	0.00004		0.00015 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 2

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

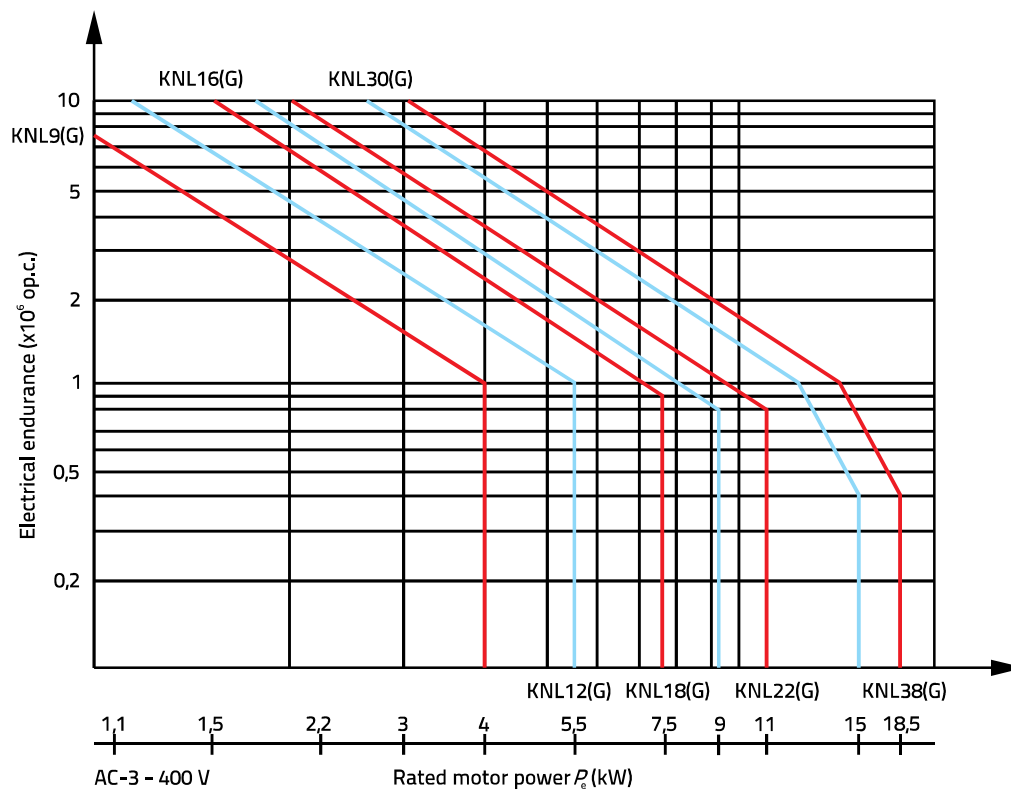
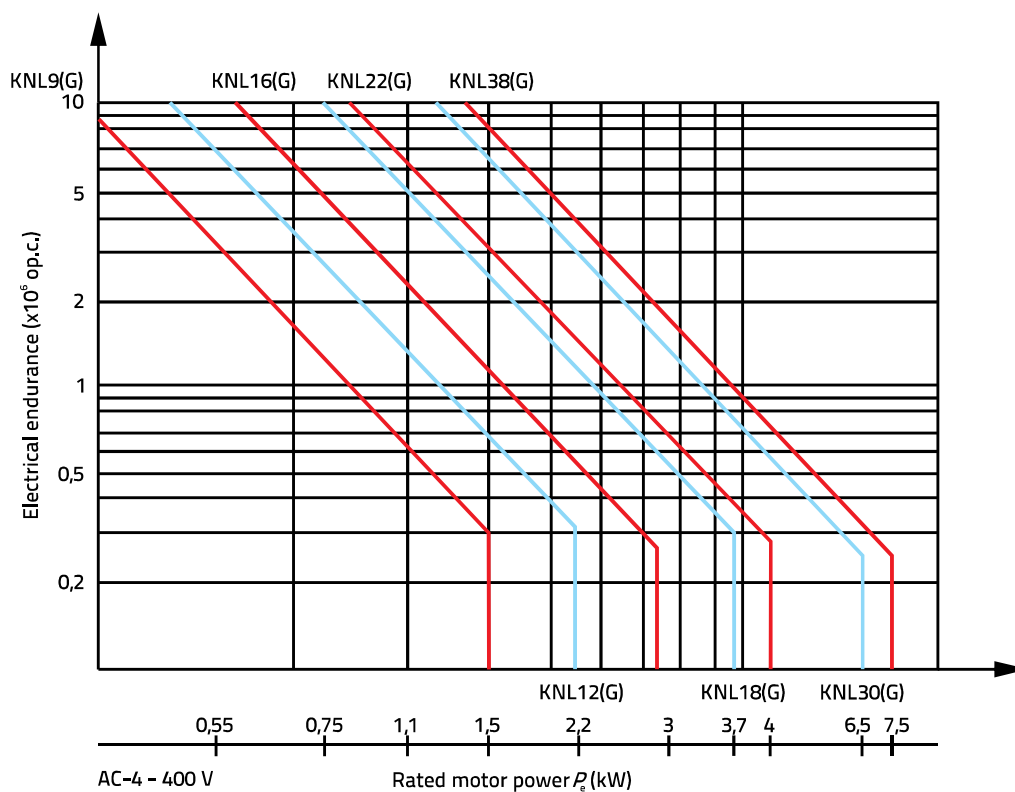
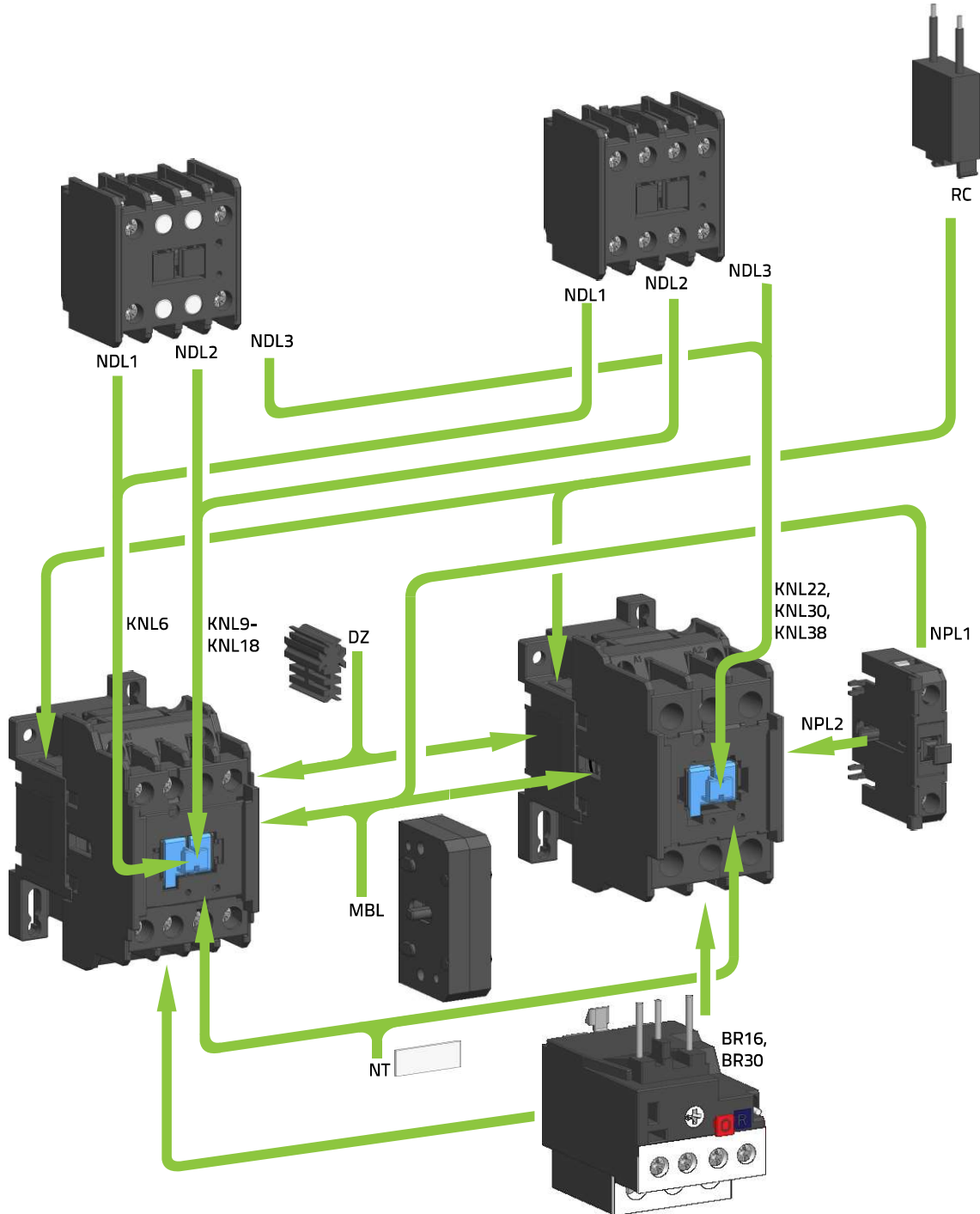


Diagram 3

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



Mounting positions of accessories



Contactors KNL6(G)-KNL38(G)

Accessories



Snap-on auxiliary switch blocks

TECHNICAL DATA

		Symbol	Unit	NDL1, NDL2 NDL3, NDLG	NPL1 NPL2
GENERAL	Type				
	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		°C		
	open			-25 ... +55	
	closed			-25 ... +45	
	Storage temperature		°C	-30 ... +80	
	Maximum altitude		m	2000	
	U _i and U _e is reduced for 1.2 % and I _e for 0.4 % for every additional 100 m				
	Maximum operating frequency with no load		op. c./h	3000	
	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			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	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	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	1	

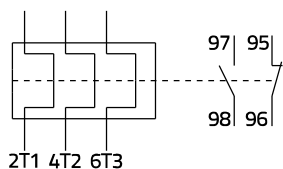
¹⁾ No UL and CSA for NDLG

Thermal overload relay BR16 and BR30

TECHNICAL DATA

Type	Symbol	Unit	BR16	BR30
Standards			IEC 60947-4-1, IEC 60947-5-1, UL508	
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			-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 above sea level		m	2000	
Weight		g	115	
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	
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 AC-15				
230 V	NO	I_e	A	3
400 V				2
500 V				1
230 V	NC	I_e	A	3
400 V				2
500 V				1
Rated operational current DC-13				
60 V	both contacts	I_e	A	0,45
110 V				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	

Connection diagram BR16 and BR30



Contactors KNL6(G)-KNL38(G)

Accessories

Thermal overload relay BR16

Setting ranges and maximum permitted back-up fuses

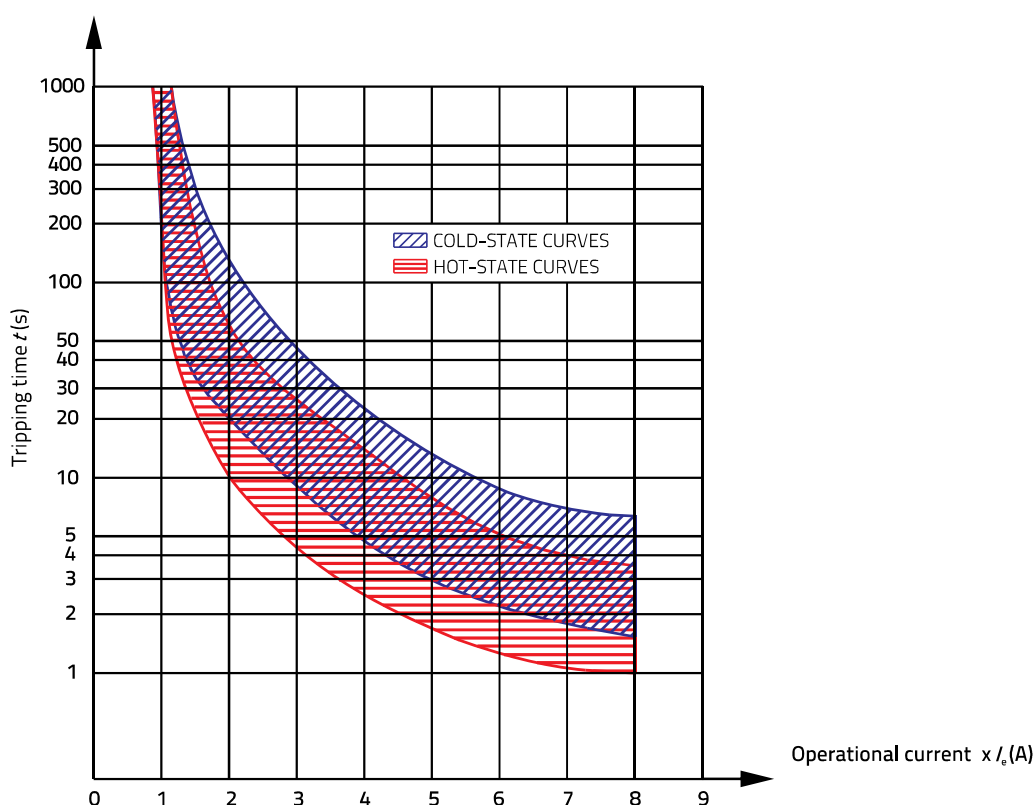
Setting range (A)	Max. back-up fuse gL/gG – UL 508 (A)	Max. back-up fuse gL/gG (A)
0.1 - 0.16	1	1
0.16 - 0.25	1	1
0.25 - 0.4	1	1
0.35 - 0.5	1	1
0.45 - 0.63	1	1
0.55 - 0.8	3	2
0.75 - 1	3	2
0.9 - 1.3	3	2
1.1 - 1.6	3	2
1.4 - 2	6	4
1.8 - 2.5	6	4
2.3 - 3.2	6	4
2.9 - 4	10	8
3.5 - 4.8	10	8
4.5 - 6.3	15	10
5.5 - 7.5	15	10
7.2 - 10	25	16
9 - 12.5	30	20
11.3 - 16	40	25
15 - 20	50	35

Thermal overload relay BR30

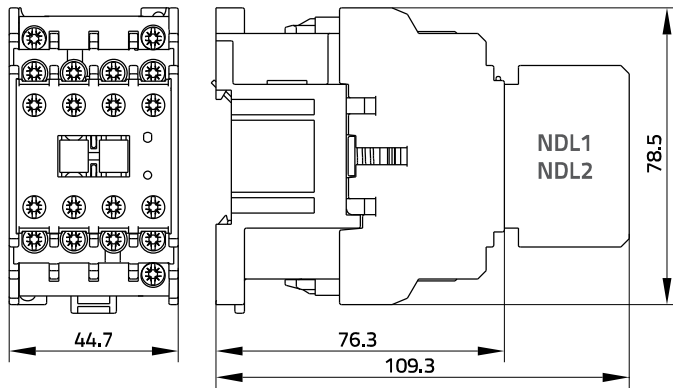
Setting ranges and maximum permitted back-up fuses

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

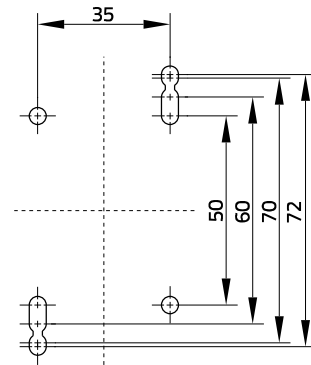
Tripping curve BR16 and BR30



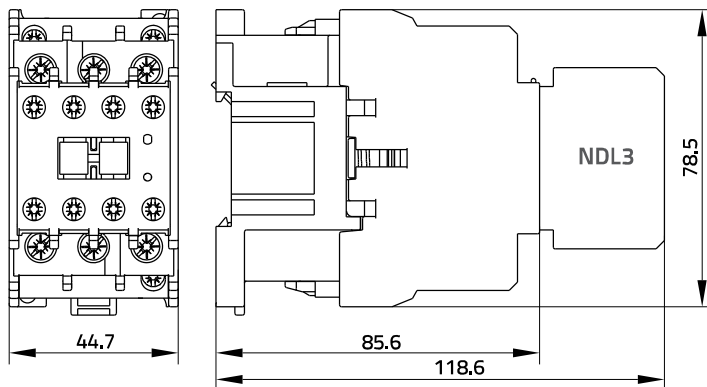
KNL6 ... KNL18



KNL6 ... KNL38 - drilling plan



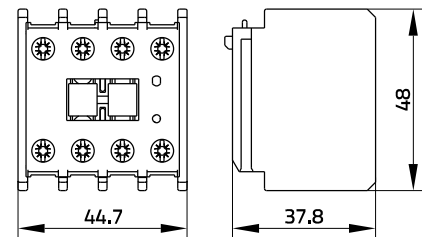
KNL22 ... KNL38



NDL1, NDL2, NDL3

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

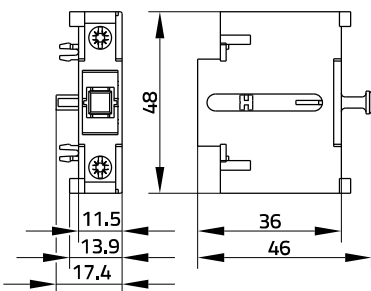
NDL1 - for KNL6(G)
 NDL2 - for KNL9(G) - KNL18(G)
 NDL3 - for KNL22(G) - KNL38(G)



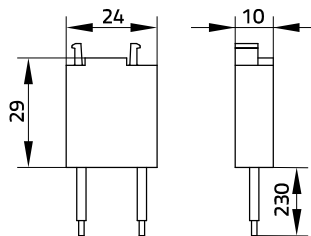
NPL1, NPL2

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

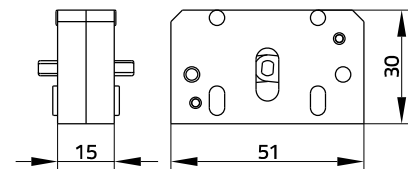
NPL1 - for KNL9(G) - KNL18(G)
 NPL2 - for KNL22(G) - KNL38(G)



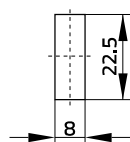
RC suppressor



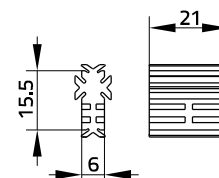
MBL mechanical interlock



NT identification plate



DZ distance spacer



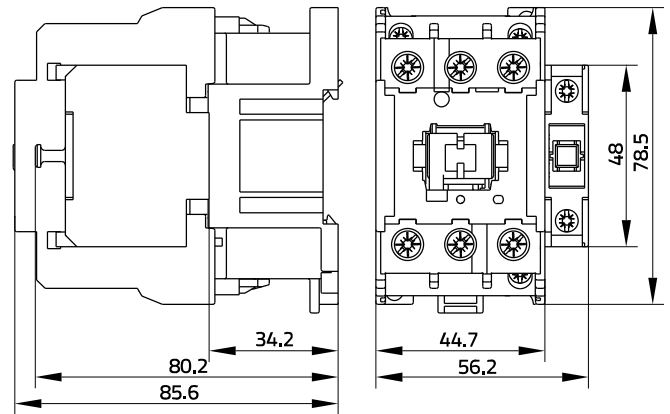
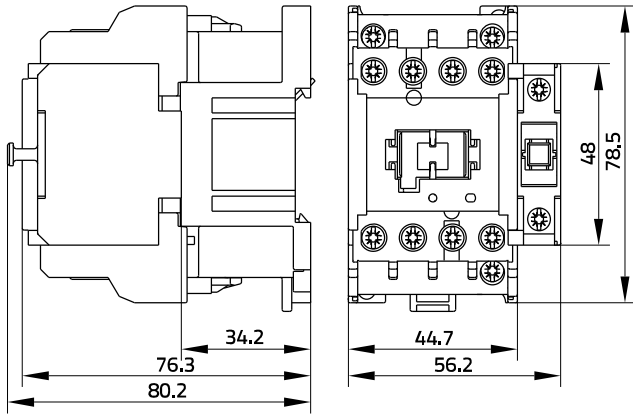
Contactors KN6(G)-KNL38(G)

Dimensions

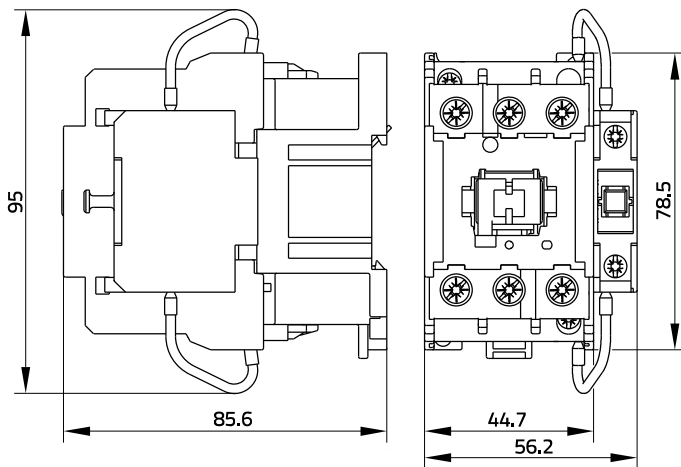


KNL9-KNL18 + NPL1

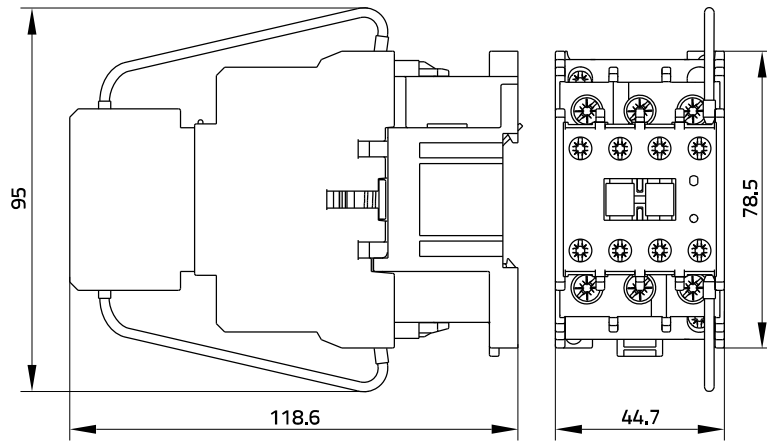
KNL22-KNL38 + NPL2



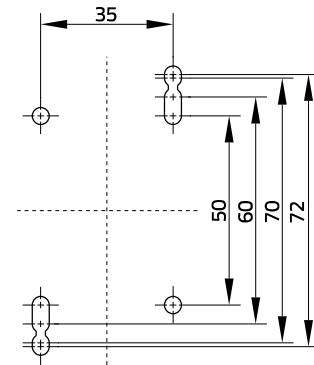
KNL22G-KNL38G + NPLG



KNL22G-KNL38G + NDLG

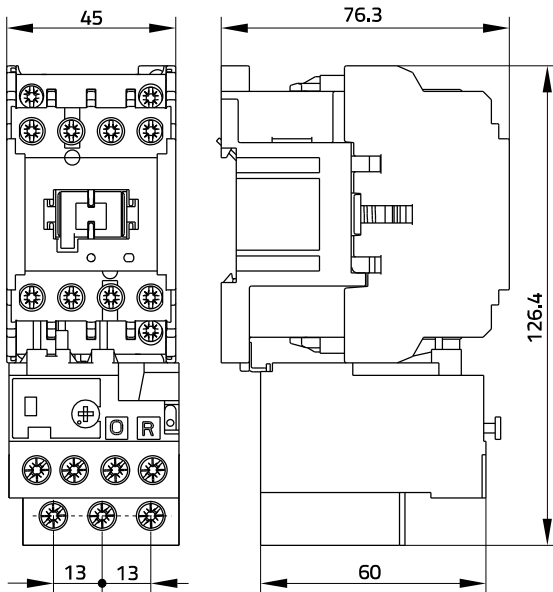


KNL6 ... KNL38 - drilling plan



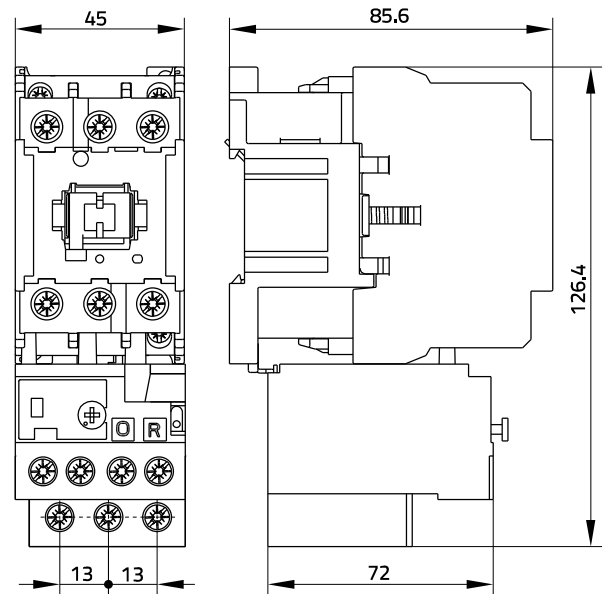
KNL6 ... KNL18 + BR16

Contactor + thermal overload relay

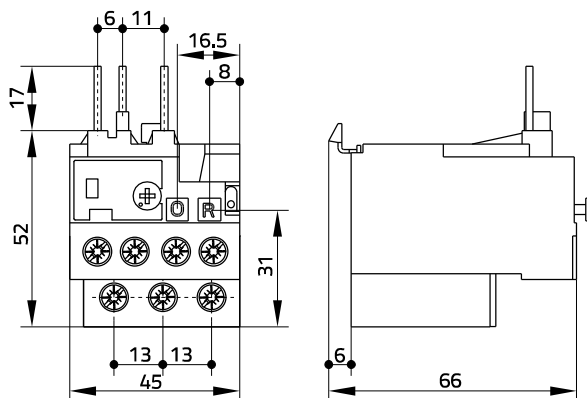


KNL22 ... KNL38 + BR30

Contactor + thermal overload relay



BR16 thermal overload relay



BR30 thermal overload relay

