

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.

Refer to *Safety Precautions* on page 18.

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-operated | AC 24 | 24 VAC |
| | AC 48 | 48 VAC |
| | AC 100 | 100 VAC |
| | AC 110 | 110 VAC |
| | AC 120 | 120 VAC |
| | 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-operated | DC 12 | 12 VDC |
| | DC 24 | 24 VDC |
| | DC 48 | 48 VDC |
| | DC 60 | 60 VDC |
| | DC 100 | 100 VDC |
| | DC 110 | 110 VDC |
| | DC 120 | 120 VDC |
| | DC 200 | 200 VDC |
| | DC 210 | 210 VDC |
| | DC 220 | 220 VDC |

J7KC Series

Ordering Information

Main unit

| Product Type | Operation | Coil rating | Auxiliary contact | Model |
|--------------------|---|-------------|-------------------|------------------|
| Magnetic contactor | AC-operated | 24 VAC | SPST-1NO | J7KC-12-10 AC24 |
| | | | SPST-1NC | J7KC-12-01 AC24 |
| | | 48 VAC | SPST-1NO | J7KC-12-10 AC48 |
| | | | SPST-1NC | J7KC-12-01 AC48 |
| | | 100 VAC | SPST-1NO | J7KC-12-10 AC100 |
| | | | SPST-1NC | J7KC-12-01 AC100 |
| | | 110 VAC | SPST-1NO | J7KC-12-10 AC110 |
| | | | SPST-1NC | J7KC-12-01 AC110 |
| | | 120 VAC | SPST-1NO | J7KC-12-10 AC120 |
| | | | SPST-1NC | J7KC-12-01 AC120 |
| | | 200 VAC | SPST-1NO | J7KC-12-10 AC200 |
| | | | SPST-1NC | J7KC-12-01 AC200 |
| | | 220 VAC | SPST-1NO | J7KC-12-10 AC220 |
| | | | SPST-1NC | J7KC-12-01 AC220 |
| | | 230 VAC | SPST-1NO | J7KC-12-10 AC230 |
| | | | 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 |
| | | 440 VAC | SPST-1NO | J7KC-12-10 AC440 |
| | | | SPST-1NC | J7KC-12-01 AC440 |
| | | 500 VAC | SPST-1NO | J7KC-12-10 AC500 |
| | | | SPST-1NC | J7KC-12-01 AC500 |
| | DC-operated (With built-in surge absorption unit) | 12 VDC | SPST-1NO | J7KC-12-10 DC12 |
| | | | SPST-1NC | J7KC-12-01 DC12 |
| | | 24 VDC | 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 |
| | | 100 VDC | SPST-1NO | J7KC-12-10 DC100 |
| | | | 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 |
| | | | SPST-1NC | J7KC-12-01 DC200 |
| | | 210 VDC | 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 |
|------------------------------|--|-------------|-------------------|-------------------|
| Reversing magnetic contactor | AC-operated | 24 VAC | SPST-1NO | J7KCR-12-10 AC24 |
| | | | SPST-1NC | J7KCR-12-01 AC24 |
| | | 48 VAC | SPST-1NO | J7KCR-12-10 AC48 |
| | | | SPST-1NC | J7KCR-12-01 AC48 |
| | | 100 VAC | SPST-1NO | J7KCR-12-10 AC100 |
| | | | SPST-1NC | J7KCR-12-01 AC100 |
| | | 110 VAC | SPST-1NO | J7KCR-12-10 AC110 |
| | | | SPST-1NC | J7KCR-12-01 AC110 |
| | | 120 VAC | SPST-1NO | J7KCR-12-10 AC120 |
| | | | SPST-1NC | J7KCR-12-01 AC120 |
| | | 200 VAC | SPST-1NO | J7KCR-12-10 AC200 |
| | | | SPST-1NC | J7KCR-12-01 AC200 |
| | | 220 VAC | SPST-1NO | J7KCR-12-10 AC220 |
| | | | SPST-1NC | J7KCR-12-01 AC220 |
| | | 230 VAC | SPST-1NO | J7KCR-12-10 AC230 |
| | | | SPST-1NC | J7KCR-12-01 AC230 |
| | | 240 VAC | SPST-1NO | J7KCR-12-10 AC240 |
| | | | 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 |
| | | | SPST-1NC | J7KCR-12-01 AC400 |
| | | 440 VAC | SPST-1NO | J7KCR-12-10 AC440 |
| | | | SPST-1NC | J7KCR-12-01 AC440 |
| | | 500 VAC | SPST-1NO | J7KCR-12-10 AC500 |
| | | | SPST-1NC | J7KCR-12-01 AC500 |
| | DC-operated (With built-in surge absorption unit) | 12 VDC | SPST-1NO | J7KCR-12-10 DC12 |
| | | | SPST-1NC | J7KCR-12-01 DC12 |
| | | 24 VDC | SPST-1NO | J7KCR-12-10 DC24 |
| | | | SPST-1NC | J7KCR-12-01 DC24 |
| | | 48 VDC | SPST-1NO | J7KCR-12-10 DC48 |
| | | | SPST-1NC | J7KCR-12-01 DC48 |
| | | 60 VDC | SPST-1NO | J7KCR-12-10 DC60 |
| | | | SPST-1NC | J7KCR-12-01 DC60 |
| | | 100 VDC | SPST-1NO | J7KCR-12-10 DC100 |
| | | | SPST-1NC | J7KCR-12-01 DC100 |
| | | 110 VDC | SPST-1NO | J7KCR-12-10 DC110 |
| | | | SPST-1NC | J7KCR-12-01 DC110 |
| | | 120 VDC | SPST-1NO | J7KCR-12-10 DC120 |
| | | | SPST-1NC | J7KCR-12-01 DC120 |
| | | 200 VDC | SPST-1NO | J7KCR-12-10 DC200 |
| | | | 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 |

J7KC Series

Options (Order Separately)

Auxiliary contact unit

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

| Type | 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 | No | J76KC-RC-1 |
| 48-125 VAC | | 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 model | Rated voltage | | Allowable voltage range | | | Must operate voltage | Must release voltage |
|-----------------|---------------|-------------|-------------------------|-------------|-------------|----------------------|----------------------|
| | 50 Hz | 60 Hz | | 50 Hz | 60 Hz | | |
| AC 24 | 24 VAC | 24-26 VAC | 85 to 110% | 21-27 VAC | 21-29 VAC | 85% max. | 20% min. |
| 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 | | 170-242 VAC | 187-264 VAC | | |
| 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 | Allowable voltage range | | Must operate voltage | Must release voltage |
|-----------------|---------------|-------------------------|-------------|----------------------|----------------------|
| DC 12 | 12 VDC | 85 to 110% | 11-14 VDC | 85% max. | 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 | | 85-110 VDC | | |
| DC 110 | 110 VDC | | 94-121 VDC | | |
| 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 consumption | Making (VA) | 22 (200 V) | 25 (220 V) |
| | Holding (VA) | 4.5 (200 V) | 4.5 (220 V) |
| Power loss (W) | | 1.2 (200 V) | 1.3 (220 V) |
| Must operate voltage (V) | | 122 to 135 | 128 to 138 |
| Must release voltage (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°C cold condition.

DC operated

| | | |
|--------------------------|-------------|------------|
| Coil power consumption | Making (W) | 2.4 (24 V) |
| | Holding (W) | 2.2 (24 V) |
| Time constant (ms) | Holding | 20 |
| Must operate voltage (V) | | 10 to 11 |
| Must release voltage (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

| | | | | | | | | | | | | | | |
|---------------------------|---|--|-------------------------------------|-----------------------------|---|---------------------|--------------|------------|------------|------|------------|------|--|--|
| Main circuit rating | Rating based on IEC 60947-4-1 | AC-1 (Resistive load) | Voltage range (V) | | AC200-240 AC | | AC380-440 AC | | | | | | | |
| | | | Rated operational current (A) | | 15 | | 15 | | | | | | | |
| | | AC-3 (3-phase cage motor) | Voltage range (V) | | 200-240 AC | | 380-440 AC | | 500-550 AC | | 600-690 AC | | | |
| | | | Rated capacity (kW) | | 3 | | 5.5 | | 5.5 | | 4 | | | |
| | | | Rated operational current (A) | | 12 | | 12 | | 9 | | 5 | | | |
| | | AC-4 (3-phase cage motor) | Voltage range (V) | | 200-240 AC | | 380-440 AC | | 500-550 AC | | 600-690 AC | | | |
| | | | Rated capacity (kW) | | 3 | | 5.5 | | 5.5 | | 4 | | | |
| | | | Rated operational current (A) | | 12 | | 12 | | 9 | | 5 | | | |
| | | DC-1 (Resistive load L/R ≤ 1 ms) | Voltage range (V) | | 24 DC | | 48 DC | | 110 DC | | 220 DC | | | |
| | | | Rated operational current (A) | Number of serial contacts 1 | | 12 | | 12 | | 3 | | 0.7 | | |
| | | | | Number of serial contacts 2 | | 12 | | 12 | | 9 | | 4 | | |
| | | | | Number of serial contacts 3 | | 12 | | 12 | | 12 | | 12 | | |
| | | DC-3, DC-5 (DC motor load L/R ≤ 15 ms) | Voltage range (V) | | 24 DC | | 48 DC | | 110 DC | | 220 DC | | | |
| | | | Rated operational current (A) | Number of serial contacts 1 | | 2 | | 1.5 | | 1 | | 0.1 | | |
| | | | | Number of serial contacts 2 | | 10 | | 3 | | 0.85 | | 0.35 | | |
| | | | | Number of serial contacts 3 | | 12 | | 6 | | 1.7 | | 0.7 | | |
| | | Conventional free air thermal current (rated flowing current) (A) | | | | 15 | | | | | | | | |
| | Rating based on UL 60947-4-1, CSA C22.2 | 3-phase motor | Voltage range (V) | | 200 AC | | 220-240 AC | | 440-480 AC | | 550-600 AC | | | |
| | | | Rated capacity (HP) | | 3 | | 3 | | 5 | | 5 | | | |
| | | | Rated operational current (A) | | 11 | | 9.6 | | 7.6 | | 6.1 | | | |
| | | | Rated current (A) | | 15 | | | | | | | | | |
| | | Single-phase motor | Voltage range (V) | | 110-120 AC | | 200 AC | | | | 220-240 AC | | | |
| | | | Rated capacity (HP) | | 3/4 | | 1-1/2 | | | | 2 | | | |
| | | | Rated operational current (A) | | 13.8 | | 11.5 | | | | 12 | | | |
| | | | Rated current (A) | | 15 | | | | | | | | | |
| | | FUSE | | | | 30A (Class K5, RK5) | | | | | | | | |
| | Rating based on JIS C 8201-4-1 | AC-1 (resistive load) | Voltage range (V) | | 200-240 AC | | | 380-440 AC | | | | | | |
| | | | Rated operational current (A) | | 15 | | | 15 | | | | | | |
| | | AC-3 (3-phase cage motor) | Voltage range (V) | | 200-240 AC | | | 380-440 AC | | | 500-550 AC | | | |
| | | | Rated capacity (kW) | | 2.2 | | | 5.5 | | | 5.5 | | | |
| | | | Rated operational current (A) | | 12 | | | 12 | | | 9 | | | |
| | | DC-1 (Resistive load L/R ≤ 1 ms) | Voltage range (V) | | 24 DC | | 48 DC | | 110 DC | | 220 DC | | | |
| | | | Rated operational current (A) | Number of serial contacts 1 | | 12 | | 12 | | 3 | | 0.7 | | |
| | | | | Number of serial contacts 2 | | 12 | | 12 | | 9 | | 4 | | |
| | | | | Number of serial contacts 3 | | 12 | | 12 | | 12 | | 12 | | |
| | | DC-3, DC-5 (DC motor load L/R ≤ 15 ms) | Voltage range (V) | | 24 DC | | 48 DC | | 110 DC | | 220 DC | | | |
| | | | Rated operational current (A) | Number of serial contacts 1 | | 2 | | 1.5 | | 1 | | 0.1 | | |
| | | | | Number of serial contacts 2 | | 10 | | 3 | | 0.85 | | 0.35 | | |
| | | | | Number of serial contacts 3 | | 12 | | 6 | | 1.7 | | 0.7 | | |
| | | Conventional free air thermal current (rated flowing current) (A) | | | | 15 | | | | | | | | |
| | Minimum operate voltage/current (reference value) | | | | 24 VDC 10 mA | | | | | | | | | |
| | Electrical/ mechanical endurance | Voltage range (V) | | 220 AC | | | | 440 AC | | | | | | |
| | | Rated operational current (A) | | 12 | | | | 12 | | | | | | |
| | | Contact closed current (A) | | 144 | | | | 144 | | | | | | |
| | | Breaking current (A) | | 120 | | | | 120 | | | | | | |
| | | Switching frequency (times per hour) | | 1800 | | | | 1800 | | | | | | |
| | | Endurance (10,000 operations min.) | | Mechanical | | 1000 | | | | 1000 | | | | |
| | | | | Electrical (AC3) | | 100 * | | | | | | | | |
| | Contact resistance (reference value) | | | | 10 mΩ max. (6 VDC, 1 mA, voltage drop method) | | | | | | | | | |

* 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.

| | | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|------------|------------|------------|--------|------------------------|--------|--------|--------|--|--------|--|
| Auxiliary circuit rating | Rating based on IEC 60947-5-1/ JIS C 8201-5-1 | Voltage range (V) | | 100-120 AC | 200-240 AC | 380-440 AC | 500-600 AC | 24 DC | 48 DC | 110 DC | 220 DC | | | | |
| | | Rated operational current (A) | AC-15 (coil load) | | | | | | DC-13 (coil load) | | | | | | |
| | | | 3 | 3 | 1 | 0.5 | 2 | 1 | 0.3 | 0.2 | | | | | |
| | | | AC-12 (resistive load) | | | | | | DC-12 (resistive load) | | | | | | |
| | | | 6 | 6 | 6 | 3 | 3 | 2 | 1.5 | 0.5 | | | | | |
| | | Contact closed and breaking current (A) | 30 | 30 | 10 | 5 | 30 | 30 | 10 | 5 | | | | | |
| | Conventional free air thermal current (rated flowing current) (A) | 10 | | | | | | | | | | | | | |
| | Rating based on UL 508 | Rated carry current (A) | | 10 | | | | | | | 2.5 | | | | |
| | | Voltage range (V) | | 120 AC | | 240 AC | | 480 AC | | 600 AC | | 125 DC | | 250 DC | |
| | | Contact closed current (A) | | 60 | | 30 | | 15 | | 12 | | 0.55 | | 0.27 | |
| | | Breaking current (A) | | 6 | | 3 | | 1.5 | | 1.2 | | 0.55 | | 0.27 | |
| | | Rating code | | A 600 | | | | | | | Q 300 | | | | |
| | Minimum operate voltage/current (reference value) | | | 3 mA at 5 VDC | | | | | | | | | | | |
| | Electrical/ mechanical endurance | Switching frequency (times per hour) | | 1800 | | | | | | | | | | | |
| | | Mechanical (10,000 cycles min.) | | 1000 | | | | | | | | | | | |
| | | Electrical (10,000 cycles min.) | AC-15 | 220 V | 50 | | | | | | | | | | |
| | | | | 440 V | 50 | | | | | | | | | | |
| | | | AC-12 | 220 V | 25 | | | | | | | | | | |
| | | | | 440 V | 25 | | | | | | | | | | |
| | | | DC-13 | 220 V | 15 | | | | | | | | | | |
| | DC-12 | | 220 V | 50 | | | | | | | | | | | |
| | Contact resistance (reference value) | | | 50 mΩ max. (6 VDC, 1 mA, voltage drop method) | | | | | | | | | | | |
| Rated insulation voltage | | | 690 VAC | | | | | | | | | | | | |
| Rated impulse dielectric strength | | | 6 kV | | | | | | | | | | | | |
| Rated frequency | | | 50/60 Hz | | | | | | | | | | | | |
| Vibration resistance | | | Vibration: 10 to 55 Hz, acceleration: 15 m/s ² | | | | | | | | | | | | |
| Shock resistance | | | Shock value 50 m/s ² | | | | | | | | | | | | |
| Contact form | | | Double break form (main circuit: single contacts, auxiliary circuit: bifurcated contacts) | | | | | | | | | | | | |
| Contact material | | | Ag alloy | | | | | | | | | | | | |
| Mirror contact | | | Available * | | | | | | | | | | | | |
| Degree of protection | | | IP20 (IEC60529) | | | | | | | | | | | | |
| Operating temperature | | | -10 to +55°C (however, daily average shall not exceed 35°C) | | | | | | | | | | | | |
| Ambient storage temperature | | | -40 to +65°C (no condensation or icing) | | | | | | | | | | | | |
| Relative humidity | | | 45% to 85% RH (no condensation or icing) | | | | | | | | | | | | |
| Altitude | | | 2000 m max. | | | | | | | | | | | | |
| Weight | | | 160 g (J7KC-□-AC)/190 g (J7KC-□-DC)/400 g (J7KCR-□-AC)/460 g (J7KCR-□-DC) | | | | | | | | | | | | |
| Applicable Standards | | Safety standard | | EN 60947-4-1(IEC 60947-4-1), UL 60947-4-1, CSA 22.2 No.60947-4-1, CCC GB/T14048.4 | | | | | | | | | | | |

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

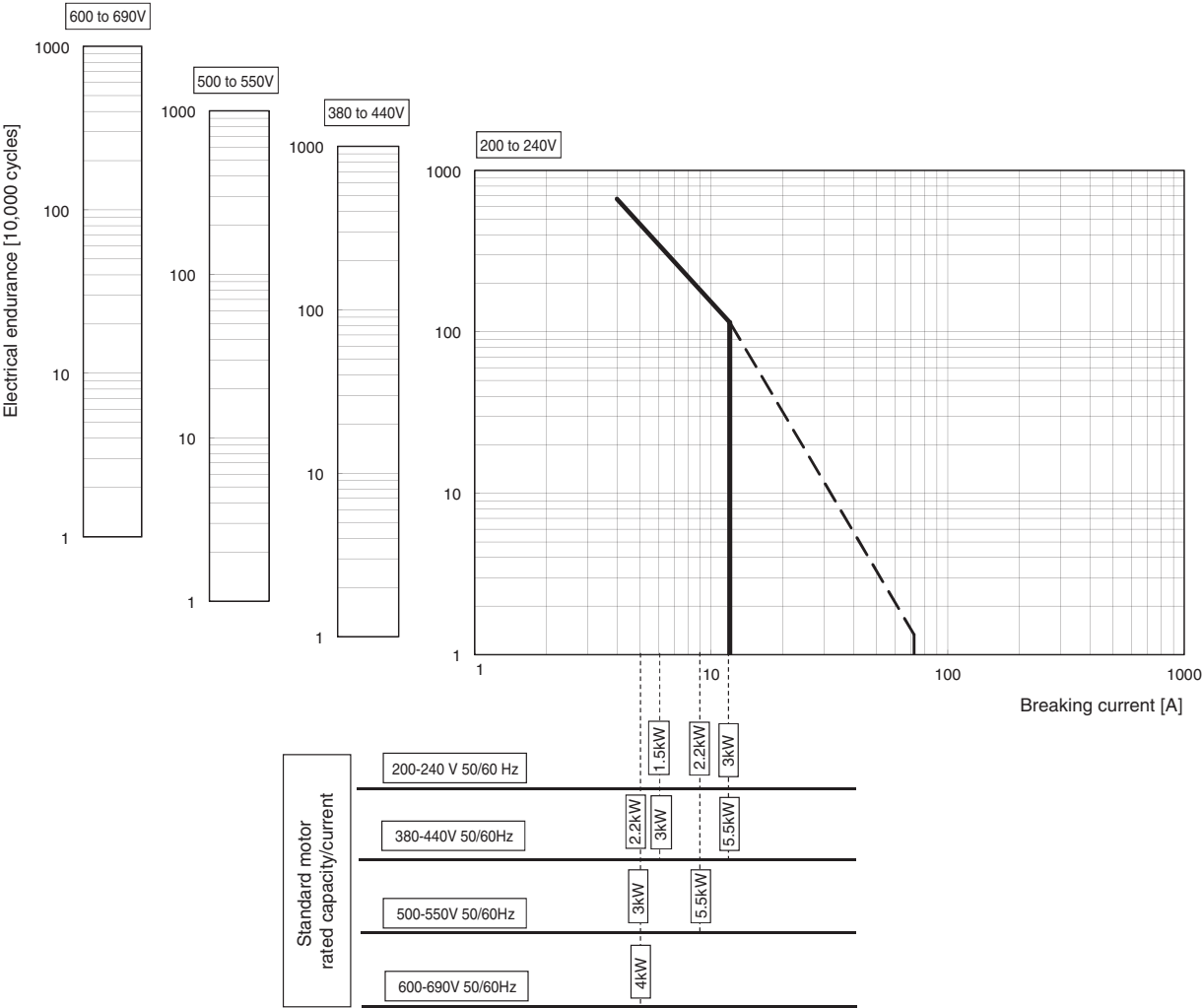
With the combination of the main circuit and the auxiliary circuit of the main unit, welding the main contacts will result in a structure that secures a shock resistance voltage of 2.5 kV or more, or a contact interval of 0.5 mm or more, for all of the auxiliary circuit NC contacts even if the excitation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

J7KC Series

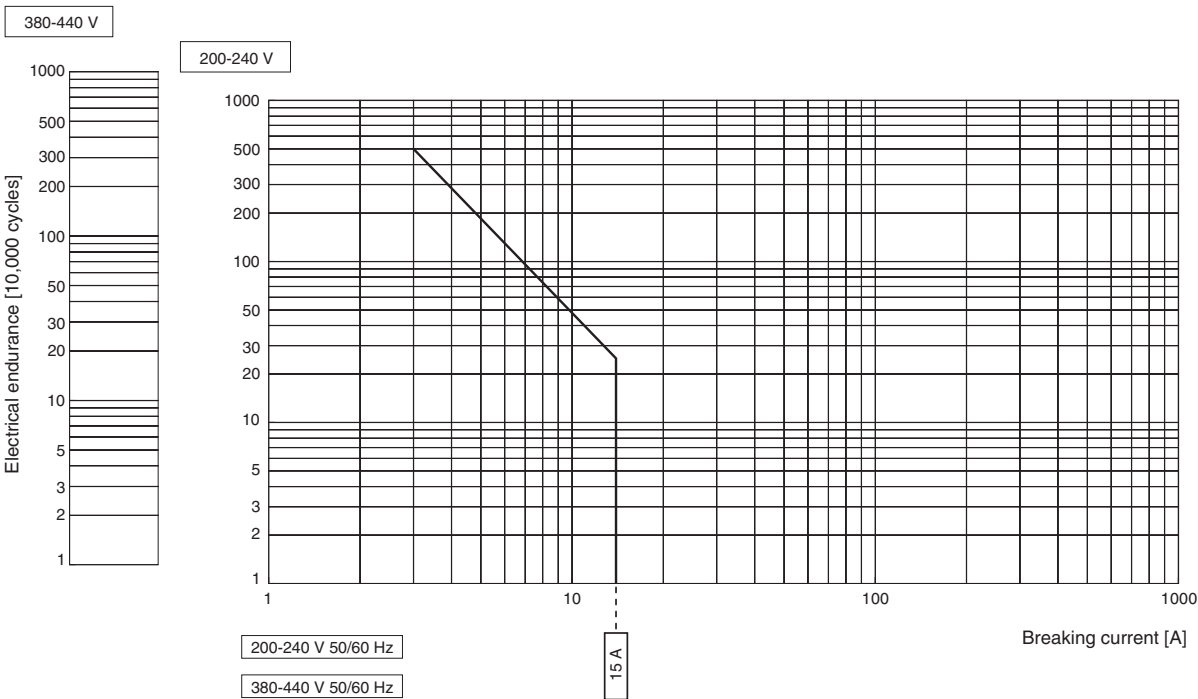
Engineering Data

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)

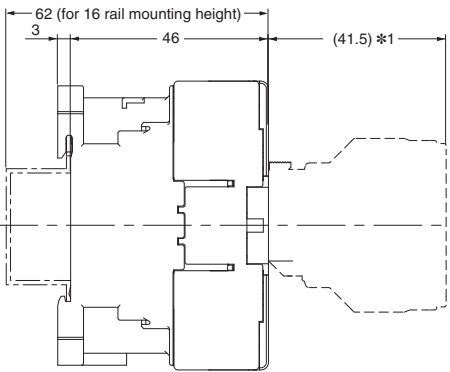
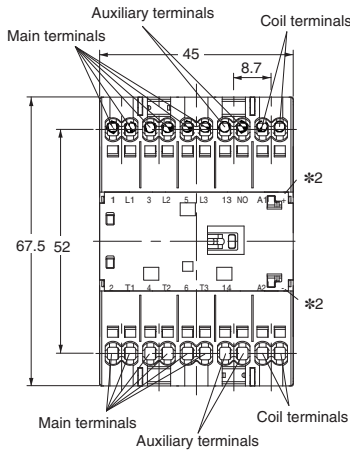


Dimensions

(Unit: mm)

Main unit

Magnetic contactor
J7KC

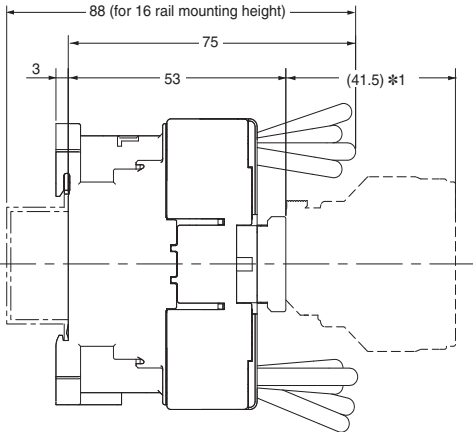
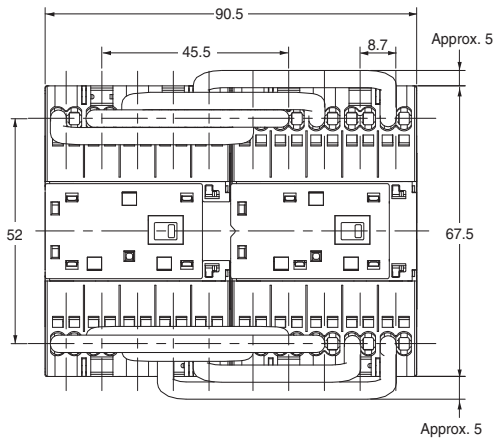


*1. When auxiliary contact unit (J73KC) is mounted

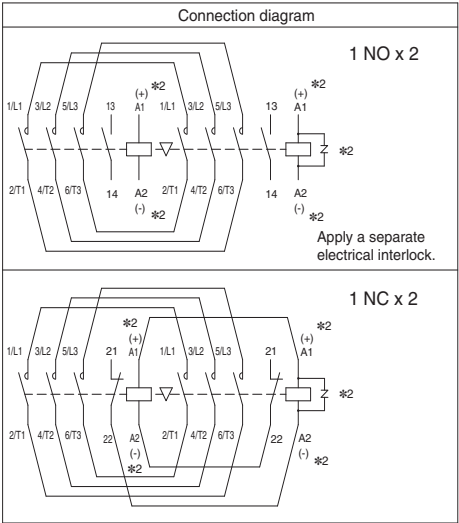
| Auxiliary contact | Contact form |
|-------------------|--------------|
| 1NO (1a) | |
| 1NC (1b) | |

*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

J7KC Series

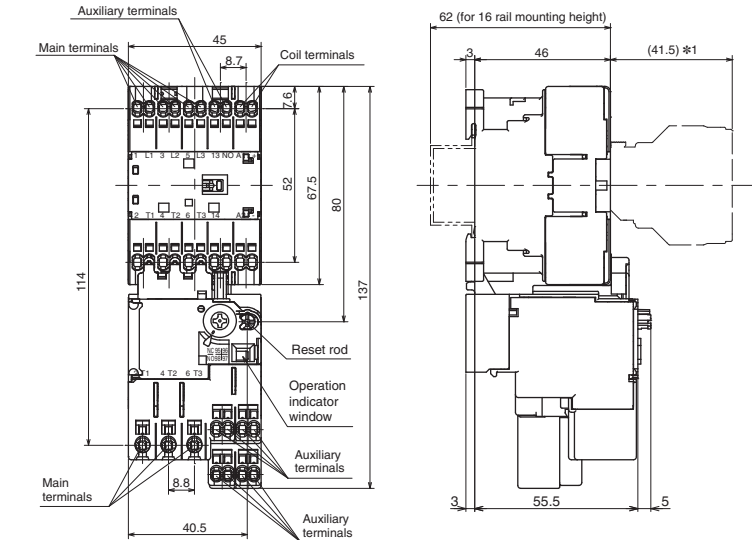
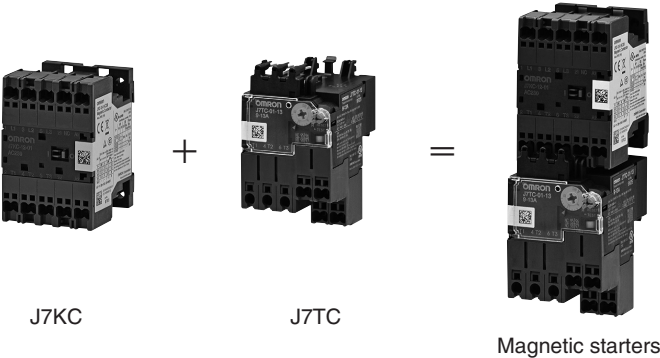
Related Products (Order Separately)

Thermal overload relay

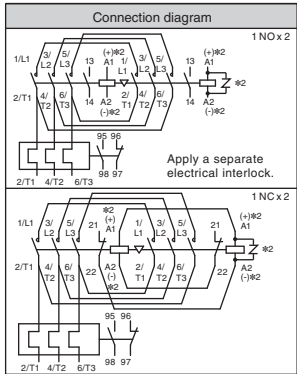
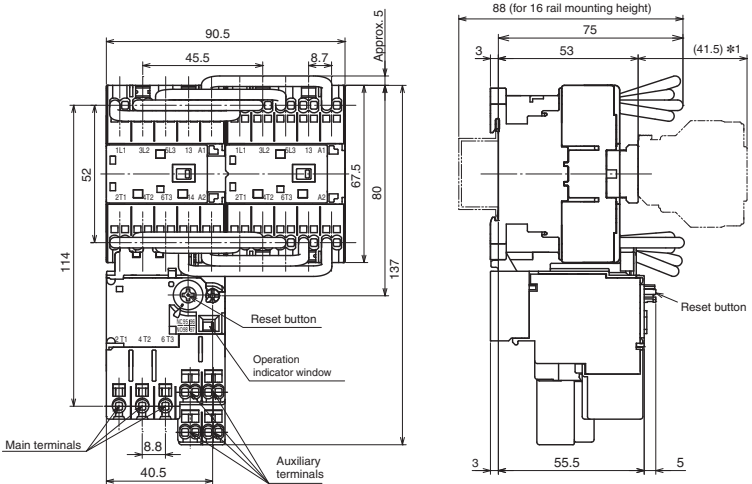
J7TC

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).



| Auxiliary contact | Connection diagram |
|-------------------|--------------------|
| 1NO (1a) | |
| 1NC (1b) | |



*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 starters | | | Coordination type | | | | |
|-----------------------|------------------------|---------------------------------|--------------------------------------|---|---------------|--------------------------------------|--|
| Magnetic contactor | Thermal overload relay | | Type 1 | | | Type 2 | |
| | | 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) |
| J7KC-12 | J7TC-01 | 0.34-0.52 | 1 | Breaker for wiring protection (MCCB) Icu 240 V 5 kA 440 V 2.5 kA | 3 | 1 | 2 |
| | | 0.48-0.72 | | | | | |
| | | 0.64-0.96 | | | 5 | | 4 |
| | | 0.8-1.2 | | | | | |
| | | 0.95-1.45 | | | 10 | | |
| | | 1.1-1.65 | | | | | |
| | | 1.4-2.1 | | | | | |
| | | 1.7-2.6 | | | | | |
| | | 2.2-3.4 | | | | | |
| | | 2.8-4.2 | | | 20 | | 16 |
| | | 4-6 | | | | | |
| | | 5-7.5 | | | | | |
| | | 6-9 | | | | | |
| | | 7-10.5 | | | | | |
| | | 9-13 | | | 30 | | |

Conditional rated short circuit current Iq (240 V)

| Magnetic starters | | | Coordination type | | | | |
|-----------------------|------------------------|---------------------------------|---------------------------------------|---|---------------|---------------------------------------|--|
| Magnetic contactor | Thermal overload relay | | Type 1 | | | Type 2 | |
| | | Setting current range [A] | Short-circuit current "Iq" [kA] | Breaker EN60947-2 | Rating [A] | Short-circuit current "Iq" [kA] | Fuse rating [A] (IEC 60269-1 gG and gM) |
| J7KC-12 | J7TC-01 | 0.34-0.52 | 25 | Breaker for wiring protection (MCCB) Icu 240 V 5 kA 440 V 2.5 kA | 3 | 50 | 2 |
| | | 0.48-0.72 | | | 5 | | 4 |
| | | 0.64-0.96 | | | | | |
| | | 0.8-1.2 | | | | | |
| | | 0.95-1.45 | | | 10 | | 16 |
| | | 1.1-1.65 | | | | | |
| | | 1.4-2.1 | | | | | |
| | | 1.7-2.6 | | | | | |
| | | 2.2-3.4 | | | | | |
| | | 2.8-4.2 | | | | | |
| | | 4-6 | | | | | |
| | | 5-7.5 | | | | | |
| | | 6-9 | | | | | |
| | | 7-10.5 | | | | | |
| | | 9-13 | | Breaker for wiring protection (MCCB) Icu 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 $I_q = 50$ kA (200 VAC, 400 VAC)

| 3-phase motor capacity and full load current | | | | Manual motor starter | | | Short-circuit current I _q [kA] | Magnetic contactor | |
|--|-------------|---------------|-------------|----------------------|-------------|---------------------------|--|--------------------|------------------------------------|
| 200 VAC | | 400 VAC | | | | | | | |
| Capacity [kW] | Current [A] | Capacity [kW] | Current [A] | Model | | Current setting range [A] | | Model | Rated operational current AC-3 [A] |
| | | | | J7MC-3P-E16 | J7MC-3R-E16 | 0.1-0.16 | 50 | J7KC-12 | 12 |
| 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 | | | |
| 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 | 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 | | | |

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 $I_q = 50$ kA (200 VAC, 400 VAC)

| 3-phase motor capacity and full load current | | | | Manual motor starter | | | Short-circuit current Iq [kA] | Magnetic contactor | |
|--|----------------|------------------|----------------|----------------------|-------------|------------------------------|-------------------------------------|--------------------|----|
| 200 VAC | | 400 VAC | | | | | | | |
| Capacity [kW] | Current [A] | Capacity [kW] | Current [A] | Model | | Current setting range [A] | | | |
| | | | | J7MC-3P-E16 | J7MC-3R-E16 | 0.1-0.16 | 50 | J7KC-12 | 12 |
| 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 | | | |
| 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 | 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 | | | |

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 | | | Magnetic contactor | Short-circuit current rating SCCR [kA] |
|---------------------|-------------------------------|---------------------|-------------------------------|----------------------|-------------|---------------------------|--------------------|--|
| Rated capacity [Hp] | Rated operational current [A] | Rated capacity [Hp] | Rated operational current [A] | Model | | Current setting range [A] | Model | |
| * | 0.16 | * | 0.16 | J7MC-3P-E16 | J7MC-3R-E16 | 0.1-0.16 | J7KC-12 | 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 | | 65 kA |
| 1/2 | 2.2 | 1 | 2.1 | J7MC-3P-2E5 | J7MC-3R-2E5 | 1.6-2.5 | | 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 |

* An area where horsepower is not defined in UL60947-4-1 (SCCR is acquired in this area)

J7KC Series

Options (Order Separately)

Auxiliary contact unit

J73KC

Ratings

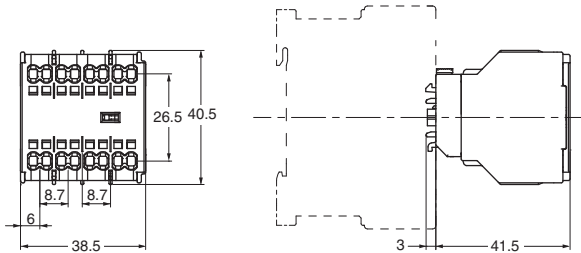


| Conventional free air thermal current (rated flowing current) [A] | Contact closed and Breaking current [A] | AC | | | DC | | | Minimum operate voltage/ current |
|--|---|-----------------------------|----------------------------------|------------------------------|-----------------------------|----------------------------------|------------------------------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

Connection diagram

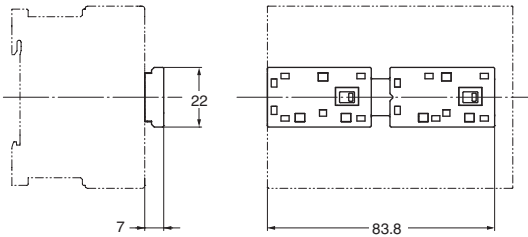
| Model | Contact configuration | | | Model | Contact configuration | | |
|-------------|--------------------------|--|--|-------------|--------------------------|--|--|
| J73KC-AM-40 | 4PST-4NO (4NO) | | | J73KC-AM-04 | 4PST-4NC (4NC) | | |
| J73KC-AM-31 | 4PST-3NO 1NC (3NO1NC) | | | J73KC-AM-20 | 2PST-2NO (2NO) | | |
| J73KC-AM-22 | 4PST-2NO 2NC (2NO2NC) | | | J73KC-AM-11 | 2PST-1NO 1NC (1NO1NC) | | |
| J73KC-AM-13 | 4PST-1NO 3NC (1NO3NC) | | | J73KC-AM-02 | 2PST-2NC (2NC) | | |

Dimensions



Interlock unit

J74KC

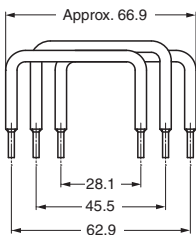


Reversing conductor kit

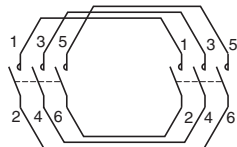
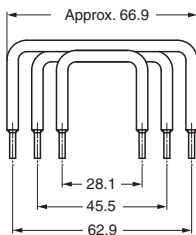
J75KC-WKR-A



For power supply side



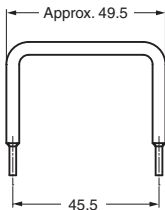
For load side



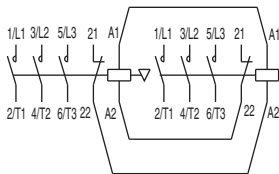
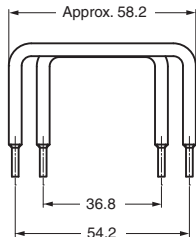
J75KC-WKR-B



For power supply side



For load side



Coil surge absorption unit

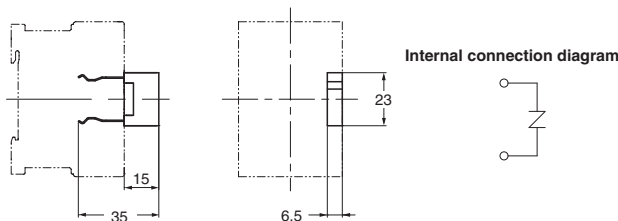
Ratings

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

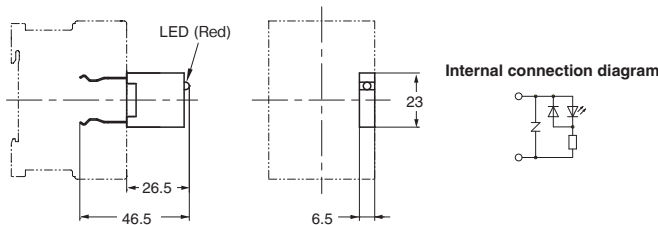
* The DC operated (J7KC-□-DC) has a varistor built into the main unit.

Dimensions

J76KC-RC



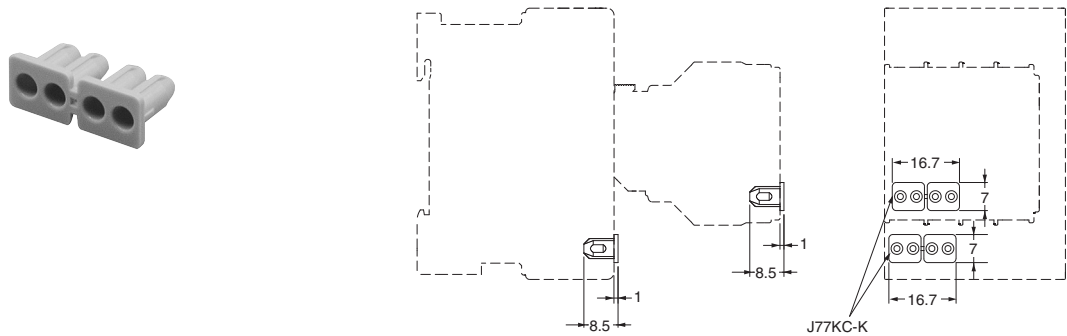
J76KC-RC-N



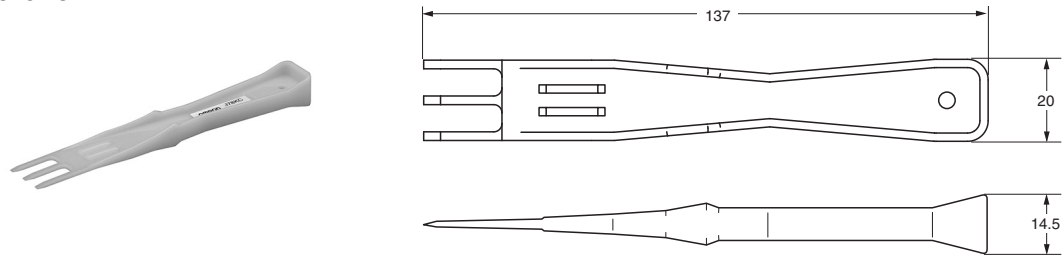
J7KC Series

Insulation stop J77KC-K

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



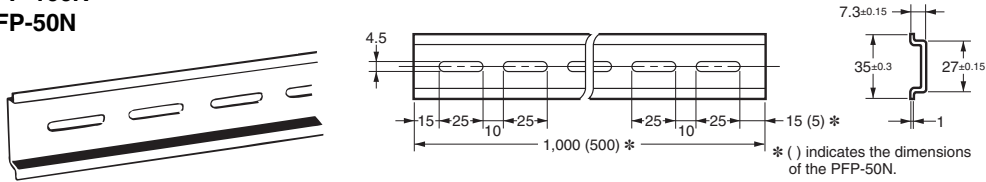
Tools for removal J78KC



DIN Rails (Order Separately)

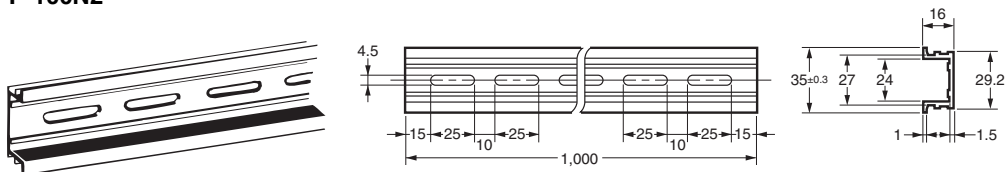
(Unit: mm)

Mounting Rail
PFP-100N
PFP-50N



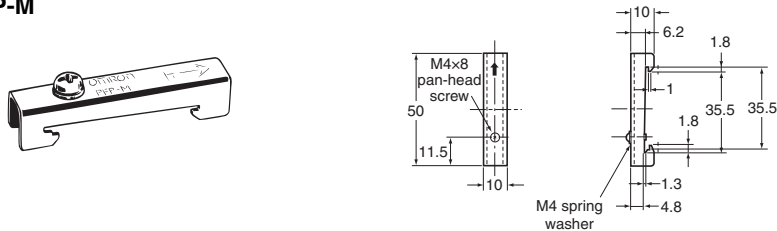
| Model |
|----------|
| PFP-100N |
| PFP-50N |

Mounting Rail
PFP-100N2



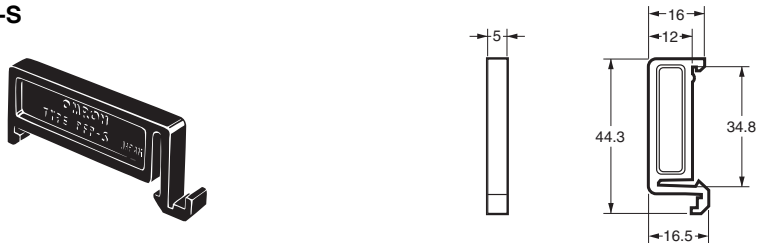
| Model |
|-----------|
| PFP-100N2 |

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

| | |
|--|--|
|  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

| | |
|---|---|
|  | Used to warn of the risk of electric shock under specific conditions. |
|  | Used to indicate prohibition when there is a risk of minor injury from electric shock or other source if the product is disassembled. |
|  | Used for general prohibitions for which there is no specific symbol. |
|  | Used for general mandatory action precautions for which there is no specified symbol. |

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 may occasionally 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, benzene, 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.

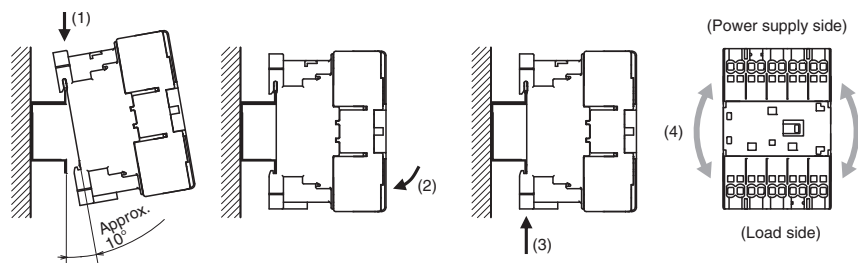
Mounting, removal and wiring (connection)

Mounting on rail

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

[Mounting]

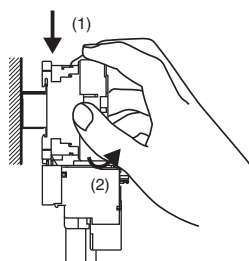
- (1) Tilt the product about 10° with respect to the rail. Engage the hook at the power supply side and gently push the product down.
- (2) Press the product against the rail.
- (3) Lift the product up to engage the hook at the load side with the rail.
- (4) Gently jiggle the product to check that the 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 | | | | | |
|--------------------|-------------------|-------------------|-------------------|----------------|---------------------|
| Mounting direction | Standard mounting | Inclined mounting | Sideways mounting | | Horizontal mounting |
| | --- | 30° | Coil upwards | Coil downwards | Terminals upwards |
| J7KC-12-□ AC□ | X | X | X | *1 | X |
| J7KC-12-□ DC□ | X | X | *2 | X | X |

*1. Allowable voltage fluctuation range is 90% to 110%.

*2. Release (open) voltage is 5% to 70%.

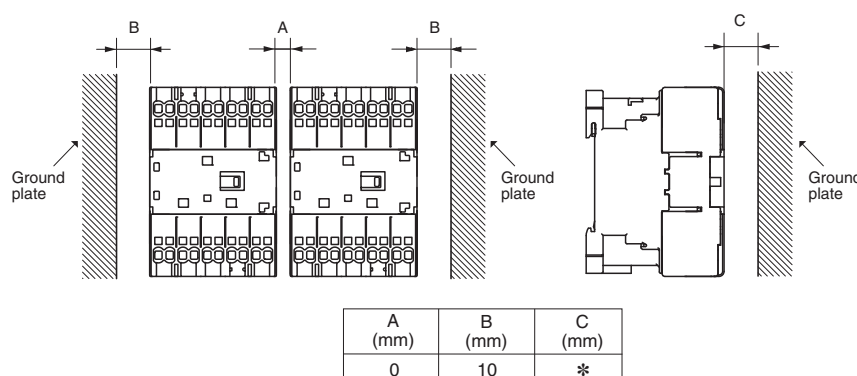
Installation interval

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.

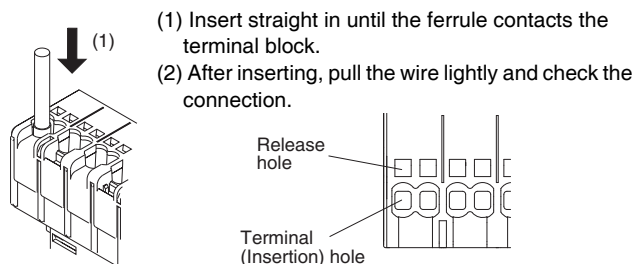
Auxiliary circuit: If 7 A is exceeded, 7 A max.



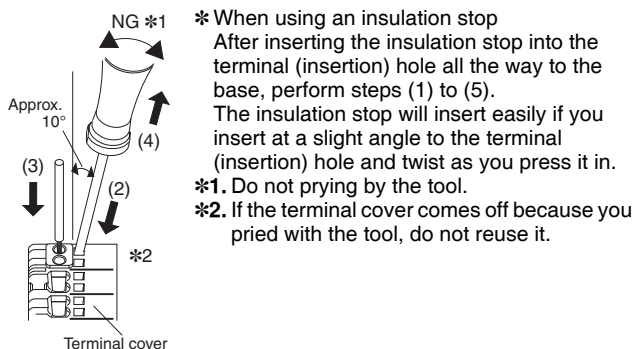
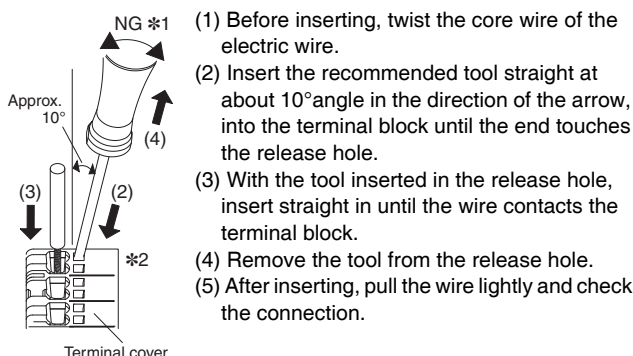
* Set dimension C to an adequate distance for wiring. If the wires have to be bent in a small space, check the minimum bending dimensions with the wire manufacturer before connecting the wiring.

Wiring

Wire with ferrule

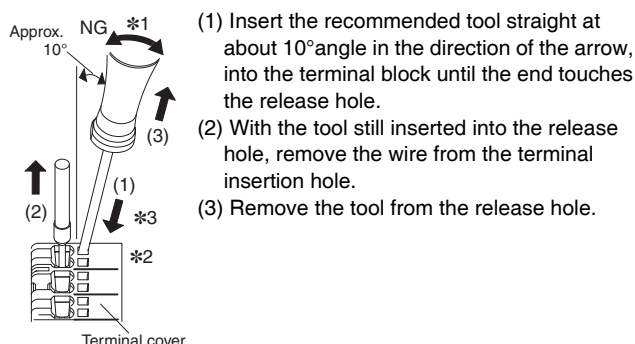


Stranded wire (direct insertion)



Removing wire

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



*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

| Applicable wire | | Ferrules used | | | | | Stranded wires (direct insertion) *4 | |
|-----------------|-------|---------------|--|--------------|---|--------------|--|--------------|
| | | Size (mm²) | With an insulation sleeve (L = 8 mm, 10 mm) | | Without an insulation sleeve (L = 10 mm) | | | |
| (mm²) | (AWG) | | | Main circuit | Auxiliary/ control circuit | Main circuit | Auxiliary/ control circuit | Main circuit |
| 0.5 | 20 | 0.5 | --- | ⊙ | --- | ⊙ | --- | ⊙ (*3) |
| 0.75 | 18 | 0.75 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ |
| 1 | | 1 | ⊙ | ⊙ | ⊙ | ⊙ | (*3) | (*3) |
| 1.25 | 16 | 1.5 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ |
| 1.5 | | | | | | | | |
| 2 | 14 | 2 (*2) | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | --- |
| 2.5 | | 2.5 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | --- |

⊙: 2 wires allowed (simultaneous connection for crossover wiring terminals),
○: 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 mm² to 1.0 mm²(20AWG to 18AWG): 12 mm ± 1 mm

1.25 mm² to 2.5 mm²(16AWG to 14AWG): 11 mm ± 1 mm

When using ferrules, refer to the table of recommended ferrules.

Recommended Ferrules and Crimp Tools

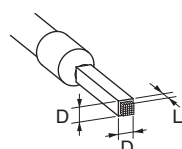
Recommended ferrules

| Applicable wire | | Ferrule conductor length (mm) | Recommended ferrules | | | | | | | |
|------------------------|-------|-------------------------------|----------------------------------|---|-------------|----------------|----------------------------------|---|-------------|-------------|
| | | | With an insulation sleeve | | | | Without an insulation sleeve | | | |
| (mm²) | (AWG) | | Insulation stripping length (mm) | Phoenix Contact | Weid muller | Wago | Insulation stripping length (mm) | Phoenix Contact | Weid muller | Wago |
| 0.5 | 20 | 8 | 10 | Al 0,5-8 | H0.5/14 | FE-0.5-8N-WH | --- | --- | --- | --- |
| | | 10 | 12 | Al 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 | Al 0,75-8 | H0.75/14 | FE-0.75-8N-GY | --- | --- | --- | --- |
| | | 10 | 12 | Al 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 | 18/17 | 8 | 10 | Al 1-8 | H1.0/14 | FE-1.0-8N-RD | --- | --- | --- | --- |
| | | 10 | 12 | Al 1-10 | H1.0/16 | FE-1.0-10N-RD | 10 | A 1-10 | H1.0/10 | F-1.0-10 |
| 1.25/1.5 | 17/16 | 8 | 10 | Al 1,5-8 | H1.5/14 | FE-1.5-8N-BK | --- | --- | --- | --- |
| | | 10 | 12 | Al 1,5-10 | H1.5/16 | FE-1.5-10N-BK | 10 | A 1,5-10 | H1.5/10 | F-1.5-10 |
| 2 | 14 | 8 | 10 | Al 2,5-8 | H2.5/15D | FE-2.08-8N-YE | --- | --- | --- | --- |
| | | | | | | FE-2.5-8N-BU | | | | |
| | | 10 | 12 | Al 2,5-10 | --- | FE-2.08-10N-YE | 10 | --- | H2.5/10 | F-2.5-10 |
| | | | | | | FE-2.5-10N-BU | | | | |
| 2.5 | 14 | 10 | 12 | --- | --- | --- | 10 | --- | H2.5/10 | F-2.5-10 |
| | | 12 | 14 | --- | --- | --- | --- | --- | --- | --- |
| Recommended crimp tool | | | | CRIMPFOX 6 CRIMPFOX 6T-F CRIMPFOX 10S | PZ6 roto | Variocrimp4 | | CRIMPFOX 6 CRIMPFOX 6T-F CRIMPFOX 10S | PZ6 roto | Variocrimp4 |

* 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 | Maximum | Minimum | Maximum |
| L[mm] | | 0 | 0.5 | 0 | 0.5 |
| D[mm] | | Less than 2.5 | | Less than 2.5 | |
| Wire size | [mm ²] | 0.75 | 2 | 0.5 | 1.5 |
| | [AWG] | 18 | 14 | 20 | 16 |

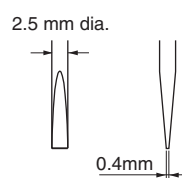


Recommended Flat-blade Screwdriver (Recommended tool)

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 0,40x2,5 | Wera |
| SZS 0,4x2,5 SZF 0-0,4x2,5 * | Phoenix Contact |
| 0.4x2.5x75 302 | Wiha |
| AEF.2,5x75 | Facom |
| 210-719 | Wago |
| SDIS 0.4x2.5x75 | Weidmuller |
| 9900 (-2.5x75) | Vessel |

* OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4x2,5 (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°C ambient temperature), 80 to 110% (40°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 | |
| 60 | 100 |
| 100 | |
| 110 | |
| 120 | |
| 200 | 240 |
| 210 | |
| 220 | |
| | |
| | 470 |
| | |

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

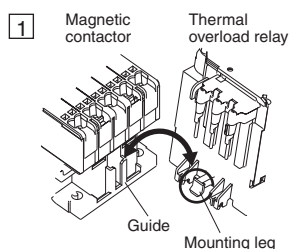
| Device output form | Without protective diode | With built-in protective diode | | |
|--------------------|---|---|---|--|
| Connection method | | | | |
| Example of device | Various DC output models | NPN output photoelectric switch, proximity switch, etc. | PNP output photoelectric switch, proximity 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

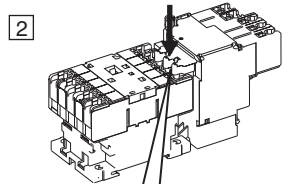
| AC operated | Application | Coil surge absorption characteristics (200 VAC coil) |
|-------------------------------|--|--|
| Without surge absorption unit | Due to the sudden current change when the coil turns off, a steep surge voltage is generated from the coil due to the coil inductance, and this becomes noise in the peripheral electronic equipment that may cause a malfunction or circuit damage. | J7KC-□-AC |
| | 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 |

| 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) |

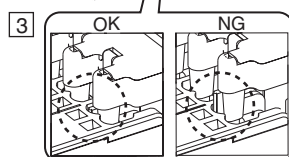
Installing of the thermal overload relay



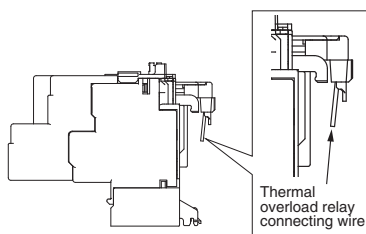
Insert the mounting legs of the thermal overload relay into the guides in the magnetic contactor, and insert the connecting wires into the terminal (insertion) holes.



Please push the position of the arrow till the last.



Please insert it until a projection hides.

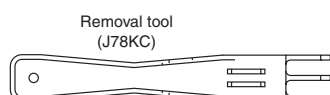
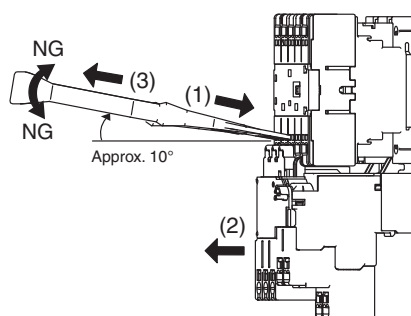


- * The connecting wires are manufactured at an angle. Be sure not to change the shape of the connecting wires.
- * Thermal overload relays cannot be used for auxiliary relays.

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.

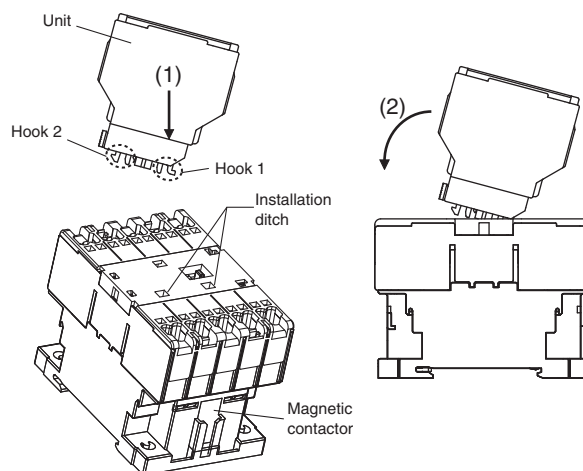


Fig 1. Mounting method

- 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.

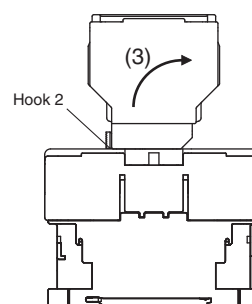


Fig 2. Removal method

Mounting space

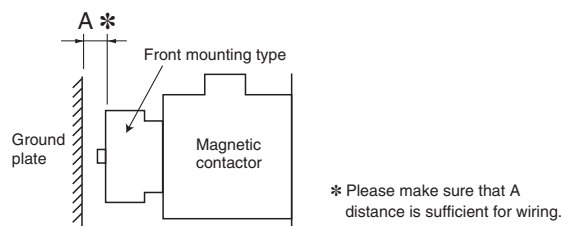
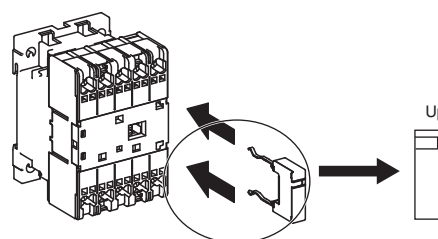


Diagram 3. Mounting space

Mounting the coil surge absorption unit

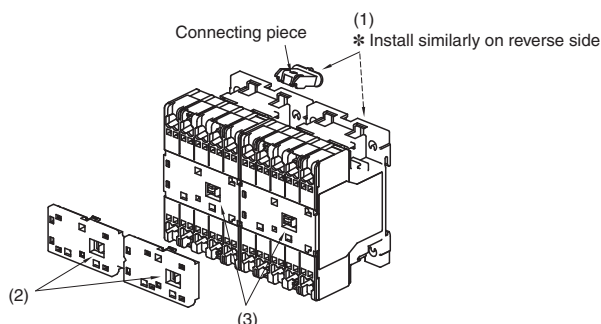
Push the unit into the mounting holes in the Magnetic contactor. The unit has a defined vertical orientation. Do not mount it upside down.



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

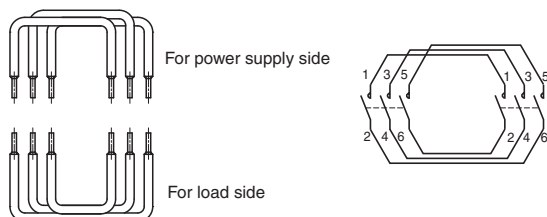
Interlock unit

1. Connect two magnetic contactors with two connecting pieces (1).
2. 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.
4. After installation, slide the left and right indicator projections one at a time to confirm that they move smoothly.
5. 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.

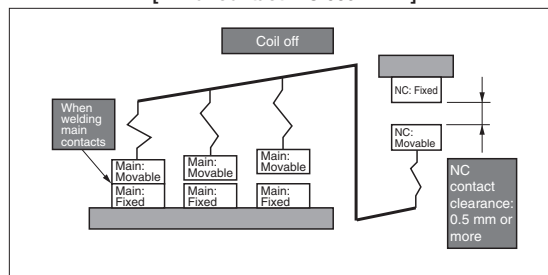
Mirror Contact Mechanism

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]

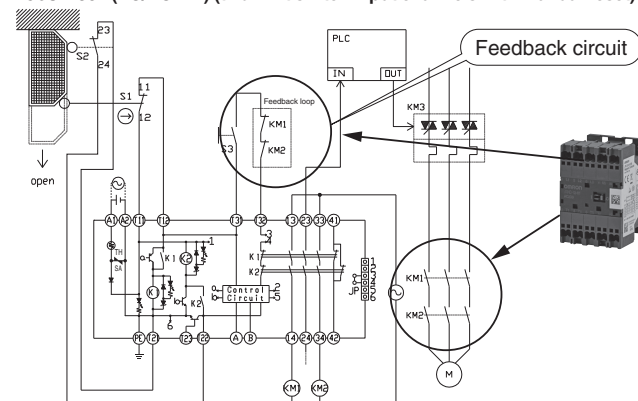


Safety Function with Mirror Contacts

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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OMRON Corporation Industrial Automation Company
Kyoto, JAPAN

Contact: www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V.

Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC

2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.

No. 438A Alexandra Road # 05-05/08 (Lobby 2),
Alexandra Technopark,
Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.

Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

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