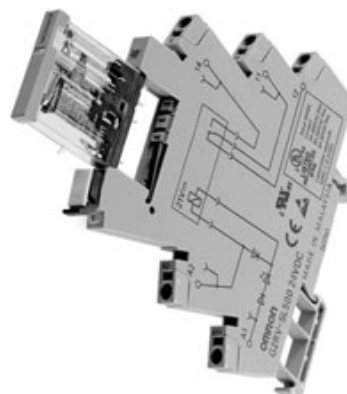


# Slim Relay G2RV

## The World's First Industrial Slim Relay

- Large plug-in terminals for reliable connection.
- LED indicator and mechanical flag to check operation.
- Transparent housing enables checking relay condition.
- Slim outline to save space.
- Push-in terminals and accessories for easy wiring.



## Model Number Structure

### Model Number Legend

G2RV-SL       -    

1    2    3    4    5

**1. Auxiliary Type Designation**

SL: Slim relay and socket combination

**2. Wire Connection**

7: Screw terminals

5: Push-in terminals

**3. Relay LED**

0: Without LED

**Note:** LED indicator available on socket.

**4. Relay Pushbutton**

0: Without pushbutton

**5. Input Voltage**

## Ordering Information

### List of Models

| Classification    |                 | Enclosure rating | Input voltage | Type of connection | Contact form |
|-------------------|-----------------|------------------|---------------|--------------------|--------------|
| Plug-in terminals | General-purpose |                  |               |                    | SPDT         |
|                   |                 | Unsealed         | AC/DC         | Screw terminals    | G2RV-SL700   |
|                   |                 |                  |               | Push-in terminals  | G2RV-SL500   |

### Relay and Socket Combinations

| Input voltage | Screw terminals      | Push-in terminals    |
|---------------|----------------------|----------------------|
| 12 VDC        | G2RV-SL700-12 VDC    | G2RV-SL500-12 VDC    |
| 24 VDC        | G2RV-SL700-24 VDC    | G2RV-SL500-24 VDC    |
| 24 VAC/DC     | G2RV-SL700-24 VAC/DC | G2RV-SL500-24 VAC/DC |
| 48 VAC/DC     | G2RV-SL700-48 VAC/DC | G2RV-SL500-48 VAC/DC |
| 110 VAC       | G2RV-SL700-110 VAC   | G2RV-SL500-110 VAC   |
| 230 VAC       | G2RV-SL700-230 VAC   | G2RV-SL500-230 VAC   |

# Specifications

## ■ Input Ratings

| Rated voltage | Rated current <sup>*1</sup> |         |         | Must operate voltage | Must release voltage | Power consumption  |                 | Input voltage   |
|---------------|-----------------------------|---------|---------|----------------------|----------------------|--------------------|-----------------|-----------------|
|               | AC                          |         | DC      |                      |                      | % of rated voltage | AC (VA) Approx. | DC (mW) Approx. |
|               | 50 Hz                       | 60 Hz   |         |                      |                      |                    |                 |                 |
| 12 VDC        | ---                         | ---     | 27.2 mA | 80%                  | 10%                  | ---                | 300 mW          | ±10%            |
| 24 VDC        | ---                         | ---     | 13.3 mA |                      |                      | ---                | 300 mW          |                 |
| 24 VAC/DC     | 21.1 mA                     | 22.5 mA | 13.0 mA |                      |                      | 0.5 VA             | 300 mW          |                 |
| 48 VAC/DC     | 8.5 mA                      | 9.0 mA  | 5.2 mA  |                      |                      | 0.4 VA             | 250 mW          |                 |
| 110 VAC       | 7.1 mA                      | 7.5 mA  | ---     |                      |                      | 0.8 VA             | ---             |                 |
| 230 VAC       | 7.3 mA                      | 7.9 mA  | ---     |                      |                      | 1.7 VA             | ---             |                 |
|               |                             |         |         |                      |                      |                    |                 |                 |

\*1) Rated currents are measured at 23 degrees Celsius (ambient)

## ■ Contact Ratings

|                                |                                      |  |
|--------------------------------|--------------------------------------|--|
| Number of poles                | 1 pole                               |  |
| Load                           | Resistive load<br>( $\cos\phi = 1$ ) | Inductive load<br>( $\cos\phi = 0.4$ , L/R = 7 ms) |
| Rated load                     | 6 A at 250 VAC;<br>6 A at 30 VDC     | 2.5 A at 250 VAC;<br>2 A at 30 VDC                 |
| Rated carry current            | 6 A                                  |  |
| Max. switching voltage         | 400 VAC, 125 VDC                     |  |
| Max. switching current         | 6 A                                  |  |
| Max. switching power           | 1,500 VA<br>180 W                    | 500 VA<br>60 W                                     |
| Failure rate (reference value) | 10mA at 5VDC (P level)               |  |

Note: P level:  $\lambda_{60} = 0.1 \times 10^{-6}/\text{operation}$

## ■ Characteristics

| Item                     | 1 pole   |
|--------------------------|--|
| Contact resistance       | 100 mΩ max.  |
| Operate (set) time       | 20 ms max.   |
| Release time             | 40 ms max.   |
| Max. operating frequency | Mechanical: 18,000 operations/hr<br>Electrical: 1,800 operations/hr (under rated load)   |
| Insulation resistance    | 1,000 MΩ min. (at 500 VDC)   |
| Dielectric strength      | 4,000 VAC, 50/60 Hz for 1 min between coil and contacts*;<br>1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity   |
| Vibration resistance     | Destruction: 10 to 55 to 10 Hz, 0.50 mm single amplitude (1.0 mm double amplitude)<br>Malfunction: 10 to 55 to 10 Hz, 0.50 mm single amplitude (1.0 mm double amplitude) |
| Shock resistance         | Destruction: 1,000 m/s <sup>2</sup><br>Malfunction: 200 m/s <sup>2</sup> when energized; 100 m/s <sup>2</sup> when not energized   |
| Endurance                | Mechanical: 5,000,000 operations min.<br>Electrical : 100,000 Typical; NO 70,000 operations min. ; NC 50,000 operations min.   |
| Ambient temperature      | Operating: -40° C to 55° C (with no icing or condensation)   |
| Ambient humidity         | Operating: 5% to 85%   |
| Weight                   | Approx. 35 g   |
| Overvoltage category     | III  |
| Pollution degree         | 2  |
| Contact material         | Ag3SnIn  |
| Creepage distance        | 7.0 mm   |
| Clearance distance       | 5.5 mm   |

Note: Values in the above table are the initial values.

## ■ Approved Standards

### UL 508 (File No. E41643)

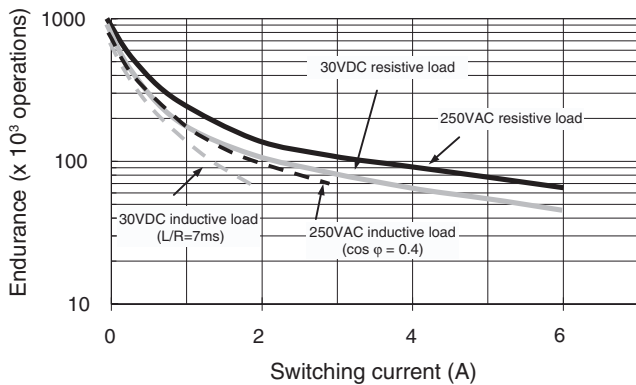
| Model          | Contact form | Coil ratings                  | Contact ratings   | Operations |
|----------------|--------------|-------------------------------|---|------------|
| G2RV-SL Series | SPDT         | 12 to 48 VDC<br>24 to 230 VAC | 250 VAC 6 A (Resistive Load)<br>30 VDC 6 A (Resistive Load)<br>400 VAC 2 A (Resistive Load) | 6,000      |

### IEC/VDE (EN 61810)

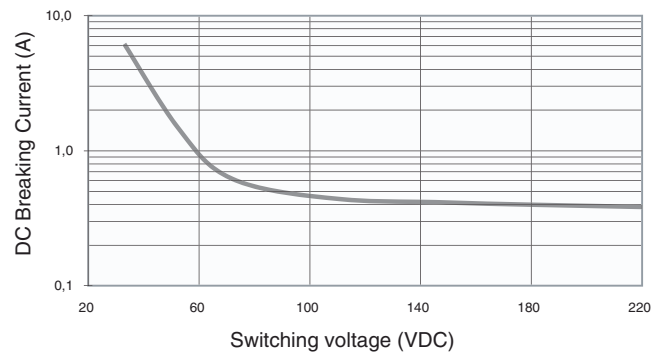
| Contact form | Coil ratings  | Contact ratings              | Operations |
|--------------|---------------|------------------------------|------------|
| 1 pole       | 12, 24 VDC    | 250 VAC 6 A (Resistive Load) | 50,000     |
|              | 24, 48 VAC/DC | 30 VDC 6 A (Resistive Load)  | 50,000     |
|              | 110, 230 VAC  | 400 VAC 2 A (Resistive Load) | 6,000      |

# Engineering Data

## ■ Endurance



## Switching capacity of DC resistive load



## Typical Operating and Release Time

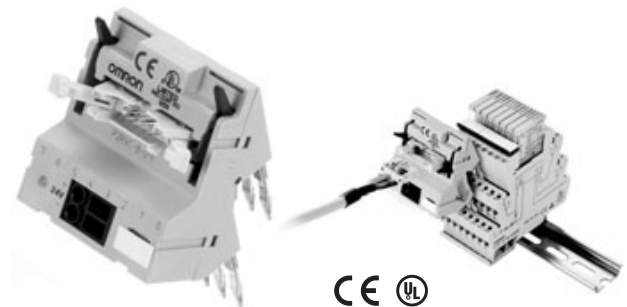
| Model number           | Operating time (typical) | Release time (typical) |
|------------------------|--------------------------|------------------------|
| G2RV-SL7□□/5□□ DC12    | 5 ~ 7 ms                 | 5 ~ 8 ms               |
| G2RV-SL7□□/5□□ DC24    | 5 ~ 7 ms                 | 6 ~ 9 ms               |
| G2RV-SL7□□/5□□ AC/DC24 | 5 ~ 7 ms                 | 17 ~ 22 ms             |
| G2RV-SL7□□/5□□ AC/DC48 | 5 ~ 7 ms                 | 22 ~ 30 ms             |
| G2RV-SL7□□/5□□ AC110   | 12 ~ 15 ms               | 22 ~ 30 ms             |
| G2RV-SL7□□/5□□ AC230   | 12 ~ 15 ms               | 22 ~ 30 ms             |

## Accessories

### ■ PLC Interface (for G2RV-SL700 series only)

#### List of Models

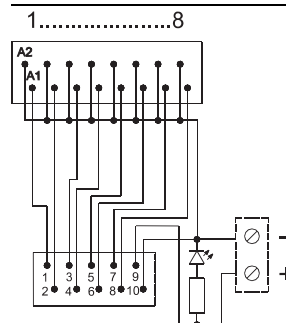
| Model number | Description  | Connection                               |
|--------------|--|--|
| P2RVC-8-O-F  | PLC Output Interface for 8x G2RV-SL700-series PNP - type | Ribbon cable connector 10 Pole, IEC603/1 |



#### Specifications

|                 |                      |   |
|-----------------|----------------------|---|
| Input           | Rated voltage        | 30 VAC/VDC max.   |
|                 | Current capacity     | 0.5 A per channel<br>2.0 A total current, power supply terminal |
| Characteristics | Ambient temperature  | Operating: 0 to 55° C<br>Storage: -20 to 85° C                  |
|                 | Overvoltage category | III   |
|                 | Pollution degree     | 2   |

#### Electrical schematic P2RVC-O-8-F



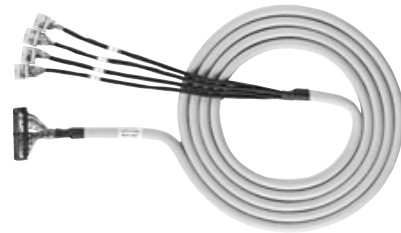
## ■ Cables for PLC Interface P2RVC-8-O-F

### P2RV-4-□□□C

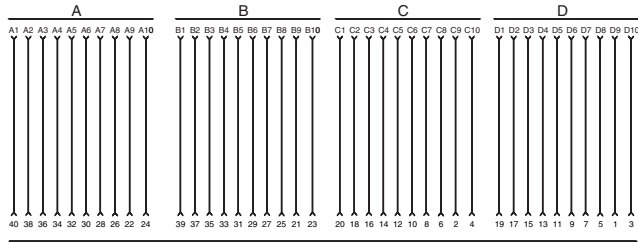
Cable to connect CJ1 to 4 x P2RVC-8-O-F

#### List of Models

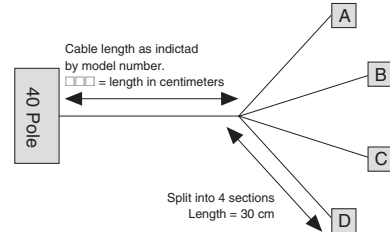
| Model number | Cable length |
|--------------|--------------|
| P2RV-4-100C  | 1.0 m        |
| P2RV-4-200C  | 2.0 m        |
| P2RV-4-300C  | 3.0 m        |
| P2RV-4-500C  | 5.0 m        |



#### 4x10 pole IDC mounting to 4 x P2RVC-8-O-F



40 pole IDC mounting to Omron PLC CJ1-OD232



#### Technical data

|                                    |  |
|------------------------------------|--|
| Control line                       | AWG26/0.14 mm <sup>2</sup> , tin-plated copper       |
| Diameter cable                     | 10.6 mm (one end splits into 4 sections: A, B, C, D) |
| Operating voltage                  | 60 VDC   |
| Continuous current per signal wire | 0.5 A  |
| Max. total current, 4 bytes, each  | 1.0 A  |
| Test voltage                       | 0.5 KV, 50 Hz, 1 min                                 |
| Operating temperature range        | -20°C to +50°C                                       |

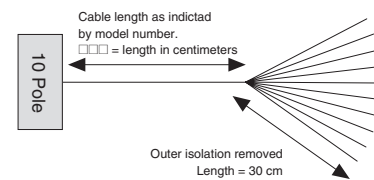
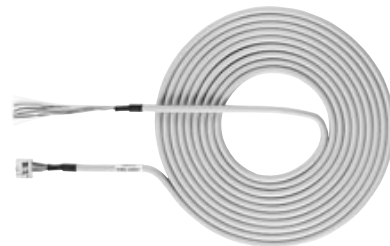
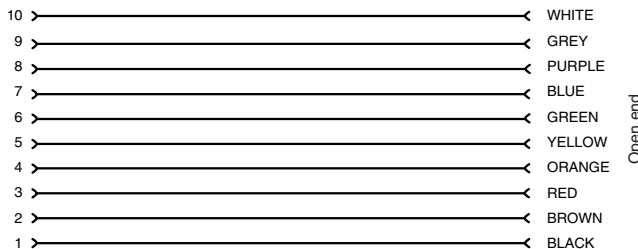
### P2RV-A□□□C

Cable, single sided 10 pole IDC connector, to connect to P2RVC-8-O-F

#### List of Models

| Model number | Cable length |
|--------------|--------------|
| P2RV-A100C   | 1.0 m        |
| P2RV-A200C   | 2.0 m        |
| P2RV-A300C   | 3.0 m        |
| P2RV-A500C   | 5.0 m        |

#### 40 pole IDC mounting to P2RVC-8-O-F





#### Technical data

|                                    |  |
|------------------------------------|--|
| Control line                       | AWG26/0.14 mm <sup>2</sup> , tin-plated copper |
| Diameter cable                     | 6.8 mm   |
| Operating voltage                  | 60 VDC   |
| Continuous current per signal wire | 0.5 A  |
| Max. total current                 | 1.0 A  |
| Test voltage                       | 0.5 KV, 50 Hz, 1 min                           |
| Operating temperature range        | -20°C to +50°C                                 |

## P2RV-□□□C-SIM S7/□00

Cables to connect Siemens S7/300 or S7/400 to 4 x P2RVC-8-O-F

### List of Models

| Model number         | Cable length | PLC type                   | Configuration   |
|----------------------|--------------|----------------------------|---|
| P2RV-200C-SIM S7/300 | 2.0 m        | Siemens S7/300<br>4x1 Byte |  |
| P2RV-250C-SIM S7/300 | 2.5 m        |                            |   |
| P2RV-300C-SIM S7/300 | 3.0 m        |                            |   |
| P2RV-500C-SIM S7/300 | 5.0 m        |                            |   |
| P2RV-200C-SIM S7/400 | 2.0 m        | Siemens S7/400<br>4x1 Byte |  |
| P2RV-250C-SIM S7/400 | 2.5 m        |                            |   |
| P2RV-300C-SIM S7/400 | 3.0 m        |                            |   |
| P2RV-500C-SIM S7/400 | 5.0 m        |                            |   |

## ■ Single Relays for Maintenance

### Model Number Legend

G2RV-□ - □□□□ - □-□  
1 2 3 4 5 6

**1. Number of Poles**

1: 1 pole

**2. Terminals**

S: Push-In

**3. Relay LED**

Blank: Without LED

**4. Relay Pushbutton**

Blank: Without pushbutton

**5. Contact Material**

Blank: AgSnIn

**6. Rated Coil Voltage**

11 VDC, 21 VDC, and 48 VDC

### List of Models

| Model number  | Replacement for        |
|---------------|------------------------|
| G2RV-1-S DC11 | G2RV-SL7□□/5□□ DC12    |
| G2RV-1-S DC21 | G2RV-SL7□□/5□□ DC24    |
|               | G2RV-SL7□□/5□□ AC/DC24 |
| G2RV-1-S DC48 | G2RV-SL7□□/5□□ AC/DC48 |
|               | G2RV-SL7□□/5□□ AC110   |
|               | G2RV-SL7□□/5□□ AC230   |



## ■ Cross bars

### Model Number Legend

P2RVM -    
                   1    2

**1. Number of Poles**

- 020: 2 poles
- 030: 3 poles
- 040: 4 poles
- 100: 10 poles
- 200: 20 poles

**2. Color**

- R: Red
- S: Blue
- B: Black

### List of Models

| Model number                       | Poles | Quantity                     | Color                            |
|------------------------------------|-------|------------------------------|----------------------------------|
| P2RVM-020 <input type="checkbox"/> | 2     | 60 pcs / box (minimum order) | Red (R)<br>Blue (S)<br>Black (B) |
| P2RVM-030 <input type="checkbox"/> | 3     | 60 pcs / box (minimum order) |                                  |
| P2RVM-040 <input type="checkbox"/> | 4     | 60 pcs / box (minimum order) |                                  |
| P2RVM-100 <input type="checkbox"/> | 10    | 20 pcs / box (minimum order) |                                  |
| P2RVM-200 <input type="checkbox"/> | 20    | 20 pcs / box (minimum order) |                                  |

select color: R = Red, S=Blue, B=Black

### Specification

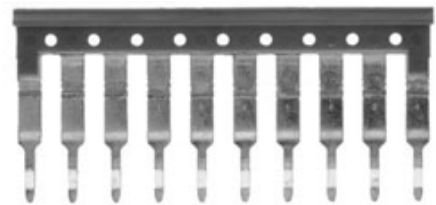
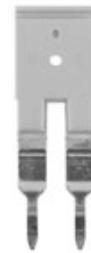
|   |         |
|---|---------|
| <b>Max current</b><br>(EN60947-7-1 section 8.3.3 / 1991)                                    | 32A     |
| <b>Max. Voltage</b>   | 400 VAC |
| <b>Max. Voltage</b><br>when cutting Cross-bar without using separation plate or end-bracket | 250 VAC |

## ■ Plastic Labels for G2RV Sockets

| Model number    | Box quantity  | Color |
|-----------------|---|-------|
| R99-15 for G2RV | 5 sheets × 120 labels =<br>600 labels (minimum order) | White |

## ■ Labels (Stickers) for G2RV Sockets

| Model number    | Box quantity   | Color |
|-----------------|--|-------|
| R99-16 for G2RV | 10 sheets × 484 labels =<br>4,840 labels (minimum order) | White |



## ■ Separating Plates

| Model number | Quantity                     | Description  |
|--------------|------------------------------|--|
| P2RV-S       | 50 plates<br>(minimum order) | Provides isolation between adjacent relays to achieve 400 V isolation. |

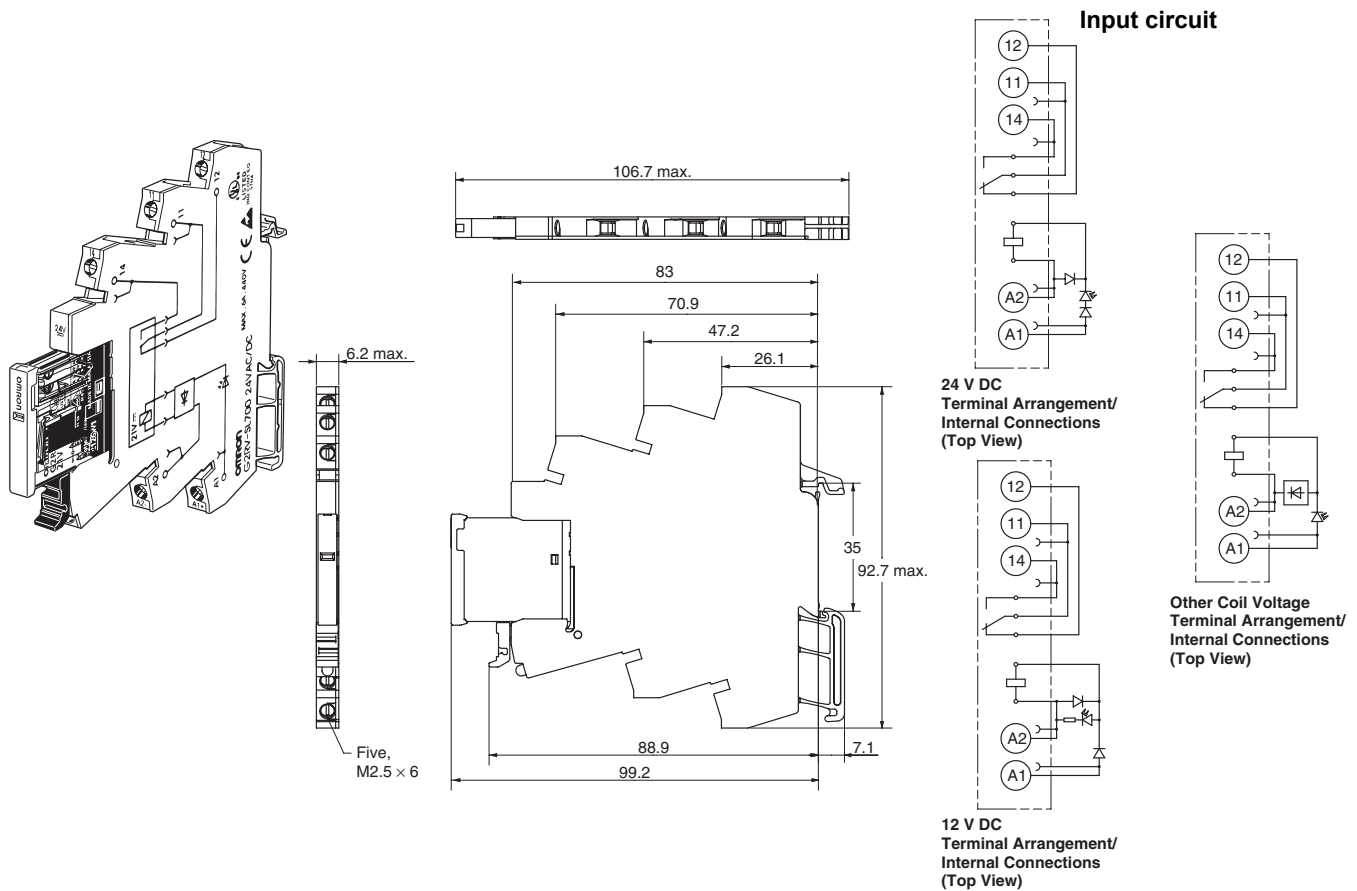


## Dimensions

Note: All units are in millimeters unless otherwise indicated.

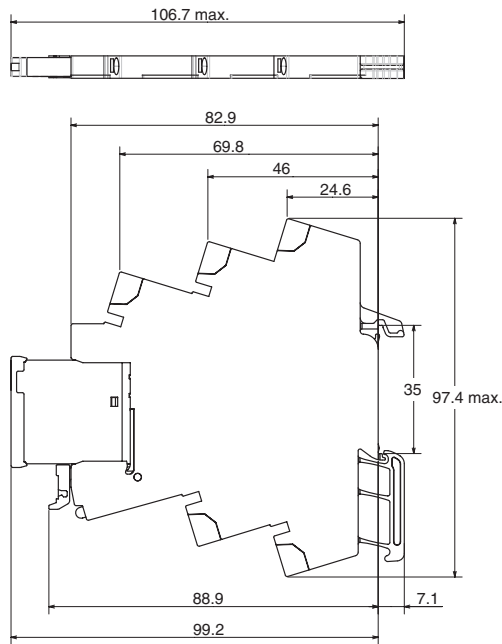
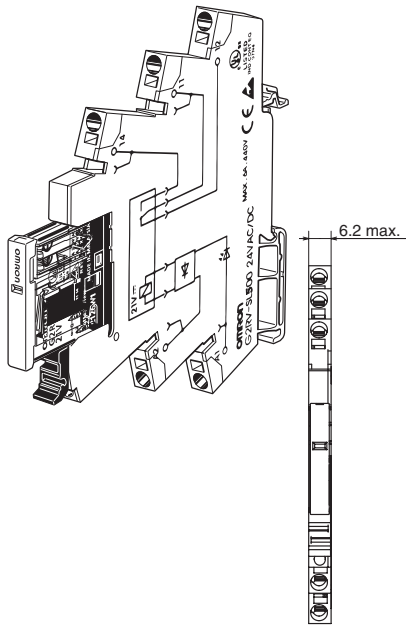
### Complete Unit

#### G2RV-SL700

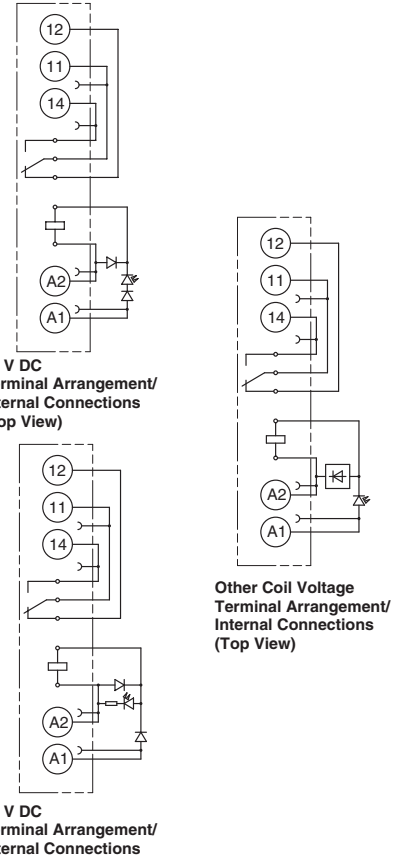




**G2RV-SL500**

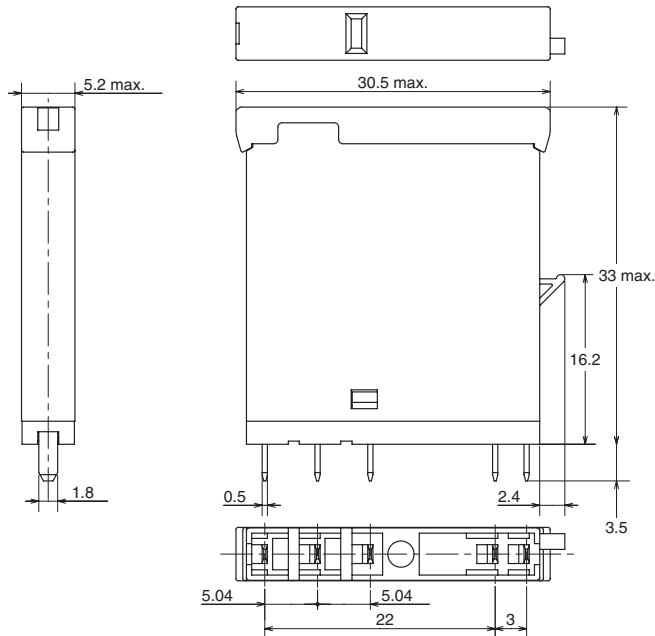
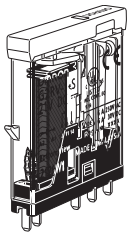


**Input circuit**

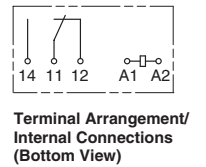


**Single Relay**

**G2RV-1-S**



**Input circuit**



# Installation

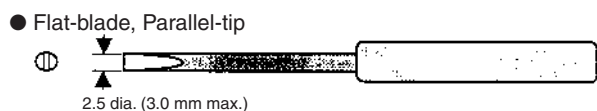
## ■ Tools

G2RV-SL700 series: Flat-Blade screwdriver should be used for mounting and / or releasing cables.

G2RV-SL500 series: Flat-Blade screwdriver should be used for mounting stranded wires without ferrules and / or releasing cables.

### Applicable Screwdriver

- Flat-blade, Parallel-tip, 2.5 mm diameter (3.0 mm max.)



- Flat-blade, Flared-tip



**Cannot be used.**

Examples: FACOM AEF.2.5×75E (AEF. 3×75E)  
 VESSEL No. 9900-(-)2.5×75 (No. 9900-(-)3×100)  
 WAGO 210-119  
 WIHA 260/2.5×40 (260/3×50)

\*Chamfering the tip of the driver improves insertion when used as an exclusive tool.

## ■ Applicable Wires

### Applicable Wire Sizes

#### G2RV-SL700 Series

##### Box clamp technology

| Wire type                                     | Applicable wire size      | Stripping length |
|---|---------------------------|------------------|
| Stranded without ferrules                     | 0.5 - 2.5 mm <sup>2</sup> | 7 mm             |
| Stranded with ferrules and plastic collar     | 0.5 - 2.5 mm <sup>2</sup> | 7 mm             |
| Stranded with ferrules without plastic collar | 0.5 - 2.5 mm <sup>2</sup> | 7 mm             |
| Solid   | 0.5 - 2.5 mm <sup>2</sup> | 7 mm             |

#### G2RV-SL500 Series

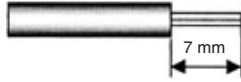
##### Push-in technology

| Wire type                                     | Applicable wire size      | Stripping length |
|---|---------------------------|------------------|
| Stranded without ferrules                     | 0.5 - 2.5 mm <sup>2</sup> | 12 mm            |
| Stranded with ferrules and plastic collar     | 0.5 - 2.5 mm <sup>2</sup> | 12 mm            |
| Stranded with ferrules without plastic collar | 0.5 - 2.5 mm <sup>2</sup> | 12 mm            |
| Solid   | 0.5 - 2.5 mm <sup>2</sup> | 12 mm            |

## ■ Wiring

Use wires of the applicable sizes specified above. The length of the exposed conductor should be 7 mm for a G2RV-SL700 series, 12 mm for a G2RV-SL500 series.

G2RV-SL700



G2RV-SL500

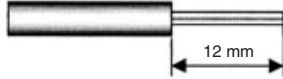
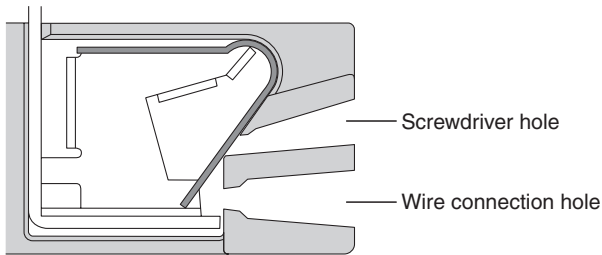
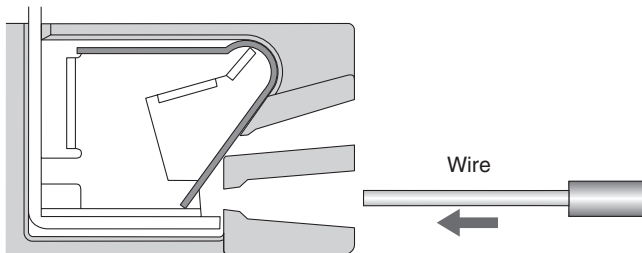


Fig. 1 Exposed Conductor Length

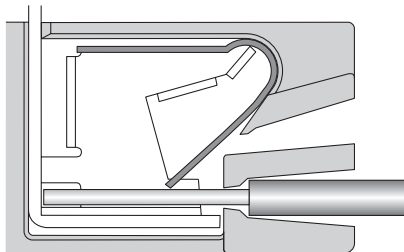
## Wiring Procedure for G2RV-SL500 series



### ● Wiring



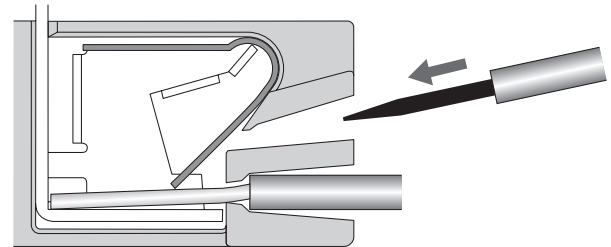
Insert the exposed conductor into the connection hole.



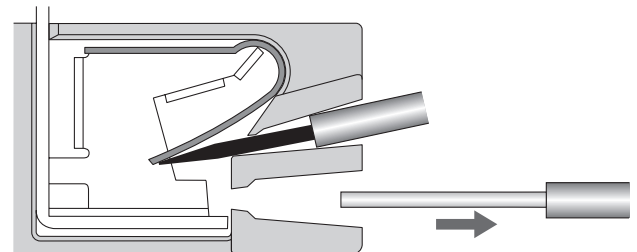
No other tools are required.

**Note:** In case of wiring stranded wires without ferrules screwdriver should be inserted before inserting the wire.  
Screwdriver should be removed after fully insertion of the wire.

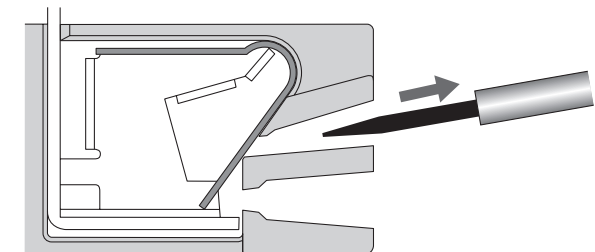
### ● Removing



Insert the specified screwdriver into the release hole.



Removing wire.

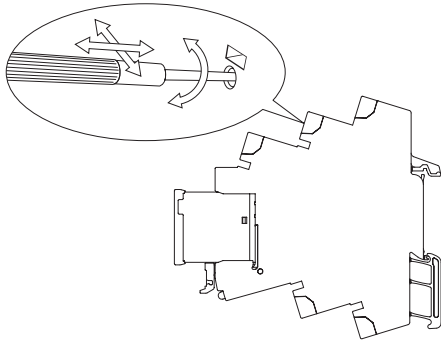


Removing screwdriver.

# Precautions

## Precautions for Connection

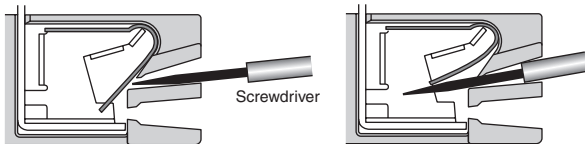
- Do not move the screwdriver up, down, or from side to side while it is inserted in the hole. Doing so may cause damage to internal components (e.g., deformation of the clamp spring or cracks in the housing) or cause deterioration of insulation.
- Do not insert the screwdriver at an angle. Doing so may break the side of socket and result in a short-circuit.



- Do not insert two or more wires in the hole. Wires may come in contact with the spring causing a temperature rise or be subject to sparks.



- Insert the screwdriver along the hole wall as shown below.



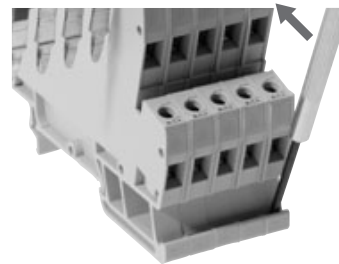
- If lubricating liquid, such as oil, is present on the tip of screwdriver, the screwdriver may fall out resulting in injury to the operator.
- Insert the screwdriver into the bottom of the hole. It may not be possible to connect cables properly if the screwdriver is inserted incorrectly.

## General Precautions

- Do not use the product if it has been dropped on the ground. Dropping the product may adversely affect performance.
- Confirm that the socket is securely attached to the mounting track before wiring. If the socket is mounted insecurely it may fall and injure the operator.
- Ensure that the socket is not charged during wiring and maintenance. Not doing so may result in electric shock.
- Do not pour water or cleansing agents on the product. Doing so may result in electric shock.
- Do not use the socket in locations subject to solvents or alkaline chemicals.
- Do not use the socket in locations subject to ultraviolet light (e.g., direct sunlight). Doing so may result in markings fading, rust, corrosion, or resin deterioration.
- Do not dispose the product in fire.

## Removing from Mounting Rail

To remove the socket from the mounting rail, insert the tip of screwdriver in the fixture rail, and move it in the direction shown below.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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

Cat. No. J11E-EN-01A In the interest of product improvement, specifications are subject to change without notice.

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