


Mini Contactor Relays

Series K1-07D ...

Mini Contactor Relays 4-pole

AC Operated


Ratings		Therm.	Contacts ²⁾		Type		Coil voltage ¹⁾
AC15			Distinc. Number	Additional Contact			
230V	400V	Rated Current I_{th} 	acc. to EN50011	Blocks Type	24	24V 50/60Hz	↓
A	A				230	220-230V 50Hz	
		24VS	24V 50/60Hz w. protection ³⁾				
		230VS	220-230V 50Hz w. protection ³⁾				
		24VM	24V 50/60Hz 24V= DC				
		230VM	220-240V 50/60Hz 220V= DC				

4-pole, With Screw Terminals



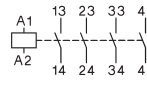
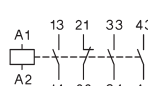
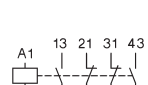
3	2	10	4	-	40E	1 HK..	K1-07D40 ...
3	2	10	3	1	31E	1 HK..	K1-07D31 ...
3	2	10	2	2	22E	1 HK..	K1-07D22 ...

DC Solenoid Operated

Type	Coil voltage ¹⁾	Contacts ²⁾	Additional Contact Blocks	Pack pcs.	Weight kg/pc.	Wiring Diagrams
	24 24V= DC		acc. to EN50011	Type		
	24VS 24V= DC with protection ²⁾					
	↓	NO NC				

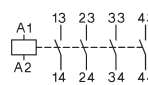
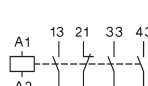
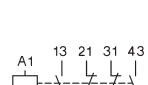
4-pole, With Screw Terminals, Coil 2,5W



K1-07D40= ...	4	-	40E	1 HK..	10	0,19	
K1-07D31= ...	3	1	31E	1 HK..	10	0,19	
K1-07D22= ...	2	2	22E	1 HK..	10	0,19	

4-pole, With Screw Terminals, Coil 1,5W, 19 to 30V DC with suppressor ³⁾



K1-07D40= 24VR	4	-	-	-	10	0,20	
K1-07D31= 24VR	3	1	-	-	10	0,20	
K1-07D22= 24VR	2	2	-	-	10	0,20	

Mini Contactor Relays

Series K1-07D ...

Auxiliary Contact Blocks For Contactor Relays



Ratings AC15 230V A	400V A	Thermal Rated Current A	Contacts ²⁾		Type
			NO	NC	
3	2	10	1	1	HK11
3	2	10	-	2	HK02
3	2	10	2	-	HK20
3	2	10	4	-	HK40
3	2	10	2	2	HK22
3	2	10	-	4	HK04

Aux. Contact Blocks	HK11	HK02	HK20	HK40	HK22	HK04
Wiring Diagrams						

Distinc. Number according to EN50011 for Contactor Relay with Auxiliary Contact Block

K1-07D40	51E	42E	60E	80E	62E
K1-07D31	42Y	33Y	51Y	71Y	53Y
K1-07D22	33Y	24Y	42Y	62Y	44Y

Preferable combinations with distinctive letter **"..E"** according to DIN EN 50011

- 1)) Other coil voltages on reque
- 2)) Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V (test ratings 17V DC, 5mA)
Mirror contacts acc. IEC60947-4-1 Annex F.
- 3)) with integrated coil suppressor (transient Voltage Suppressor Diode)

Suppressor Units for Contactors K1-..



Voltage Range V		Type
12 - 48V AC/DC	1600nF / 22 Ohm	RC-K1 24
48 - 127V AC/DC	680nF / 270 Ohm	RC-K1 110
110 - 250V AC/DC	220nF / 2200 Ohm	RC-K1 230

Mini Contactors

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

Auxiliary Contacts			Type	K1-07D.. K1-09D.. K1-12D..	K1-0 ..=(VM) K1-0 ..=(VM) K1-1 ..=(VM)	K1-07D.= 24VR K1-09D.= 24VR	K1-09F.= (VM)	K1-07L.= (VM) K1-09L.= (VM)	HK..
Rated insulation voltage U_i			V AC	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ²⁾	
Thermal rated current I_{th} to 690V									690 ¹⁾
Ambient temperature	40°C	A	10	10	10	10	10	10	10
	60°C	A	6	6	6	6	6	6	6
Power loss per pole			at I_{th} W	0,5	0,5	0,5	0,5	0,5	0,5
Utilization category AC15									
Rated operational current I_e	220-240V	A	3	3	3	3	3	3	3
	380-415V	A	2	2	2	2	2	2	2
	440V	A	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	500V	A	1,2	1,2	1,2	1,2	1,2	1,2	1,2
	660-690V	A	0,6	0,6	0,6	0,6	0,6	0,6	0,6
	Utilization category DC13								
Rated operational current I_e	60V	A	2	2	2	2	2	2	2
	110V	A	0,4	0,4	0,4	0,4	0,4	0,4	0,4
	220V	A	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Maximum ambient temperature									
Operation	open	°C	-40 to +60 (+90) ³⁾						
	enclosed	°C	-40 to +40						
Storage		°C	-40 to +90						
Short circuit protection									
short-circuit current 1kA, contact welding not accepted max. fuse size			gL (gG) A	20	20	20	20	20	20
For contactors with thermal overload relay the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse size.									
Power consumption of coils									
AC operated	inrush	VA	25	-	-	25	25	-	
	sealed	VA	4 - 5	-	-	4 - 5	4 - 5	-	
		W	1,2	-	-	1,2	1,2	-	
DC operated and ...VM (AC/DC)	inrush	W	-	2,5	1,5	2,5	2,5	-	
	sealed	W	-	2,5	1,5	2,5	2,5	-	
Operation range of coils									
in multiples of control voltage U_s				0,85 - 1,1	0,8 - 1,1	19 - 30V DC	0,85 - 1,1	0,85 - 1,1	-
Switching time at control voltage $U_s \pm 10\%$ ^{4) 5)}									
AC operated	make time	ms	15 - 19	-	-	15 - 19	15 - 19	-	
	release time	ms	8 - 25	-	-	8 - 25	8 - 25	-	
	arc duration	ms	10 - 15	-	-	10 - 15	10 - 15	-	
DC operated	make time	ms	-	15 - 50	15 - 50	15 - 50	15 - 50	-	
	release time	ms	-	8 - 25	8 - 25	8 - 25	8 - 25	-	
	arc duration	ms	-	10 - 15	10 - 15	10 - 15	10 - 15	-	
Cable cross-section									
all connectors	solid	mm ²	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	Fast on	Solder connector	0,5 -	
	flexible	mm ²	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	1x 6,3 x 0,8	Ø 1,15	0,5 - 2,5	
	flexible with multicore cable end	mm ²	0,5 - 1,5	0,5 - 1,5	0,5 - 1,5	or		0,5 - 1,5	
Clamps per pole			2	2	2	2x 2,8 x 0,8	-	2	
	solid or stranded	AWG	18 - 14	18 - 14	18 - 14			18 - 14	

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

2) Suitable at 690V for pollution degree 2, $U_{imp} = 6kV$.

Pollution degree 3 $U_i = 690V$ non-tracking of the printed circuit CTI ≥ 600

Pollution degree 3 $U_i = 500V$ non-tracking of the printed circuit CTI ≥ 400

Pollution degree 3 $U_i = 400V$ non-tracking of the printed circuit CTI ≥ 100

3) With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced thermal rated current I_{th} to I_e /AC15

4) Summary switching time = release time + arc duration

5) Release time of NC make time of NO increase when suppressor units for voltage peak protection are used (Varistor, RC-units, Diode units).

Mini Contactor Relays

Series K1-07D ...

Data according to UL508

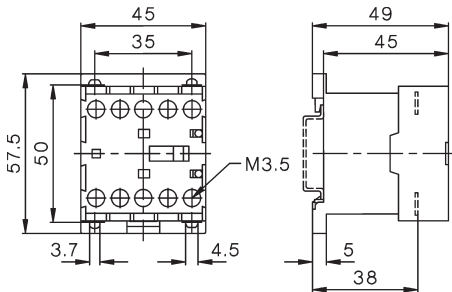


Main Contacts (cULus)	Type	K1-09D.. K1W09D01	K1-09F..	K1-09L..	K1-07D..	K1-12D.. K1W12D01	HK..
Rated operational current "General Use"	A	15	15	20	10	20	10
Rated operational power of three-phase motors at 60Hz (3ph)	110-120V hp	1½	1½	1½	-	2	-
	200-208V hp	3	3	3	-	3	-
	220-240V hp	3	3	3	-	3	-
Rated operational power of AC motors at 60Hz (1ph)	440-480V hp	5	5	5	-	7½	-
	550-600V hp	7½	7½	7½	-	10	-
Rated operational power of AC motors at 60Hz (1ph)	110-120V hp	½	½	½	-	¾	-
	200-208V hp	1	1	1	-	1½	-
	220-240V hp	1½	1½	1½	-	2	-
Fuse / Short-circuit current	A/kA	30/5	30/5	30/5	-	30/5	-
Rated voltage	V AC	600	600	600 ¹⁾	600	600	600
Auxiliary Contacts (cULus)	heavy pilot duty AC	A600	A600	A600	A600	A600	A600
	standard pilot duty DC	Q600	Q600	Q600	Q600	Q600	Q600

Dimensions

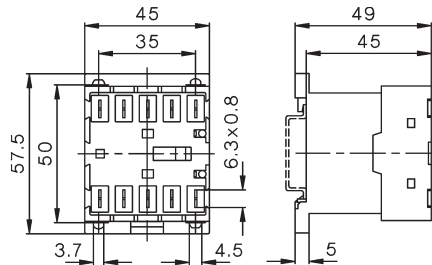
AC and DC operated with screw terminals

K1-07D..
K1-09D..
K1-12D..

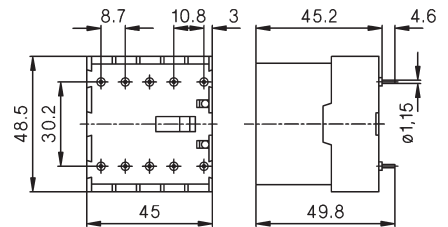


with fast on terminals

K1-07F..
K1-09F..

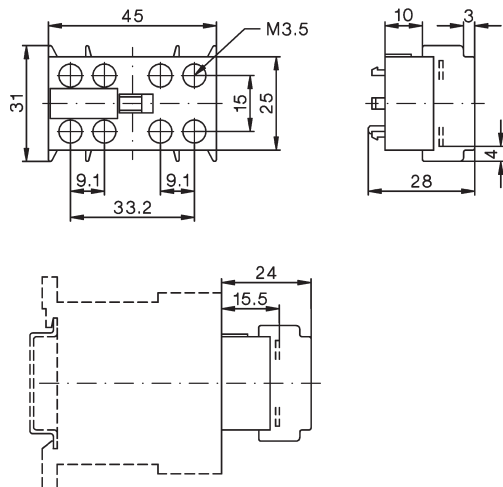


AC and DC operated with solder connections
K1-07L..
K1-09L..



Auxiliary Contact Blocks

HK..



Suppressor Units

RC-K1

