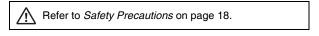
## **Magnetic Contactor**

## J7KC Series

# Best Match for upto 2.2 kW (240 VAC) \*2, 5.5 kW (440 VAC) Motor and Primary Side switches

- Push-In Plus wiring Technology saves Wiring and Maintenance time
- World's smallest size (\*1)
- Ideal for motor Control up to 2.2 kW (200 to 240 VAC) (\*2),
   5.5 kW (380 to 440 VAC), AC-3 class
- Ideal for safety applications thanks to mirror contact mechanism with feedback function
- High Contact Reliability (Min. 5 VDC, 3 mA) by Bifurcated contacts
- Coil surge absorber unit installed as standard (\*3)
- Certified as compliant with the main safety standards
- \*1. According to OMRON investigation, as of August 2019. For push-in models.
- \*2. Based on JIS C 8201-4-1
- \*3. DC operated







For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## **Model Number Structure**

**Model Number Legend** Order according to the format described in Ordering Information.

J7KC□-	12-		
(1)	(2)	(3)	(4)

#### (1) Non-reversing/reversing

Code	
None	Non-reversing
R	Reversing
(2) Frame size	
Code	
12	12 A

#### (3) Auxiliary contacts

Code	Contact form
10	SPST-1NO
01	SPST-1NC

#### (4) Coil voltage

Operation	Code	Coil voltage
	AC 24	24 VAC
	AC 48	48 VAC
	AC 100	100 VAC
	AC 110	110 VAC
	AC 120	120 VAC
AC-operated	AC 200	200 VAC
	AC 220	220 VAC
	AC 230	230 VAC
	AC 240	240 VAC
	AC 380	380 VAC
	AC 400	400 VAC
	AC 440	440 VAC
	AC 500	500 VAC

Operation	Code	Coil voltage
	DC 12	12 VDC
	DC 24	24 VDC
	DC 48	48 VDC
	DC 60	60 VDC
DC-operated	DC 100	100 VDC
DO-operated	DC 110	110 VDC
	DC 120	120 VDC
	DC 200	200 VDC
	DC 210	210 VDC
	DC 220	220 VDC

## **Ordering Information**

## Main unit

Product Type	Operation	Coil rating	Auxiliary contact	Model
		24 VAC	SPST-1NO	J7KC-12-10 AC24
	24 1/10	SPST-1NC	J7KC-12-01 AC24	
		48 VAC	SPST-1NO	J7KC-12-10 AC48
		40 VAO	SPST-1NC	J7KC-12-01 AC48
		100 VAC	SPST-1NO	J7KC-12-10 AC100
		100 1710	SPST-1NC	J7KC-12-01 AC100
		110 VAC	SPST-1NO	J7KC-12-10 AC110
		110 1/10	SPST-1NC	J7KC-12-01 AC110
		120 VAC	SPST-1NO	J7KC-12-10 AC120
		120 1710	SPST-1NC	J7KC-12-01 AC120
		200 VAC	SPST-1NO	J7KC-12-10 AC200
		200 1710	SPST-1NC	J7KC-12-01 AC200
	AC-operated	220 VAC	SPST-1NO	J7KC-12-10 AC220
	710 oporatou	220 1710	SPST-1NC	J7KC-12-01 AC220
		230 VAC	SPST-1NO	J7KC-12-10 AC230
		200 1710	SPST-1NC	J7KC-12-01 AC230
		240 VAC	SPST-1NO	J7KC-12-10 AC240
			SPST-1NC	J7KC-12-01 AC240
		380 VAC	SPST-1NO	J7KC-12-10 AC380
			SPST-1NC	J7KC-12-01 AC380
		400 VAC	SPST-1NO	J7KC-12-10 AC400
			SPST-1NC	J7KC-12-01 AC400
Magnetic contactor		440 VAC	SPST-1NO	J7KC-12-10 AC440
<b>3</b>			SPST-1NC	J7KC-12-01 AC440
			SPST-1NO	J7KC-12-10 AC500
			SPST-1NC	J7KC-12-01 AC500
			SPST-1NO	J7KC-12-10 DC12
			SPST-1NC	J7KC-12-01 DC12
			SPST-1NO	J7KC-12-10 DC24
			SPST-1NC	J7KC-12-01 DC24
		48 VDC	SPST-1NO	J7KC-12-10 DC48
			SPST-1NC	J7KC-12-01 DC48
		60 VDC	SPST-1NO	J7KC-12-10 DC60
			SPST-1NC	J7KC-12-01 DC60
	DC-operated	100 VDC	SPST-1NO	J7KC-12-10 DC100
	(With built-in surge absorption unit		SPST-1NC	J7KC-12-01 DC100
		110 VDC	SPST-1NO	J7KC-12-10 DC110
			SPST-1NC	J7KC-12-01 DC110
		120 VDC	SPST-1NO	J7KC-12-10 DC120
			SPST-1NC	J7KC-12-01 DC120
		200 VDC	SPST-1NO	J7KC-12-10 DC200
		210 VDC	SPST-1NC	J7KC-12-01 DC200
			SPST-1NO	J7KC-12-10 DC210
			SPST-1NC	J7KC-12-01 DC210
		220 VDC	SPST-1NO	J7KC-12-10 DC220
			SPST-1NC	J7KC-12-01 DC220

Product Type	Operation	Coil rating	Auxiliary contact	Model
		24 VAC	SPST-1NO	J7KCR-12-10 AC24
		24 VAC	SPST-1NC	J7KCR-12-01 AC24
		48 VAC	SPST-1NO	J7KCR-12-10 AC48
		70 700	SPST-1NC	J7KCR-12-01 AC48
		100 VAC	SPST-1NO	J7KCR-12-10 AC100
		100 1/10	SPST-1NC	J7KCR-12-01 AC100
		110 VAC	SPST-1NO	J7KCR-12-10 AC110
		110 1/10	SPST-1NC	J7KCR-12-01 AC110
		120 VAC	SPST-1NO	J7KCR-12-10 AC120
		120 170	SPST-1NC	J7KCR-12-01 AC120
		200 VAC	SPST-1NO	J7KCR-12-10 AC200
		200 170	SPST-1NC	J7KCR-12-01 AC200
	AC-operated	220 VAC	SPST-1NO	J7KCR-12-10 AC220
	Ao-operateu	220 VAO	SPST-1NC	J7KCR-12-01 AC220
		230 VAC	SPST-1NO	J7KCR-12-10 AC230
		200 170	SPST-1NC	J7KCR-12-01 AC230
		240 VAC	SPST-1NO	J7KCR-12-10 AC240
		240 VAO	SPST-1NC	J7KCR-12-01 AC240
		380 VAC	SPST-1NO	J7KCR-12-10 AC380
			SPST-1NC	J7KCR-12-01 AC380
		400 VAC	SPST-1NO	J7KCR-12-10 AC400
		700 VAO	SPST-1NC	J7KCR-12-01 AC400
eversing magnetic		440 VAC	SPST-1NO	J7KCR-12-10 AC440
contactor		440 VAC	SPST-1NC	J7KCR-12-01 AC440
		500 VAC	SPST-1NO	J7KCR-12-10 AC500
			SPST-1NC	J7KCR-12-01 AC500
		12 VDC	SPST-1NO	J7KCR-12-10 DC12
			SPST-1NC	J7KCR-12-01 DC12
		24 VDC	SPST-1NO	J7KCR-12-10 DC24
		24 100	SPST-1NC	J7KCR-12-01 DC24
		48 VDC	SPST-1NO	J7KCR-12-10 DC48
		46 VDC	SPST-1NC	J7KCR-12-01 DC48
		60 VDC	SPST-1NO	J7KCR-12-10 DC60
			SPST-1NC	J7KCR-12-01 DC60
	DO	100 VDC	SPST-1NO	J7KCR-12-10 DC100
	DC-operated /With built-in surge	100 100	SPST-1NC	J7KCR-12-01 DC100
	absorption unit	110 VDC	SPST-1NO	J7KCR-12-10 DC110
		110 100	SPST-1NC	J7KCR-12-01 DC110
		120 VDC	SPST-1NO	J7KCR-12-10 DC120
		120 VDC	SPST-1NC	J7KCR-12-01 DC120
		200 VDC	SPST-1NO	J7KCR-12-10 DC200
		200 VDC	SPST-1NC	J7KCR-12-01 DC200
		210 VDC	SPST-1NO	J7KCR-12-10 DC210
			SPST-1NC	J7KCR-12-01 DC210
		220 VDC	SPST-1NO	J7KCR-12-10 DC220
			SPST-1NC	J7KCR-12-01 DC220

## Options (Order Separately) Auxiliary contact unit

Number of poles	Auxiliary contact	Model
	2PST-2NO	J73KC-AM-20
2 poles	2PST-1NO 1NC	J73KC-AM-11
	2PST-2NC	J73KC-AM-02
	4PST-4NO	J73KC-AM-40
	4PST-3NO 1NC	J73KC-AM-31
4 poles	4PST-2NO 2NC	J73KC-AM-22
	4PST-1NO 3NC	J73KC-AM-13
	4PST-4NC	J73KC-AM-04

#### Interlock unit

Model	
J74KC-A	

#### Reversing conductor kit

Туре	Model
For main circuit	J75KC-WKR-A
For auxiliary circuit	J75KC-WKR-B

#### Coil surge absorption unit

Adopted Coil voltage type	LED indicator	Model
24-48 VAC		J76KC-RC-1
48-125 VAC	No	J76KC-RC-2
100-250 VAC		J76KC-RC-3
24-48 VAC	Yes	J76KC-RC-N-1
48-125 VAC		J76KC-RC-N-2

#### Insulation stop

Model	Minimum order (bag)
J77KC-K	1 (30 pcs./bag)

#### **Tools for removal**

Model
J78KC

## Ratings/Specifications

The ratings/specifications are the same for both non-reversing/reversing types.

#### **Coil rating**

#### **AC** operated

Displayed	Rated	voltage	Al	lowable voltage	range	Must operate	Must release
model	50 Hz	60 Hz		50 Hz	60 Hz	voltage	voltage
AC 24	24 VAC	24-26 VAC		21-27 VAC	21-29 VAC		
AC 48	48 VAC	48-52 VAC		41-53 VAC	41-58 VAC		
AC 100	100 VAC	100-110 VAC		85-110 VAC	85-121 VAC		
AC 110	100-110 VAC	110-120 VAC		85-121 VAC	94-132 VAC		
AC 120	110-120 VAC	120-130 VAC		94-132 VAC	102-143 VAC		
AC 200	200 VAC	200-220 VAC		170-220 VAC	170-242 VAC		
AC 220	200-220 VAC	220-240 VAC	85 to 110%	170-242 VAC	187-264 VAC	85% max.	20% min.
AC 230	220-230 VAC	230 VAC		187-253 VAC	196-253 VAC		
AC 240	220-240 VAC	240-260 VAC		187-264 VAC	204-286 VAC		
AC 380	346-380 VAC	380-420 VAC		295-418 VAC	323-462 VAC		
AC 400	380-400 VAC	400-440 VAC		323-440 VAC	340-484 VAC		
AC 440	415-440 VAC	440-480 VAC		353-484 VAC	374-528 VAC		
AC 500	480-500 VAC	500-550 VAC		408-550 VAC	425-605 VAC		

#### DC operated

Displayed model	Rated voltage	Al	lowable voltage range	Must operate voltage	Must release voltage
DC 12	12 VDC		11-14 VDC		10% min.
DC 24	24 VDC		21-27 VDC		
DC 48	48 VDC		41-53 VDC		
DC 60	60 VDC		51-66 VDC		
DC 100	100 VDC	85 to 110%	85-110 VDC	85% max.	
DC 110	110 VDC	05 10 110%	94-121 VDC	05 % IIIax.	
DC 120	120 VDC		102-132 VDC		
DC 200	200 VDC		170-220 VDC		
DC 210	210 VDC		179-231 VDC		
DC 220	220 VDC		187-242 VDC		

### Coil characteristics (reference value)

#### **AC** operated

Frequency		50 Hz	60 Hz		
Coil power	Making (VA)	22 (200 V)	25 (220 V)		
consumption	Holding (VA)	4.5 (200 V)	4.5 (220 V)		
Power loss (W)		1.2 (200 V) 1.3 (220 V)			
Must operate voltag	je (V)	122 to 135 128 to 138			
Must release voltag	e (V)	80 to 89 83 to 96			
Operate time (ms)		17 to 26			
Release time (ms)		6 to 16			

- Note: 1. Coil ratings: Characteristics for 200 VAC, 50 Hz / 200-220 VAC, 60 Hz
  - 2. Coil power consumption value is the same for a coil that is not rated 200 VAC.
  - 3. Indicated operate/release times for 200 VAC, 50 Hz.
  - 4. Closed and open voltages of 100 V coil (100 VAC, 50 Hz/100-110 VAC, 60 Hz) are approximately one half the values in the table above.
  - 5. Values in the table above are examples for 20  $^{\circ}\text{C}$  cold condition.

#### DC operated

<b>-</b>	_	
Coil power	Making (W)	2.4 (24 V)
consumption	Holding (W)	2.2 (24 V)
Time constant (ms)	Holding	20
Must operate voltag	je (V)	10 to 11
Must release voltag	e (V)	4 to 6
Operate time (ms)		34 to 60
Release time (ms)		5 to 10

- Note: 1. Coil ratings: Characteristics for 24 VDC
  - 2. Coil power consumption value is the same for a coil that is not rated 24 VDC.
  - 3. Values in the table above are examples for 20°C cold condition.

## Ratings/Characteristics

		AC-1	Voltage range	e (V)	AC200-240 AC	)		AC380-440 AC			
		(Resistive load)	Rated operational current (A)		15			15			
		AC-3	Voltage range	e (V)	200-240 AC	380-	-440 AC	500-550	AC	600-690 AC	
		(3-phase cage	Rated capaci	ty (kW)	3	5.5		5.5		4	
		motor)	Rated operational current (A)		12	12		9		5	
		AC-4	Voltage range	e (V)	200-240 AC	380-440 AC		500-550	AC	600-690 AC	
		(3-phase cage	Rated capacity (kW)		3	5.5		5.5		4	
		motor)	Rated operat	ional current (A)	12	12		9		5	
F	Rating based on		Voltage rang	e (V)	24 DC	48 E	С	110 DC		220 DC	
11	IEC 60947-4-1	DC-1 (Resistive load L/R ≤ 1 ms)	Rated	Number of serial contacts 1	12	12		3		0.7	
			operational	Number of serial contacts 2	12	12		9		4	
		,	current (A)	Number of serial contacts 3	12	12		12		12	
			Voltage range	e (V)	24 DC	48 E	C	110 DC		220 DC	
		DC-3, DC-5		Number of serial contacts 1	2	1.5		1		0.1	
		(DC motor load L/R ≤ 15 ms)	Rated operational	Number of serial contacts 2		3		0.85		0.35	
		⊔n ≥ 13 III <b>3</b> )	current (A)	Number of serial contacts 3		6		1.7		0.7	
		Conventional free	e air thermal cu			-		***		***	
		(rated flowing cu			15						
			Voltage range	e (V)	200 AC	220-	-240 AC	440-480	AC	550-600 AC	
		2 mbass mater	Rated capaci	ty (HP)	3	3		5		5	
		3-phase motor	Rated operat	ional current (A)	11	9.6		7.6		6.1	
_	Rating based on	hasadan		Rated current (A)							
U	JL 60947-4-1,		Voltage range (V)		110-120 AC		200 AC		220	-240 AC	
C	CSA C22.2	Single-phase	Rated capaci	Rated capacity (HP)			1-1/2		2		
n		motor	Rated operat	ional current (A)	13.8		11.5		12		
uit			Rated curren	t (A)	15				ļ		
ng		FUSE			30A (Class K5	, RK5)					
		AC-1	V. II			200-240 AC 380-440 AC					
		(resistive load)	Rated operational current (A)		15			15			
			Voltage range	e (V)	200-240 AC		380-440	AC	500	-550 AC	
		AC-3 (3-phase cage	Rated capacity (kW)		2.2			5.5			
		motor)	Rated operational current (A)		12		12	9			
			Voltage range	<u>`</u>	24 DC	48 E		110 DC		220 DC	
		DC-1		Number of serial contacts 1		12		3		0.7	
	Rating based on	(Resistive load	Rated operational	Number of serial contacts 2		12		9		4	
J	IIS C 8201-4-1	L/R ≤ 1 ms)	current (A)	Number of serial contacts 3		12		12		12	
			Voltage range		24 DC	48 [	DC	110 DC		220 DC	
		DC-3, DC-5		Number of serial contacts 1		1.5		1		0.1	
		(DC motor load L/R ≤ 15 ms)	Rated operational	Number of serial contacts 2		3		0.85		0.35	
		⊔n ≥ 13 ilis)	current (A)	Number of serial contacts 3		6		1.7		0.33	
		Conventional free			15						
N	Minimum operate	voltage/current (	reference value	e)	24 VDC 10 mA	4					
		Voltage range (V)			220 AC				440 AC		
		Rated operationa	I current (A)		12				12		
	The stripe!	Contact closed c	urrent (A)		144			144			
	Electrical/ nechanical	Breaking current	(A)		120			120			
	endurance	Switching freque		hour)	1800				1800		
		<u>-</u>	. , (ee por	Mechanical	1000			1000			
		Endurance	e min \	Electrical (AC3)		100 *					
		(10,000 operation	15 111111. <i>)</i>	100 %  10 mΩ max. (6 VDC, 1 mA, voltage drop method)							

<sup>\*</sup>The electrical endurance is the value at 200 V based on the electrical endurance test conditions assumed in the IEC/JIS standards, and will vary depending on the characteristics and load conditions of the motor you use. A large motor starting current may cause a decrease of electrical endurance or contact sticking.

		Voltage range (	V)		100-120 AC	200-240 AC	380-44 AC	500-600 AC	24 DC	48 DC	110 D0	220 DC
					AC-15 (cd	oil load)			DC-13 (c	oil load)		
	Rating based on	Rated operational current (A)  Contact closed and breaking current (A)			3	3	1	0.5	2	1	0.3	0.2
	IEC 60947-5-1/				AC-12 (re	sistive loa	d)		DC-12 (r	esistive lo	ad)	1
	JIS C 8201-5-1				6	6	6	3	3	2	1.5	0.5
					30	30	10	5	30	30	10	5
		Conventional fr (rated flowing o		al current	10							
		Rated carry current (A)			10					2.5		
Auxiliary   ι circuit		Voltage range (	V)		120 AC	240 A	AC .	480 AC	600 AC	125	DC	250 DC
	Rating based on UL 508	Contact closed	current (A)		60	30		15	12	0.55	5	0.27
		Breaking current (A)			6	3		1.5	1.2	0.55	j	0.27
rating		Rating code			A 600				•	Q 3	00	
	Minimum operate voltage/current (reference value)					VDC						
		Switching frequency (times per hour)			1800							
		Mechanical (10,000 cycles min.)			1000							
		Electrical (10,000 cycles min.)	AC-15	220 V	50							
	Electrical/ mechanical endurance			440 V	50							
			AC-12	220 V	25							
				440 V	25							
			DC-13		220 V	15						
			DC-12	220 V	50							
	Contact resistanc	e (reference valu	ie)		50 mΩ max. (6 VDC, 1 mA, voltage drop method)							
	ulation voltage				690 VAC							
-	oulse dielectric stre	engtn			6 kV							
Rated free	<u> </u>				50/60 Hz							
Vibration Shock res	resistance				Vibration: 10 to 55 Hz, acceleration: 15 m/s <sup>2</sup>							
Contact fo					Shock value 50 m/s <sup>2</sup>							
Contact m					Double break form (main circuit: single contacts, auxiliary circuit: bifurcated contacts  Ag alloy							
Mirror cor					Available	*						
	protection				IP20 (IEC60529)							
Operating temperature			-10 to +55°C (however, daily average shall not exceed 35°C)									
·	storage temperatur	e				•		on or icing)		· · ·		
Relative h						•		ation or icing)	)			
Altitude					2000 m m							
Weight					160 g (J7	KC-□-AC)	/190 g (J7	′KC-□-DC)/4	00 g (J7K0	CR-□-AC)	460 g (J7	KCR-□-DC
Applicable	e Standards	Safety standard	I		EN 60947 CCC GB/		60947-4-1	), UL 60947-	4-1, CSA 2	2.2 No.60	947-4-1,	

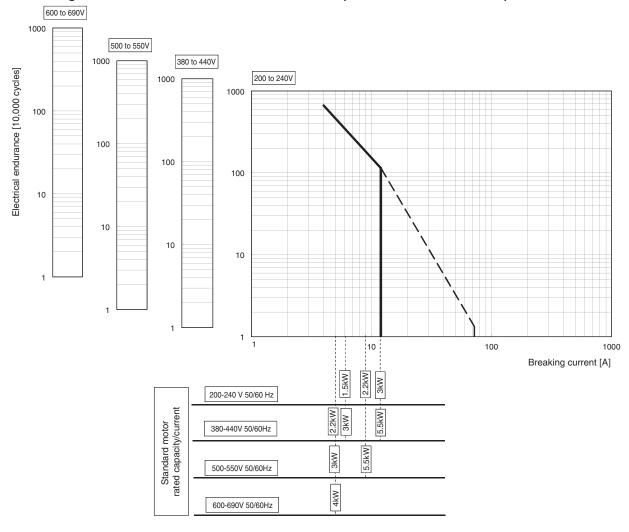
\*A mirror contact is a mechanism found mainly in contactors.

With the combination of the main circuit and the auxiliary circuit of the main unit, welding the main contacts will result in a structure that secures a shock resistance voltage of 2.5 kV or more, or a contact interval of 0.5 mm or more, for all of the auxiliary circuit NC contacts even if the excitation of the coil is released. The main contact may turn on even if the auxiliary circuit is welded. Even with the combined usage of the auxiliary contact unit (J73KC-AM), welding the main contact in the main unit will create a mirror contact surface where the attached auxiliary contact (NC contact) is separated.

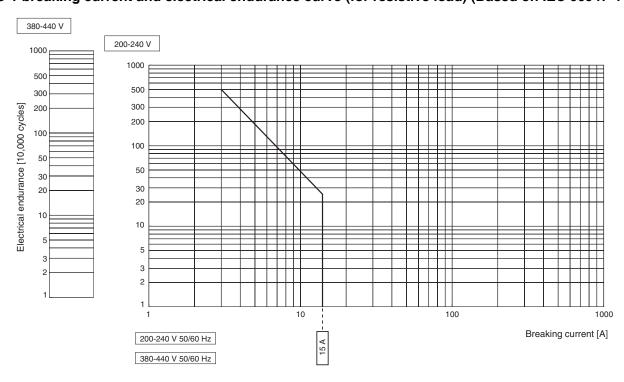
## **Engineering Data**

#### **Electrical endurance curves**

#### AC-3 breaking current and electrical endurance curve (Based on IEC 60947-4-1)



#### AC-1 breaking current and electrical endurance curve (for resistive load) (Based on IEC 60947-4-1)

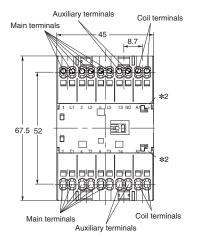


Dimensions (Unit: mm)

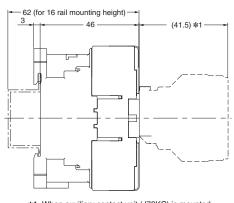
#### Main unit

Magnetic contactor J7KC





Auxiliary contact	Contact form						
1NO (1a)	1/L1 3/L2 5/L3 13 A1 (+) *2  1/L1 3/L2 5/L3 13 A1 (+) *2  2/L1 4/T2 6/T3 14 A2 (-) *2						
1NC (1b)	1/L1 3/L2 5/L3 21 A1 (+) *2  1/L1 3/L2 5/L3 21 A2 (+) *2  2/1 4/T2 6/T3 22 A2 (-) *2						

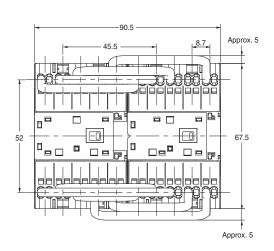


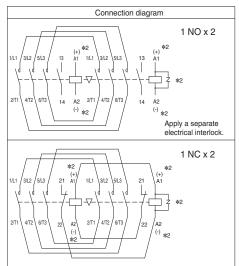
 $\ensuremath{ \star 1}.$  When auxiliary contact unit (J73KC) is mounted

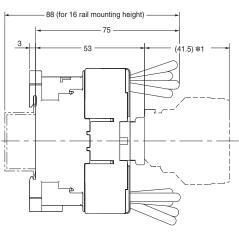
\*2. For DC-operated model

## Reversing magnetic contactor J7KCR









\*1. When auxiliary contact unit (J73KC) is mounted

Note: The terminal (number) names of the reversing magnetic contactor are the same as the magnetic contactor.

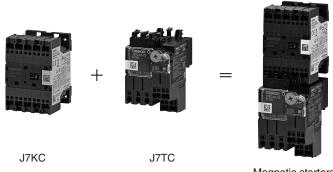
\*2. For DC-operated model

## **Related Products (Order Separately)**

## Thermal overload relay

J7TC

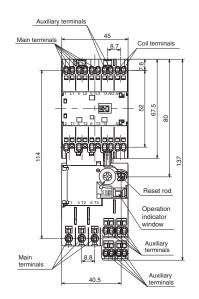
Combine with a thermal overload relay to use as a magnetic switch. For details, refer to *J7TC Thermal Overload Relay Data Sheet* (Catalog No. J231-E1).

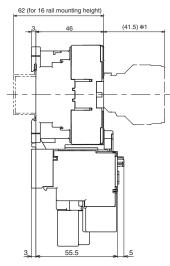


Magnetic starters



Magnetic starters

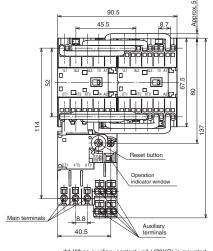




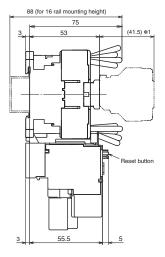
Auxiliary contact	Connection diagram
1NO (1a)	1/L1 3/L2 5/L3 13 A1(+) %2 A2(-) %2 A3(-) %3 A3(
1NC (1b)	1/L1 3/L2 5/L3 21

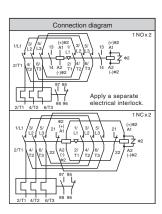


Reversing type magnetic starters



\$1 When auxiliary contact unit (J73KC) is mounted \$2 For DC-operated model





## Coordination with the short circuit protection device (SCPD) (based on IEC and JIS standards)

Assumed short circuit current "r" (240 V, 440 V)

	Magnetic starte	rs	Coordination type					
	Thermal of	overload relay		Type 1	Type 2			
Magnetic contactor		Setting current range [A]	Short-circuit current "r" [kA]	Breaker EN60947-2	Rating [A]	Short-circuit current "r" [kA]	Fuse rating [A] (IEC 60269-1 gG and gM)	
		0.34-0.52			3		2	
		0.48-0.72			3	_		
		0.64-0.96			5		4	
		0.8-1.2			5			
		0.95-1.45			10			
		1.1-1.65	1	Breaker for wiring protection	10	_		
		1.4-2.1						
J7KC-12	J7TC-01	1.7-2.6		1 1	(MCCB)		1	1
		2.2-3.4		240 V 5 kA				
		2.8-4.2		440 V 2.5 kA	20		16	
		4-6			20			
		5-7.5						
		6-9						
		7-10.5						
		9-13	1		30			

#### Conditional rated short circuit current Iq (240 V)

	Magnetic starter	rs			Coordination	type		
Thermal overload relay				Type 1	Type 2			
Magnetic contactor		Setting current range [A]	Short-circuit current "Iq" [kA]	Breaker EN60947-2	Rating [A]	Short-circuit current "lq" [kA]	Fuse rating [A] (IEC 60269-1 gG and gM)	
		0.34-0.52			0		2	
		0.48-0.72	=	Breaker for wiring protection (MCCB) Icu 240 V 5 kA 440 V 2.5 kA	3	50		
		0.64-0.96			5		4	
		0.8-1.2						
		0.95-1.45			10		16	
		1.1-1.65					10	
		1.4-2.1						
J7KC-12	J7TC-01	1.7-2.6						
		2.2-3.4						
		2.8-4.2						
		4-6	=				20	
		5-7.5		Breaker for wiring				
		6-9		protection (MCCB)				
		7-10.5	1	lcu	30			
		9-13		240 V 50 kA 440 V 30 kA				

#### Manual motor starter

#### J7MC

For details, refer to J7MC Manual Motor Starter Data Sheet (Catalog No.J233-E1).



#### Short-circuit harmonized protection

Satisfies the harmonized protection types 1 and 2 for magnetic switches and short-circuit protection devices specified in IEC 60947 and JIS C 8201.

- Type 1: Damage to magnetic contactors and thermal overload relays is observed. Requires partial or complete replacement at the time of inspection.
- Type 2: No damage, except slight welding of the contacts in the magnetic contactor. Can remain in use without replacement at the time of inspection.

This greatly reduces the possibility of secondary accidents in the event that an accident occurs.

#### Type 1 rated conditional short-circuit current Iq = 50 kA (200 VAC, 400 VAC)

3-phase m	3-phase motor capacity and full load current				Manual motor starte	NP		Magnetic contactor						
200	VAC	400	VAC		Wallual Illotor Starte	er .	Short-circuit current	wagii	elic contactor					
Capacity [kW]	Current [A]	Capacity [kW]	Current [A]	N	<i>l</i> lodel	Current setting range [A]	lq [kA]	Model	Rated operationa current AC-3 [A]					
				J7MC-3P-E16	J7MC-3R-E16	0.1-0.16								
0.03	0.24	0.06	0.23	J7MC-3P-E25	J7MC-3R-E25	0.16-0.25		1						
0.06	0.37	0.09	0.32	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4								
		0.12	0.5	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63			12					
0.1	0.68	0.18	0.65	J7MC-3P-1	J7MC-3R-1	0.63-1.0		J7KC-12						
		0.25	0.9	J7MC-3P-1	J7MC-3R-1	0.63-1.0	50							
0.2	1.3	0.37	1.25	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6	50		12					
		0.55	1.6	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5								
0.4	2.3	0.75	2	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5								
		1.1	2.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0								
0.75	3.6	1.5	3.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0								
1.5	6.1	2.2	5	J7MC-3P-6	J7MC-3R-6	4.0-6.3	1							

Note: The 3-phase motor full load current is a reference value. When applying, check the full load current of the motor you will use.

#### Type 2 rated conditional short-circuit current Iq = 50 kA (200 VAC, 400 VAC)

3-phase m	3-phase motor capacity and full load current				Manual motor starter			Magnatia contactor	
200	0 VAC 400 VAC		VAC		Manual motor starter			Magnetic contactor	
Capacity [kW]	Current [A]	Capacity [kW]	Current [A]	Model		Current setting range [A]	current Iq [kA]	Model	Rated operational current AC-3 [A]
				J7MC-3P-E16	J7MC-3R-E16	0.1-0.16			
0.03	0.24	0.06	0.23	J7MC-3P-E25	J7MC-3R-E25	0.16-0.25			
0.06	0.37	0.09	0.32	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4			
		0.12	0.5	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63			
0.1	0.68	0.18	0.65	J7MC-3P-1	J7MC-3R-1	0.63-1.0			
		0.25	0.9	J7MC-3P-1	J7MC-3R-1	0.63-1.0	50	J7KC-12	12
0.2	1.3	0.37	1.25	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6			
		0.55	1.6	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5			
0.4	2.3	0.75	2	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5	1		
		1.1	2.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0			
0.75	3.6	1.5	3.5	J7MC-3P-4	J7MC-3R-4	2.5-4.0	1		

Note: The 3-phase motor full load current is a reference value. When applying, check the full load current of the motor you will use.

#### Rated combination table and SCCR for North America

220-	240 V	440-	480 V	Manual motor starter		Manual motor starter			Magnetic contactor	Short-circuit current rating
Rated capacity [Hp]	Rated operational current [A]	Rated capacity [Hp]	Rated operational current [A]	Model		Current setting range [A]	Model	SCCR [kA]		
•	0.16		0.16	J7MC-3P-E16	J7MC-3R-E16	0.1-0.16		65 kA		
	0.25		0.25	J7MC-3P-E25	J7MC-3R-E25	0.16-0.25		65 kA		
*	0.4	*	0.4	J7MC-3P-E4	J7MC-3R-E4	0.25-0.4		65 kA		
*	0.63		0.63	J7MC-3P-E63	J7MC-3R-E63	0.4-0.63		65 kA		
	1		1	J7MC-3P-1	J7MC-3R-1	0.63-1.0		65 kA		
	1.6	3/4	1.6	J7MC-3P-1E6	J7MC-3R-1E6	1.0-1.6	J7KC-12	65 kA		
1/2	2.2	1	2.1	J7MC-3P-2E5	J7MC-3R-2E5	1.6-2.5	37KC-12	65 kA		
3/4	3.2	2	3.4	J7MC-3P-4	J7MC-3R-4	2.5-4		65 kA		
1-1/2	6	3	4.8	J7MC-3P-6	J7MC-3R-6	4-6.3		65 kA		
		5	7.6	J7MC-3P-10	J7MC-3R-10	6.3-10		25 kA		
3	9.6			J7MC-3P-10	J7MC-3R-10	6.3-10		25 kA		
		7-1/2	11	J7MC-3P-13	J7MC-3R-13	9-13		10 kA		

<sup>\*</sup>An area where horsepower is not defined in UL60947-4-1 (SCCR is acquired in this area)

## **Options (Order Separately)**

## **Auxiliary contact unit**

J73KC Ratings



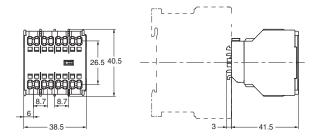
Conventional			AC						
free air thermal current	Contact closed and Breaking	Operating voltage	Rated op curre	erational nt (A)	Operating	Rated operational current (A)		Minimum operate voltage/	
current) [A]	current) current		Coil load (AC-15)	Resistive load (AC-12)	voltage [V]	Coil load (DC-13)	Resistive load (DC-12)	current	
	30	100 to 120 AC	3	6	24 DC	2	3		
10	30	200 to 240 AC	3	6	48 DC	1	2	5 VDC,	
10	10	380 to 440 AC	1	6	110 DC	0.3	1.5	3 mA	
	5	500 to 600 AC	0.5	3	220 DC	0.2	0.5		

#### **Connection diagram**

Model	Contact c	onfiguration		
J73KC-AM-40	4PST-4NO (4NO)	53 63 73 83 1 1 1 1 1 - 1 - 1 54 64 74 84		
J73KC-AM-31	4PST-3NO 1NC (3NO1NC)	53 61 73 83 		
J73KC-AM-22	4PST-2NO 2NC (2NO2NC)	53 61 71 83 1		
J73KC-AM-13	4PST-1NO 3NC (1NO3NC)	53 61 71 81 		

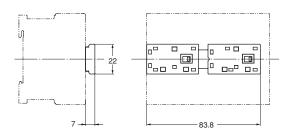
Model	Contact c	onfiguration		
J73KC-AM-04	4PST-4NC (4NC)	51 61 71 81 1. 1. 1. 1. 1. 1. 52 62 72 82		
J73KC-AM-20	2PST-2NO (2NO)	53 63  54 64		
J73KC-AM-11	2PST-1NO 1NC (1NO1NC)	53 61 1 		
J73KC-AM-02	2PST-2NC (2NC)	51 61 		

#### **Dimensions**



## Interlock unit J74KC





## Reversing conductor kit

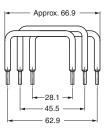
J75KC-WKR-A



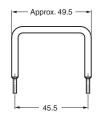
J75KC-WKR-B



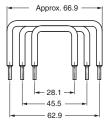
For power supply side



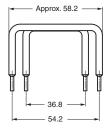
For power supply side



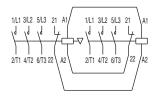
For load side



For load side







## Coil surge absorption unit

#### Ratings

Model	Surge	Varistor	LED	Applicab	le model	Control circuit voltage	
wodei	absorber	voltage	indicator	AC operated	DC operated	AC	DC
J76KC-RC-1		100 V		J7KC-□-AC		24-48 VAC	Not
J76KC-RC-2		240 V				48-125 VAC	
J76KC-RC-3	Varistor	470 V				100-250 VAC	required
J76KC-RC-N-1		100 V	LED(red)			24-48 VAC	*
J76KC-RC-N-2		240 V	LEL(Ieu)			48-125 VAC	

<sup>\*</sup>The DC operated (J7KC- DC) has a varistor built into the main unit.

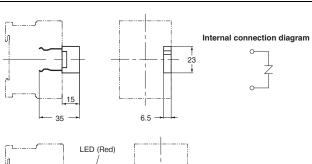
#### **Dimensions**

#### J76KC-RC



J76KC-RC-N



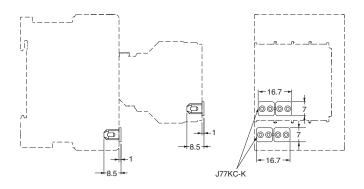




## Insulation stop J77KC-K

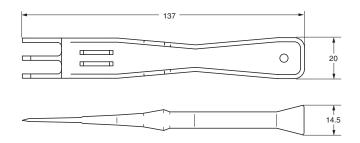
Guide for insertion into terminal (insertion) holes to stabilize holding of 1mm² or less stranded wire (direct insertion).





## Tools for removal J78KC



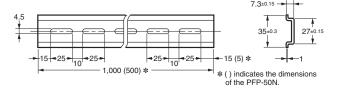


### **DIN Rails (Order Separately)**

(Unit: mm)

#### Mounting Rail PFP-100N PFP-50N

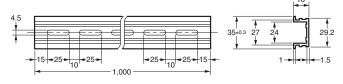




Model
PFP-100N
PFP-50N

## Mounting Rail PFP-100N2

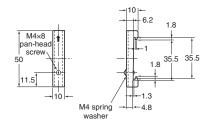




Model PFP-100N2

## End Plate PFP-M

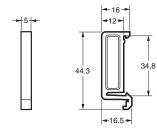




Model PFP-M

## Spacer PFP-S





Model PFP-S

Note: 1. Order the parts above in units of ten. The prices shown above are standard prices for one piece.

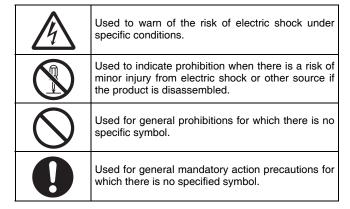
2. Rails conform to DIN standards.

#### **Safety Precautions**

#### Warning Indications

<b>⚠</b> CAUTION	Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or property damage.
Precautions for Safe Use	Supplementary comments on what to do or avoid doing, to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing to prevent failure to operate, malfunction, or undesirable effects on product performance.

#### **Meaning of Product Safety Symbols**



#### **↑** CAUTION

Do not touch or approach the product while or immediately after power is supplied. Electric shock or burn injuries may occur.



Never disassemble, modify, or repair the product or touch any of the internal parts. Minor electric shock, fire, or malfunction mayoccasionally occur.



Do not use the product in an environment where flammable or explosive gas is present.



Relay life expectancy varies considerably with output load and switching conditions. Always consider the application conditions and use within the rated load and electrical life expectancy.



#### Precautions for Safe Use

- Do not use the product in any of the following locations.
  - Places subject to intense temperature changes
  - Places subject to high humidity or condensation
  - · Places subject to intense vibration or shock
  - Places subject to considerable dust or corrosive gas, or directly exposed to sunlight
  - · Places subject to splashing water, oil, or chemicals.
- Using the product in a place where there is an intense magnetic field may result in malfunctioning.
- Do not store or use in conditions that subject the product to an external load.
- The product has an internal permanent magnet. Do not bring other products that are susceptible to the effects of magnetism close to the product, or store together with the product.
- · Securely mount the product on the rail.
- · When mounting on a rail, use the end plate.
- Never drop the product or allow it to fall.
- Make sure that foreign matter does not collect or enter into the terminal (insertion) hole or release hole. Smoking or ignition, malfunctioning, or failure may occur.
- Do not use the product at less than the minimum applicable load.
- · Never use at a load that exceeds the rated capacity.
- · Select the coil specifications correctly.
- When using an AC current coil, malfunction or damage of the connected device may result due to the occurrence of a current surge.

Be sure to use a surge absorption Unit.

- For the coil, do not use a power supply that is also connected to a solenoid or similar device.
- Do not use an inverter power supply for the coil.
- Do not apply a voltage greater than the maximum allowable voltage to the coil.
- Use wire, ferrules, and tools with the required specifications.
   Strip the wires to the specified length, and use ferrules of the specified length. Insert all the way into the terminal (insertion) hole until the wire tip contacts the back.
  - (For details, refer to the information on pages 20 and 21.)
- If directly inserting wire, always use tin-plated strand wire.
- Do not insert multiple wires into one terminal (insertion) hole.
- Do not wire terminals that are not used.
- Make sure all wiring connections are correct before supplying power.
- · Do not accidentally insert a wire into the release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force.
- After inserting the tool into the release hole, do not pry with the tool.
- · Do not insert the tool into the terminal (insertion) hole.
- Do not supply power while the tool is inserted into the release hole.
- Do not insert anything other than the specified tool into the release hole.
- When replacing the magnetic contactor/auxiliary relay, also replace the surge absorption unit at the same time.
- Wipe off any dirt from the product with a soft dry cloth. Never use thinners, benzine, alcohol, or any cleaners that contain these or other organic solvents. Deformation or discoloration may occur.
- When disposing of the product, follow local disposal procedures for industrial waste.

#### **Precautions for Correct Use**

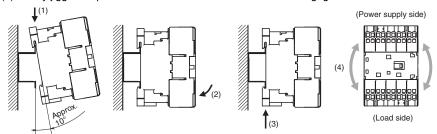
- Check the terminal polarity and wire correctly.
- If the power voltage fluctuates, ensure that enough voltage is applied to the coil
  - to enable each connector to fully operate.
- Avoid use in a location with many magnetic particles.
   Risk of failure.
- Follow the procedure in the datasheet to securely install the Unit on the main Unit.

#### Mounting, removal and wiring (connection)

#### Mounting on rail

Follow the procedures below to mount the product on the rail or remove it from the rail. [Mounting]

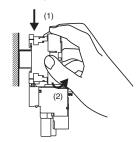
- (1) Tilt the product about 10° with respect to the rail. Engage the hook at the power supply side and gently push the product down.
- (2) Press the product against the rail.
- (3) Lift the product up to engage the hook at the load side with the rail.
- (4) Gently jiggle the product to check that the load-side hook is engaged with the rail.



When mounting on a rail, use the end plate.

#### Removing from rail

- (1) Hold the product at the top and bottom. Push it downward to release the lower hook.
- (2) Remove the product.



#### Mounting angle

Appearance		30° 30° 30° 30° 30° 30° 30° 30° 30° 30°			
Mounting direction	Standard mounting	Inclined mounting	Sideways mounting		Horizontal mounting
wounting direction		30°	Coil upwards	Coil downwards	Terminals upwards
J7KC-12-□ AC□	Х	Х	X	*1	X
J7KC-12-□ DC□	Х	X	*2	X	X

- **\*1.** Allowable voltage fluctuation range is 90% to 110%.
- \*2. Release (open) voltage is 5% to 70%.

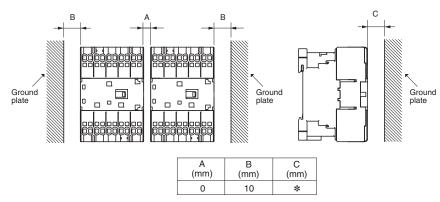
#### Installation interval

Mount with a separation of at least the dimension shown in the diagram.

When mounting products close together, comply with the standards below for the rated operational current and rated flowing current in the Characteristics table on pages 6 to 7. Increased temperature under some operating conditions (closely mounted products that are energized continuously or have a high switching frequency) may reduce the life of the coil.

Main circuit: If 9 A is exceeded, 9 A max.

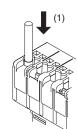
Auxiliary circuit: If 7 A is exceeded, 7 A max.



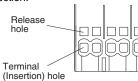
\* Set dimension C to an adequate distance for wiring. If the wires have to be bent in a small space, check the minimum bending dimensions with the wire manufacturer before connecting the wiring.

#### Wiring

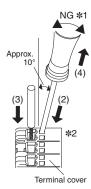
#### Wire with ferrule



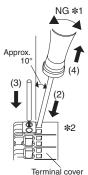
- (1) Insert straight in until the ferrule contacts the terminal block.
- (2) After inserting, pull the wire lightly and check the connection.



#### Stranded wire (direct insertion)



- Before inserting, twist the core wire of the electric wire.
- (2) Insert the recommended tool straight at about 10° angle in the direction of the arrow, into the terminal block until the end touches the release hole.
- (3) With the tool inserted in the release hole, insert straight in until the wire contacts the terminal block.
- (4) Remove the tool from the release hole.
- (5) After inserting, pull the wire lightly and check the connection.



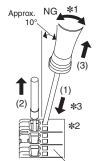
\*When using an insulation stop After inserting the insulation stop into the terminal (insertion) hole all the way to the base, perform steps (1) to (5).

The insulation stop will insert easily if you insert at a slight angle to the terminal (insertion) hole and twist as you press it in.

- \*1. Do not prying by the tool.
- \*2. If the terminal cover comes off because you pried with the tool, do not reuse it.

#### Removing wire

## Common for electric wires with ferrules and stranded wires (direct insertion)



- (1) Insert the recommended tool straight at about 10° angle in the direction of the arrow, into the terminal block until the end touches the release hole.
- (2) With the tool still inserted into the release hole, remove the wire from the terminal insertion hole.
- (3) Remove the tool from the release hole.

Terminal cover

- \*1. Do not prying by the tool.
- \*2. If the terminal cover comes off because you pried with the tool, do not reuse it.
- **\*3.** The inside of the release hole is electrically live. Electric shock may result. Do not use a screwdriver with a metal handle. Do not touch the metal part of the tool.

## Connection method and application size of the electric wire

- · If directly inserting wire, always use tin-plated strand wire.
- Crimp the ferrule for stranded wires that are not tin plated.
- · Solid wire and bar terminals cannot be used.

#### Applicable wire sizes

					Ctrond	ed wires			
	icable ire	ins		· (L = 0		Without an insulation sleeve (L = 10 mm)		(direct insertion)	
(mm²)	(AWG)	(111111)	Main circuit	Auxiliary/ control circuit	Main circuit	Auxiliary/ control circuit	Main circuit	Auxiliary/ control circuit	
0.5	20	0.5		•		•		⊙ ( <b>*</b> 3)	
0.75	18	0.75	•	•	•	•	•	•	
1	10	1	•	•	•	•	(*3)	(*3)	
1.25	16	1.5	•	•	•	•	•	•	
1.5	10	1.5		•	0			0	
2	44	2 ( <b>*</b> 2)	•	•	•	•	•		
	14	2.5	0	0	•	•			
2.5		2.5			•	•	•		

- ①: 2 wires allowed (simultaneous connection for crossover wiring terminals),
- O: 1 wire allowed, -: out of specification
- \*1. For compliance with UL or CSA standards, you must use wires of the following sizes.

Main circuit: 14AWG

Auxiliary circuit: 16 AWG to 14 AWG

- \*2. Connection is only possible using 2 mm² FE-2.08-8N-YE and FE-2.08-10N-YE ferrules with insulation sleeves manufactured by Wago.
- **\*3.** Use an insulation stop.

(Insulation stops cannot be used with ferrules.)

Do not use an insulation stop in empty terminals.

\*4. Insulation stripping length for stranded wires (direct insertion) is as follows.

 $0.5 \text{ mm}^2$  to  $1.0 \text{ mm}^2$ (20AWG to 18AWG):  $12 \text{ mm} \pm 1 \text{ mm}$   $1.25 \text{ mm}^2$  to  $2.5 \text{ mm}^2$ (16AWG to 14AWG):  $11 \text{ mm} \pm 1 \text{ mm}$  When using ferrules, refer to the table of recommended ferrules.

## Recommended Ferrules and Crimp Tools Recommended ferrules

Applical	alo wiro			Recommended ferrules								
Applical	ole wire	Ferrule		With an insu	lation sleeve			Without an insul	ation sleeve			
(mm²)	(AWG)	conductor length (mm)	Insulation stripping length (mm)	Phoenix Contact	Weid muller	Wago	Insulation stripping length (mm)	Phoenix Contact	Weid muller	Wago		
0.5	20	8	10	AI 0,5-8	H0.5/14	FE-0.5-8N-WH						
0.5	20	10	12	AI 0,5-10	H0.5/16	FE-0.5-10N-WH	10	A 0,5-10	H0.5/10	F-0.5-10		
0.75	18	8	10	AI 0,75-8	H0.75/14	FE-0.75-8N-GY						
0.75	10	10	12	AI 0,75-10	H0.75/16	FE-0.75-10N-GY	10	A 0,75-10	H0.75/10	F-0.75-10		
1/1.25	10/17	8	10	Al 1-8	H1.0/14	FE-1.0-8N-RD						
1/1.25	18/17	10	12	AI 1-10	H1.0/16	FE-1.0-10N-RD	10	A 1-10	H1.0/10	F-1.0-10		
4.05/4.5	47/40	8	10	AI 1,5-8	H1.5/14	FE-1.5-8N-BK						
1.25/1.5	17/16	10	12	AI 1,5-10	H1.5/16	FE-1.5-10N-BK	10	A 1,5-10	H1.5/10	F-1.5-10		
		8	10	ALO 5 0	H2.5/15D	FE-2.08-8N-YE						
0	14	8	10	AI 2,5-8	п2.5/15D	FE-2.5-8N-BU						
2	14	10	40	ALO 5 40		FE-2.08-10N-YE	10		H2.5/10	F-2.5-10		
		10	12	AI 2,5-10		FE-2.5-10N-BU	10		H2.5/10	F-2.5-10		
0.5	4.4	10	12				10		H2.5/10	F-2.5-10		
2.5	14	12	14									
	Recomme	ended crimp to	ol	CRIMPFOX 6 CRIMPFOX 6T-F CRIMPFOX 10S	PZ6 roto	Variocrimp4		CRIMPFOX 6 CRIMPFOX 6T-F CRIMPFOX 10S	PZ6 roto	Variocrimp4		

<sup>\*</sup>Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.

#### Ferrule processing dimensions

Dimension (after processing)		Main	circuit	Auxiliary/control circuit		
		Minimum	Maximu m	Minimum	Maximu m	
L[mm]		0	0.5	0	0.5	
D[mm]		Less th	nan 2.5	Less th	an 2.5	
Wire size	[mm <sup>2</sup> ]	0.75	2	0.5	1.5	
vviie size	[AWG]	18	14	20	16	



## Recommended Flat-blade Screwdriver (Recommended tool)

Use a flat-blade screwdriver to connect and remove wires.
Use the flat-blade screwdriver shown in the table below.

The following table shows manufacturers and models as of 2018/Dec.



Model	Manufacturer
ESD 0,40×2,5	Wera
SZS 0,4×2,5 SZF 0-0,4×2,5 *	Phoenix Contact
0.4×2.5×75 302	Wiha
AEF.2,5×75	Facom
210-719	Wago
SDIS 0.4×2.5×75	Weidmuller
9900 (-2.5×75)	Vessel

<sup>\*</sup>OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4×2,5 (manufactured by Phoenix Contact).

#### Voltage fluctuation range and voltage drop in control circuit

AC-operated (J7KC-□-AC)

Must operate voltage: 85% to 110% of rated voltage

However, this is the rated voltage for making. It can be used with no concern about contact welding even if the voltage drops to 75% of the rated voltage when the main contacts are closed.

• DC-operated (J7KC-□-DC)

 $Must\ operate\ voltage: 85\%\ to\ 110\%\ of\ rated\ voltage\ (55^{\circ}C\ ambient\ temperature),\ 80\ to\ 110\%\ (40^{\circ}C\ ambient\ temperature)$ 

However, this is the rated voltage for making. It can be used with no concern about contact welding even if the voltage drops to 75% of the rated voltage when the main contacts are closed.

#### **Connection to peripherals**

(1) AC-operated models

The control coil of AC-operated models does not contain a built-in surge absorber. Use an optional coil surge absorption unit if required. (2) DC-operated models

The control coil of DC-operated models contains a built-in surge absorber (varistor). Therefore, it is not necessary to connect an external surge absorption circuit in a normal sequence circuit. (See Table 1)

Connect the control coil terminals and various DC output devices as shown in Table 2.

Note that the control coil terminals have A1 (plus) and A2 (minus) polarities.

Table 1. Coil voltages and varistor voltages of DC-operated

Coil voltage [V]	Varistor voltage [V]	
12	- 39	
24		
48	100	
60	240	
100		
110	240	
120		
200		
210	470	
220		

Table 2. Connection of control coil terminals and peripherals for DC-operated

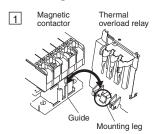
Device output form	Without protective diode		With built-in protective diode	
Connection method	A2 T	Zener diode A2	Zener diode Zener diode AA	Protective diode
Example of device	Various DC output models	NPN output photoelectric switch, proximity switch, etc.	PNP output photoelectric switch, proximity switch, etc.	Programmable controller, etc.
Precautions	Use an output transistor with a dielectric strength of at least (coil surge voltage + output power supply voltage).			The release time is extended due to the built-in protective diode.

#### Coil surge absorption characteristics

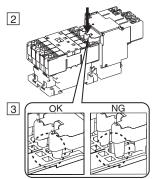
AC operated	Application	Coil surge absorption characteristics (200 VAC coil)	
Without surge absorption unit	Due to the sudden current change when the coil turns off, a steep surge voltage is generated from the coil due to the coil inductance, and this becomes noise in the peripheral electronic equipment that may cause a malfunction or circuit damage.	J7KC-□-AC  (0.1 ms/div, 1 kV/div)	
Varistor	When the surge voltage reaches or exceeds a certain level, current flows through the varistor connected in parallel with the coil, which has the effect of controlling the peak wave of the surge voltage. The varistor can be used in AC or DC circuits. The suppression surge voltage is approximately the varistor voltage.	J7KC-□-AC+J7K6C-RC-3  (2 ms/div, 200 V/div)	

DC operated	Application	Coil surge absorption characteristics (24 VDC coil)
Varistor (Built into main unit)	When the surge voltage reaches or exceeds a certain level, current flows through the varistor connected in parallel with the coil, which has the effect of controlling the peak wave of the surge voltage.	J7KC-□-DC (Built into varistor)  (0.1 ms/div, 1 kV/div)

#### Installing of the thermal overload relay

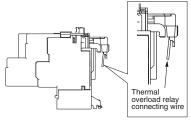


Insert the mounting legs of the thermal overload relay into the guides in the magnetic contactor, and insert the connecting wires into the terminal (insertion) holes.



Please push the position of the arrow till the last.

Please insert it until a projection hides.

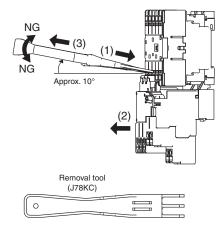


- \*The connecting wires are manufactured at an angle. Be sure not to change the shape of the connecting wires.
- \*Thermal overload relays cannot be used for auxiliary relays.

#### Removing of the thermal overload relay

Follow the procedure below to remove the thermal overload relay with the removal tool (J78KC, order separately).

- (1) Insert the removal tool into the release hole.
- (2) Pull out the thermal overload relay in the direction of the arrow while the removal tool is still inserted.
- (3) Pull out the removal tool.



#### Mounting or removing the auxiliary contact unit

To mount the unit, tilt it with respect to direction (1) and press it
against the main unit, engage hook 1 of the unit with the mounting
groove, rotate it in direction (2), and check that hook 2 is securely
engaged with the main unit.

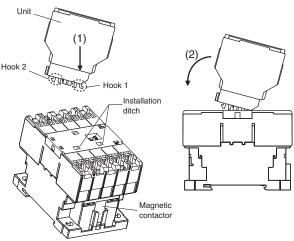


Fig 1. Mounting method

 To remove the unit, press in hook 2 of the unit between your fingers and rotate it in direction (3) to unlock and remove the unit.

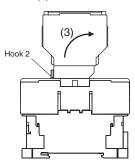


Fig 2. Removal method

#### **Mounting space**

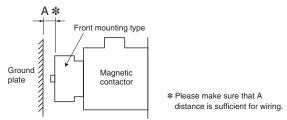
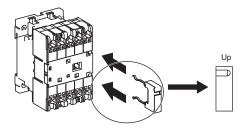


Diagram 3. Mounting space

#### Mounting the coil surge absorption unit

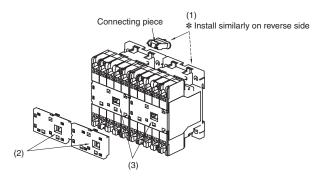
Push the unit into the mounting holes in the Magnetic contactor. The unit has a defined vertical orientation. Do not mount it upside down.



## How to assemble a reversing magnetic contactor using an interlock unit and reversing conductor

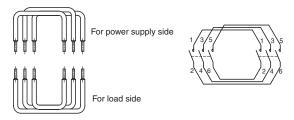
#### Interlock unit

- 1. Connect two magnetic contactors with two connecting pieces (1).
- Move the protrusion (2) on the movable part of the interlock unit to the right.
- 3. Insert them from directly above to match the protrusion (3) on the movable part of the main unit.
- After installation, slide the left and right indicator projections one at a time to confirm that they move smoothly.
- After installation, the interlock unit cannot be removed again. (The interlock unit has a structure that makes it difficult to remove once installed.)



#### Reversing conductor kit

Attach to the main circuit terminals. Conductors are available for the power supply side and load side. Be sure to install them correctly.



- \*1. To prevent a short-circuit accident when using the reversing conductor kit for rapid switching, use an electrical interlock with a delay relay to ensure a contact switching time in the two magnetic contactors of at least 15 ms.
- \*2. Provide an electrical interlock between the forward and reverse control circuits.

#### **Electrical detection**

Electricity can be detected by inserting a detector in the release hole. When inserting a detector, insert it gently while checking for electrical signals. The wire may pull out if the detector is fully inserted. After detection is complete, immediately pull out the detector and check that the wire is still firmly connected.

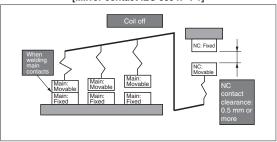
#### **Mirror Contact Mechanism**

With the combination of the main circuit and the auxiliary circuit of the main unit, welding the main contacts will result in a structure that secures a shock resistance voltage of 2.5 kV or more, or a contact interval of 0.5 mm or more, for all of the auxiliary circuit NC contacts even if the excitation of the coil is released. The main contact may turn on even if the auxiliary circuit is welded.

#### **Description of Mirror Contact Mechanism**

Impulse withstand voltage: 2.5 kV min. or contact separation (a ): 0.5 mm min.

#### [Mirror contact IEC 60947-4-1]

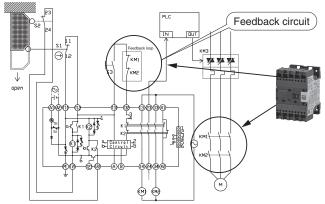


#### **Safety Function with Mirror Contacts**

The J7KC acquired EN 60947-4-1 certification for mirror contact mechanisms, enabling application in feedback circuits of safety circuits.

#### **Application Example: General Safety Circuit**

G9SA-301 (AC/DC24V) (two limit switch input channels with manual reset)



#### Recommended replacement period

Magnetic contactors and switches have a wear life according to the number of switching cycles of their main contacts and mechanical parts. The coil wiring and electronic parts in the electronic unit have a service life resulting from deterioration due to the operating environment and conditions.

You are recommended to replace magnetic contactors and switches after the rated number of switching cycles specified in the catalog, or 10 years after the date of manufacture according to the standard conditions of operation described in the "Survey on Low-voltage Equipment Update Recommendation Times" report prepared by the Japan Electrical Manufacturers' Association (JEMA).



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