

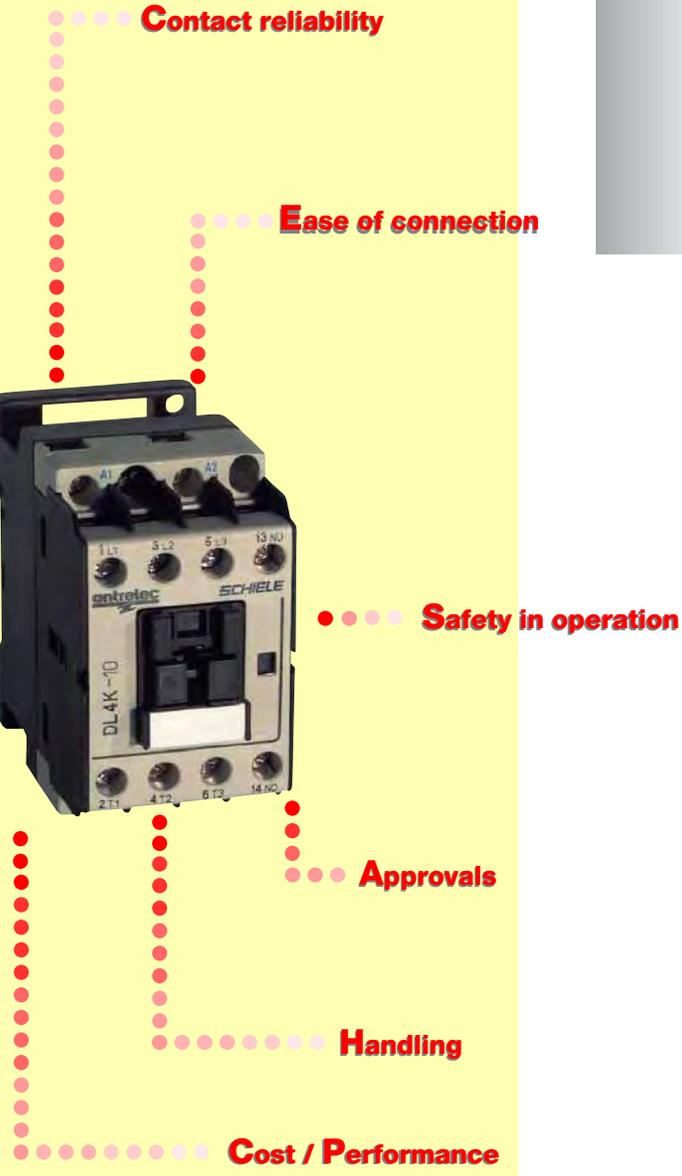
Compact-contactors

45 mm wide

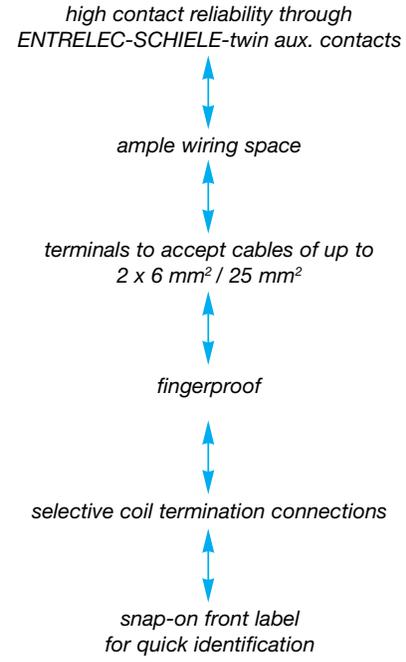
Control relays and contactors

Many benefits :

- ✓ powerful
- ✓ modular
- ✓ reliable contact
- ✓ dependable
- ✓ advanced design and handling



ADVANCED DESIGN AND HANDLING



Contact reliability

- High contact reliability of control circuit by the use of ENTRELEC-SCHIELE-twin aux. contacts
- Contact reliability increased by a factor of 1.000 to 10.000 compared to standard contacts

Connection

- Large terminal space for cables up to 2 x 6 mm² / ...25 mm²
- Coil terminations for one-sided or diagonal wiring
- Coil suppressor snaps directly to coil terminal
- Colored coil voltage marking acc. to 309-1

Safety in operation

- Fingerproof to VDE 0106: Pt. 100

Approvals

- Designed to comply with all major national and international standards

Handling

- Ergonomic, user-friendly design
- Active and passive control elements are colored differently
- Large clip-on front label for identification purposes
- Terminals arranged for quick and simple mounting

Cost / performance

- Favorable cost / performance ratio
- Comprehensive range of components to complete the system family

Compact contactors plus system accessories



✓ **Relay interface module**
the interfacing element from programmable controller to contactor (other modules on pages 1616-1617)

- HL 4 K**
- DL 4 K**
- DL 5 K**
- DL 7 K**
- DL 11 K**
- DL 15 K**
- DL 18 K**

see pages 1607-1613



✓ **Coil suppressor**
snaps on directly
types : RC-K, D-K, V-K

✓ **Contactors**

4 to 18.5 kW at 380 V, 3 ph.
5 to 25 HP at 460 V, 3 ph.
✓ AC coil - 50/60 Hz



✓ **Mechanical interlock**
for side mounting
type : MV-e



✓ **Electromechanical latch head**
clips on to front of contactor
type : MV-BN



✓ **Pneumatic timer**
clips on to front of contactor
delay on energization or de-energization up to 180 secs
types : PZ-a, PZ-r

✓ **Auxiliary contact block**
2 pole, side mounting
(left or right hand side)
1 N/O + 1N/C contacts or
2 N/O contacts
types : S 11 / S 20



✓ **Auxiliary contact block two or four pole**
clips on to front of contactor
type : HI-..., LI-...



✓ **Thermal overload relay**
type : M 23 K and M 40 K

see page 1682

Control relays
HL 4 K, HL 8 K, AC-operated
HLg 4 K, DC-operated
(economy circuit coil)



- 4- and 8-pole control relay
- High contact reliability through forced opening of ENTRELEC-SCHIELE-twin aux. contacts
- Positively guided contacts acc. to ZH 1 / 457
 - Safety rules for control of powered presses in the metal working industry
- Expandable to 8 contacts by the use of additional aux. contact blocks
- Terminal numbering to DIN EN 50 011
- Simple mounting through snap-on mount, with provision for screw attachment
- Fast wiring due to plus/minus screws with terminal clamps supplied in the "open" position
- Finger protected terminals to VDE 0106: Part 100
- Bi-frequency AC coils - 50/60 Hz
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106: Part 101 and A1 (draft 2/98)

■ Approvals:

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

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 and compact contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics

Control relays HL 4 K-, AC-operated

Rated current I _{th}	Type	Order ref.: see supplements at the top right	Contact configuration	Circuit diagram / numbering to DIN EN 50 011	Weight kg	For dimensions see page 1674
A			N/O N/C E/M L/B			
16	HL 4 K-31	1 366 404 ..	3 1		0.38	
	HL 4 K-22	1 366 408 ..	2 2		0.38	
	HL 4 K-40*	1 366 407 ..	4 0		0.38	
16	HL 8 K-44	1 366 420 ..	4 4		0.45	
	HL 8 K-62	1 366 423 ..	6 2		0.45	
	HL 8 K-53	1 366 438 ..	5 3		0.45	
	HL 8 K- 53 ü	1 366 426 ..	4 2 1 1		0.45	
	HL 8 K-80	1 366 441 ..	8 0		0.45	

* Use control relay HL 4 K-40 + aux. contact block Hi ... when designing control to DIN EN 50 011.

Characteristics

Control relays HLg 4 K-, DC-operated
 (separate pull-in/hold windings)

Rated current I _{th}	Type	Order ref.: see supplements at the top right	Contact configuration	Circuit diagram / numbering to DIN EN 50 011	Weight kg	For dimensions see page 1674
A			N/O N/C			
16	HLg 4 K-22	1 366 410 ..	2 1		0.38	
16	HLg 4 K-31	1 366 411 ..	3 0		0.38	

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 blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1671

Possible auxiliary contact block combinations - page 1615

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 HL 4 K DC and HL 8 K DC DC-operated



- 4- and 8-pole control relay
- High contact reliability through forced opening of ENTRELEC-SCHIELE-twin aux. contacts
- Positively guided contacts acc. to ZH 1 / 457
- Expandable to 8 contacts by the use of additional aux. contact blocks
- Terminal numbering to DIN EN 50 011
- Simple mounting through snap-on mount, with provision for screw attachment
- Fast wiring due to plus/minus screws with terminal clamps supplied in the "open" position
- Finger protected terminals to VDE 0106: Part 100
- Coil consumption 6.5/8.8 W only, controllable by programmable controller
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106 Part 101 and A1 (draft 2/98)

■ Approvals:    

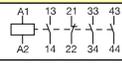
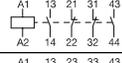
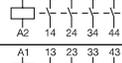
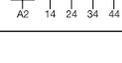
Voltage codes 04 ... 40 to be added to the contactor order reference number

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

Control relays HL 4 K DC, HL 8 K DC, HL 100 DC, DC-operated

Rated current I _{th} A	Type	Order ref.: see supplements at the top right	Contact configuration N/O N/C E/M L/B	Circuit diagram / numbering to DIN EN 50 011	Weight kg	For dimensions see page 1675
16	HL 4 K DC-31	1 367 361 ..	3 1		0.72	
16	HL 4 K DC-22	1 367 362 ..	2 2		0.72	
16	HL 4 K DC-40	1 367 363 ..	4 0		0.72	
16	HL 8 K DC-44	1 367 421 ..	4 4		0.78	
16	HL 8 K DC-53	1 367 422 ..	5 3		0.78	
16	HL 8 K DC-62	1 367 423 ..	6 2		0.78	
16	HL 8 K DC-71	1 367 424 ..	7 1		0.78	
16	HL 8 K DC-80	1 367 425 ..	8 0		0.78	

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 blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1671

Possible auxiliary contact block combinations - page 1615

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

DL 4 K to DL 18 K

4-18.5 kW / 5-25 HP at 460 V, 3 ph. (AC 3),

AC-operated,

3 main contacts,

integral aux. contacts

on sizes up to 11 kW



- Versatile compact contactors
- Auxiliary contacts are ENTRELEC-SCHIELE-twin aux. contacts
- Simple mounting with integral snap-on mount, with provision for screw attachment
- Ample wiring space and connecting terminals with plus/minus screws and self-lifting clamps which are supplied in the "open" position allow fast and economic wiring
- Finger protection to VDE 01060 Part 100
- Bi-frequency coils - 50/60 Hz
- Expandable due to comprehensive system components - 2- and 4-pole contact blocks, mechanical interlock, electromechanical latch head and pneumatic timer
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106: Part 101 and A1

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

Further notes at the bottom of this page.

Characteristics

Max. AC 3 ratings of 3-phases motors (kW)				Rated operational current I _e AC 1 / AC 3 A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram / numbering to DIN EN 50 005 and DIN EN 50 012	Weight kg	Suitable therm. overload relay	For dimensions see page 1674
230 V	400 V	500 V	690 V							
2.2	4	5.5	4	22/9	DL 4 K-10	1 366 001 ..		0.38	M 23 K	
					DL 4 K-01	1 366 004 ..		0.38		
					DL 4 K-22	1 366 031 ..		0.45		
3	5.5	7.5	5.5	25/12	DL 5 K-10	1 366 013 ..		0.38	M 23 K	
					DL 5 K-01	1 366 016 ..		0.38		
					DL 5 K-22	1 366 037 ..		0.45		
4	7.5	11	7.5	39/16	DL 7 K-10	1 366 201 ..		0.38	M 23 K	
					DL 7 K-01	1 366 204 ..		0.38		
					DL 7 K-22	1 366 231 ..		0.45		
5.5	11	15	11	39/23	DL 11 K-10	1 366 213 ..		0.38	M 23 K	
					DL 11 K-01	1 366 216 ..		0.38		
					DL 11 K-22	1 366 237 ..		0.45		
9	15	18.5	15	54/30	DL 15 K	1 370 001 .. ^{a)}		0.45	M 40 K	
					DL 15 K-22	1 370 017 .. ^{b)}		0.45		
11	18.5	20	18.5	54/37	DL 18 K	1 370 004 .. ^{a)}		0.45	M 40 K	
					DL 18 K-22	1 370 020 .. ^{b)}		0.45		

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

Type DL 4 K-22 to DL 18 K-22 contactors are supplied with the auxiliary contacts fitted.

Auxiliary contact blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1667

Possible auxiliary contact block combinations - page 1615

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

DL 4K to DL 18 K

4-18.5 kW / 5-25 HP at 460 V, 3 ph. (AC 3),

AC-operated,

3 or 4 main contacts,

no integral aux. contacts



- Versatile compact contactors
- Auxiliary contacts are ENTRELEC-SCHIELE-twin aux. contacts
- Simple mounting with integral snap-on mount, with provision for screw attachment
- Ample wiring space and connecting terminals with plus/minus screws and self-lifting clamps which are supplied in the "open" position allow fast and economic wiring
- Finger protection to VDE 01060 Part 100
- Bi-frequency coils - 50/60 Hz
- Expandable, due to comprehensive system components - 2- and 4-pole contact blocks, mechanical interlock, electromechanical latch head and pneumatic timer
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106: Part 101 and A1 (draft 2/98)

■ Approvals : 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 control relays and compact contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current I _e AC 1 / AC 3 A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram / numbering to DIN EN 50 005	Weight kg	Suitable therm. overload relay	For dimensions see page 1674
230 V	400 V	500 V	690 V							
2.2	4	5.5	4	22/9	DL 4 K	1 366 034 ..		0.38	M 23 K	
					DL 4 K-4 H	1 366 047 ..		0.38		
3	5.5	7.5	5.5	25/12	DL 5 K	1 366 044 ..		0.38	M 23 K	
					DL 5 K-4 H	1 366 050 ..		0.38		
4	7.5	11	7.5	39/16	DL 7 K	1 366 234 ..		0.38	M 23 K	
					DL 7 K-4 H	1 366 243 ..		0.38		
5.5	11	15	11	39/23	DL 11 K	1 366 240 ..		0.45	M 23 K	
					DL 11 K-4 H	1 366 246 ..		0.38		
9	15	18.5	15	54/30	DL 15 K	1 370 001 ..		0.45	M 40 K	
					DL 18 K	1 370 004 ..		0.45		

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 blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1667

Possible auxiliary contact block combinations - page 1615

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

DL 4 K DC to DL 18 K DC

4-18.5 kW / 5-25 HP at 460 V, 3 ph. (AC 3),

DC-operated



- Versatile compact contactors
- Auxiliary contacts are ENTRELEC-SCHIELE-twin aux. contacts
- Simple mounting with integral snap-on mount, with provision for screw attachment
- Ample wiring space and connecting terminals with plus/minus screws and self-lifting clamps which are supplied in the "open" position allow fast and economic wiring
- Finger protection to VDE 01060 Part 100
- Expandable, due to comprehensive system components - 2- and 4-pole contact blocks, mechanical interlock, electromechanical latch head and pneumatic timer
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106: Part 101 and A1 (draft 2/98)

■ 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

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current I _e AC 1 / AC 3 A	Contactor type	order ref.: see supplements at the top right	Circuit diagram / numbering to DIN EN 50 005 and DIN EN 50 012	Weight kg	Suitable therm. overload relay	For dimensions see page 1675
230 V	400 V	500 V	690 V							
2.2	4	5.5	4	22/9	DL 4 K DC-10	1 367 001 ..		0.72	M 23 K	
					DL 4 K DC-01	1 367 002 ..		0.72		
					DL 4 K DC-22	1 367 005 ..		0.78		
3	5.5	7.5	5.5	25/12	DL 5 K DC-10	1 367 061 ..		0.72	M 23 K	
					DL 5 K DC-01	1 367 062 ..		0.72		
					DL 5 K DC-22	1 367 065 ..		0.78		
4	7.5	11	7.5	39/16	DL 7 K DC-10	1 367 121 ..		0.72	M 23 K	
					DL 7 K DC-01	1 367 122 ..		0.72		
					DL 7 K DC-22	1 367 125 ..		0.78		
5.5	11	15	11	39/23	DL 11 K DC-10	1 367 181 ..		0.72	M 23 K	
					DL 11 K DC-01	1 367 182 ..		0.72		
					DL 11 K DC-22	1 367 185 ..		0.78		
9	15	18.5	15	54/30	DL 15 K DC	1 367 245 .. ^{a)}		0.80	M 40 K	
					DL 15 K DC-22	1 367 241 .. ^{b)}		0.86		
11	18.5	20	18.5	54/37	DL 18 K DC	1 367 305 .. ^{a)}		0.80	M 40 K	
					DL 18 K DC-22	1 367 301 .. ^{b)}		0.86		

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 blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1667

Possible auxiliary contact block combinations - page 1615

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

**DL 4 K / DLg 4 K to
DL 18 K / DLg 18 K**
to switch AC or DC loads
**AC-operated or
DC-operated with economy circuit coil**
**Utilization category : AC 1 / AC 3
DC 1 ... DC 5**



Versions :

- DL 4 K to DL 18 K = DC operated, AC switching (coil with pull-in and hold winding, economy circuit coil) **A**
- DLg 4 K to DLg 18 K = DC operated, DC switching (coil with pull-in and hold winding, economy circuit coil) **B**
- DLg 4 K to DLg 18 K = AC operated/DC switching **C**
- DC contactors with sextuple break
- Favorable mounting depth due to conventional drive
- Suitable for operational voltages up to 220 V DC
- Finger protected to VDE 0106 Part 100
- Safety isolation up to 400 V AC of coil and contact elements to DIN VDE 0106: Part 101 and A1 (draft 2/98)

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

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 and compact contactors are delivered with bi-frequency coils for 50/60 Hz.

Further notes at the bottom of this page.

Characteristics

DL 4 K to DL 18 K DC operated / AC switching **A**

Max. AC 3 ratings of 3-phase motors (kW)				Rated operational current I _e AC 1 / AC 3 A	Contactor type	Order ref.: see supplements at the top right	Circuit diagram	Weight kg	Suitable therm. overload relay	For dimensions see page 1674
220... 240 V	380... 415 V	500 V	690 V							
2.2	4	5.5	4	22/9	DL 4 K-01	1 366 025 ..		0.39	M 23 K	
3	5.5	7.5	5.5	22/12	DL 5 K-01	1 366 026 ..		0.39	M 23 K	
4	7.5	11	7.5	39/16	DL 7 K-01	1 366 225 ..		0.39	M 23 K	
5.5	11	15	11	39/23	DL 11 K-01	1 366 226 ..		0.39	M 23 K	
9	15	18.5	15	54/30	DL 15 K-22	1 370 013 ..		0.46	M 40 K	
11	18.5	20	18.5	54/37	DL 18 K-22	1 370 014 ..		0.46	M 40 K	

DLg 4 K bis DLg 18 K DC operated / DC switching **B**

Rated operational current I _e (A) DC 1			DC 2-DC 5			Contactor type	Order ref.: see supplements at the top right	Circuit diagram	Weight kg	Suitable therm. overload relay	For dimensions see page 1674
24 V	110 V	220 V	24 V	110 V	220 V						
22	22	22	22	22	6	DLg 4 K-01	1 366 027 ..		0.39	M 23 K	
25	25	25	25	25	6	DLg 5 K-01	1 366 028 ..		0.39	M 23 K	
32	32	32	32	32	8	DLg 7 K-01	1 366 227 ..		0.39	M 23 K	
39	39	39	39	39	8	DLg 11 K-01	1 366 228 ..		0.39	M 23 K	
54	54	54	54	54	10	DLg 15 K-22 ü	1 370 015 ..		0.46	M 40 K	
54	54	54	54	54	16	DLg 18 K-22 ü	1 370 016 ..		0.46	M 40 K	

DLg 4 K bis DLg 18 K AC operated / DC switching **C**

Rated operational current I _e (A) DC 1			DC 2-DC 5			Contactor type	Order ref.: see supplements at the top right	Circuit diagram	Weight kg	Suitable therm. overload relay	For dimensions see page 1674
24 V	110 V	220 V	24 V	110 V	220 V						
22	22	22	22	22	6	DLg 4 K-10	1 366 007 ..		0.34	M 23 K	
25	25	25	25	25	6	DLg 5 K-10	1 366 019 ..		0.34	M 23 K	
32	32	32	32	32	8	DLg 7 K-10	1 366 207 ..		0.34	M 23 K	
39	39	39	39	39	8	DLg 11 K-10	1 366 219 ..		0.34	M 23 K	
54	54	54	54	54	10	DLg 15 K-00	1 370 007 ..		0.45	M 40 K	
54	54	54	54	54	16	DLg 18 K-00	1 370 010 ..		0.45	M 40 K	

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 blocks - page 1613

Further system components - pages 1613-1617

Technical details - page 1667, 1669

Possible auxiliary contact block combinations - page 1615

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

System components for use with AC / DC control relays and contactors

DL 4 K to DL 18 K

HL 4 K, HLg 4 K

Auxiliary contact block



- Auxiliary contacts are ENTRELEC-SCHIELE-twin aux. contacts
- Various contact combinations
- Available in two versions :
 - without plunger, no manual operation
 - with plunger, for manual operation
- Fast mounting by simply snapping to the front of the contactor
- Additional aux. contact blocks can be side mounted
- Side-mounted contacts are advantageous when using flat control boxes

■ Approval:     

Characteristics

Auxiliary contact blocks "without plunger"

Front mounting				
for contactor	Type	Circuit diagram	Order ref.:	
DL 15 K ¹⁾ DL 18 K and contactors on page 1610	Li-11		3 369 031 01	
	Li-22		3 369 008 01	
DLg 15 K ¹⁾ DLg 18 K on page 1612	Lig-22		3 369 021 01	
DL 4 K-10 to ²⁾	Li-11 E		3 369 035 01	
DL 11 K-10	Li-22 E		3 369 036 01	
	Li-31 E		3 369 037 01	
DL 4 K to ³⁾	Hi-11		3 369 011 01	
DL 18 K and	Hi-22		3 369 015 01	
HL 4 K	Hi-02		3 369 013 01	
HLg 4 K	Hi-20		3 369 012 01	
	Hi-40		3 369 019 01	
	Hi-22 ü		3 369 016 01	
	Hi-04		3 369 020 01	
	Hi-13		3 369 014 01	
	Hi-31		3 369 022 01	

Auxiliary contact blocks "with plunger" for manual operation

Front mounting				
for contactor	Type	Circuit diagram	Order ref.:	
DL 15 K ¹⁾ DL 18 K and contactors on page 1610	Li-11		3 369 231 01	
	Li-22		3 369 208 01	
DLg 15 K ¹⁾ DLg 18 K on page 1612	Lig-22		3 369 221 01	
DL 4 K to ³⁾	Hi-11		3 369 211 01	
DL 18 K and	Hi-22		3 369 215 01	
HL 4 K	Hi-02		3 369 213 01	
HLg 4 K	Hi-20		3 369 212 01	
	Hi-40		3 369 219 01	
	Hi-22 ü		3 369 216 01	
	Hi-04		3 369 220 01	
	Hi-13		3 369 214 01	
	Hi-31		3 369 222 01	

Auxiliary block for side mounting

DL 4 K to	S 11		3 368 002 01	
DL 18 K and	S 20		3 368 002 02	
HL 4 K				

Notes

- ¹⁾ Li-11 ... Lig-22 for use with contactors having no integral auxiliary contact. Circuit diagram to DIN 50012
- ²⁾ Li-11 E ... Li-31 E for use with contactors with an integral N/O auxiliary contact. Circuit diagram to DIN 50012
- ³⁾ Hi-11 ... Hi-31 for use with contactors and control relays
- ⁴⁾ Numbers put into brackets = old terminal numbering

Technical details - page 1671

Permissible auxiliary switch combinations on K range contactors - page 1615

Hints regarding terminal numbering - page 1615

Dimensions - page 1674

Common system components for use with control relays and contactors for the K-range

Coil suppressor



Mechanical interlock



Pneumatic timer



Electromechanical latch head



- Easy and fast mounting
- Clipped-on coil suppressors are captive. They can be easily clipped onto coil terminations A1 and A2 and are fastened by screws.
- Other components can be front mounted or clipped on between the contactors

■ Approvals: page 1602

Characteristics

Coil suppressors

RC-coil suppressors (for use with AC operated contactors)

Type	Voltage range	Order ref.:	
RC-K 01	24...48 V AC/DC	3 366 035 01	
RC-K 02	110...240 V AC/DC	3 366 035 02	
RC-K 03	220...400 V AC/DC	3 366 035 03	

Diode coil suppressor (for use with DC operated contactors)

Type	Voltage range	Order ref.:	
DK-01	12...220 V DC	3 366 036 01	

Varistor coil suppressor (for use with AC or DC operated contactors)

Type	Voltage range	Order ref.:	
V-K 01	12...65 V AC 12...75 V DC	3 366 037 01	
V-K 02	60...130 V AC 70...145 V DC	3 366 037 02	
V-K 03	120...260 V AC 140...320 V DC	3 366 037 03	
V-K 04	260...400 V AC 320...540 V DC	3 366 037 04	
V-K 05	400...690 V AC 540...850 V DC	3 366 037 05	

Other components¹⁾

Electromechanical latch head MV-BN

Type	Voltage	Order ref.:	
MV-BN	12 V AC/DC	3 366 061 04	
MV-BN	24 V AC/DC	3 366 061 06	
MV-BN	42...48 V AC/DC	3 366 061 15	
MV-BN	110...127 V AC/DC	3 366 061 25	
MV-BN	220...240 V AC/DC	3 366 061 40	

Pneumatic timer PZ

Type	Time range	Order ref.:	
PZ-a ²⁾	0.1...3 s	3 357 019 01	
	delay on	0.1...30 s	3 357 019 02
	energization	10...180 s	3 357 019 03
PZ-r ²⁾	0.1...3 s	3 357 020 01	
	delay on	0.1...30 s	3 357 020 02
	de-energization	10...180 s	3 357 020 03

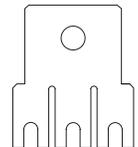
Mechanical interlock MV-e

Type	Order ref.:		
MV-e	3 359 018 01		

Connecting links, 1-pole

Connecting links are used for a parallel switching of the main contact paths of 3-pole contactors so that they can be used as 1-pole contactors with a correspondingly high rating. The conventional thermal current I_{th} will increase to approx. twice the value (set: 2 pieces for upper and lower section of the terminals).

For contactors	Order ref.:		
DL 4 K ... DL 11 K	3 366 043 02		
DL 15 K ... DL 18 K	3 370 015 02		



Connecting links, 3-pole for contactors - manual motor controllers

Type	Manual motor starter	Order ref.:	
DL 4 K...DL 11 K	MSU-K	3 366 070 00	

Notes

- ¹⁾ Detailed information - page 1615
²⁾ Not suitable for use with DL 4 K DC and DL 5 K DC contactors

Use of system components - page 1615

Further accessories - pages 1616-1617

Use of system components

Device type 	Control relays			Contactors					
	AC/DC			AC/DC					
System components 									
Side mounted auxiliary contact block Type : S 11 (1 N/O + 1 N/C contact) or you can select Type : S 20 (2 N/C contacts)		x	x		x	x		x	x
Front mounted aux. contact block Type : Hi (2 pole) Type : Hi (4 pole) Type : Li (2 pole) Type : Li (4 pole)	x	x	x	x	x	x		x	x
Timer Type : PZ-a (delay on energization)	x	x	x	x	x	x ¹⁾	x	x	x
Timer Type : PZ-r (delay on de-energization)	x	x	x	x	x	x ¹⁾	x	x	x
Electromechanical latch head Type : MV-BN	x	x	x	x	x	x	x	x	x

¹⁾ Not permitted on DC operated DL 4 K or DL 5 K DC contactors.

Key to symbols :

-  Contactor with no side mounted aux. contact block
-  Contactor with one side mounted aux. contact block
-  Contactor with two side mounted aux. contact block
-  Contactor can be fitted with the system component shown

Terminal numbering for circuit diagrams :

Contactors for 4 kW to 11 kW

ENTRELEC-SCHIELE contactors from 4 kW to 11 kW, i.e., contactor types DL 4 K to DL 11 K can be supplied with either one integral N/O auxiliary contact (13/14) or one auxiliary N/C contact (21/22). Positional index 1 or 2 is used for the built-in contacts.

If any additional auxiliary contacts are required, type Hi... auxiliary contacts are used. Their terminal numbering starts with positional index 5, e.g., Hi-11 (53/54 + 61/62) to avoid duplicated positional indices.

Contactors for 15 kW and 18.5 kW

ENTRELEC-SCHIELE contactors DL 15 kW and DL 18 K, i.e. contactors for 15 kW and 18.5 kW, do not have any built-in auxiliary contacts. Type Li-11 and Li-22 are intended for exclusive use with these contactors. The circuit diagram will then comply with DIN EN 50 012.

System components *supplements to page 1614

Pneumatic timer PZ *

The PZ pneumatic timer clips on to K range contactors. It is operated by the contactor either with delay on energization or de-energization.

The PZ is used wherever the requirements for accurate timing are not too exacting and where no extreme ambient environmental conditions are to be expected. A front-fitted lever is used for testing. When intended for use in a 60 Hz network, the associated contactor should be fitted with a 60 Hz coil.

Electromechanical latch head MV-BN (New) *

The MV-BN latch head clips onto K range contactors. Once it has closed, the contactor is mechanically latched by the MV-B. Unlatching is either manual or electrical, either by a push button or another contact (e.g., limit switch, relay contact). Contactor and latch head must not be energized simultaneously. An integral auxiliary contact disconnects the drive automatically 15 ms after the latch head has been energized. The PZ can be AC or DC operated.

Mechanical interlock MV-e *

If K range contactors are required as reversing or star-delta contactors or when used as safety assemblies with control relays, the MV-e interlock can be clipped on at the side between the adjacent contactors.

The MV-e is attached to the contactors without the use of a tool.

Technical details

Conventional current	I _{th} 10 A, V _e 660 V
Ambient temperature range (operating)	-40°C ... +70°C
Repetitive accuracy	± 2%
Long-term timing error	up to 0.5 x 10 ⁶ operations : +15 %
Long-term timing error with variation of ambient temperature	0.25 % / °C
Rated insulation voltage	V _i 690 V
To unlatch :	
Actuating power AC	25 V A
Actuating power DC	30 W
Pulse duration	≥ 100 ms
Max. duty cycle	10 %

Common system components for use with control relays and contactors for the K-range

Module



- The four modules below are cost-saving additions to complete the K range contactor family. They are designed to switch control sequences in a very simple and reliable manner.
- Mounting is extremely easy and fast. The modules are fitted to the top of the contactor. Connection is via solid leads to contactor coil terminations A1 and A2.
- Benefits :
 - It is possible to use contactors with 24 V to 415 V AC coils that are normally available off-the-shelf.
 - NP-K and RM-K modules are fitted with a RC coil suppressor as standard.
 - An LED to indicate switch position is included as standard.
 - A combined contactor / module unit is more reliable and lower priced than any additional external components.

Characteristics

Modules¹⁾²⁾

Low-signal module (with integral coil suppressor)

Type	Voltage range	Order ref.:	
NP-K	24 V AC/DC	3 366 214 01	
	42 V AC/DC	on request	
	230 V AC/DC	3 366 214 31	
	400 V AC	on request	

NP-K



Application :
Reliable switching of low level voltages and currents in uninterrupted duty.

Star-delta timer module

Type	Voltage and time range	Order ref.:	
YZ-K delay on energization	24...240 V AC 1.5...30 s	3 366 207 12	

YZ-K



Application :
Star-delta starters up to 30 kW/400 V.

Timer module

Type	Voltage and time range	Order ref.:	
ZM-K delay on energization	24...240 V AC/DC		
	... 0.2...4 s	3 366 207 01	
	... 1.5...30 s	3 366 207 02	
	... 12.5...250 s	3 366 207 03	

ZM-K (delay on energization)



Application :
Panel building, simple control sequences.

Relay interface-module (with integral coil suppressor)

Type	Voltage range input/coil	Order ref.:	
RM-K 01	24 V DC/380...415 V AC	3 366 201 01	
RM-K 02	24 V DC/215...250 V AC	3 366 201 02	

RM-K (delay on energization)



Application :
Interface between programmable controller and AC operated K range contactors up to 18.5 kW and K range control relays.

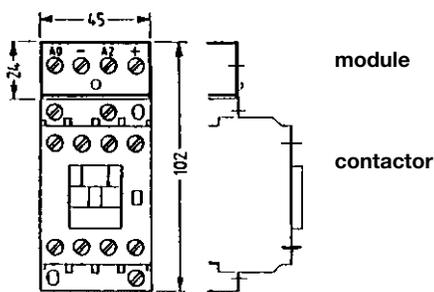
Notes

- ¹⁾ Technical specification - page 1617
- ²⁾ Safety isolation of coil and contact elements as defined by DIN VDE 0106 Part 101 and A1 (draft 2/89) is **not** possible with these modules.

Function of the modules

- These four modules below are cost-saving additions to complete the K range contactor family. They are designed to switch control sequences in a very simple and reliable manner.
- Mounting is extremely easy and fast. The modules are fitted to the top of the contactor. Connection is via solid leads to contactor coil terminations A1 and A2.
- Benefits :
 - It is possible to use contactors with 24 V to 415 V AC coils that are normally available off-the-shelf.
 - NP-K and RM-K modules are fitted with a RC coil suppressor as standard.
 - An LED to indicate switch position is fitted as standard.
 - A combined contactor / module unit is more reliable and lower-priced than any additional external components.

Dimensions



■ Approvals : RM-K module

Technical data

Output circuit

Min. load current			
Max. load current			
Load current de-rating			
Max. surge current			
Relay		1 N/O contact	
Relay contact		Ruthenium reed contact	
Contact resistance		200 mΩ max. (initial value)	
Max. switching voltage		200 V =/-(peak)	
Max. switching current		V > 12 V : 0.05 A =/-(peak) V ≤ 12 V : 0.75 A =/-(peak)	
Max. switching capacity		10 V A	
Dielectric strength		350 V =/-(min. between open contacts 2000 V ~ min. between input - output circuit	
Input circuit			
Supply voltage and power consumption		24 V AC/DC - 0.072 W 42 V AC/DC - 0.132 W 230 V AC/DC - 0.800 W	
Supply voltage range	A1-A2		
Voltagess loss while timing			
Power consumption while timing			
Supply voltage tolerance		-15 %, +10 %	
Supply voltage frequency		50...60 Hz	
Ambient temperature range		-20°C ... +60°C	
Switch position indication		LED red	
Time circuit			
Recovery time		150 ms	
Repetitive accuracy		± 0.2 %	
Timing error within tolerance of supply voltage		≤ 0.5 %	
Timing error within tolerance of ambient temperature		≤ 0.07 % / °C	
Ambient temperature range		-20°C ... +60°C	
Time range (delay on energization)		1.5...30 s	

Notes

¹⁾ Safety isolation of coil and contact elements as defined by DIN VDE 0106 Part 101 and A1 (draft 2/89) is **not** possible on modules.

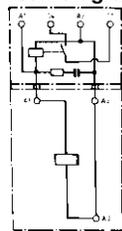
Modules¹⁾

Low-signal module NP-K

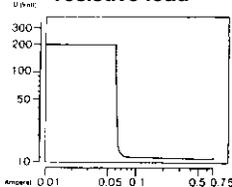


Voltage range :
24 V AC/DC
Order ref.: 3 366 214 01
Voltage range :
42 V AC/DC
Order ref.: on request
Voltage range :
230 V AC/DC
Order ref.: 3 366 214 31
Voltage range :
400 V AC
Order ref.: on request

Circuit diagram



Max. load curve at resistive load



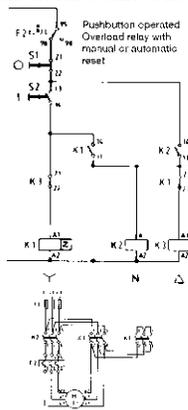
NP-K module

Star-delta module YZ-K

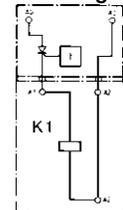


Voltage range :
24...240 V AC
1.5...30 s
Order ref.: 3 366 207 12

Star-delta connection



Circuit diagram



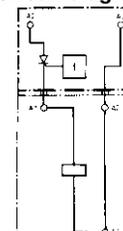
YZ-K module

Timer module ZM-K



ZM-K delay on energization
Voltage range :
... 0.2...4 s
Order ref.: 3 366 207 01
Voltage range :
... 1.5...30 s
Order ref.: 3 366 207 02
Voltage range :
... 12.5...250 s
Order ref.: 3 366 207 03

Circuit diagram



Function

"Delay on energization"
Timing starts when the supply is applied - via an external control contact, for ex. - to contactor and timer which are connected in series. The thyristor triggers and energizes the contactor once the set delay time has elapsed. The ZM-K works as a "switch delay unit"

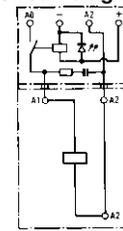
ZM-K module

Relay-interface module RM-K



RM-K 01
Voltage range :
24 V DC/415 V AC
Order ref.: 3 366 201 01
RM-K 02
Voltage range :
24 V DC/250 V AC
Order ref.: 3 366 201 02

Circuit diagram



RM-K module

RM-K 01	
Input:	19...40 V DC 15...30 mA
Output:	415 V AC AC 11 : 1.5 A 470 Ω 0.15 μF
RM-K 02	
Input:	19...40 V DC 15...30 mA
Output:	250 V AC AC 11 : 1.5 A 220 Ω 0.22 μF
Contact life: 2 million operations (approx.)	
Function :	
1. A DC voltage, e.g. 24 V, to energize the RM-K coil is applied to terminals - and +.	
2. An AC voltage, e.g. 230 V, is applied to terminals A0 and A2. The contactor coil is energized by the RM-K contact.	
LED green	

**Voltage code numbers 04 ...73
to be added to the contactor order reference
number for compact 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

Mini contactors

Mini contactors • control relays, contactors, reversing contactors, reversing relays, contactors, reversing contactors

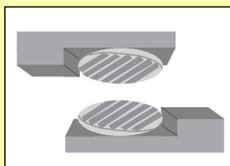
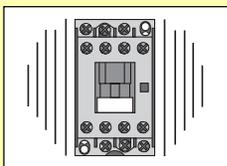
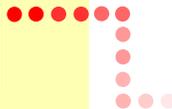
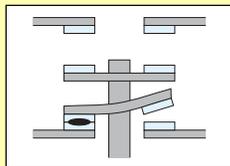
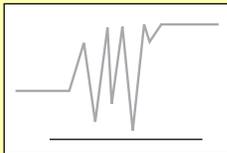
... the benefits at a glance ...

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 + 1N/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 ..., KLW ... CONTACTORS PLUS SYSTEM COMPONENTS

Control relay

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



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 or 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 $I_{th} = 29 A$ at $50^{\circ}C$

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

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 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

Auxiliary contact block - page 1641

Other coil voltages on request

Other system components - page 1641

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

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)
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

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 ranges 0.7 to 1.3 Vc - integral coil suppressor	0.235	
	KHiS-22	1 309 077 06	2 2		- only 2 pole aux. contact block permitted	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

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

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

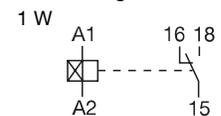
Type	Timer range	Voltage range input/coil	Order ref.:	
HV-48	1...30	24...48 V AC/DC	3 309 050 01	
HV-240	1...30	110...240 V AC	3 309 050 02	

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 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

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 1664-1665

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 ..		- 50/60 Hz coil - with integral coil suppressor permitted up to 240 V max.	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 ..		- 50/60 Hz coil - with integral coil suppressor permitted up to 240 V max.	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 ..		- 50/60 Hz coil - with integral coil suppressor permitted up to 240 V max.	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: AC: 24, 42, 110, 230 and 400 V Auxiliary contact block - page 1653
 (Short-term availability) DC: 24, 110 and 220 V
Other coil voltages on request 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 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

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 1664-1665

**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.

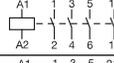
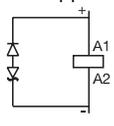
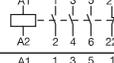
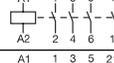
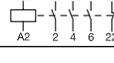
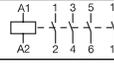
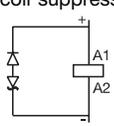
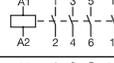
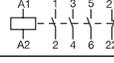
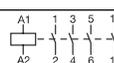
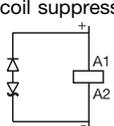
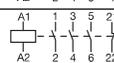
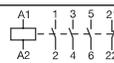
■ Approvals:    

**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 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	1 309 006 ..		- with integral coil suppressor  permitted up to 240 V max.	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 ..		- with integral coil suppressor  permitted up to 240 V max.	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 ..		- with integral coil suppressor  permitted up to 240 V max.	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 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											
2.2	4	4	4	20/9	KLi4S-10	1 309 027 ..		- 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	0.235	M 06	
					KLi4S-01	1 309 037 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
2.2	4	4	4	20/9	KLi4F-10	1 309 127 ..		- 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	0.235	M 06	
					KLi4F-01	1 309 137 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
2.2	4	4	4	20/9	KLi4L-10	1 309 227 ..		- 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	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 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			
2.2	4	4	4	20/9	KLb4S-10	1 309 021 ..		24 V	0.225	M 06	
					KLb4S-01	1 309 031 ..		110 V			
								230 V			
								permitted			
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
								50/60 Hz coil			
2.2	4	4	4	20/9	KLb4F-10	1 309 121 ..		24 V	0.225	M 06	
					KLb4F-01	1 309 131 ..		110 V			
								230 V			
								permitted			
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
								50/60 Hz coil			
2.2	4	4	4	20/9	KLb4L-10	1 309 221 ..		24 V	0.225	M 06	
					KLb4L-01	1 309 231 ..		110 V			
								230 V			
								permitted			

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 - pages 1664-1665

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	KLV2S-10	1 309 300 ..		without integral coil suppressor	0.39	M 06	
					KLV2S-01	1 309 310 ..					
2.2	4	4	4	20/9	KLV4S-10	1 309 320 ..					
					KLV4S-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	KLV2F-10	1 309 400 ..		without integral coil suppressor	0.37	M 06	
					KLV2F-01	1 309 410 ..					
2.2	4	4	4	20/9	KLV4F-10	1 309 420 ..					
					KLV4F-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	KLV2L-10	1 309 500 ..		without integral coil suppressor	0.43	M 06	
					KLV2L-01	1 309 510 ..					
2.2	4	4	4	20/9	KLV4L-10	1 309 520 ..					
					KLV4L-01	1 309 530 ..					

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

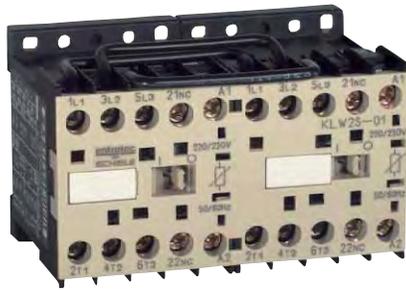
¹⁾ Color code to IEC 309-1 printed on the coil.
Only for compact contactors, HL 4 K / HL 8 K and DL 4 K - DL 18 K

Technical details - pages 1664-1665

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	KLV2S-10	1 309 302 ..		with integral coil suppressor permitted up to 240 V max.	0.39	M 06	
					KLV2S-01	1 309 312 ..					
2.2	4	4	4	20/9	KLV4S-10	1 309 322 ..					
					KLV4S-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	KLV2F-10	1 309 402 ..		with integral coil suppressor permitted up to 240 V max.	0.37	M 06	
					KLV2F-01	1 309 412 ..					
2.2	4	4	4	20/9	KLV4F-10	1 309 422 ..					
					KLV4F-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	KLV2L-10	1 309 502 ..		with integral coil suppressor permitted up to 240 V max.	0.43	M 06	
					KLV2L-01	1 309 512 ..					
2.2	4	4	4	20/9	KLV4L-10	1 309 522 ..					
					KLV4L-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

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

Auxiliary contact block - page 1653

Other system components - page 1653

Technical details - pages 1664-1665

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 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 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	0.48	M 06	
					KLWDC2S-01	1 309 316 ..					
2.2	4	4	4	20/9	KLWDC4S-10	1 309 326 ..		permitted up to 240 V	0.48	M 06	
					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	0.46	M 06	
					KLWDC2F-01	1 309 416 ..					
2.2	4	4	4	20/9	KLWDC4F-10	1 309 426 ..		permitted up to 240 V	0.46	M 06	
					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	0.52	M 06	
					KLWDC2L-01	1 309 516 ..					
2.2	4	4	4	20/9	KLWDC4L-10	1 309 526 ..		permitted up to 240 V	0.52	M 06	
					KLWDC4L-01	1 309 536 ..					

Notes

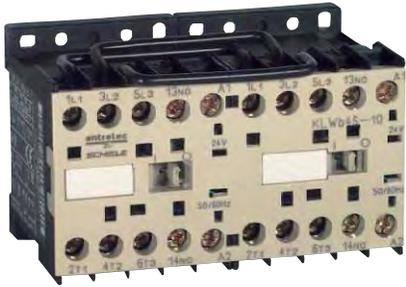
- Normal/Standard voltages are:** DC: 24, 110 and 220 V Auxiliary contact block - page 1653
- (Short-term availability) Other system components - page 1653
- Other coil voltages on request**
- DC-coils available with integral coil suppressor to max. 220 V** Technical details - pages 1664-1665

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

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 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			
2.2	4	4	4	20/9	KLWb4S-10	1 309 321 24 V ... 110 V ... 230 V permitted	0.48	M 06	
					KLWb4S-01	1 309 331 ..					
Version with Faston connectors, 2 x 2.8 mm or 1 x 6.35 mm											
								50/60 Hz coil			
2.2	4	4	4	20/9	KLWb4F-10	1 309 421 24 V ... 110 V ... 230 V permitted	0.46	M 06	
					KLWb4F-01	1 309 431 ..					
Version with solder pins, 1,7 mm Ø, hole on p. c. b.											
								50/60 Hz coil			
2.2	4	4	4	20/9	KLWb4L-10	1 309 521 24 V ... 110 V ... 230 V permitted	0.52	M 06	
					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:

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.:	
KL ... KLW ...	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	
KH, KHDC, KHi	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

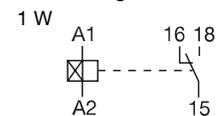
Type	Timer range	Voltage range input/coil	Order ref.:	
HV-48	1...30	24...48 V AC/DC	3 309 050 01	
HV-240	1...30	110...240 V AC	3 309 050 02	

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 Vc. 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 Vc. 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