

MINI-CONTACTORS K1

Data according to IEC / EN60947-4-1, VDE 0660

Type K1-09D.. K1-09F.. K1-09L.. K1-12D..

Main Contacts ^{1) 2) 3)}

Rated insulation voltage U_i		V~	690 ¹⁾	690 ¹⁾	690 ²⁾	690 ¹⁾
Making capacity I_{eff}	at $U_e = 690V\sim$	A	165	165	165	165
Breaking capacity I_{eff}	400V~	A	100	100	100	100
$\cos\varphi = 0,65$	500V~	A	90	90	90	90
	690V~	A	80	80	80	80

Utilization category AC1 Switching of resistive load

Rated operational current $I_e (=I_{th})$ open	at 40°C	A	20	16	16	20
Rated operational power of three-phase resistive loads	230V	kW	7,9	6	6	7,9
50-60Hz, $\cos\varphi = 1$	240V	kW	8,3	6,5	6,5	8,3
	400V	kW	13,8	11	11	13,8
	415V	kW	14,3	11,5	11,5	14,3
Rated operational current $I_e (=I_{th})$ enclosed	at 60°C	A	16	12	12	16
Rated operational power of three-phase resistive loads	230V	kW	6,3	4,5	4,5	6,3
50-60Hz, $\cos\varphi = 1$	240V	kW	6,7	5	5	6,7
	400V	kW	11	8	8	11
	415V	kW	11,5	8,5	8,5	11,5
Minimum cross-section of conductor at load with $I_e (=I_{th})$		mm ²	2,5	2,5	-	2,5

Utilization category AC2 and AC3 Switching of three-phase motors

Rated operational current I_e open and enclosed	220V	A	12	12	12	15
	230V	A	11,5	11,5	11,5	14,5
	240V	A	11	11	11	14
	380-400V	A	9	9	9	12
	415-440V	A	8	8	8	11
	500V	A	7	7	7	9
	660-690V	A	5	5	5	6,5
Rated operational power of three-phase motors	220-240V	kW	3	3	3	4
50-60Hz	380-440V	kW	4	4	4	5,5
	500-690V	kW	4	4	4	5,5

Utilization category DC1

Switching of resistive load	1pole	24V	A	20	16	16	20
Time constant $L/R \leq 1ms$		60V	A	20	16	16	20
Rated operational current I_e		110V	A	5	5	5	5
		220V	A	0,6	0,6	0,6	0,6

Power consumption of coils

AC operated	inrush		VA	25	25	25	25
	sealed		VA	4-5	4-5	4-5	4-5
			W	1,2	1,2	1,2	1,2
DC operated and VM...	inrush		W	2,5	2,5	2,5	2,5
	sealed		W	2,5	2,5	2,5	2,5

Operation range of coils

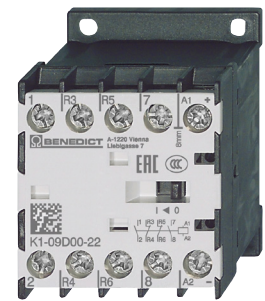
in multiple of control voltage U_s AC operated				0,85-1,1
U_s DC operated				0,8-1,1

Maximum ambient temperature

Operation	open	°C	-40 bis +60 (+90) ³⁾
	enclosed	°C	-40 bis +40
with thermal overload relay	open	°C	-25 bis +60
	enclosed	°C	-25 bis +40
Storage		°C	-50 bis +90

Short circuit protection contactors without thermal overload relay

Coordination-type "1" acc. IEC 947-4-1,	gL (gG)	A	20	20	20	20
Contact welding without hazard of persons						
max. fuse size						



Symbol

Wiring diagram

K1-09D10 K1-09F10 K1-09L10 K1-12D10	
K1-09D01 K1-09F01 K1-09L01 K1-12D01	
K1-09D00-40 K1-09F00-40 K1-09L00-40 K1-12D00-40	
K1-09D00-22 K1-09F00-22 K1-09L00-22 K1-12D00-22	

Voltage information AC

K1-... 24	24V 50/60Hz
K1-... 230	220-230V 50Hz, 230-250V 60Hz

Voltage information DC

K1-... = 24	24V = DC
K1-... = 42	42V = DC
K1-... = 220VS	over voltage protection (Transil)

Technical changes reserved

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Switching time at control voltage $U_c \pm 10\%$ ^{4) 5)}

AC operated	make time	ms	15-19	15-19	15-19	15-19
	release time	ms	8-25	8-25	8-25	8-25
DC operated	make time	ms	15-50	15-50	15-50	15-50
	release time	ms	8-25	8-25	8-25	8-25
AC + DC operated	arc duration	ms	10-15	10-15	10-15	10-15

Cable cross-sections

main connector	solid or stranded	mm ²	0,5-2,5	Fast on connector Ø 1,15	Solder	0,5-2,5
	flexible	mm ²	0,5-2,5			0,5-2,5
	flexible with multicore cable end	mm ²	0,5-1,5			0,5-1,5

Anschlußklemmen

Connecting screws	Pozidrive		M3,5	-	-	M3,5
Screwdriver			Pz2	-	-	Pz2
Tightening torque		Nm	0,8-1,4	-	-	0,8-1,4
Number of clampable conductors per terminal	solid or stranded	AWG	2	-	-	2
			18-14	-	-	18-14

Auxiliary Contacts

Rated insulation voltage U_i		V~	690 ¹⁾	690 ¹⁾	690 ²⁾	690 ¹⁾
Thermal rated current I_{th} bis 690V						
Ambient temperature	40°C	A	10	10	10	10
	60°C	A	6	6	6	6

Utilization category AC15

Rated operational current I_e	220-240V	A	3	3	3	3
	380-415V	A	2	2	2	2
	440V	A	1,6	1,6	1,6	1,6
	500V	A	1,2	1,2	1,2	1,2
	660-690V	A	0,6	0,6	0,6	0,6

Utilization category DC13

Rated operational current I_e	60V	A	2	2	2	2
	110V	A	0,4	0,4	0,4	0,4
	220V	A	0,1	0,1	0,1	0,1

Short circuit protection max. fuse size

short-circuit current 1kA, contact welding not accepted	gL (gG)	A	20	20	20	20
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Technical Data to UL508

Type K1-09D.. K1-09F.. K1-09L.. K1-12D..

Main contacts (cULus)

Rated operational current "General Use"	A	15	15	20	20
Rated operational power of three-phase motors at 60Hz (3ph)	110-120V	hp	1½	1½	2
	200-208V	hp	3	3	3
	220-240V	hp	3	3	3
	440-480V	hp	5	5	7½
	550-600V	hp	7½	7½	10
Rated operational power of AC motors at 60Hz (1ph)	110-120V	hp	½	½	¾
	200-208V	hp	1	1	1½
	220-240V	hp	1½	1½	2
Fuse / Sort-circuit current	A/kA	30/5	30/5	30/5	30/5
Rated voltage	V~	600	600	600 ³⁾	600

Auxiliary Contacts (cULus)

heavy pilot duty	AC	A600	A600	A600	A600
standard pilot duty	DC	Q600	Q600	Q600	Q600

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

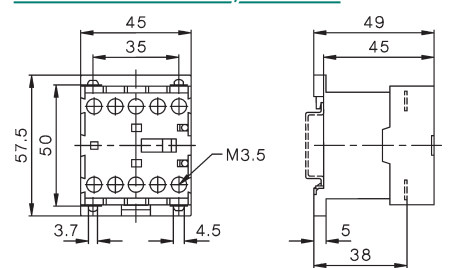
Pollution degree 3 U_i
= 400V non-tracking of the printed circuit CTI ≥ 100

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

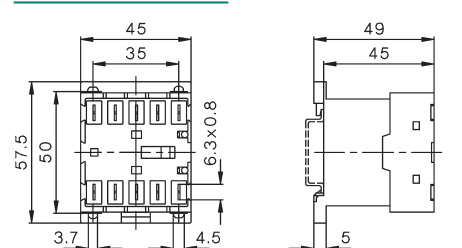
4) Summary switching time = release time + arc duration

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

Dimensions K1-09D.., K1-12D..



Dimensions K1-09F..



Dimensions K1-09L..

