

Mini contactors



Mini contactors • control relays, contactors, reversing contactors

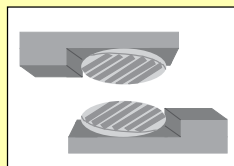
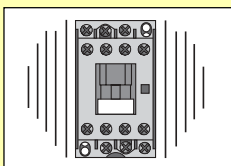
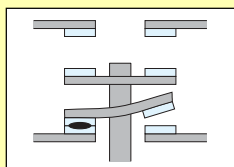
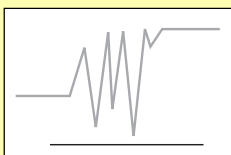
... the benefits at a glance ...

4 basic coil versions

- ✓ AC : 4.5 VA
- DC : 2.4 W
- DC : 1.5 W
- ✓ AC with rectifier : 3.5 VA (hum-free, silent, no peak currents on make, insensitive to short voltage cutoffs).

M 06 motor protection relay covering a range from 0.1 to 11.5 A

- ✓ Phase failure sensitive
- ✓ Electrically separate 1 N/O + 1 N/C contacts
- ✓ Hand/auto reset
- ✓ Reset and setting parameters can be protected by sealable cover
- ✓ Control terminals are prewired
- ✓ Relay can be mounted beneath contactor



KH ... CONTROL RELAY KL ..., K LW ... CONTACTORS PLUS SYSTEM COMPONENTS

Control relay

Versions : Screw terminals, Faston connectors or solder pins
AC, DC, interface or hum-free coils



Contactors



Thermal overload relay



Auxiliary contact block 2 or 4 pole

Versions : Screw or Faston connection for top mounting



Timer module

Delay on energization 1 to 30 secs
Versions : 24 to 48 V AC/DC
110 to 240 V AC
front mounting



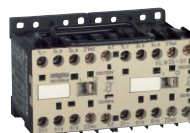
Coil suppressor

Versions : RC, varistor or diode
front mounting



Reversing contactor

Versions : Screw terminals, Faston connectors or solder pins AC, DC, interface or hum-free coils



- Broad coil voltage range ensures reliable operation
- Integral or external coil suppressors give reliable protection to electronics
- 2- or 4-pole snap-on auxiliary contact blocks to increase the number of contacts
- Compact size saves space
- Separation of contacts ensured by forced opening of contacts
- Maximum shock resistance through specially designed magnetic system
- Contact reliability through special contacts
- Safe transmission of low-level signals
- Improved life at AC 3/AC 4 duty through optimized arc chutes and contact materials
- Suitable for resistive loads (AC 1): contacts are designed for $I_{th} = 29 \text{ A at } 50^\circ\text{C}$

Control relays KH ..., AC operated without integral coil suppressor



- Terminal numbering to DIN EN 50 011
- Compact design
- Available in 3 versions :
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency coils 50/60 Hz
- High contact reliability
- Forced opening of contacts
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

■ Approvals :

Voltage codes 04 ... 73 to be added to the contactor order reference number

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics of control relays KH ..., AC operated, 4.5 VA coils

Version with screw terminals

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHS-31	1 309 060 ..	3 1		- 50/60 Hz coil - without integral coil suppressor	0.180	
	KHS-22	1 309 070 ..	2 2			0.180	
	KHS-40	1 309 050 ..	4 0			0.180	

Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHF-31	1 309 160 ..	3 1		- 50/60 Hz coil - without integral coil suppressor	0.180	
	KHF-22	1 309 170 ..	2 2			0.180	
	KHF-40	1 309 150 ..	4 0			0.180	

Version with solder pins, 1.7 mm Ø, hole on p. c. b.

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHL-31	1 309 260 ..	3 1		- 50/60 Hz coil - without integral coil suppressor	0.210	
	KHL-22	1 309 270 ..	2 2			0.210	
	KHL-40	1 309 250 ..	4 0			0.210	

Notes

Normal/Standard voltages are:
(Short-term availability)
Other coil voltages on request

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Auxiliary contact block - page 1641

Other system components - page 1641





Technical details - pages 1664, 1666

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Control relays KH ..., AC operated with integral coil suppressor



- Terminal numbering to DIN EN 50 011
- Compact design
- Available in 3 versions :
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency coils 50/60 Hz
- High contact reliability
- Forced opening of contacts
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

■ Approvals:    

Voltage codes 04 ... 73 to be added to the contactor order reference number

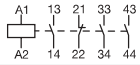

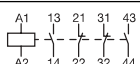
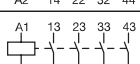
Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

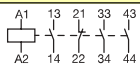

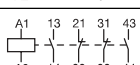
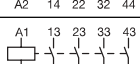
Further notes at the bottom of this page.

Characteristics for control relays KH ..., AC operated, 4.5 VA coils

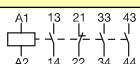

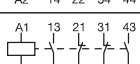
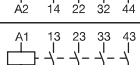
Version with screw terminals

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHS-31	1 309 062 ..	3 1		- with integral coil suppressor  - permitted up to 240 V max.	0.180	
	KHS-22	1 309 072 ..	2 2			0.180	
	KHS-40	1 309 052 ..	4 0			0.180	

Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHF-31	1 309 162 ..	3 1		- with integral coil suppressor  - permitted up to 240 V max.	0.180	
	KHF-22	1 309 172 ..	2 2			0.180	
	KHF-40	1 309 152 ..	4 0			0.180	

Version with solder pins, 1.7 mm Ø, hole on p. c. b.

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHL-31	1 309 262 ..	3 1		- with integral coil suppressor  - permitted up to 240 V max.	0.210	
	KHL-22	1 309 272 ..	2 2			0.210	
	KHL-40	1 309 252 ..	4 0			0.210	

Notes

Normal/Standard voltages are:
(Short-term availability)

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Other coil voltages on request

AC-coils available with integral coil suppressor to max. 230 V

Auxiliary contact block - page 1641

Other system components - page 1641

Technical details - pages 1664, 1666

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Control relays KHDC ..., DC operated without integral coil suppressor



- Terminal numbering to DIN EN 50 011
- Compact design
- Available in 3 versions :
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Forced opening of contacts
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

■ Approvals:

Voltage codes 04 ... 40 to be added to the contactor order reference number

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for control relays KHDC ..., DC operated, 3 W coils

Versions with screw terminals

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCS-31	1 309 065 ..	3 1		- without integral coil suppressor	0.225	
	KHDCS-22	1 309 075 ..	2 2			0.225	
	KHDCS-40	1 309 055 ..	4 0			0.225	

Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCF-31	1 309 165 ..	3 1		- without integral coil suppressor	0.225	
	KHDCF-22	1 309 175 ..	2 2			0.225	
	KHDCF-40	1 309 155 ..	4 0			0.225	

Version with solder pins, 1.7 mm Ø, hole on p. c. b.

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCL-31	1 309 265 ..	3 1		- without integral coil suppressor	0.225	
	KHDCL-22	1 309 275 ..	2 2			0.225	
	KHDCL-40	1 309 255 ..	4 0			0.225	

Notes

Normal/Standard voltages are:
(Short-term availability)

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Other coil voltages on request

Auxiliary contact block - page 1641

Other system components - page 1641

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Technical details - pages 1664, 1666

Control relays KHDC ..., DC operated with integral coil suppressor



- Terminal numbering to DIN EN 50 011
- Compact design
- Available in 3 versions :
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Forced opening of contacts
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

■ Approvals:

**Voltage codes 04 ... 40
to be added to the contactor order
reference number**

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for control relays KHDC ..., DC operated, 3 W coils

Version with screw terminals

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCS-31	1 309 066 ..	3 1		- with integral coil suppressor	0.225	
	KHDCS-22	1 309 076 ..	2 2			0.225	
	KHDCS-40	1 309 056 ..	4 0		- permitted up to 240 V max.	0.225	

Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCF-31	1 309 166 ..	3 1		- with integral coil suppressor	0.225	
	KHDCF-22	1 309 176 ..	2 2			0.225	
	KHDCF-40	1 309 156 ..	4 0		- permitted up to 240 V max.	0.225	

Version with solder pins, 1.7 mm Ø, hole on p. c. b.

Rated thermal current I_{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHDCL-31	1 309 266 ..	3 1		- with integral coil suppressor	0.225	
	KHDCL-22	1 309 276 ..	2 2			0.225	
	KHDCL-40	1 309 256 ..	4 0		- permitted up to 240 V max.	0.225	

Notes

Normal/Standard voltages are:
(Short-term availability)

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Auxiliary contact block - page 1641

Other system components - page 1641

Other coil voltages on request

DC-coils available with integral coil suppressor to max. 220 V

Technical details - pages 1664, 1666

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K





Control relays KHi (interface),
DC operated
with integral coil suppressor and
LED to indicate operational state



- Terminal numbering to DIN EN 50 011
- Compact design, same size as AC control relay
- Version :
 - with screw terminals
- Low power consumption coils
- High contact reliability
- Switch position indication
- Positively guided terminals
- Can be directly controlled by programmable controller
- Safety isolation up to 400 V to VDE 0106, IEC 536

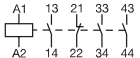
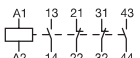
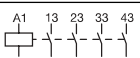
Voltage codes 04 ... 40 to be added to the contactor order reference number		
Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

■ Approvals:    

Characteristics for control relays KHiS ..., DC operated, interface, 1.8 W coil

Version with screw terminals

Rated thermal current I _{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C	Circuit diagram to DIN EN 50 011	Features	Weight kg	For dimensions see page 1673
10	KHiS-31	1 309 067 06	3 1		- built-in LED to indicate operational state - Coil operating voltage rangs 0.7 to 1.3 Vc - integral coil suppressor - only 2 pole aux. contact block permitted	0.235	
	KHiS-22	1 309 077 06	2 2			0.235	
	KHiS-40	1 309 057 06	4 0			0.235	

Notes

Normal/Standard voltages are:
(Short-term availability)
Other coil voltages on request

DC: 24 and 48 V

Auxiliary contact block - page 1641

Other system components - page 1641

Technical details - pages 1664, 1666

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Mini contactors: system components

for use with control relays, contactors, and reversing contactors



- Auxiliary contact blocks, 2- or 4-pole, front fitting
- Compact in size, mounts quickly
- Available in 2 versions :
S = screw terminals
F = Faston connectors
- Contact positioning and numbering to DIN EN 50011 on types HS/HF when mounted to control relays with 4 N/O contacts
- When mounted to contactors, DIN EN 50012 is maintained when LS contacts are used
- High contact reliability
- Switch position indication
- 3 front mounting coil suppressor versions with LED indicators
- Front mounting timer module, delay on energization up to 30 secs

Approvals:

Characteristics

Auxiliary contact blocks

for use with KL ..., KLV contactors

for use with KH ..., KHDC ..., KHi control relays

Top mounting				
for contactors	Type	Circuit diagram	Order ref.:	
DIN EN 50 012	LS-11		3 309 001 01	
	LS-02		3 309 002 01	
	LS-13		3 309 005 01	
	LS-22		3 309 004 01	
	LS-31		3 309 003 01	
KL ... KLV ...	HS-02		3 309 033 01	
	HF-02		3 309 043 01	
	HS-04		3 309 038 01	
	HF-04		3 309 048 01	
	HS-11		3 309 032 01	
	HF-11		3 309 042 01	
	HS-13		3 309 037 01	
	HF-13		3 309 047 01	
	HS-20		3 309 031 01	
	HF-20		3 309 041 01	
	HS-22		3 309 036 01	
	HF-22		3 309 046 01	
	HS-31		3 309 035 01	
	HF-31		3 309 045 01	
	HS-40		3 309 034 01	
	HF-40		3 309 044 01	

Weight : 0.045 kg

Coil suppressors with built-in LED indicator

RC coil suppressor (for AC operated contactor)

Type	Voltage range	Order ref.:	
RC-250 ¹⁾	220...250 V	3 309 062 01	

Diode coil suppressor (for DC operated contactor)

Type	Voltage range	Order ref.:	
D-24 ²⁾	12...24 =	3 309 061 01	
D-48 ²⁾	32...48 =	3 309 061 02	

Varistor coil suppressor (for AC or DC operated contactor)

Type	Voltage range	Order ref.:	
V-24 ³⁾	12...24 AC/DC	3 309 060 01	
V-48 ³⁾	32...48 AC/DC	3 309 060 02	
V-130 ³⁾	40...129 AC/DC	3 309 060 04	
V-250 ³⁾	130...250 AC/DC	3 309 060 05	

Weight : 0.010 kg

Timer module snaps to the front of contactor

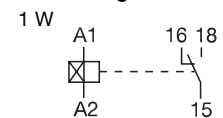
Type	Timer range	Voltage range input/coil	Order ref.:	
HV-48	1...30	24...48 V AC/DC	3 309 050 01	
HV-240	1...30	110...240 V AC	3 309 050 02	

Weight : 0.040 kg

Technical details :

- Relay outputs
- 240 V AC/DC, 2 A max.
- Max. switching capacity
250 VA / 150 W
- Control voltage range 0.85...1.1 V_C
- Permissible ambient temperature
-10°C ... +60°C
- Reset time :
1.5 secs while timing
0.5 secs after timing

Circuit diagram :



Explanation :

... S = screw terminals
... F = Faston connectors
on KHi only 2-pole versions permitted !

Notes

- ¹⁾ Limits transient voltage to max. 3 V_C. Slight increase in drop-out time (1.2 to 2 times the normal time).
- ²⁾ No interference by transient voltages and high frequency. Observe polarity when connecting. Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- ³⁾ Limits transient voltages to max. 2 V_C. Max. reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Technical details - pages 1664-1666

Dimensions - page 1673





Contactors KL ..., 2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)

AC operated,
without integral coil suppressor



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

KL contactors are designed to switch three-phase and AC loads. Applications include building automation, air conditioning, heating and ventilation, and switching resistive loads such as heaters, lamps, and inductive loads, e.g., valves, couplings, etc.

■ Approvals:    

Voltage codes 04 ... 73
to be added to the contactor order
reference number

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for contactors KL ..., AC operated, 4.5 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KL2S-10	1 309 000 ..		- 50/60 Hz coil - without integral coil suppressor	0.180	M 06	
					KL2S-01	1 309 010 ..					
2.2	4	4	4	20/9	KL4S-10	1 309 020 ..					
					KL4S-01	1 309 030 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KL2F-10	1 309 100 ..		- 50/60 Hz coil - without integral coil suppressor	0.180	M 06	
					KL2F-01	1 309 110 ..					
2.2	4	4	4	20/9	KL4F-10	1 309 120 ..					
					KL4F-01	1 309 130 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KL2L-10	1 309 200 ..		- 50/60 Hz coil - without integral coil suppressor	0.210	M 06	
					KL2L-01	1 309 210 ..					
2.2	4	4	4	20/9	KL4L-10	1 309 220 ..					
					KL4L-01	1 309 230 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)
Other coil voltages on request

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

Technical details - pages 1664-1665





¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Contactors KL ..., **2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)** **AC operated,** **with integral coil suppressor**



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

KL contactors are designed to switch three-phase and AC loads. Applications include building automation, air conditioning, heating and ventilation, and switching resistive loads such as heaters, lamps, and inductive loads, e.g., valves, couplings, etc.

■ Approvals:    

Voltage codes 04 ... 73 **to be added to the contactor order** **reference number**

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for contactors KL ..., AC operated, 4.5 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KL2S-10	1 309 002 ..		<div>- 50/60 Hz coil</div> <div>- with integral coil suppressor</div> <div></div> <div>permitted up to 240 V max.</div>	0.180	M 06	
					KL2S-01	1 309 012 ..					
2.2	4	4	4	20/9	KL4S-10	1 309 022 ..					
					KL4S-01	1 309 032 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KL2F-10	1 309 102 ..		<div>- 50/60 Hz coil</div> <div>- with integral coil suppressor</div> <div></div> <div>permitted up to 240 V max.</div>	0.180	M 06	
					KL2F-01	1 309 112 ..					
2.2	4	4	4	20/9	KL4F-10	1 309 122 ..					
					KL4F-01	1 309 132 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KL2L-10	1 309 202 ..		<div>- 50/60 Hz coil</div> <div>- with integral coil suppressor</div> <div></div> <div>permitted up to 240 V max.</div>	0.210	M 06	
					KL2L-01	1 309 212 ..					
2.2	4	4	4	20/9	KL4L-10	1 309 222 ..					
					KL4L-01	1 309 232 ..					

Notes

Normal/Standard voltages are:
 (Short-term availability)
Other coil voltages on request

AC: 24, 42, 110, 230 and 400 V
 DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

AC-coils available with integral coil suppressor to max. 230 V

Technical details - pages 1664-1665





¹⁾ Color code to IEC 309-1 printed on the coil.
 Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Contactors KLDC ..., **2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)** **DC operated,** **without integral coil suppressor**



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

KLDC contactors are designed to switch three-phase and AC loads. Applications include building automation, air conditioning, heating and ventilation, and switching resistive loads such as heaters, lamps, and inductive loads, e.g., valves, couplings, etc.

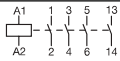
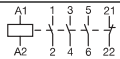
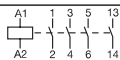
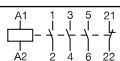
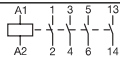
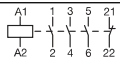
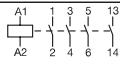
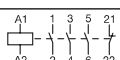
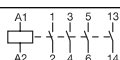
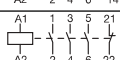
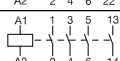

■ Approvals:    

Voltage codes 04 ... 40
to be added to the contactor order
reference number

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for contactors KLDC ..., DC operated, 3 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLDC2S-10	1 309 005 ..		- without integral coil suppressor	0.225	M 06	
					KLDC2S-01	1 309 015 ..					
2.2	4	4	4	20/9	KLDC4S-10	1 309 025 ..					
					KLDC4S-01	1 309 035 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLDC2F-10	1 309 105 ..		- without integral coil suppressor	0.225	M 06	
					KLDC2F-01	1 309 115 ..					
2.2	4	4	4	20/9	KLDC4F-10	1 309 125 ..					
					KLDC4F-01	1 309 135 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLDC2L-10	1 309 205 ..		- without integral coil suppressor	0.225	M 06	
					KLDC2L-01	1 309 215 ..					
2.2	4	4	4	20/9	KLDC4L-10	1 309 225 ..					
					KLDC4L-01	1 309 235 ..					

Notes

Normal/Standard voltages are:
 (Short-term availability)
Other coil voltages on request

AC: 24, 42, 110, 230 and 400 V
 DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
 Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Contactors KLDC ..., **2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)** **DC operated** **with integral coil suppressor**



- Terminal numbering DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

KLDC contactors are designed to switch three-phase and AC loads. Applications include building automation, air conditioning, heating and ventilation, and switching of resistive loads such as heaters, lamps, and inductive loads, e.g., valves, couplings, etc.

■ Approvals:

Voltage codes 04 ... 40 **to be added to the contactor order** **reference number**

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for contactors KLDC ..., DC operated, 3 W coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contacteur type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLDC2S-10	1 309 006 ..		<div>- with integral coil suppressor</div> <div>permitted up to 240 V max.</div>	0.225	M 06	
					KLDC2S-01	1 309 016 ..					
2.2	4	4	4	20/9	KLDC4S-10	1 309 026 ..					
					KLDC4S-01	1 309 036 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLDC2F-10	1 309 106 ..		<div>- with integral coil suppressor</div> <div>permitted up to 240 V max.</div>	0.225	M 06	
					KLDC2F-01	1 309 116 ..					
2.2	4	4	4	20/9	KLDC4F-10	1 309 126 ..					
					KLDC4F-01	1 309 136 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLDC2L-10	1 309 206 ..		<div>- with integral coil suppressor</div> <div>permitted up to 240 V max.</div>	0.225	M 06	
					KLDC2L-01	1 309 216 ..					
2.2	4	4	4	20/9	KLDC4L-10	1 309 226 ..					
					KLDC4L-01	1 309 236 ..					

Notes

Normal/Standard voltages are:
 (Short-term availability)
Other coil voltages on request

AC: 24, 42, 110, 230 and 400 V
 DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

DC-coils available with integral coil suppressor to max. 220 V






Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
 Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Interface contactors KLi ... 4 kW / 5 HP at 460 V, 3 ph. (AC 3) DC operated, with integral coil suppressor and LED switch position indication



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Switch position indication
- Can be directly controlled by programmable controllers
- Safety isolation up to 400 V to VDE 0106, IEC 536

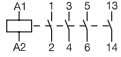
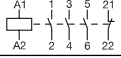
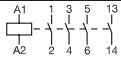
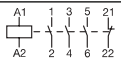
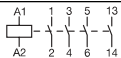

■ Approvals:     

**Voltage codes 04 ... 40
to be added to the contactor order
reference number**

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for contactors KLi ..., DC operated, 1.8 W coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
								- Built in LED to indicate switch position - Coil voltage range from 0.7 to 1.3 Vc - Integral coil suppressor up to 72 V max. - Only 2 pole aux. contact block permitted			
2.2	4	4	4	20/9	KLi4S-10	1 309 027 ..			0.235	M 06	
					KLi4S-01	1 309 037 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
								- Built in LED to indicate switch position - Coil voltage range from 0.7 to 1.3 Vc - Integral coil suppressor up to 72 V max. - Only 2 pole aux. contact block permitted			
2.2	4	4	4	20/9	KLi4F-10	1 309 127 ..			0.235	M 06	
					KLi4F-01	1 309 137 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
								- Built-in LED to indicate switch position - Coil voltage range from 0.7 to 1.3 Vc - Integral coil suppressor up to 72 V max. - Only 2 pole aux. contact block permitted			
2.2	4	4	4	20/9	KLi4L-10	1 309 227 ..			0.265	M 06	
					KLi4L-01	1 309 237 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)

Other coil voltages on request

DC: 24 and 48 V

Auxiliary contact block - page 1653

Other system components - page 1653

Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

**Contactors KLb ...,
4 kW / 5 HP at 460 V, 3 ph. (AC 3)
AC operated,
with integral coil suppressor
hum-free for special
applications**



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536

- KLi contactors are hum free which makes them suitable for use in building equipment, etc.
- Magnet coil with integral rectifier and coil suppressor
- Suitable for rail mounting (35 mm rail) or screw fixing (4 mm dia. screws)
- Connecting screws are supplied with the clamps in the open position

■ Approvals:

**Voltage codes 04 ... 73
to be added to the contactor order
reference number**

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for contactors KLb ..., AC operated, 3 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
								50/60 Hz coil 24 V 110 V 230 V permitted			
2.2	4	4	4	20/9	KLb4S-10	1 309 021 ..			0.225	M 06	
					KLb4S-01	1 309 031 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
								50/60 Hz coil 24 V 110 V 230 V permitted			
2.2	4	4	4	20/9	KLb4F-10	1 309 121 ..			0.225	M 06	
					KLb4F-01	1 309 131 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
								50/60 Hz coil 24 V 110 V 230 V permitted			
2.2	4	4	4	20/9	KLb4L-10	1 309 221 ..			0.225	M 06	
					KLb4L-01	1 309 231 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)
Other coil voltages on request

AC: 24, 110 and 230 V

Auxiliary contact block - page 1653

Other system components - page 1653

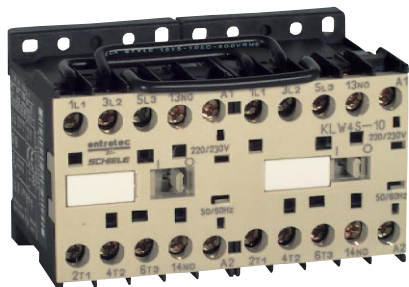
Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Reversing contactors KLV ..., 3 pole

2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)

AC operated,
without integral coil suppressor



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536
- Mechanically interlocked as standard
- Main circuit is ready wired on contactors with screw terminals
- Suitable for rail mounting (35 mm rail) or screw fixing (4 mm dia. screw)
- Connecting screws are supplied with the clamps in the open position

■ Approvals:

Voltage codes 04 ... 73
to be added to the contactor order reference number

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for reversing contactors KLV ..., AC operated, 4.5 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLW2S-10	1 309 300 ..		without integral coil suppressor	0.39	M 06	
					KLW2S-01	1 309 310 ..					
2.2	4	4	4	20/9	KLW4S-10	1 309 320 ..					
					KLW4S-01	1 309 330 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLW2F-10	1 309 400 ..		without integral coil suppressor	0.37	M 06	
					KLW2F-01	1 309 410 ..					
2.2	4	4	4	20/9	KLW4F-10	1 309 420 ..					
					KLW4F-01	1 309 430 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLW2L-10	1 309 500 ..		without integral coil suppressor	0.43	M 06	
					KLW2L-01	1 309 510 ..					
2.2	4	4	4	20/9	KLW4L-10	1 309 520 ..					
					KLW4L-01	1 309 530 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Other coil voltages on request

Auxiliary contact block - page 1653

Other system components - page 1653

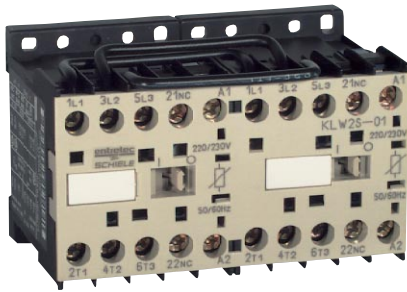
Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Reversing contactors KLV ..., 3 pole

2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)

AC operated,
with integral coil suppressor



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536
- Mechanically interlocked as standard
- Main circuit is ready wired on contactors with screw terminals
- Suitable for rail mounting (35 mm rail) or screw fixing (4 mm dia. screw)
- Connecting screws are supplied with the clamps in the open position

■ Approvals:

Voltage codes 04 ... 73
to be added to the contactor order
reference number

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for reversing contactors KLV ..., AC operated, 4.5 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLW2S-10	1 309 302 ..		with integral coil suppressor permitted up to 240 V max.	0.39	M 06	
					KLW2S-01	1 309 312 ..					
2.2	4	4	4	20/9	KLW4S-10	1 309 322 ..					
					KLW4S-01	1 309 332 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLW2F-10	1 309 402 ..		with integral coil suppressor permitted up to 240 V max.	0.37	M 06	
					KLW2F-01	1 309 412 ..					
2.2	4	4	4	20/9	KLW4F-10	1 309 422 ..					
					KLW4F-01	1 309 432 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLW2L-10	1 309 502 ..		with integral coil suppressor permitted up to 240 V max.	0.43	M 06	
					KLW2L-01	1 309 512 ..					
2.2	4	4	4	20/9	KLW4L-10	1 309 522 ..					
					KLW4L-01	1 309 532 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)

AC: 24, 42, 110, 230 and 400 V
DC: 24, 110 and 220 V

Other coil voltages on request

AC-coils available with integral coil suppressor to max. 230 V

Auxiliary contact block - page 1653

Other system components - page 1653

Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Reversing contactors KLWDC ..., 3 pole

2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)

DC operated,
without integral coil suppressor



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Switch position indication
- With or without integral coil suppressor
- Safety isolation up to 400 V to VDE 0106, IEC 536
- Mechanically interlocked as standard
- Main circuit is prewired on contactors with screw terminals
- Suitable for rail mounting (35 mm rail) or screw fixing (4 mm dia. screw)
- Connecting screws are supplied with the clamps in the open position
- Approvals:

Voltage codes 04 ... 40
to be added to the contactor order
reference number

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for reversing contactors KLWDC ..., DC operated, 3 W coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLWDC2S-10	1 309 305 ..		without integral coil suppressor	0.39	M 06	
					KLWDC2S-01	1 309 315 ..					
2.2	4	4	4	20/9	KLWDC4S-10	1 309 320 ..					
					KLWDC4S-01	1 309 335 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLWDC2F-10	1 309 405 ..		without integral coil suppressor	0.39	M 06	
					KLWDC2F-01	1 309 415 ..					
2.2	4	4	4	20/9	KLWDC4F-10	1 309 320 ..					
					KLWDC4F-01	1 309 435 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLWDC2L-10	1 309 505 ..		without integral coil suppressor	0.39	M 06	
					KLWDC2L-01	1 309 515 ..					
2.2	4	4	4	20/9	KLWDC4L-10	1 309 320 ..					
					KLWDC4L-01	1 309 535 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)

Other coil voltages on request

DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

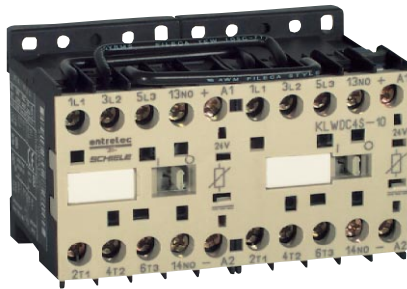
Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Reversing contactors KLWDC ..., 3 pole

2.2 and 4 kW / 3 and 5 HP at 460 V, 3 ph. (AC 3)

DC operated, with integral coil suppressor



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536
- Mechanically interlocked as standard
- Main circuit is prewired on contactors with screw terminals
- Suitable for rail mounting (35 mm rail) or screw attached (4 mm dia. screw)
- Connecting screws are supplied with the clamps in the open position
- Approvals:

**Voltage codes 04 ... 40
to be added to the contactor order
reference number**

Code number	for coil voltage DC	Color code ¹⁾ DC
... 04	12 V	green
... 06	24 V	green
... 10	32 V	green
... 11	36 V	green
... 13	42 V	green
... 15	48 V	green
... 19	60 V	green
... 25	110 V	green
... 28	120 V	green
... 29	125 V	green
... 38	208 V	green
... 40	220 V	green

Further notes at the bottom of this page.

Characteristics for reversing contactors KLWDC ..., DC operated, 3 W coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
1.5	2.2	3	3	20/6	KLWDC2S-10	1 309 306 ..		with integral coil suppressor permitted up to 240 V	0.48	M 06	
					KLWDC2S-01	1 309 316 ..					
2.2	4	4	4	20/9	KLWDC4S-10	1 309 326 ..					
					KLWDC4S-01	1 309 336 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
1.5	2.2	3	3	20/6	KLWDC2F-10	1 309 406 ..		with integral coil suppressor permitted up to 240 V	0.46	M 06	
					KLWDC2F-01	1 309 416 ..					
2.2	4	4	4	20/9	KLWDC4F-10	1 309 426 ..					
					KLWDC4F-01	1 309 436 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
1.5	2.2	3	3	20/6	KLWDC2L-10	1 309 506 ..		with integral coil suppressor permitted up to 240 V	0.52	M 06	
					KLWDC2L-01	1 309 516 ..					
2.2	4	4	4	20/9	KLWDC4L-10	1 309 526 ..					
					KLWDC4L-01	1 309 536 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)
Other coil voltages on request

DC-coils available with integral coil suppressor to max. 220 V

DC: 24, 110 and 220 V

Auxiliary contact block - page 1653

Other system components - page 1653

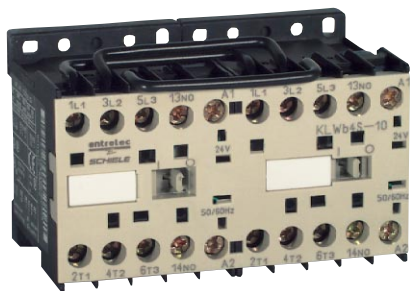
Technical details - pages 1664-1665

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Reversing contactors KLWb ..., 3 pole

4 kW / 5 HP at 460 V, 3 ph. (AC 3)

AC operated,
hum-free for
special applications



- Terminal numbering to DIN EN 50 005 and DIN EN 50 012
- Compact design
- Available in 3 versions:
 - with screw terminals
 - Faston connectors
 - solder pins
- Version with solder pins includes front face screw terminals for direct connection to load
- Low power consumption coils
- Bi-frequency AC coils 50/60 Hz
- High contact reliability
- Switch position indication
- Safety isolation up to 400 V to VDE 0106, IEC 536
- KLWb contactors are hum-free which makes them suitable for use in building equipment, etc.
- Magnet coil with integral rectifier and coil suppressor
- Mechanically interlocked as standard
- Main circuit is prewired on contactor with screw terminals
- Suitable for rail mounting (35 mm rail) or screw attached (4 mm dia. screw)
- Connecting screws are supplied with the clamps in the open position

■ Approvals:

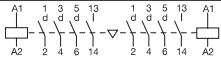
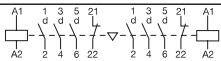
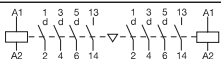
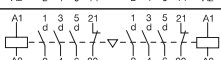
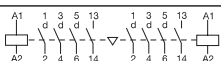
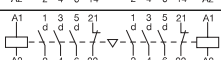
Voltage codes 04 ... 73 to be added to the contactor order reference number

Code number	for coil voltage AC	Color code ¹⁾ AC
... 04	12 V	violet
... 06	24 V	violet
... 10	32 V	violet
... 11	36 V	green
... 13	42 V	white
... 15	48 V	white
... 19	60 V	green
... 25	110 V	yellow
... 28	120 V	yellow
... 29	127 V	yellow
... 38	208 V	blue
... 40	230 V	blue
... 41	220 V	blue
... 43	240 V	blue
... 59	400 V	red
... 61	380 V	red
... 63	415 V	red
... 65	440 V	red
... 69	500 V	black
... 73	600 V	black

Our mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics for reversing contactors KLWb ..., AC operated, 3 VA coils

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current le AC 1/AC 3 up to 440 V A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram to DIN EN 50 005 and DIN EN 50 012	Features	Weight kg	Suitable thermal overload relay	For dimensions see page 1673
230 V	380... 415 V	500 V	690 V								
Version with screw terminals											
								50/60 Hz coil ... 24 V ... 110 V ... 230 V permitted	0.48	M 06	
2.2	4	4	4	20/9	KLWb4S-10	1 309 321 ..					
					KLWb4S-01	1 309 331 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
								50/60 Hz coil ... 24 V ... 110 V ... 230 V permitted	0.46	M 06	
2.2	4	4	4	20/9	KLWb4F-10	1 309 421 ..					
					KLWb4F-01	1 309 431 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
								50/60 Hz coil ... 24 V ... 110 V ... 230 V permitted	0.52	M 06	
2.2	4	4	4	20/9	KLWb4L-10	1 309 521 ..					
					KLWb4L-01	1 309 531 ..					

Notes

Normal/Standard voltages are:
(Short-term availability)

Other coil voltages on request

AC: 24, 110 and 230 V

Auxiliary contact block - page 1653

Other system components - page 1653

¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Technical details - page 1664-1665

Mini contactors: system components

for use with control relays, contactors and reversing contactors



- Auxiliary contact blocks, 2- or 4-pole, front fitting
- Compact in size, mounts quickly
- Available in 2 versions :
S = screw terminals
F = Faston connectors
- Contact positioning and numbering to DIN EN 50011 on types HS/HF when mounted to control relays with 4 N/O contacts
- When mounted to contactors, DIN EN 50012 is maintained when LS contacts are used
- High contact reliability
- Switch position indication
- 3 front mounting coil suppressor versions with LED indicators
- Front mounting timer module, delay on energization up to 30 seconds

Approvals:

P
Penoresan.com

Characteristics

Auxiliary contact blocks

for use with KL ..., KLW contactors

for use with KH ..., KHDC ..., KHi control relays

Top mounting				
for contactors	Type	Circuit diagram	Order ref.:	
DIN EN 50 012	LS-11		3 309 001 01	
	LS-02		3 309 002 01	
	LS-13		3 309 005 01	
	LS-22		3 309 004 01	
	LS-31		3 309 003 01	
KL ... KLW ...	HS-02		3 309 033 01	
	HF-02		3 309 043 01	
	HS-04		3 309 038 01	
	HF-04		3 309 048 01	
	HS-11		3 309 032 01	
	HF-11		3 309 042 01	
	HS-13		3 309 037 01	
	HF-13		3 309 047 01	
	HS-20		3 309 031 01	
	HF-20		3 309 041 01	
	HS-22		3 309 036 01	
	HF-22		3 309 046 01	
	HS-31		3 309 035 01	
	HF-31		3 309 045 01	
	HS-40		3 309 034 01	
	HF-40		3 309 044 01	
KH, KHDC, KHi				

Weight : 0.045 kg

Coil suppressors with built in LED indicator

RC coil suppressor (for AC operated contactor)

Type	Voltage range	Order ref.:	
RC-250 ¹⁾	220...250 V	3 309 062 01	

Diode coil suppressor (for DC operated contactor)

Type	Voltage range	Order ref.:	
D-24 ²⁾	12...24 =	3 309 061 01	
D-48 ²⁾	32...48 =	3 309 061 02	

Varistor coil suppressor (for AC or DC operated contactor)

Type	Voltage range	Order ref.:	
V-24 ³⁾	12...24 AC/DC	3 309 060 01	
V-48 ³⁾	32...48 AC/DC	3 309 060 02	
V-130 ³⁾	40...129 AC/DC	3 309 060 04	
V-250 ³⁾	130...250 AC/DC	3 309 060 05	

Weight : 0.010 kg

Timer module snaps to the front of contactor

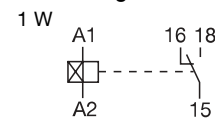
Type	Timer range	Voltage range input/coil	Order ref.:	
HV-48	1...30	24...48 V AC/DC	3 309 050 01	
HV-240	1...30	110...240 V AC	3 309 050 02	

Weight : 0.040 kg

Technical details :

- Relay outputs
- 240 V AC/DC, 2 A max.
- Max. switching capacity
250 VA / 150 W
- Control voltage range 0.85...1.1 V_C
- Permissible ambient temperature
-10°C ... +60°C
- Reset time :
1.5 secs while timing
0.5 secs after timing

Circuit diagram :



Explanation :

... S = screw terminals
... F = Faston connectors
on KHi only 2-pole versions permitted !

Notes

- ¹⁾ Limits transient voltage to max. 3 V_C. Slight increase in drop-out time (1.2 to 2 times the normal time).
- ²⁾ No interference by transient voltages and high frequency. Observe polarity when connecting. Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- ³⁾ Limits transient voltages to max. 2 V_C. Max. reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Technical details - pages 1664-1666

Dimensions - page 1673

Voltage code numbers 04 ...73
to be added to the contactor order reference
number for mini contactors

Code number	for coil voltage		Color code ¹⁾	
	AC	DC	AC	DC
... 04	12 V		violet	green
... 06	24 V		violet	green
... 10	32 V		violet	green
... 11	36 V		green	green
... 13	42 V		white	green
... 15	48 V		white	green
... 19	60 V		green	green
... 25	110 V		yellow	green
... 28	120 V		yellow	green
... 29	127 V	125 V	yellow	green
... 38	208 V		blue	green
... 40	230 V	220 V	blue	green
... 41	220 V		blue	-
... 43	240 V		blue	-
... 59	400 V		red	-
... 61	380 V		red	-
... 63	415 V		red	-
... 65	440 V		red	-
... 69	500 V		black	-
... 73	600 V		black	-

Our control relays, compact contactors and mini contactors are delivered with bi-frequency coils for 50/60 Hz.

Our N-contactors are available with mono-frequency coils for 50 or 60 Hz.



Notes

Normal/Standard voltages are:
 (Short-term availability)

AC: 24, 42, 110, 230 and 400 V
 DC: 24, 110 and 220 V

Other coil voltages on request

¹⁾ Color code to IEC 309-1 printed on the coil. Only for compact contactors HL 4 K / HL 8 K and DL 4 K - DL 18 K