

# Auxiliary Relay (Contactor Relay) J7KCA Series

Same shape as J7KC magnetic contactors Ideal for standardizing panel design

- Push-In Plus wiring Technology saves Wiring and Maintenance time
- World's smallest size (\*1)
- High Contact Reliability (Min. 5 VDC, 3 mA) by Bifurcated contacts
- Combination with Auxiliary contact units to configure a wide variety of contact variations
- Coil surge absorber unit installed as standard (\*2)
- Auxiliary Relay with mechanically linked contacts according to EN 60947-5-1 in safety applications, combined with AUX contact blocks, whose switching function is controlled by a safety-related system
- Certified as compliant with the main safety standards

\*1. According to OMRON investigation, as of August 2019. For push-in models.

\*2. 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 10.

## Model Number Structure

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

J7KCA-                    
(1) (2)

### (1) Contact configuration

| Code | Contact configuration |
|------|-----------------------|
| 40   | 4PST-4NO              |
| 31   | 4PST-3NO 1NC          |
| 22   | 4PST-2NO 2NC          |

### (2) 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      |

# J7KCA Series

## Ordering Information

### Main unit

#### Contact relay

| Coil rating | Contact configuration | Model          |
|-------------|-----------------------|----------------|
| 24 VAC      | 4PST-4NO              | J7KCA-40 AC24  |
|             | 4PST-3NO 1NC          | J7KCA-31 AC24  |
|             | 4PST-2NO 2NC          | J7KCA-22 AC24  |
| 48 VAC      | 4PST-4NO              | J7KCA-40 AC48  |
|             | 4PST-3NO 1NC          | J7KCA-31 AC48  |
|             | 4PST-2NO 2NC          | J7KCA-22 AC48  |
| 100 VAC     | 4PST-4NO              | J7KCA-40 AC100 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC100 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC100 |
| 110 VAC     | 4PST-4NO              | J7KCA-40 AC110 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC110 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC110 |
| 120 VAC     | 4PST-4NO              | J7KCA-40 AC120 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC120 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC120 |
| 200 VAC     | 4PST-4NO              | J7KCA-40 AC200 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC200 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC200 |
| 220 VAC     | 4PST-4NO              | J7KCA-40 AC220 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC220 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC220 |
| 230 VAC     | 4PST-4NO              | J7KCA-40 AC230 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC230 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC230 |
| 240 VAC     | 4PST-4NO              | J7KCA-40 AC240 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC240 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC240 |
| 380 VAC     | 4PST-4NO              | J7KCA-40 AC380 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC380 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC380 |
| 400 VAC     | 4PST-4NO              | J7KCA-40 AC400 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC400 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC400 |
| 440 VAC     | 4PST-4NO              | J7KCA-40 AC440 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC440 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC440 |
| 500 VAC     | 4PST-4NO              | J7KCA-40 AC500 |
|             | 4PST-3NO 1NC          | J7KCA-31 AC500 |
|             | 4PST-2NO 2NC          | J7KCA-22 AC500 |
| 12 VDC      | 4PST-4NO              | J7KCA-40 DC12  |
|             | 4PST-3NO 1NC          | J7KCA-31 DC12  |
|             | 4PST-2NO 2NC          | J7KCA-22 DC12  |
| 24 VDC      | 4PST-4NO              | J7KCA-40 DC24  |
|             | 4PST-3NO 1NC          | J7KCA-31 DC24  |
|             | 4PST-2NO 2NC          | J7KCA-22 DC24  |
| 48 VDC      | 4PST-4NO              | J7KCA-40 DC48  |
|             | 4PST-3NO 1NC          | J7KCA-31 DC48  |
|             | 4PST-2NO 2NC          | J7KCA-22 DC48  |
| 60 VDC      | 4PST-4NO              | J7KCA-40 DC60  |
|             | 4PST-3NO 1NC          | J7KCA-31 DC60  |
|             | 4PST-2NO 2NC          | J7KCA-22 DC60  |
| 100 VDC     | 4PST-4NO              | J7KCA-40 DC100 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC100 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC100 |

| Coil rating | Contact configuration | Model          |
|-------------|-----------------------|----------------|
| 110 VDC     | 4PST-4NO              | J7KCA-40 DC110 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC110 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC110 |
| 120 VDC     | 4PST-4NO              | J7KCA-40 DC120 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC120 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC120 |
| 200 VDC     | 4PST-4NO              | J7KCA-40 DC200 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC200 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC200 |
| 210 VDC     | 4PST-4NO              | J7KCA-40 DC210 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC210 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC210 |
| 220 VDC     | 4PST-4NO              | J7KCA-40 DC220 |
|             | 4PST-3NO 1NC          | J7KCA-31 DC220 |
|             | 4PST-2NO 2NC          | J7KCA-22 DC220 |

### Optional Unit (Order Separately)

#### Auxiliary contact unit

| Number of poles | Contact configuration | Model       |
|-----------------|-----------------------|-------------|
| 2               | 2PST-2NO              | J73KC-AM-20 |
|                 | 2PST-1NO 1NC          | J73KC-AM-11 |
|                 | 2PST-2NC              | J73KC-AM-02 |
| 4               | 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 |

#### Coil surge absorption unit

| Adopted Coil voltage type | LED indicator | Model        |
|---------------------------|---------------|--------------|
| 24-48 VAC                 | No            | J76KC-RC-1   |
| 48-125 VAC                |               | J76KC-RC-2   |
| 100-125 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<br>(30 pcs./bag)  |

## J7KCA Series

### Ratings/Specifications

#### 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) | 2.4 (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.

## Characteristics

|                                                      |                                                                       |                                            |                        |                                                                                           |               |               |               |        |                        |        |        |  |
|------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------|------------------------|-------------------------------------------------------------------------------------------|---------------|---------------|---------------|--------|------------------------|--------|--------|--|
| Auxiliary<br>circuit<br>ratings                      | Ratings based on<br>IEC 60947-5-1/<br>JIS C 8201-5-1                  | Voltage range (V)                          |                        | 100-120<br>AC                                                                             | 200-240<br>AC | 380-440<br>AC | 500-600<br>AC | 24 DC  | 48 DC                  | 110 DC | 220 DC |  |
|                                                      |                                                                       | Rated operational<br>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<br>breaking current (A) | 30                     | 30                                                                                        | 10            | 5             | 30            | 30     | 10                     | 5      |        |  |
|                                                      | Conventional free air<br>thermal current<br>(rated carry current) (A) | 10                                         |                        |                                                                                           |               |               |               |        |                        |        |        |  |
|                                                      | Ratings based on<br>UL 508                                            | Rated carry current (A)                    |                        | 10                                                                                        |               |               |               |        | 2.5                    |        |        |  |
|                                                      |                                                                       | Voltage range                              |                        | 120 AC                                                                                    | 240 AC        | 480 AC        | 600 AC        | 125 DC |                        | 250 DC |        |  |
|                                                      |                                                                       | Contact closed<br>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<br>(reference value) |                                                                       | 5 VDC, 3 mA                                |                        |                                                                                           |               |               |               |        |                        |        |        |  |
| 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 <sup>2</sup>                                 |               |               |               |        |                        |        |        |  |
| Shock resistance                                     |                                                                       |                                            |                        | Shock value 50 m/s <sup>2</sup>                                                           |               |               |               |        |                        |        |        |  |
| Electrical/<br>mechanical<br>endurance               | Switching frequency (times per hour)                                  |                                            |                        | 1800                                                                                      |               |               |               |        |                        |        |        |  |
|                                                      | Mechanical (10,000 operations min.)                                   |                                            |                        | 1000                                                                                      |               |               |               |        |                        |        |        |  |
|                                                      | Electrical<br>(10,000 operations<br>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. (1 mA at 6 VDC using the voltage drop method)                                  |               |               |               |        |                        |        |        |  |
| Contact structure                                    |                                                                       |                                            |                        | Double-break                                                                              |               |               |               |        |                        |        |        |  |
| Contact material                                     |                                                                       |                                            |                        | Ag alloy                                                                                  |               |               |               |        |                        |        |        |  |
| Linked 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 (J7KCA-□-AC)/190 g (J7KCA-□-DC)                                                     |               |               |               |        |                        |        |        |  |
| Applicable<br>standards                              | Safety standard                                                       |                                            |                        | EN 60947-5-1 (IEC 60947-5-1), UL 60947-4-1, CSA 22.2 No.60947-4-1, CCC GB/T 14048.5, UKCA |               |               |               |        |                        |        |        |  |

\* A linked contact is a mechanism found mainly in auxiliary relays. (Applicable models: J73KCA-31, J73KCA-22)

With the combination of the auxiliary circuit of the main unit, welding the NO (or NC) 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 the NC (or NO) contacts even if the excitation of the coil is released. No linked contact structure is created with the combined usage of the auxiliary contact unit (J73KC-AM).

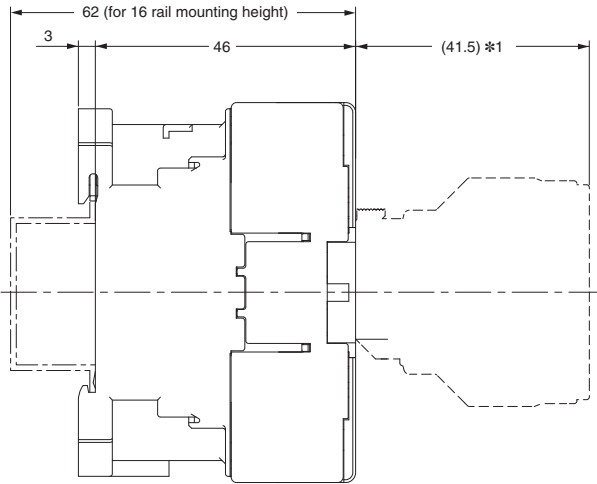
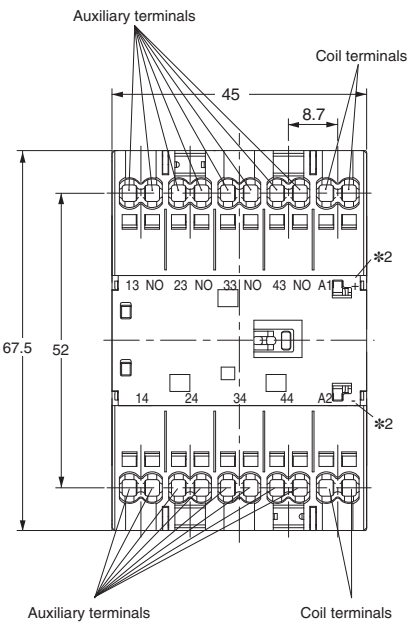
J7KCA Series

Dimensions

(Unit: mm)

Main unit

J7KCA



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

| Auxiliary contact | Contact configuration |
|-------------------|-----------------------|
| 4NO<br>(4a)       |                       |
| 3NO1NC<br>(3a1b)  |                       |
| 2NO2NC<br>(2a2b)  |                       |

\*2. For DC operated

## Option (Order Separately)

## Auxiliary contact unit

J73KC

## Ratings



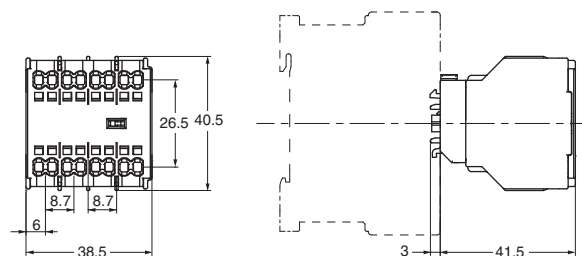
| Conventional<br>free air thermal<br>current<br>(rated flowing<br>current)<br>[A] | Contact<br>closed and<br>Breaking<br>current<br>[A] | AC                          |                                  |                              | DC                          |                                  |                              | Minimum<br>operate<br>voltage/<br>current |
|----------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------|----------------------------------|------------------------------|-----------------------------|----------------------------------|------------------------------|-------------------------------------------|
|                                                                                  |                                                     | Operating<br>voltage<br>[V] | Rated operational<br>current [A] |                              | Operating<br>voltage<br>[V] | Rated operational<br>current [A] |                              |                                           |
|                                                                                  |                                                     |                             | Coil load<br>(AC-15)             | Resistive<br>load<br>(AC-12) |                             | Coil load<br>(DC-13)             | Resistive<br>load<br>(DC-12) |                                           |
| 10                                                                               | 30                                                  | 100 to 120 AC               | 3                                | 6                            | 24 DC                       | 2                                | 3                            | 5 VDC,<br>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)        |  |

**Note:** Refer to page 16 for linked contact relationships when combined with auxiliary relays.

## Dimensions



Coil surge absorption unit

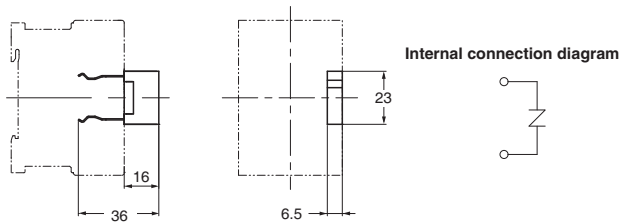
Ratings

| Model        | Surge absorber | Varistor voltage | LED indicator | Applicable model |             | Control circuit voltage |                   |
|--------------|----------------|------------------|---------------|------------------|-------------|-------------------------|-------------------|
|              |                |                  |               | AC operated      | DC operated | AC                      | DC                |
| J76KC-RC-1   | Varistor       | 100 V            | ---           | J7KCA-□-AC       | ---         | 24-48 VAC               | Not required<br>* |
| J76KC-RC-2   |                | 240 V            |               |                  |             | 48-125 VAC              |                   |
| J76KC-RC-3   |                | 470 V            |               |                  |             | 100-250 VAC             |                   |
| J76KC-RC-N-1 |                | 100 V            | 24-48 VAC     |                  |             |                         |                   |
| J76KC-RC-N-2 |                | 240 V            | 48-125 VAC    |                  |             |                         |                   |
|              |                |                  | LED (Red)     |                  |             |                         |                   |

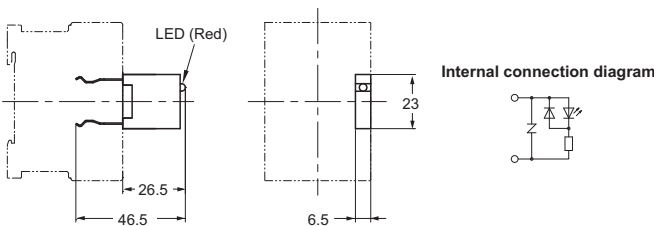
\* The DC operate (J7KCA-□-DC) has a varistor built into the main unit.

Dimensions

J76KC-RC

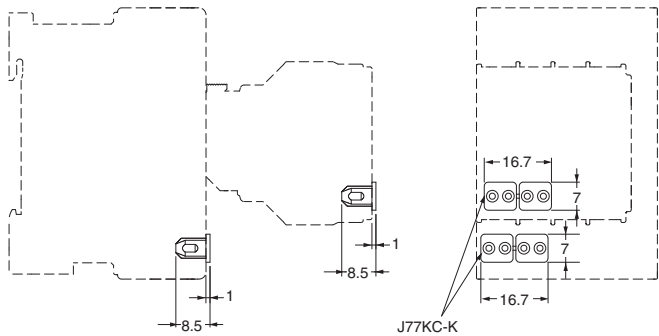


J76KC-RC-N



Insulation stop  
J77KC-K

Guide for insertion into terminal (insertion) holes to stabilize holding of 1mm<sup>2</sup> or less stranded wire (direct insertion).

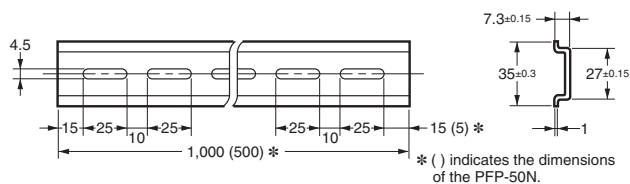
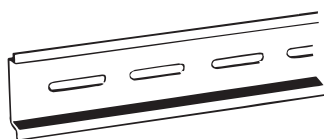




## DIN Rails (Order Separately)

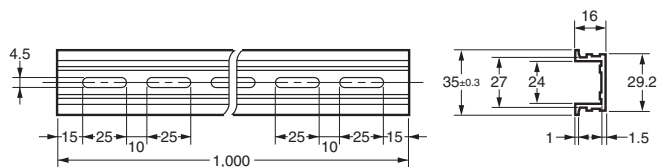
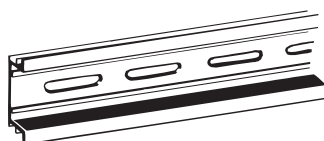
(Unit: mm)

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



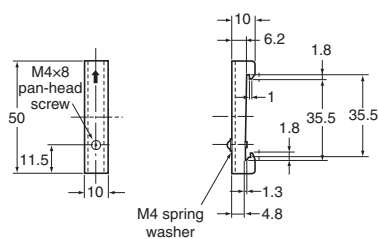
| Model    |
|----------|
| PFP-100N |
| PFP-50N  |

### Mounting Rail PFP-100N2



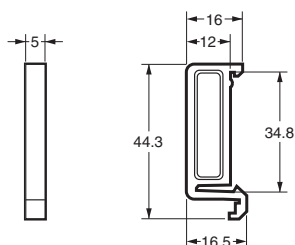
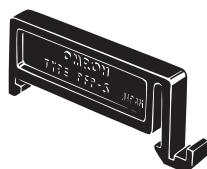
| Model     |
|-----------|
| PFP-100N2 |

### 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>CAUTION</b> | Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or property damage.         |
| <b>Precautions for Safe Use</b>                                                                  | Supplementary comments on what to do or avoid doing, to use the product safely.                                                                |
| <b>Precautions for Correct Use</b>                                                               | 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 12 and 13.)
- 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 contactor 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.

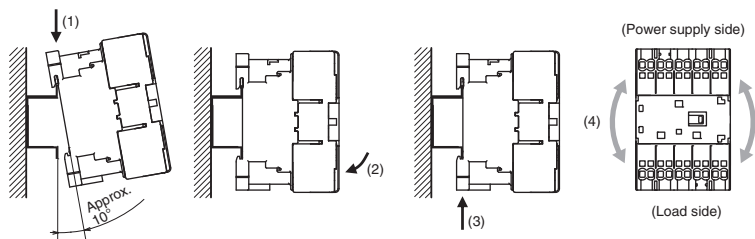
## Mounting, removal and wiring (connection)

### How to mount on rail

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

[Mounting]

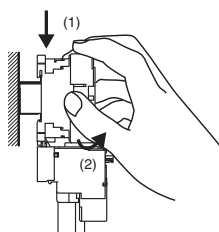
- (1) Tilt the product about 10° with respect to the rail. Engage the hook at the power supply side and gently push the product down.
- (2) Press the product against the rail.
- (3) Lift the product up to engage the hook at the load side with the rail.
- (4) Gently jiggle the product to check that the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



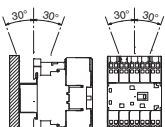
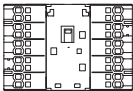
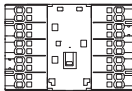
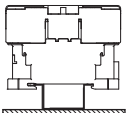
When mounting on a rail, use the end plate.

### 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                                                                    | Coil downwards                                                                        | Horizontal mounting                                                                   |
|                    | ---                                                                                 | 30°                                                                                 | Coil upwards                                                                         | Coil downwards                                                                        | Terminals upwards                                                                     |
| J7KCA-□-AC□        | X                                                                                   | X                                                                                   | X                                                                                    | *1                                                                                    | X                                                                                     |
| J7KCA-□-DC□        | X                                                                                   | X                                                                                   | *2                                                                                   | X                                                                                     | X                                                                                     |

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

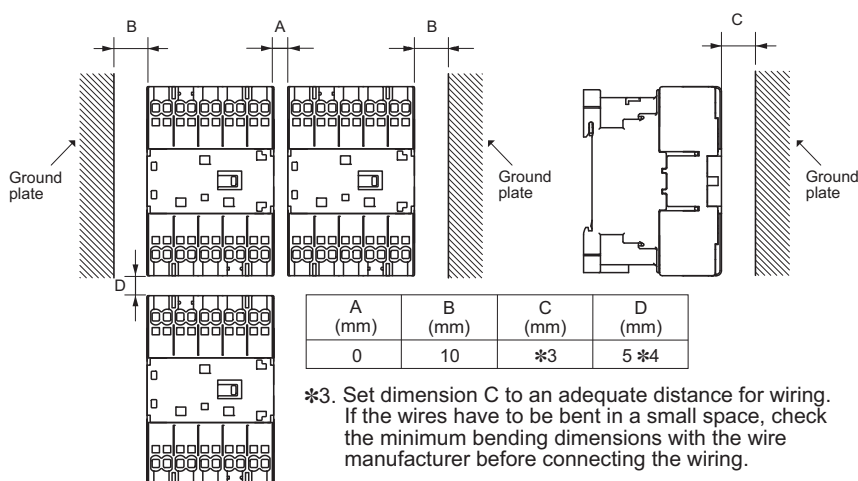
\*2. Release (open) voltage is 5% to 70%.

### 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 5. 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.

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

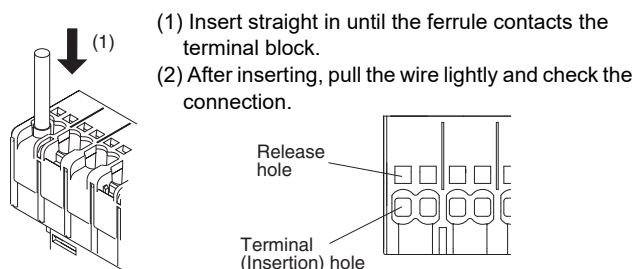


\*3. Set dimension C to an adequate distance for wiring. If the wires have to be bent in a small space, check the minimum bending dimensions with the wire manufacturer before connecting the wiring.

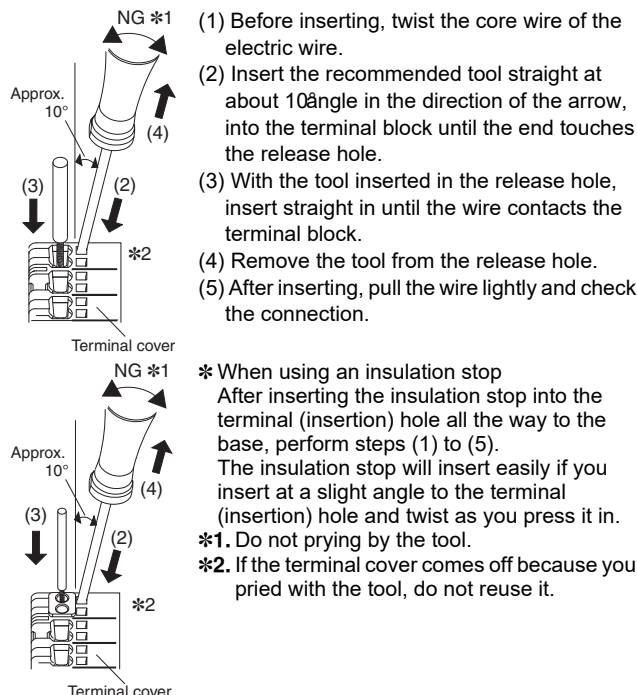
\*4. When installing vertically, use spacing of at least the D dimension to make installation/removal easier and to ensure sufficient insulation distance. When using connecting wires between the upper and lower contactor relays, also check with the wire manufacturer for the minimum bending dimensions of each wire before wiring to prevent excessive wire tension at the terminals.

## Wiring

### Wire with ferrule

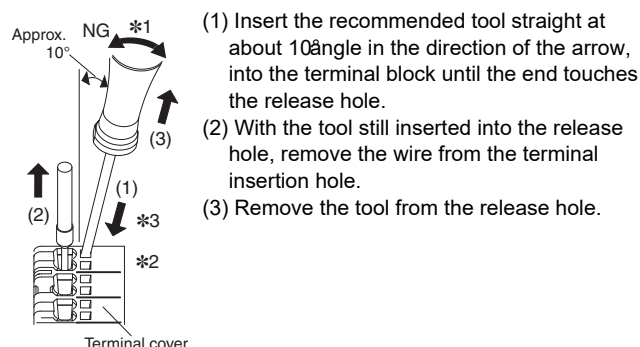


### Stranded wire (direct insertion)



## 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    |       | Size (mm <sup>2</sup> ) | Ferrule                                     |                                          | Stranded wire (direct insertion) *4 |
|--------------------|-------|-------------------------|---------------------------------------------|------------------------------------------|-------------------------------------|
|                    |       |                         | With an insulation sleeve (L = 8 mm, 10 mm) | Without an insulation sleeve (L = 10 mm) |                                     |
| (mm <sup>2</sup> ) | (AWG) |                         | Auxiliary/control circuit                   | Auxiliary/control circuit                | Auxiliary/control circuit           |
| 0.5                | 20    | 0.5                     | ⊙                                           | ⊙                                        | ⊙ (*3)                              |
| 0.75               | 18    | 0.75                    | ⊙                                           | ⊙                                        | ⊙ (*3)                              |
| 1                  |       | 1                       | ⊙                                           | ⊙                                        |                                     |
| 1.25               | 16    | 1.5                     | ⊙                                           | ⊙                                        | ⊙                                   |
| 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.

Auxiliary circuit: 16 AWG to 14 AWG

\*2. Connection is only possible using 2 mm<sup>2</sup> FE-2.08-8N-YE ferrules with insulation sleeves manufactured by Wago.

\*3. Use insulation stops.

Insulation stops cannot be used with ferrules.

Do not use insulation stops in empty terminals.

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

0.5 mm<sup>2</sup> to 1.0 mm<sup>2</sup> (20AWG to 18AWG) : 12 mm ± 1 mm  
1.25 mm<sup>2</sup> (16AWG) : 11 mm ± 1 mm

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

## Recommended Ferrules and Crimp Tools

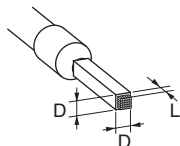
### Recommended ferrules

| Applicable wire        |       | Ferrule conductor length (mm) | Recommended ferrules             |                                             |            |             |                                  |                                             |            |             |
|------------------------|-------|-------------------------------|----------------------------------|---------------------------------------------|------------|-------------|----------------------------------|---------------------------------------------|------------|-------------|
|                        |       |                               | With an insulation sleeve        |                                             |            |             | Without an insulation sleeve     |                                             |            |             |
| (mm²)                  | (AWG) |                               | Insulation stripping length (mm) | Phoenix Contact                             | Weidmuller | Wago        | Insulation stripping length (mm) | Phoenix Contact                             | Weidmuller | Wago        |
| 0.5                    | 20    | 8                             | 10                               | Al 0,5-8                                    | H0.5/14    | 216-201     | ---                              | ---                                         | ---        | ---         |
|                        |       | 10                            | 12                               | Al 0,5-10                                   | H0.5/16    | 216-241     | 10                               | A 0,5-10                                    | H0.5/10    | F-0.5-10    |
| 0.75                   | 18    | 8                             | 10                               | Al 0,75-8                                   | H0.75/14   | 216-202     | ---                              | ---                                         | ---        | ---         |
|                        |       | 10                            | 12                               | Al 0,75-10                                  | H0.75/16   | 216-242     | 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    | 216-203     | ---                              | ---                                         | ---        | ---         |
|                        |       | 10                            | 12                               | Al 1-10                                     | H1.0/16    | 216-243     | 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    | 216-204     | ---                              | ---                                         | ---        | ---         |
|                        |       | 10                            | 12                               | Al 1,5-10                                   | H1.5/16    | 216-244     | 10                               | A 1,5-10                                    | H1.5/10    | F-1.5-10    |
| 2                      | 14    | 8                             | 10                               | Al 2,5-8                                    | H2.5/15D   | 216-205     | ---                              | ---                                         | ---        | ---         |
|                        |       |                               |                                  |                                             |            | 216-206     |                                  |                                             |            |             |
|                        |       | 10                            | 12                               | Al 2,5-10                                   | ---        | 216-246     | 10                               | ---                                         | H2.5/10    | F-2.5-10    |
| 2.5                    | 14    | 10                            | 12                               | ---                                         | ---        | ---         | 10                               | ---                                         | H2.5/10    | F-2.5-10    |
|                        |       | 12                            | 14                               | ---                                         | ---        | ---         | ---                              | ---                                         | ---        | ---         |
| Recommended crimp tool |       |                               |                                  | CRIMPFOX 6<br>CRIMPFOX 6T-F<br>CRIMPFOX 10S | PZ6 roto   | Variocrimp4 |                                  | CRIMPFOX 6<br>CRIMPFOX 6T-F<br>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) |                    | Auxiliary/control circuit |         |
|------------------------------|--------------------|---------------------------|---------|
|                              |                    | Minimum                   | Maximum |
| L [mm]                       |                    | 0                         | 0.5     |
| D [mm]                       |                    | Less than 2.5             |         |
| Wire size                    | [mm <sup>2</sup> ] | 0.5                       | 1.5     |
|                              | [AWG]              | 20                        | 16      |

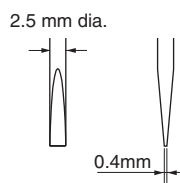


### Recommended flat-bladed screwdriver (Recommended tool)

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<br>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          |

\* 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 (J7KCA-□-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 (J7KCA-□-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

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

### (2) DC-operated

The control coil of DC-operated 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              | 240                  |
| 200              |                      |
| 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.                                                                           | J7KCA-□-AC<br><br>(0.1 ms/div, 1 kV/div)             |
|                               | 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. | J7KCA-□-AC+J7K6C-RC-3<br><br>(2 ms/div, 200 V/div)   |

| DC operated                     | Application                                                                                                                                                                                                | Coil surge absorption characteristics (24 V DC 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. | J7KCA-□-DC (Built into varistor)<br><br>(0.1 ms/div, 1 kV/div) |

## 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.

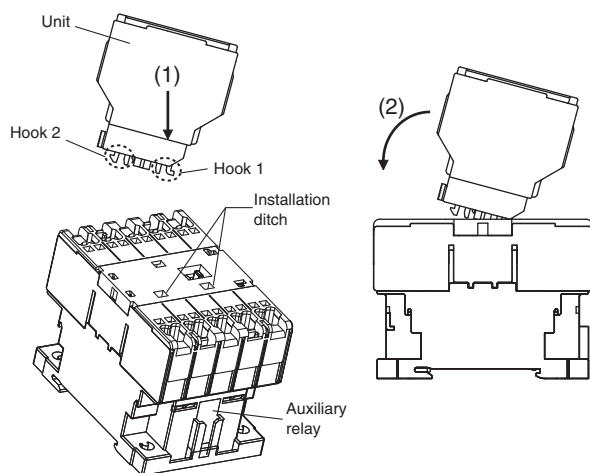


Diagram 1. Mounting method

- 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.

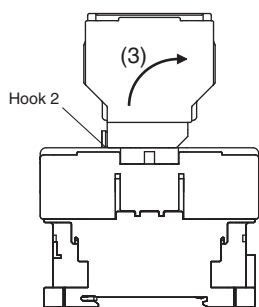


Diagram 2. Removal method

## Mounting space

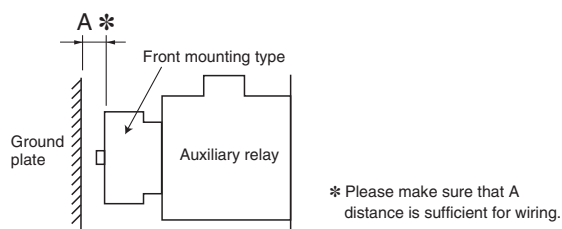
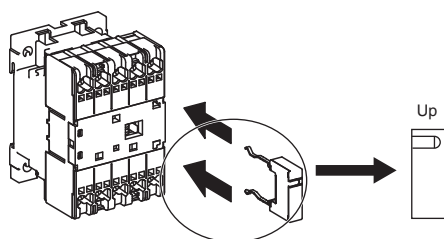


Diagram 3. Mounting space

## Mounting the coil surge absorption unit

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



## Electrical detection

Electricity can be detected by inserting a detector in the release hole.

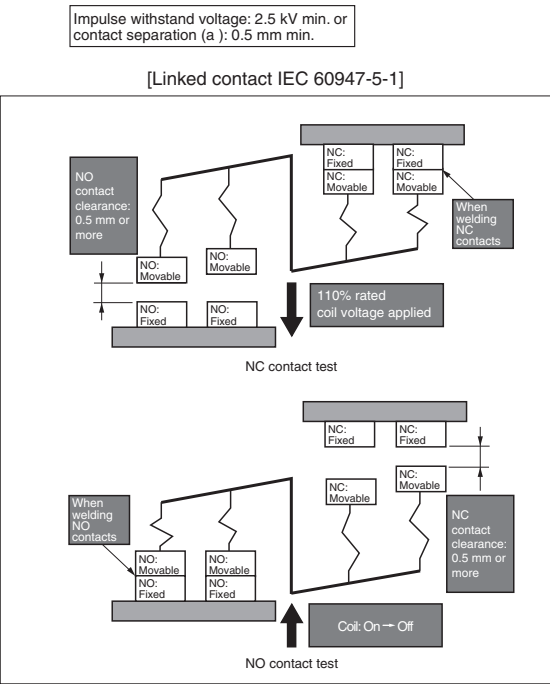
When inserting a detector, insert it gently while checking for electrical signals. The wire may pull out if the detector is fully inserted.

After detection is complete, immediately pull out the detector and check that the wire is still firmly connected.

Linked contact mechanisms

With the combination of the auxiliary circuit of the main unit, welding the NO (or NC) 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 the NC (or NO) contacts even if the excitation of the coil is released.

Example figure of linked contact mechanism



Linked contact relationship when using auxiliary relays only

| Auxiliary relay                                                                        | Linked contact relationship                                                                                                                                                                       |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J7KCA-40 (Auxiliary contact 4PST-4NO)                                                  | There is no linked contact mechanism because the auxiliary contact only has NO contacts.                                                                                                          |
| J7KCA-31 (Auxiliary contact 4PST-3NO 1NC)<br>J7KCA-22 (Auxiliary contact 4PST-2NO 2NC) | The NC auxiliary contact acts as the linked contact mechanism for the NO auxiliary contact.<br>(The NO auxiliary contact also acts as the linked contact mechanism for the NC auxiliary contact.) |

Linked contact relationship when using auxiliary relays together with auxiliary contact units

| Auxiliary relay                                                                                                                 | Linked contact relationship                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| J7KCA-40 (Auxiliary contact 4PST-4NO)<br>J7KCA-31 (Auxiliary contact 4PST-3NO 1NC)<br>J7KCA-22 (Auxiliary contact 4PST-2NO 2NC) | There is no linked contact mechanism for combinations with an auxiliary contact unit (J73KC-AM). |

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).



# Terms and Conditions Agreement

## **Read and understand this catalog.**

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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