

Mini Motor Contactor

J7KNA

Main contactor

- AC & DC operated
- Integrated auxiliary contacts
- Screw fixing and snap fitting (35 mm DIN-rail)
- Range from 4 to 5.5 kW (AC 3, 380/415V)
- 4 -main pole version (4 kW AC and DC coil)
- Auxiliary contacts suitable for electronic devices (DIN 19240)
- Finger proof (BGV A2)
- Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function is controlled by a safety-related system.



Accessories

- 2 and 4 pole additional auxiliary contacts in different configurations
- Mechanical interlock (in reversing contactor combination only)
- RC Suppressors
- Link modules for fuseless Load Feeders
- Insulated wiring systems (parallel, Star-delta combinations)

Approved Standards

Standard	Standard	Guide No (US,C)
UL	VDE 0660	NLDX, NLDX7

Ordering Information

■ Model Number Legend

1. Mini Motor Contactors

J7KNA-□□-□□ □□□□
1 2 3 4

- 1) Mini Contactor
- 2) Rated Motor Current (AC3 400V)
09: 9A
12: 12A
- 3) Integrated auxiliary contact
10: 1 NO 0 NC
01: 0 NO 1NC
4: 4 main pole type (no aux contact)
- 4) R: Reversing Contactor
- 5) Coil voltage (AC operated)¹⁾
24: AC24V 50/60Hz
48: AC48V 50Hz
60: AC60V 50Hz
110: AC110-115V 50Hz, AC120-125V 60Hz
180: AC180-210V 50Hz, AC200-240V 60Hz
230: AC220-230V 50Hz, AC240V 60Hz
240: AC230V-240V 50Hz
400: AC380-400V 50Hz, AC440V 60Hz
415: AC400-415V 50Hz

Coil voltage (DC operated)

- 24D: DC24V
48D: DC48V
60D: DC60V
110D: DC110V
24VS: DC24V with diode

- 48VS: DC48V with diode
110VS: DC110V with diode
125VS: DC125V with diode

2. Aux. Contact Modules for Mini Motor Contactors

J73KN-□□-□□
1 2 3

- 1) Auxiliary Contact Modules
- 2) A: for mini motor contactor (DIN EN 50005)
AM: for mini motor contactor (DIN EN 50012)
- 3) Combination of NO/NC contacts
11: 1 NO 1 NC
02: 0 NO 2 NC
04: 0 NO 4 NC
22: 2 NO 2 NC
40: 4 NO 0 NC
- 4) for Reversing Contactors
v: left side
x: right side

3. Insulated wiring systems for motor contactors

J74-WKR-A
1 2 3

- 1) Additional reference for Magnetic contactor
- 2) WKR: Wiring Kit Reverser
- 3) Version

4. Accessories for mini motor contactors/ contactor relays (RC suppressor units)

J74KN-D-RC□□
1 2 3 4

- 1) Additional reference for Magnetic contactor
- 2) D: J7KNA(-AR)
- 3) RC = RC suppressor unit
- 4) Voltage

¹⁾ See datasheet J7KN Motor Contactor for RC-suppressor units.

■ System overview

Mini Motor Contactors AC Operated

	Ratings			Rated Current		Aux. Contacts		Type	Pack	Weight
	AC2, AC3 380V 400V 415V kW	500V kW	660V 690V kW	AC3 400V A	AC1 690V A	NO	NC ^{*1}			
								Suitable Overload Relay ^{*2}	Coil Voltage ^{*3} 24V 50/60Hz 220-230V 50Hz	pcs. kg/pc.
	3-pole, With Screw Terminals									
	4	4	4	9	20	1	-	J7TKN-A	J7KNA-09-10-□□□□□	10 0.16
	5.5	5.5	5.5	12	20	1	-	J7TKN-A	J7KNA-12-10-□□□□□	10 0.16
	4	4	4	9	20	-	1	J7TKN-A	J7KNA-09-01-□□□□□	10 0.16
	5.5	5.5	5.5	12	20	-	1	J7TKN-A	J7KNA-12-01-□□□□□	10 0.16
	4-pole, With Screw Terminals									
	4	4	4	9	20	-	-	J7TKN-A	J7KNA-09-4-□□□□□	10 0.19

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function **is** controlled by a safety-related system

*2) For details see datasheet J7TKN Thermal Overload Relay

*3) Other coil voltages see page 6

DC Solenoid Operated

	Ratings			Rated Current		Aux. Contacts		Type	Pack	Weight
	AC2, AC3 380V 400V 415V kW	500V kW	660V 690V kW	AC3 400V A	AC1 690V A	NO	NC ^{*1}			
								Suitable Overload Relay ^{*2}	Coil voltage 24V DC 2,5W	pcs. kg/pc.
	3-pole, With Screw Terminals									
	4	4	4	9	20	1	-	J7TKN-A	J7KNA-09-10-□□□□D(-VS) ^{*3}	10 0.19
	5.5	5.5	5.5	12	20	1	-	J7TKN-A	J7KNA-12-10-□□□□D(-VS) ^{*3}	10 0.19
	4	4	4	9	20	-	1	J7TKN-A	J7KNA-09-01-□□□□D(-VS) ^{*3}	10 0.19
	5.5	5.5	5.5	12	20	-	1	J7TKN-A	J7KNA-12-01-□□□□D(-VS) ^{*3}	10 0.19

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function **must** be controlled by a safety-related system

*2) For details see datasheet J7TKN Thermal Overload Relay

*3) with built-in coil suppressor (diode + zener diode)

Auxiliary contact blocks with screw terminals for contactors J7KNA-09... and J7KNA-12...

	Contacts		Rated Current		Thermal Rated Current	Type	Pack	Weight
	NO	NC ^{*1}	AC15 230V A	400V A				
	1	1	3	2	10	J73KN-AM-11	10	0.04
	-	2	3	2	10	J73KN-AM-02	10	0.04
	2	2	3	2	10	J73KN-AM-22	10	0.04

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function **is** controlled by a safety-related system

Link modules for electric connection between MPCB and contactors

	Description	Version for contactors	For MPCB	Type	Pack pcs	Weight approx. kg/pc
	link module (electrical and mechanical connection) See datasheet J7MN Motor Protection Circuit Breaker	J7KNA 09-...12	J7MN 12 / J7MN 25	J74MN-VK1 12-25	1	0.015

Suppressor units

	Function	For Contactors	Voltages	Partnumber Type
	RC-Unit snap on 	J7KNA(-AR)	12 - 48 V AC/DC 48 - 127 V AC/DC 110 - 250 V AC/DC	J74KN-D-RC24 J74KN-D-RC110 J74KN-D-RC230

■ System overview

Mini Motor Contactors AC Operated

Wiring Diagrams	Distinc. Number according to DIN EN 50012	Auxiliary Contact Blocks		Contactor with Auxiliary Contact Block			Contacts suitable for Electronic Circuits according to DIN 19240 for rated voltage 24V DC (test ratings 17V DC, 5mA)	
		Type	NO	NC ^{*1}	Distinc. Number according to DIN EN 50012	NO		NC ^{*1}
3-pole, With Screw Terminals								
	10	J73KN-AM-11	1	1	21	2	1	Preferred combinations according to DIN EN 50012
		J73KN-AM-02	0	2	12	1	2	
		J73KN-AM-22	2	2	32	3	2	
	01	J73KN-A-11	1	1	-	1	2	Contacts according to DIN EN 50005
		J73KN-A-02	0	2	-	0	3	
		J73KN-A-40	4	0	-	4	1	
		J73KN-A-22	2	2	-	2	3	
		J73KN-A-04	0	4	-	0	5	
4-pole, With Screw Terminals								
	00	J73KN-A-11	1	1	-	1	1	Contacts according to DIN EN 50005
		J73KN-A-02	0	2	-	0	2	
		J73KN-A-40	4	0	-	4	0	
		J73KN-A-22	2	2	-	2	2	
		J73KN-A-04	0	4	-	0	4	

*1) Mirror Contact (NC) according to IEC 60947-4-1 for safety applications

DC Solenoid Operated

Wiring Diagrams	Distinc. Number according to DIN EN 50012	Auxiliary Contact Blocks			Contactor with Auxiliary Contact Block			Contacts suitable for Electronic Circuits according to DIN 19240 for rated voltage 24V DC (test ratings 17V DC, 5mA)
		Type	NO	NC ^{*1}	Distinc. Number according to DIN EN 50012	NO	NC ^{*1}	
3-pole, With Screw Terminals								
	10	J73KN-AM-11	1	1	21	2	1	Preferred combinations according to DIN EN 50012
		J73KN-AM-02	0	2	12	1	2	
		J73KN-AM-22	2	2	32	3	2	
	01	J73KN-A-11	1	1	-	1	2	Contacts according to DIN EN 50005
		J73KN-A-02	0	2	-	0	3	
		J73KN-A-40	4	0	-	4	1	
		J73KN-A-22	2	2	-	2	3	
		J73KN-A-04	0	4	-	0	5	

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function is controlled by a safety-related system

() = VS-Version

Auxiliary contact blocks with screw terminals for contactors J7KNA-09... and J7KNA-12...

Wiring Diagrams								Contacts suitable for Electronic Circuits according to DIN 19240 for rated voltage 24V DC (test ratings 17V DC, 5mA)
J73KN-AM-11	J73KN-AM-02	J73KN-AM-22	J73KN-A-11	J73KN-A-02	J73KN-A-40	J73KN-A-22	J73KN-A-04	

■ System overview

Mini Reversing Contactors, Mechanical Interlocked AC Operated

	Ratings			Rated Current		Aux. Contacts		Type	Pack	Weight		
	AC2, AC3			AC3	AC1							
	380V 400V 415V kW	500V kW	660V 690V kW	400V A	690V A			Suitable Overload Relay* ²	24 230	Coil Voltage* ³ 24V 50/60Hz 220-230V 50Hz	pcs.	kg/pc.
	3-pole, With Screw Terminals											
	4	4	4	9	20	-	1	J7TKN-A	J7KNA-09-01-R-□□□□		1	0.32
	5.5	5.5	5.5	12	20	-	1	J7TKN-A	J7KNA-12-01-R-□□□□		1	0.32

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function is controlled by a safety-related system

*2) For details see datasheet J7TKN Thermal Overload Relay

*3) Other coil voltages see *page 6*

DC Solenoid Operated

	Ratings			Rated Current		Aux. Contacts		Type	Pack	Weight	
	AC2, AC3		AC3	AC1							
	380V		660V					Suitable Overload Relay ^{*2}			
	400V	500V	690V	400V	690V	NO	NC ^{*1}				
	415V			A	A						
	kW	kW	kW					Coil voltage 24V DC 2,5W	pcs.	kg/pc.	
	3-pole, With Screw Terminals										
	4	4	4	9	20	-	1	J7TKN-A	J7KNA-09-01-R-□□□□D(-VS) ^{*3}	1	0.38
	5.5	5.5	5.5	12	20	-	1	J7TKN-A	J7KNA-12-01-R-□□□□D(-VS) ^{*3}	1	0.38

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function is controlled by a safety-related system

*2) For details see datasheet J7TKN Thermal Overload Relay

*3) with built-in coil suppressor (diode + zener diode)

Auxiliary contact blocks with screw terminals for contactors J7KNA-09-01-R...(D) and J7KNA-12-01-R...(D)

	Contacts		Rated Current		Thermal Rated Current	Type	Pack	Weight
			AC15 230V A	400V A				
	1	1	3	2	10	J73KN-AM-11V	10	0.04
	1	1	3	2	10	J73KN-AM-11X	10	0.04

*1) Magnetic contactor with Mirror contacts according to EN 60947-4-1 in safety applications, whose switching function is controlled by a safety-related system

Insulated wiring systems for contactors J7KNA-09-01-R...(D) and J7KNA-12-01-R...(D)

	Description	Version (A)	For contactors	Type	Pack pcs
	Reversing Starter Connector with Coil Connector for Mini Reversing Contactors, mechanical interlocked	16	J7KNA-09-01-R...(D) & J7KNA-12-01-R...(D)	J74-WKR-A	1

■ System overview

Mini Motor Contactors

AC/DC solenoid operated

Wiring Diagrams	Distinc. Number according to DIN EN 50012	Auxiliary Contact Blocks suitable for						Contacts suitable for Electronic Circuits according to DIN 19240 for rated voltage 24V DC (test ratings 17V DC, 5mA)
		left hand side Contactor K1			right hand side Contactor K2			
		Type	NO	NC*1	Type	NO	NC*1	
3-pole, With Screw Terminals								
	01	J73KN-AM-11V	1	1	J73KN-AM-11X	1	1	

*1) Mirror Contact (NC) according to IEC 60947-4-1 for safety applications

Auxiliary contact blocks with screw terminals for contactors J7KNA-09-01-R...(D) and J7KNA-12-01-R...(D)

Wiring Diagrams						Contacts suitable for Electronic Circuits according to DIN 19240 for rated voltage 24V DC (test ratings 17V DC, 5mA)
J73KN-AM-11V	J73KN-AM-11X					
						

Specifications

■ Coil Voltages

Suffix to contactor type e.g. J7KNA-09-10-24	Voltage Marking at the coil		Rated Control Voltage U _s range for			
	for 50Hz V	for 60Hz V	50Hz min V.	50Hz max V.	60Hz min V.	60Hz max V.
24	24	24	22	24	24	24
48	48	48	48	50	48	52
100	100	110-115	100	105	110	115
110	110-115	120-125	110	115	120	125
200	200	210-220	195	205	210	220
230	220-230	240	220	230	240	250
400	380-400	440	380	400	415	440
550	525-550	600	525	550	570	600

Standard voltages in bold type letters. Coil not exchangeable

Please see datasheet J7KN Motor Contactor for RC-suppressor units.

■ Engineering data and Characteristics

Mini Motor Contactors

Data according to IEC 947-4-1, VDE 0660, EN 60947-4-1

Main Contacts	Type	J7KNA-09-...	J7KNA-12-...
Rated insulation voltage U_i	V AC	690 ⁽¹⁾	690 ⁽¹⁾
Making capacity I_{eff} at $U_e = 690V$ AC	A	165	165
Breaking capacity I_{eff} 400V AC	A	100	100
$\cos\varphi = 0,65$ 500V AC	A	90	90
690V AC	A	80	80
Utilization category AC1			
Switching of resistive load			
Rated operational current $I_e (=I_{th})$ at 40°C, open	A	20	20
Rated operational power of three-phase resistive loads 230V	kW	7.9	7.9
50-60Hz, $\cos\varphi = 1$ 240V	kW	8.3	8.3
400V	kW	13.8	13.8
415V	kW	14.3	14.3
Rated operational current $I_e (=I_{the})$ at 60°C, enclosed	A	16	16
Rated operational power of three-phase resistive loads 230V	kW	6.3	6.3
50-60Hz, $\cos\varphi = 1$ 240V	kW	6.7	6.7
400V	kW	11	11
415V	kW	11.5	11.5
Minimum cross-section of conductor at load with $I_e (=I_{th})$	mm ²	2.5	2.5
Utilization category AC2 and AC3			
Switching of three-phase motors			
Rated operational current I_e 220V	A	12	15
open and enclosed 230V	A	11.5	14.5
240V	A	11	14
380-400V	A	9	12
415-440V	A	8	11
500V	A	7	9
660-690V	A	5	6.5
Rated operational power of three-phase motors 220-240V	kW	3	4
50-60Hz 380-440V	kW	4	5.5
500-690V	kW	4	5.5
Utilization category AC4			
Switching of squirrel cage motors, inching			
Rated operational current I_e 220V	A	12	15
open and enclosed 230V	A	11.5	14.5
240V	A	11	14
380-400V	A	9	12
415-440V	A	8	11
500V	A	7	9
660-690V	A	5	6.5
Rated operational power of three-phase motors 220-240V	kW	3	4
50-60Hz 380-440V	kW	4	5.5
500-690V	kW	4	5.5

Mini Motor Contactors

Data according to IEC 947-4-1, VDE 0660, EN 60947-4-1

Main Contacts			Type	J7KNA-09-...	J7KNA-12-...
Utilization category DC1					
Switching of resistive load	1 pole	24V	A	20	20
Time constant L/R	1ms	60V	A	20	20
Rated operational current I _e		110V	A	5	5
		220V	A	0.6	0.6
3 poles in series	24V	A	20	20	
	60V	A	20	20	
	110V	A	20	20	
	220V	A	16	16	
Utilization category DC3 and DC5					
Switching of shunt motors	1 pole	24V	A	20	20
and series motors		60V	A	5	5
Time constant L/R	15ms	110V	A	1	1
Rated operational current I _e		220V	A	0.15	0.15
	3 poles in series	24V	A	20	20
		60V	A	20	20
		110V	A	20	20
		220V	A	2	2
Maximum ambient temperature					
Operation	open	°C	-40 to +60 (+90) ^{*2}		
	enclosed	°C	-40 to +40		
with thermal overload relay	open	°C	-25 to +60		
	enclosed	°C	-25 to +40		
Storage		°C	-50 to +90		
Short circuit protection					
for contactors without thermal overload relay					
Coordination-type "1" according to IEC 947-4-1					
Contact welding without hazard of persons					
max. fuse size	gL (gG)	A	40	40	
Coordination-type "2" according to IEC 947-4-1					
Light contact welding accepted					
max. fuse size	gL (gG)	A	25	25	
Contact welding not accepted					
max. fuse size	gL (gG)	A	10	10	
For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size.					
Cable cross-sections					
for contactors without thermal overload relay					
main connector	solid or stranded	mm²	0.5 - 2.5	0.5 - 2.5	
	flexible	mm²	0.5 - 2.5	0.5 - 2.5	
	flexible with multicore cable end	mm²	0.5 - 1.5	0.5 - 1.5	
Cables per clamp			2	2	
	solid or stranded	AWG	18 - 14	18 - 14	

Mini Motor Contactors

Data according to IEC 947-4-1, VDE 0660, EN 60947-4-1

Main Contacts		Type	J7KNA-09-...	J7KNA-12-...
Frequency of operations z	without load	1/h	10000	10000
Contactors without thermal overload relay	AC3, I _e	1/h	600	700
	AC4, I _e	1/h	120	150
	DC3, I _e	1/h	600	700
Mechanical life AC operated	S x	10 ⁶	5	5
DC operated	S x	10 ⁶	15	15
Short time current	10s-current	A	96	120
Power loss per pole	at I _e /AC3 400V	W	0.15	0.25
Resistance to shock according to IEC 68-2-27				
Shock time 20ms sine-wave				
AC operated	NO	g	5	5
	NC	g	5	5
DC operated	NO	g	8	8
	NC	g	6	6

*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) With reduced control voltage range 0.9 up to 1.0 x U_s and with reduced rated current I_e/AC1 according to I_e/AC3

Mini Motor Contactors

Auxiliary Contacts		Type	J7KNA-09... J7KNA-12...	J7KNA-09...D(VS) ^{*1} J7KNA-12...D(VS)	J73KN-A...
Rated insulation voltage U_i		V AC	690 ^{*2}	690 ^{*1}	690 ^{*1}
Thermal rated current I_{th} to 690V					
Ambient temperature	40°C	A	10	10	10
	60°C	A	6	6	6
Power loss per pole	at I_{th}	W	0.5	0.5	0.5
Utilization category AC15					
Rated operational current I_e	220-240V	A	3	3	3
	380-415V	A	2	2	2
	440V	A	1.6	1.6	1.6
	500V	A	1.2	1.2	1.2
	660-690V	A	0.6	0.6	0.6
Utilization category DC13					
Rated operational current I_e	60V	A	2	2	2
	110V	A	0.4	0.4	0.4
	220V	A	0.1	0.1	0.1
Maximum ambient temperature					
Operation	open	°C	-40 to +60 (+90) ^{*3}		
	enclosed	°C			
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
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	-	-
	sealed	VA	4 - 5	-	-
		W	1.2	-	-
DC operated	inrush	W	-	2.5	-
	sealed	W	-	2.5	-
Operation range of coils in multiples of control voltage U_s			0.85 - 1.1	0.8 - 1.1	-
Switching time at control voltage $U_i \pm 10\%$ ^{*4,*5}					
AC operated	make time	ms	15 - 19	-	-
	release time	ms	8 - 25	-	-
	arc duration	ms	10 - 15	-	-
DC operated	make time	ms	-	15 - 25	-
	release time	ms	-	8 - 25	-
	arc duration	ms	-	10 - 15	-

Mini Motor Contactors

Auxiliary Contacts	Type	J7KNA-09... J7KNA-12...	J7KNA-09...D(VS) ^{*1} J7KNA-12...D(VS)	J73KN-A...
Cable cross-section				
all connectors	solid	mm ² 0.75 - 2.5	0.75 - 2.5	0.75 - 2.5
	flexible	mm ² 0.75 - 2.5	0.75 - 2.5	0.75 - 2.5
	flexible with multicore cable end	mm ² 0.5 - 1.5	0.5 - 1.5	0.5 - 2.5
Clamps per pole		2	2	2
	solid or stranded	AWG 18 - 14	18 - 14	18 - 14

*1) version „VS“

*2) 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.

*3) With reduced control voltage range 0.9 up to $1.0 \times U_s$ 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 Contactors for North America

Data according to UL508

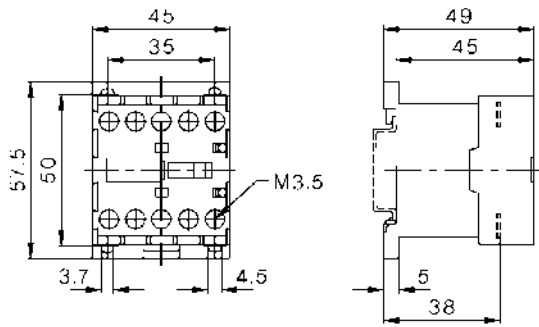
Main Contacts (cULus)	Type	J7KNA-09...	J7KNA-12...	J73KN-A...
Rated operational current "General Use"	A	15	20	10
Rated operational power of three-phase motors at 60Hz (3ph)	115V hp	1½	2	-
	200V hp	3	3	-
	230V hp	3	3	-
	460V hp	5	7½	-
	575V hp	7½	10	-
Rated operational power of AC motors at 60Hz (1ph)	115V hp	½	¾	-
	200V hp	1	1½	-
	230V hp	1½	2	-
Fuses	A	30	30	-
Suitable for use on a capability of delivering not more than rms (SCCR)	A	5000	5000	-
	V	600	600	-
Rated voltage	V AC	600	600	600
Auxiliary Contacts (cULus)				
heavy pilot duty	AC	A600	A600	A600
standard pilot duty	DC	Q600	Q600	Q600

■ Dimensions

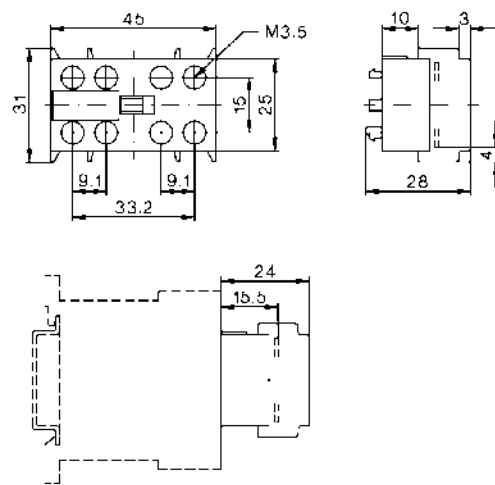
AC and DC operated
with screw terminals

Auxiliary Contact Blocks

J7KNA-09...
J7KNA-12...

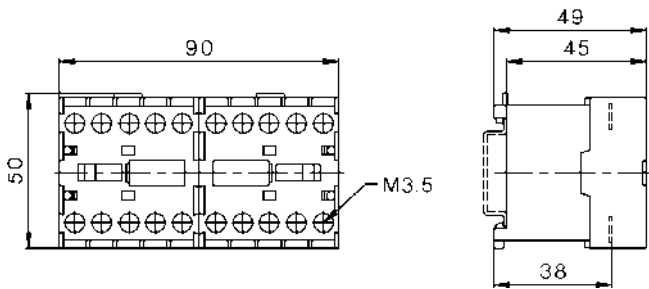


J73KN-A...

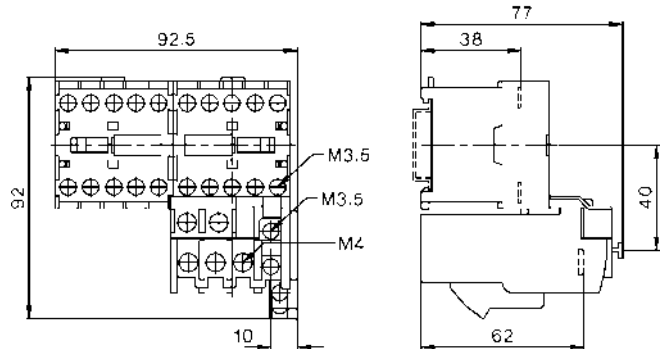


Reversing Contactors

J7KNA-09-01-R...
J7KNA-12-01-R...

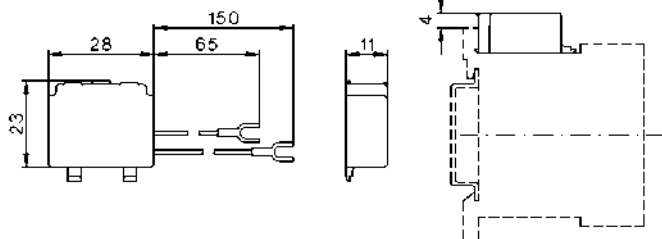


J7KNA-09-01-R... + J7TKN-A
J7KNA-12-01-R... + J7TKN-A



Suppressor units

J74KN-D-RC...



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.