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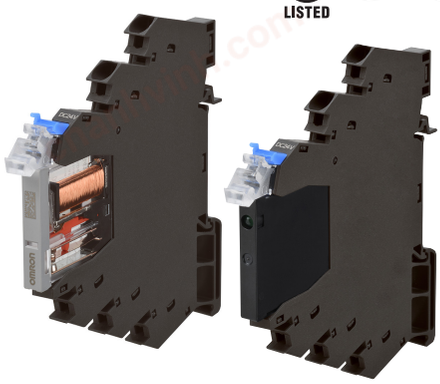
## Slim I/O Relay/Slim I/O Solid State Relay

# G2RV-ST/G3RV-ST

## Slim I/O relay realizes space saving thanks to high-density mounting and ultra-slim body

- 60% space saving from G2R series with 6.2 mm width.
- 60%* reduction in wiring time and user-friendly with a low insertion force thanks to Push-In Plus Technology.
- Larger hole and angled structure contribute to efficient wiring and standardization of wires up to AWG14, 2.5 $mm^2$.
- Easy maintenance with improved LED visibility and color stopper voltage line identification.
- Low cutting force of short bars contribute to reducing health issues such as Tenosynovitis.

✻According to OMRON actual measurement data for both push-in plus terminal blocks and screw terminal blocks.



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

⚠ Refer to *Safety Precautions* on page 22.

## Slim I/O Relay Types

**G2RV-ST series** **mounted relay: electromagnetic relay..... from page 2**
**G3RV-ST series** **mounted relay: solid state relay..... from page 12**

## Common matter

**Common precautions ..... from page 22**
**Common accessories (order separately)..... from page 29**

## Common features of G2RV-ST/G3RV-ST

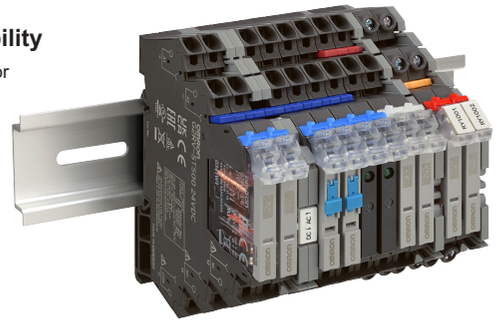
### Wiring standardization is also supported by 2.5 $mm^2$ compatibility

DC common wiring also provides support for 2.5 $mm^2$ dia./AWG14 (2.0 $mm^2$) needs

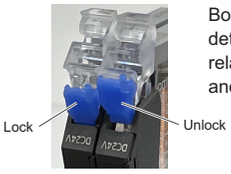
### Wiring work efficiency improvement

Easy to see and easy insertion thanks to large-diameter wiring holes and tilted structure.





### Maintainability is enhanced by color stoppers




Both easy replacement and detachment prevention of relays are achieved by locking and unlocking of stopper.

Designed so that wires are hard come out even if release levers are touched unintentionally.



Coil voltage line identification
Red: AC
Blue: DC
White: Multi (e.g. 24 VAC/VDC)

### Work judgment support is provided through mounting feeling enhancement.

Work efficiency is enhanced by DIN rail sliding performance and short bar improvements.



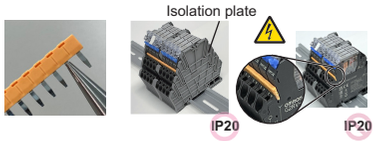
DIN rail tolerance is also supported through elasticity.



Insertion feeling to let you know when mounting is complete.

### Easy and safe

Short bar cutting force has been decreased to reduce the burden during assembly. Electrification of the short bar fracture plane is prevented by an isolation plate.




Note. Cutting force of 25 kg, so easily cut by needle-nose pliers

### Visibility is enhanced by release lever LED



Visibility from the front is improved by a structure where the actual release lever lights and by expanding the light emission area.

Note. The third relay from the right is equipped with a label.

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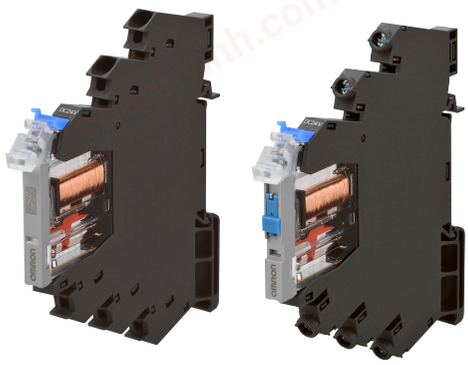
Slim I/O Relay

# G2RV-ST

## Slim I/O relay realizes space saving thanks to high-density mounting and ultra-slim body

- 60% space saving from G2R series with 6.2 mm width technology.
- 60%*1 reduction in wiring time and user-friendly with a low insertion force thanks to Push-In Plus Technology.
- Max. 6 A realized even with close-contact mounting.
- Au-plated contacts suitable for micro loads with a failure rate P value*2 of 1 mA at 100 mVDC.
- A transparent case that allows for easy on-site visual checks of contact state abnormalities.
- Easy relay replacement with a terminal structure that does not bend easily.
- Operation check using a test switch reduces inspection time.
- A coil surge absorption circuit equipped as standard.

**1.** According to OMRON actual measurement data for both push-in plus terminal blocks and screw terminal blocks.
**2.** Reference value

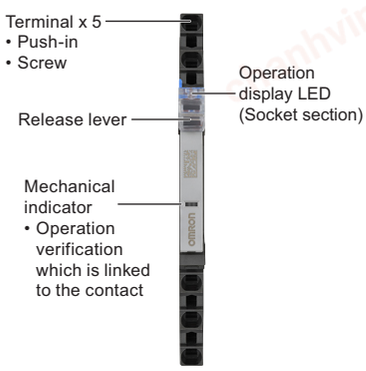


For the recent information on models that have been certified for safety standards, refer to your OMRON website.

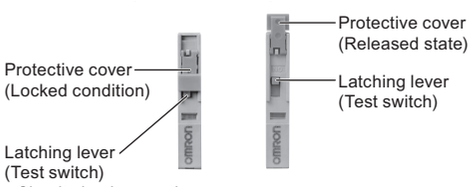
Refer to *Safety Precautions* on page 22.

## Features

### Standard model/Micro load

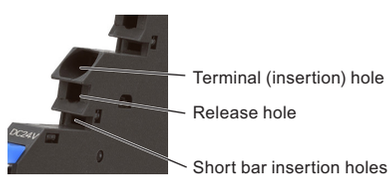


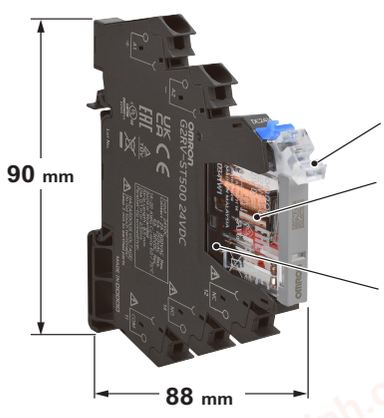

### With latching lever (Test switch)




• Circuit check operation Confirmation, reducing the inspection effort

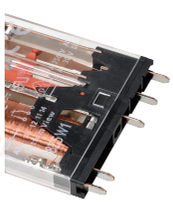
### Push-In Plus technology




**Release lever**
Relay easily fixed/removed

**Transparent case**
Relay contact
Easy confirmation of the situation



**Plug-in terminal**
Peace of mind as the terminal does not bend when replacing

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# Model Number Structure

## Model Number Legend

**G2RV-ST** □□ □ - □ □
(1) (2) (3) (4) (5) (6)

**(1) Basic model name**
G2RV: Slim I/O Relay

**(2) Sub type**
ST: Slim relay + integrated low profile socket

**(3) Terminal (wire connection)**
50: Push-In Plus Terminal
70: Screw terminal

**(4) Latching lever (test switch)**
0: Without latching lever
1: With latching lever

**(5) Contact structure**
Blank: Standard
AP: Microloads

**(6) Rated input voltage**
12, 24 VDC
24, 48 VAC/VDC
100, 110, 200, 230 VAC

# Ordering Information

| Terminal (Wire connection) | Classification | Latching lever (Test switch) | Rated input voltage (V) | | Model |
|---|---|---|---|---|---|
| Push-In Plus Terminal | Standard | No | DC | 12 | **G2RV-ST500 12 VDC** |
| | | | | 24 | **G2RV-ST500 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST500 24 VAC/VDC** |
| | | | | 48 | **G2RV-ST500 48 VAC/VDC** |
| | | | AC | 100 | **G2RV-ST500 100 VAC** |
| | | | | 110 | **G2RV-ST500 110 VAC** |
| | | | | 200 | **G2RV-ST500 200 VAC** |
| | | | | 230 | **G2RV-ST500 230 VAC** |
| | | Yes | DC | 24 | **G2RV-ST501 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST501 24 VAC/VDC** |
| | Microloads | No | DC | 12 | **G2RV-ST500-AP 12 VDC** |
| | | | | 24 | **G2RV-ST500-AP 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST500-AP 24 VAC/VDC** |
| | | | | 48 | **G2RV-ST500-AP 48 VAC/VDC** |
| | | | AC | 100 | **G2RV-ST500-AP 100 VAC** |
| | | | | 110 | **G2RV-ST500-AP 110 VAC** |
| | | | | 200 | **G2RV-ST500-AP 200 VAC** |
| | | | | 230 | **G2RV-ST500-AP 230 VAC** |
| Screw terminal | Standard | No | DC | 12 | **G2RV-ST700 12 VDC** |
| | | | | 24 | **G2RV-ST700 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST700 24 VAC/VDC** |
| | | | | 48 | **G2RV-ST700 48 VAC/VDC** |
| | | | AC | 100 | **G2RV-ST700 100 VAC** |
| | | | | 110 | **G2RV-ST700 110 VAC** |
| | | | | 200 | **G2RV-ST700 200 VAC** |
| | | | | 230 | **G2RV-ST700 230 VAC** |
| | | Yes | DC | 24 | **G2RV-ST701 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST701 24 VAC/VDC** |
| | Microloads | No | DC | 12 | **G2RV-ST700-AP 12 VDC** |
| | | | | 24 | **G2RV-ST700-AP 24 VDC** |
| | | | AC/DC | 24 | **G2RV-ST700-AP 24 VAC/VDC** |
| | | | | 48 | **G2RV-ST700-AP 48 VAC/VDC** |
| | | | AC | 100 | **G2RV-ST700-AP 100 VAC** |
| | | | | 110 | **G2RV-ST700-AP 110 VAC** |
| | | | | 200 | **G2RV-ST700-AP 200 VAC** |
| | | | | 230 | **G2RV-ST700-AP 230 VAC** |

**Note:** Sockets are not sold individually.

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# G2RV-ST



## Relay for Maintenance

### Model Number Legend

**G2RV-1 - S □ - □ - G □**
(1) (2) (3) (4) (5) (6)

**(1) No. of poles**
1: 1 pole

**(2) Terminal**
S: plug-in

**(3) Latching lever (Test switch)**
Blank: Without latching lever
I: With latching lever

**(4) Contact material**
Blank: Ag alloy
AP: Ag alloy + Au plating

**(5) Types of relay for exchange**
G: G2RV-ST series equipped Relay

**(6) Rated coil voltage**
Number: 11, 21, 48 VDC

**G2RV-1-SI-G**



**G2RV-1-S(-AP)-G**



### List of Models

| Type | Latching Lever (Test switch) | Rated coil voltage (V) | | Model | Applicable model |
|---|---|---|---|---|---|
| Standard | No | DC | 11 | **G2RV-1-S-G DC11** | G2RV-ST700/500 12 VDC |
| | | | 21 | **G2RV-1-S-G DC21** | G2RV-ST700/500 24 VDC |
| | | | | | G2RV-ST700/500 24 VAC/VDC |
| | | | 48 | **G2RV-1-S-G DC48** | G2RV-ST700/500 48 VAC/VDC |
| | | | | | G2RV-ST700/500 100 VAC |
| | | | | | G2RV-ST700/500 110 VAC |
| | | | | | G2RV-ST700/500 200 VAC |
| | | | | | G2RV-ST700/500 230 VAC |
| | Yes | DC | 21 | **G2RV-1-SI-G DC21** | G2RV-ST701/501 24 VDC |
| | | | | | G2RV-ST701/501 24 VAC/VDC |
| Microload | No | DC | 11 | **G2RV-1-S-AP-G DC11** | G2RV-ST700/500-AP 12 VDC |
| | | | 21 | **G2RV-1-S-AP-G DC21** | G2RV-ST700/500-AP 24 VDC |
| | | | | | G2RV-ST700/500-AP 24 VAC/VDC |
| | | | 48 | **G2RV-1-S-AP-G DC48** | G2RV-ST700/500-AP 48 VAC/VDC |
| | | | | | G2RV-ST700/500-AP 100 VAC |
| | | | | | G2RV-ST700/500-AP 110 VAC |
| | | | | | G2RV-ST700/500-AP 200 VAC |
| | | | | | G2RV-ST700/500-AP 230 VAC |

**Note:** Voltage is reduced within the socket for the slim I/O relay, so the rated input voltage and rated coil voltage of replacement relays are different.

## Accessories (order separately)

Refer to page 29 for G2RV-ST/G3RV-ST Common Accessories.

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# Specifications

## Ratings

### Coil ratings

| Rated input voltage | Rated current | | | Must operate voltage | Must release voltage | Power consumption | | Maximum allowable voltage |
|---|---|---|---|---|---|---|---|---|
| | AC | | DC | Percentage of the rated voltage | | AC (VA) | DC (mW) | Percentage of the rated voltage |
| | 50 Hz | 60 Hz | | | | | | |
| 12 VDC | – | – | 27.9 mA | 80% max.* | 10% min. | – | Approx. 300 mW | 110% |
| 24 VDC | – | – | 13.5 mA | | | – | Approx. 300 mW | |
| 24 VAC/VDC | 13.7 mA | 14.9 mA | 12.6 mA | | | Approx. 0.5 VA | Approx. 300 mW | |
| 48 VAC/VDC | 5.9 mA | 6.4 mA | 5.2 mA | | | Approx. 0.4 VA | Approx. 250 mW | |
| 100 VAC | 6.8 mA | 7.1 mA | – | | | Approx. 0.8 VA | – | |
| 110 VAC | 6.1 mA | 6.4 mA | – | | | Approx. 0.8 VA | – | |
| 200 VAC | 6.1 mA | 7.3 mA | – | | | Approx. 1.7 VA | – | |
| 230 VAC | 6.8 mA | 8.2 mA | – | | | Approx. 1.7 VA | – | |

**Note:** The operating characteristics are measured at ambient temperature of 23°C.

✻ Operating voltage will be, for mounting in the upside down direction, 85% max.
(Upside down: Direction in which the mechanical indicator faces down)

### Contact ratings

| Item | Standard (G2RV-ST700, 500, 701, 501) | | For microloads (G2RV-ST700-AP, 500-AP) *2 |
|---|---|---|---|
| **Contact configuration** | SPDT | | |
| **Load** | Resistive load (cosϕ=1) | Inductive load (cosϕ=0.4, L/R=7ms) | Resistive load (cosϕ=1) |
| **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 | 50 mA at 30 VAC<br>50 mA at 36 VDC |
| **Rated carry current *3** | 6 A | | 50 mA |
| **Maximum switching voltage** | 440 VAC, 125 VDC | | 30 VAC, 36 VDC |
| **Maximum switching current** | 6 A | | 50 mA |
| **Maximum switching power** | 1,500 VA<br>180 W | 500 VA<br>60 W | – |
| **Failure rate P value (reference value) *1** | 10 mA at 5 VDC | | 1 mA at 100 mVDC |

**✻1.** P level: $\lambda_{60}=0.1\times10^{-6}$/times
This value is the value in switching frequency 120 operations/min.
**✻2.** If the Au plating layer is destroyed, the number will be the same as the standard type.
**✻3.** Please energize under 32A total when use short bar connection.

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## Characteristics

| Item | | Standard (G2RV-ST700, 500, 701, 501) | For microloads (G2RV-ST700-AP, 500-AP) |
|---|---|---|---|
| **Contact resistance *** | | 100 m Ω max. | |
| **Operate time *** | | 20 ms max. | |
| **Release time *** | | AC, AC/DC: 40 ms max.<br>DC: 20 ms max. | |
| **Maximum operating frequency** | | Mechanical: 18,000 operations/h<br>Electrical: 1,800 operations/h (rated load) | |
| **Insulation resistance** | | 1,000 MΩ min. (at 500 VDC) | |
| **Dielectric strength** | | Between coil and contacts: 4,000VAC 50/60 Hz 1 min<br>Contact between the same polarity: 1,000 VAC 50/60 Hz 1 min | |
| **Vibration resistance** | | Destruction: 10 to 55 to 10 Hz, single amplitude 0.50 mm (double amplitude 1.0 mm)<br>Malfunction: 10 to 55 to 10 Hz, single amplitude 0.50 mm (double amplitude 1.0 mm) | |
| **Shock resistance** | | Destruction: 1,000 $m/s^2$<br>Malfunction: Energized 200$m/s^2$, Non-energized 100$m/s^2$ | |
| **Endurance *** | **Mechanical** | 5,000,000 operations min. | |
| | **Electrical** | NO contact: 70,000 operations min.<br>NC contact: 50,000 operations min. | 5,000,000 operations min. |
| **Ambient operating temperature** | | Operating: –40 to +55°C (with no icing or condensation) | |
| **Ambient operating humidity** | | Operating: 5 to 85% RH | |
| **Weight** | | Approx. 30 g | |
| **Type of interruption** | | Micro-disconnection | |
| **Type of insulation** | | Basic isolation: Coil-Contact, Live parts-Ground | |
| **Pollution degree** | | 2 | |
| **Impulse withstand voltage** | | 4.0 kV | |
| **Test procedure** | | A (Group mounting) | |
| **Categories of environmental protection** | | RT 1 | |
| **Degree of protection by enclosure according to IEC 60529** | | IP20 | |
| **Contact material** | | Ag alloy | Ag alloy + Au plating |

**Note:** Above values are initial values.
✻Value is at ambient temperature of 23°C.

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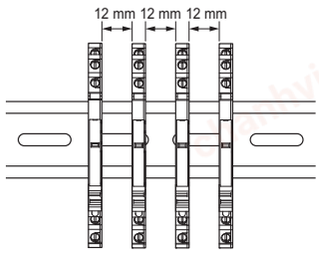


## Approved standards

### UL (File No.E41643)

| Model | Contact form | Operation coil ratings | Contact ratings | Operations |
|---|---|---|---|---|
| G2RV-ST series | SPDT | 12 to 48 VDC<br>24 to 230 VAC | 6 A at 250 VAC (Resistive load)<br>6 A at 30 VDC (Resistive load)<br>2 A at 400 VAC (Resistive load)* | 6,000 |

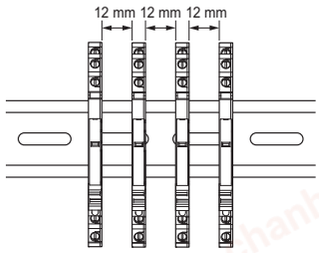
* If the load voltage exceeds 250 VAC, please attach with a spacing of 12 mm min., or use a separate plate (XW5Z-EP12) or 4psc of isolation plate (P2RV-P3.1T).




### TÜV (File No.R50327609, EN 61810-1)

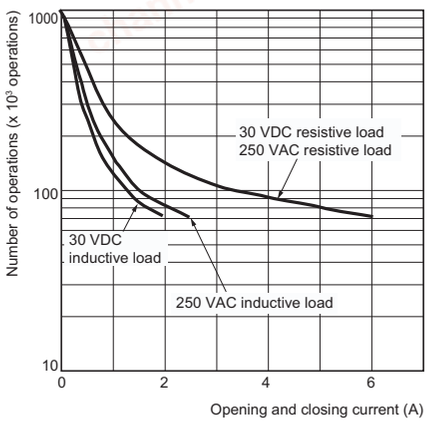
| Model | Contact form | Operation coil ratings | Contact ratings | Operations |
|---|---|---|---|---|
| G2RV-ST series | SPDT | 12, 24 VDC<br>24, 48 VAC/VDC<br>100, 110, 200, 230 VAC | 6 A at 250 VAC (Resistive load)<br>6 A at 30 VDC (Resistive load)<br>2 A at 400 VAC (Resistive load)* | 50,000<br>50,000<br>6,000 |

* If the load voltage exceeds 250 VAC, please attach with a spacing of 12 mm min., or use a separate plate (XW5Z-EP12) or 4psc of isolation plate (P2RV-P3.1T).

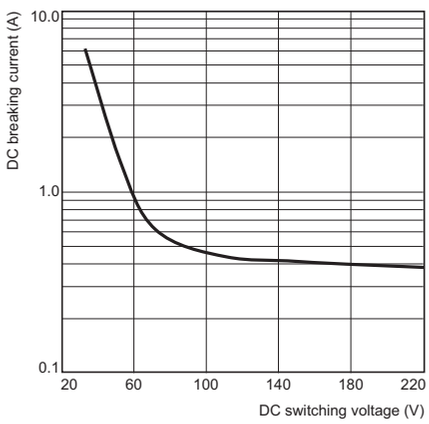



## Reference Data

### Endurance curve (N.O. side)




### Switching capacity of DC resistive load



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# G2RV-ST

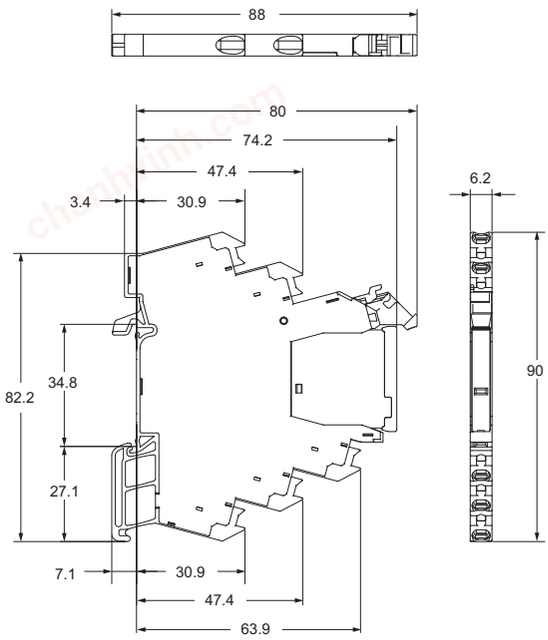
## Dimensions

(unit: mm)

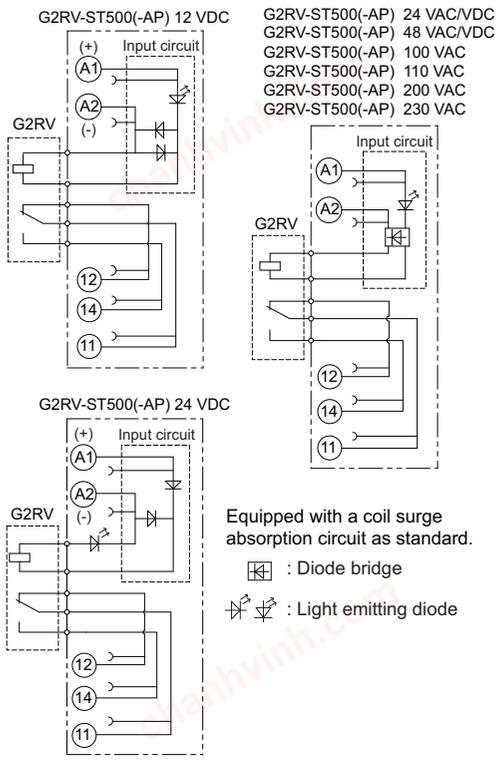
### Slim I/O Relay + socket
**Push-In Plus Terminal Block**

**Models without latching lever (without test switch)**
**G2RV-ST500**
**G2RV-ST500-AP**





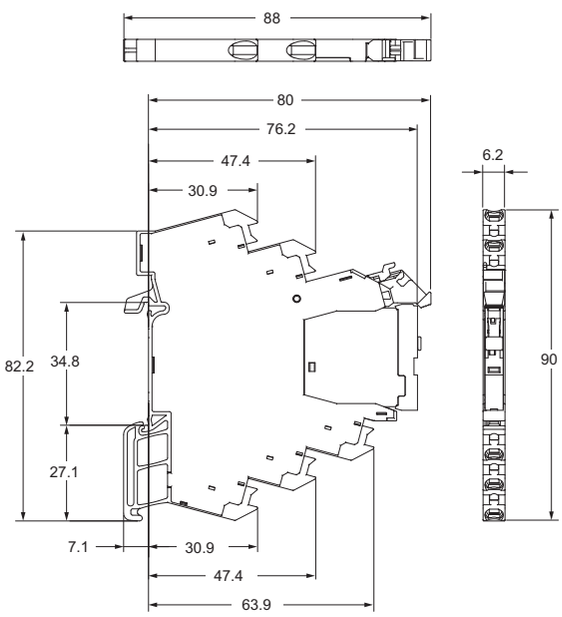

**Terminal Arrangement/Internal Connection Diagram (TOP VIEW)**



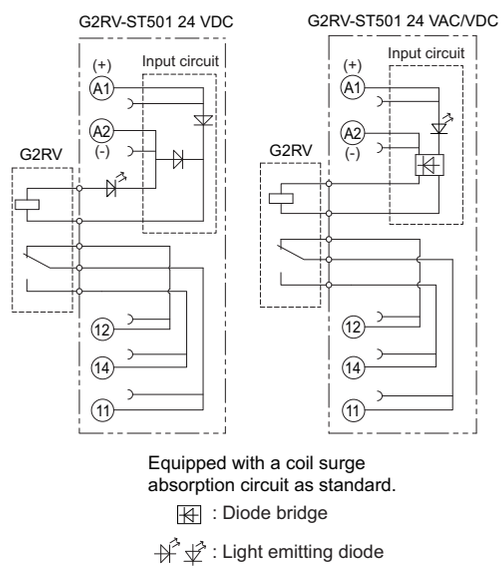

**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

**Models with latching lever (with test switch)**
**G2RV-ST501**






**Terminal Arrangement/Internal Connection Diagram (TOP VIEW)**




**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

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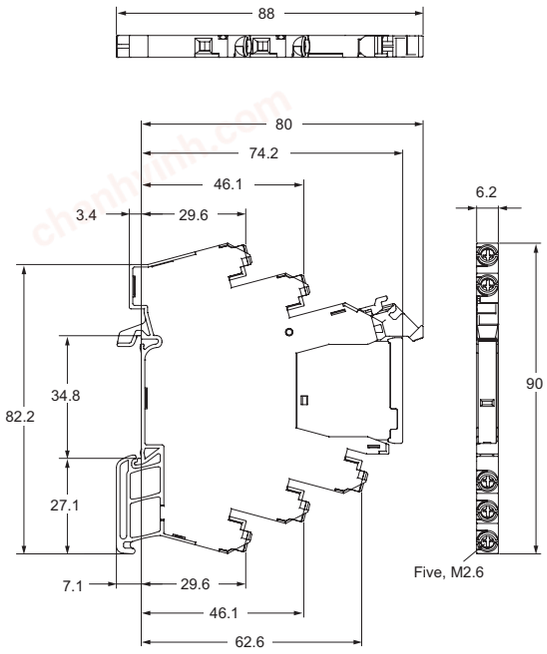




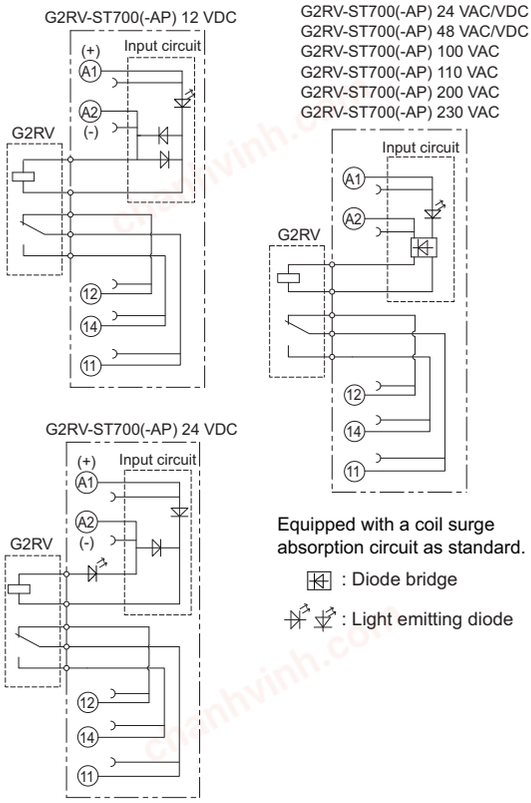
## Screw terminal

### Models without latching lever (without test switch)
**G2RV-ST700**
**G2RV-ST700-AP**





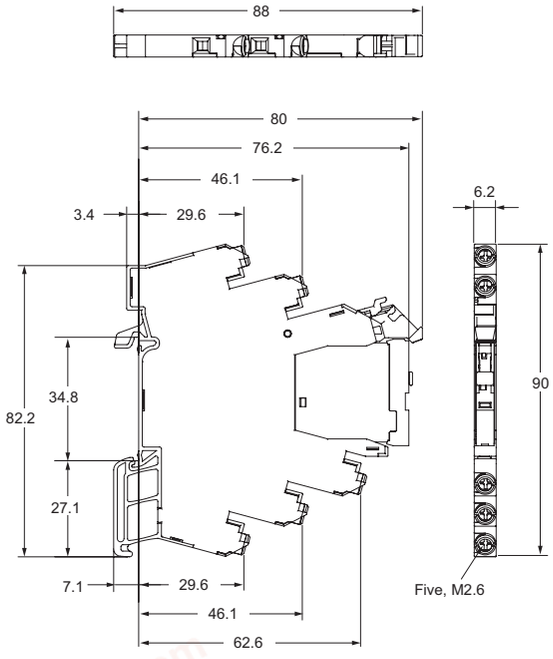

**Terminal Arrangement/Internal Connection Diagram (TOP VIEW)**



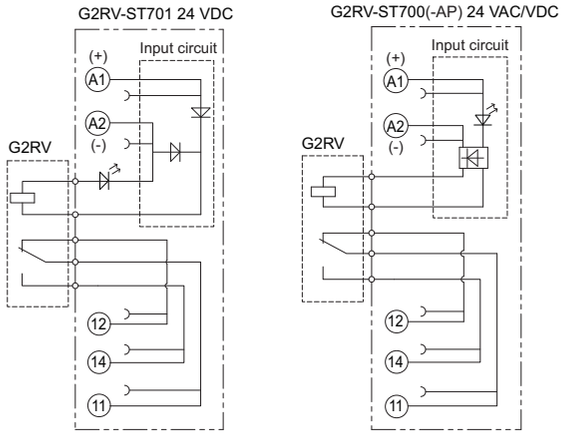

**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

### Models with latching lever (with test switch)
**G2RV-ST701**






**Terminal Arrangement/Internal Connection Diagram (TOP VIEW)**




**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

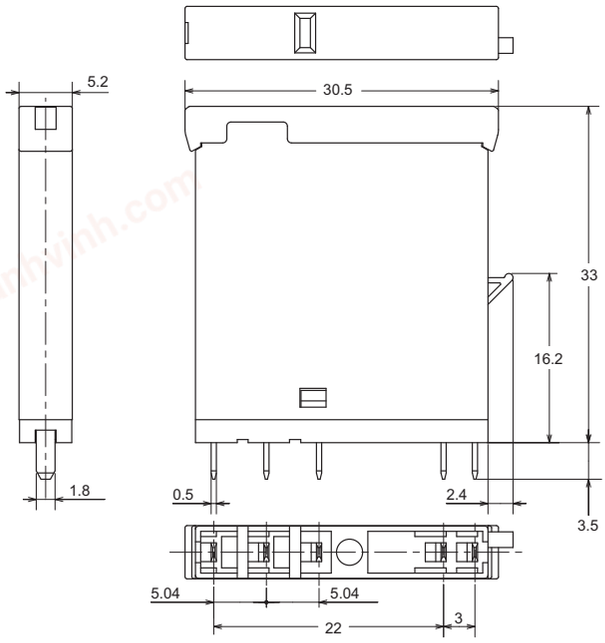
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## Relay for maintenance

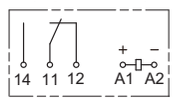
### Models without latching lever
**G2RV-1-S-G**
**G2RV-1-S-AP-G**





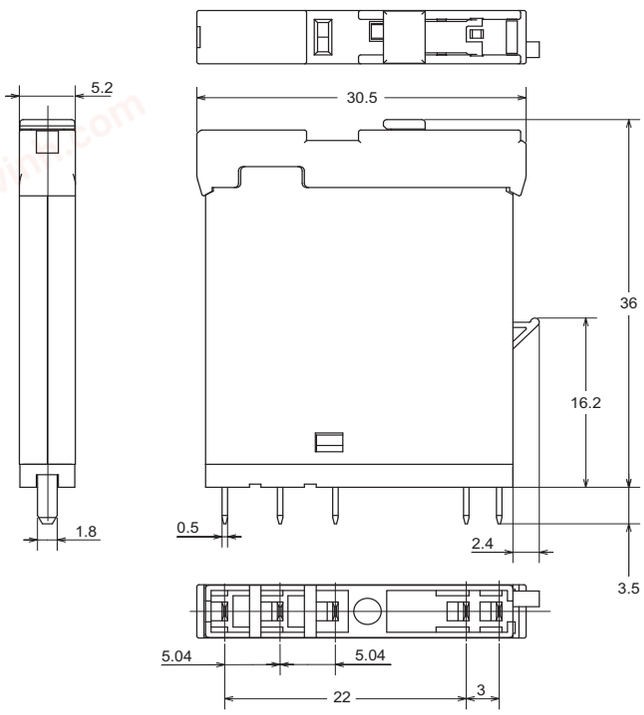

**Terminal Arrangement/ Internal Connection Diagram (TOP VIEW)**

**(Input circuit)**



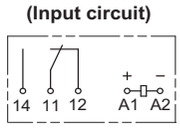

### Models with latching lever (test switch)
**G2RV-1-SI-G**






**Terminal Arrangement/ Internal Connection Diagram (TOP VIEW)**

**(Input circuit)**



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MEMO

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# Slim I/O Solid State Relay
# G3RV-ST

## Slim I/O SSR realizes space saving thanks to high-density mounting and ultra-slim body

- 60% space saving from G3R-I/O series with 6.2 mm width technology.
- 60%* reduction in wiring time and user-friendly with a low insertion force thanks to Push-In Plus Technology.
- Maximum applicable load of 3 A (DC) and 2 A (AC) realized thanks to slim technology.
- The output DC type has a minimum applicable load of 100 μA and a leaked current of 10 μA or less.
- High-speed switching type (operation time of 0.2 ms or less, release time of 0.4 ms or less) added.

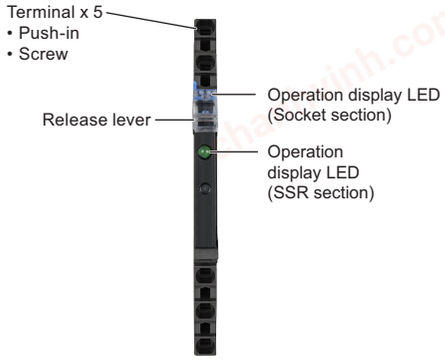
✻According to OMRON actual measurement data for both push-in plus terminal blocks and screw terminal blocks.

⚠ Refer to *Safety Precautions* on page 22.

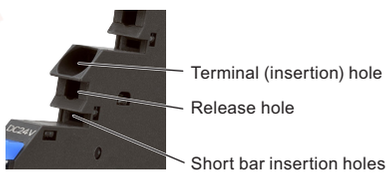


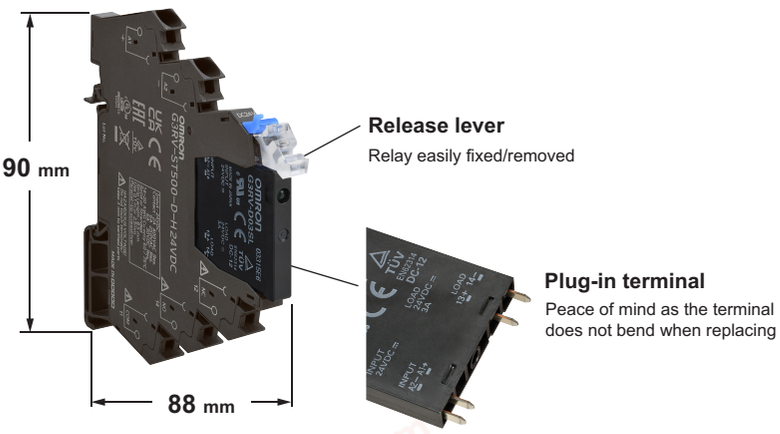
For the recent information on models that have been certified for safety standards, refer to your OMRON website.

## Features




**Push-In Plus technology**



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# Model Number Structure

## Model Number Legend

**G3RV-ST** □□□ - □ - □ □

(1) (2) (3) (4) (5) (6)

**(1) Basic model name**
G3RV: Slim I/O Solid State Relay

**(2) Sub type**
ST: Slim solid relay + integrated low profile socket

**(3) Terminal (wire connection)**
500: Push-In Plus Terminal
700: Screw terminal

**(4) Output voltage specification**
A : AC output (triac) zero cross function available
AL : AC output (triac) zero cross function not available
D : DC output (MOS FET)

**(5) Operation and release time**
H : High speed type

**(6) Rated voltage input**
12, 24 VDC
24, 48 VAC/VDC
100, 110, 200, 230 VAC

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# G3RV-ST

## Ordering Information

| Terminal (wire connection) | Applicable output load | Zero cross function | Rated input voltage (V) | | Model |
|---|---|---|---|---|---|
| Push-In Plus Terminal | DC load | — | DC | 12 | **G3RV-ST500-D 12 VDC** |
| | | | | 24 | **G3RV-ST500-D 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST500-D 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST500-D 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST500-D 100 VAC** |
| | | | | 110 | **G3RV-ST500-D 110 VAC** |
| | | | | 200 | **G3RV-ST500-D 200 VAC** |
| | | | | 230 | **G3RV-ST500-D 230 VAC** |
| | DC load (high-speed opening and closing) | — | DC | 24 | **G3RV-ST500-D-H 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST500-D-H 24 VAC/VDC** |
| | AC load | Yes | DC | 12 | **G3RV-ST500-A 12 VDC** |
| | | | | 24 | **G3RV-ST500-A 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST500-A 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST500-A 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST500-A 100 VAC** |
| | | | | 110 | **G3RV-ST500-A 110 VAC** |
| | | | | 200 | **G3RV-ST500-A 200 VAC** |
| | | | | 230 | **G3RV-ST500-A 230 VAC** |
| | | No | DC | 12 | **G3RV-ST500-AL 12 VDC** |
| | | | | 24 | **G3RV-ST500-AL 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST500-AL 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST500-AL 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST500-AL 100 VAC** |
| | | | | 110 | **G3RV-ST500-AL 110 VAC** |
| | | | | 200 | **G3RV-ST500-AL 200 VAC** |
| | | | | 230 | **G3RV-ST500-AL 230 VAC** |
| Screw terminal | DC load | — | DC | 12 | **G3RV-ST700-D 12 VDC** |
| | | | | 24 | **G3RV-ST700-D 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST700-D 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST700-D 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST700-D 100 VAC** |
| | | | | 110 | **G3RV-ST700-D 110 VAC** |
| | | | | 200 | **G3RV-ST700-D 200 VAC** |
| | | | | 230 | **G3RV-ST700-D 230 VAC** |
| | DC load (high-speed opening and closing) | — | DC | 24 | **G3RV-ST700-D-H 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST700-D-H 24 VAC/VDC** |
| | AC load | Yes | DC | 12 | **G3RV-ST700-A 12 VDC** |
| | | | | 24 | **G3RV-ST700-A 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST700-A 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST700-A 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST700-A 100 VAC** |
| | | | | 110 | **G3RV-ST700-A 110 VAC** |
| | | | | 200 | **G3RV-ST700-A 200 VAC** |
| | | | | 230 | **G3RV-ST700-A 230 VAC** |
| | | No | DC | 12 | **G3RV-ST700-AL 12 VDC** |
| | | | | 24 | **G3RV-ST700-AL 24 VDC** |
| | | | AC/DC | 24 | **G3RV-ST700-AL 24 VAC/VDC** |
| | | | | 48 | **G3RV-ST700-AL 48 VAC/VDC** |
| | | | AC | 100 | **G3RV-ST700-AL 100 VAC** |
| | | | | 110 | **G3RV-ST700-AL 110 VAC** |
| | | | | 200 | **G3RV-ST700-AL 200 VAC** |
| | | | | 230 | **G3RV-ST700-AL 230 VAC** |

**Note:** Sockets are not sold individually.

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# Solid state relay for maintenance

## Model Number Legend

**G3RV-□ □ S □ - □ □**
(1) (2) (3) (4) (5) (6)

**(1) Output voltage specification**
D: DC output
2: AC output

**(2) Rated current**
02: AC output 2 A
03: DC output 3 A

**(3) Terminal**
S: Plug-in type

**(4) Zero cross functions**
Blank: Zero cross function available
L: Zero cross function not available

**(5) Operation and release time**
H : High speed type

**(6) Rated voltage input**
Number: 12, 24, 48 VDC




## List of Models

| Insulation method | Operation Display | Output (SSR) | Zero cross Function | Rated output Load * | Rated input voltage (socket) | Model | Applicable model |
|---|---|---|---|---|---|---|---|
| Photo-triac | Yes (green) | AC | Yes | 2 A (at 100 to 240 VAC) | 12 VDC | **G3RV-202S DC12** | G3RV-ST700/500-A 12 VDC |
| | | | | | 24 VDC | **G3RV-202S DC24** | G3RV-ST700/500-A 24 VDC |
| | | | | | 24 VAC/VDC | | G3RV-ST700/500-A 24 VAC/VDC |
| | | | | | 48 VAC/VDC | **G3RV-202S DC48** | G3RV-ST700/500-A 48 VAC/VDC |
| | | | | | 100 VAC | | G3RV-ST700/500-A 100 VAC |
| | | | | | 110 VAC | | G3RV-ST700/500-A 110 VAC |
| | | | | | 200 VAC | | G3RV-ST700/500-A 200 VAC |
| | | | | | 230 VAC | | G3RV-ST700/500-A 230 VAC |
| | | | No | | 12 VDC | **G3RV-202SL DC12** | G3RV-ST700/500-AL 12 VDC |
| | | | | | 24 VDC | **G3RV-202SL DC24** | G3RV-ST700/500-AL 24 VDC |
| | | | | | 24 VAC/VDC | | G3RV-ST700/500-AL 24 VAC/VDC |
| | | | | | 48 VAC/VDC | **G3RV-202SL DC48** | G3RV-ST700/500-AL 48 VAC/VDC |
| | | | | | 100 VAC | | G3RV-ST700/500-AL 100 VAC |
| | | | | | 110 VAC | | G3RV-ST700/500-AL 110 VAC |
| | | | | | 200 VAC | | G3RV-ST700/500-AL 200 VAC |
| | | | | | 230 VAC | | G3RV-ST700/500-AL 230 VAC |
| Photo-voltage coupler | | DC | – | 3 A (at 5 to 24 VDC) | 12 VDC | **G3RV-D03SL DC12** | G3RV-ST700/500-D 12 VDC |
| | | | | | 24 VDC | **G3RV-D03SL DC24** | G3RV-ST700/500-D 24 VDC |
| | | | | | 24 VAC/VDC | | G3RV-ST700/500-D 24 VAC/VDC |
| | | | | | 48 VAC/VDC | **G3RV-D03SL DC48** | G3RV-ST700/500-D 48 VAC/VDC |
| | | | | | 100 VAC | | G3RV-ST700/500-D 100 VAC |
| | | | | | 110 VAC | | G3RV-ST700/500-D 110 VAC |
| | | | | | 200 VAC | | G3RV-ST700/500-D 200 VAC |
| | | | | | 230 VAC | | G3RV-ST700/500-D 230 VAC |
| | | | | | 24 VDC | **G3RV-D03SL-H DC24** | G3RV-ST700/500-D-H 24 VDC |
| | | | | | | | G3RV-ST700/500-D-H 24 VAC/VDC |

✻Different depending on the ambient temperature.
For more details, refer to *Load current vs. ambient rated temperature* on page 18.

## Accessories (order separately)

Refer to page 29 for G2RV-ST/G3RV-ST Common Accessories.

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# Specifications

## Rating (ambient temperature 25°C)

### Input

#### G3RV-ST700/500-A series

| Rated input voltage | Rated current | | | Must operate voltage | Must release voltage | Input voltage |
|---|---|---|---|---|---|---|
| | AC | | DC | | | Percentage of the rated voltage |
| | 50 Hz | 60 Hz | | | | |
| 12 VDC | – | – | 15.0 mA | 10.8 V max. | 1 V min. | ±10% |
| 24 VDC | – | – | 12.0 mA | 21.6 V max. | | |
| 24 VAC/VDC | 11.3 mA | 11.4 mA | 11.0 mA | 21.6 V max. | | |
| 48 VAC/VDC | 6.8 mA | 6.9 mA | 6.0 mA | 43.2 V max. | | |
| 100 VAC | 6.2 mA | 6.2 mA | – | 90 V max. | | |
| 110 VAC | 6.2 mA | 6.2 mA | – | 99 V max. | | |
| 200 VAC | 6.7 mA | 7.9 mA | – | 180 V max. | | |
| 230 VAC | 7.5 mA | 8.8 mA | – | 207 V max. | | |

#### G3RV-ST700/500-AL series

| Rated input voltage | Rated current | | | Must operate voltage | Must release voltage | Input voltage |
|---|---|---|---|---|---|---|
| | AC | | DC | | | Percentage of the rated voltage |
| | 50 Hz | 60 Hz | | | | |
| 12 VDC | – | – | 15.0 mA | 10.8 V max. | 1 V min. | ±10% |
| 24 VDC | – | – | 12.0 mA | 21.6 V max. | | |
| 24 VAC/VDC | 11.4 mA | 11.5 mA | 11.0 mA | 21.6 V max. | | |
| 48 VAC/VDC | 7.7 mA | 7.7 mA | 6.9 mA | 43.2 V max. | | |
| 100 VAC | 7.3 mA | 7.3 mA | – | 90 V max. | | |
| 110 VAC | 7.3 mA | 7.3 mA | – | 99 V max. | | |
| 200 VAC | 7.0 mA | 8.1 mA | – | 180 V max. | | |
| 230 VAC | 7.7 mA | 8.9 mA | – | 207 V max. | | |

#### G3RV-ST700/500-D series

| Rated input voltage | Rated current | | | Must operate voltage | Must release voltage | Input voltage |
|---|---|---|---|---|---|---|
| | AC | | DC | | | Percentage of the rated voltage |
| | 50 Hz | 60 Hz | | | | |
| 12 VDC | – | – | 8.0 mA | 10.8 V max. | 1 V min. | ±10% |
| 24 VDC | – | – | 4.6 mA | 21.6 V max. | | |
| 24 VAC/VDC | 5.0 mA | 5.1 mA | 4.3 mA | 21.6 V max. | | |
| 48 VAC/VDC | 6.8 mA | 6.9 mA | 6.0 mA | 43.2 V max. | | |
| 100 VAC | 6.8 mA | 6.8 mA | – | 90 V max. | | |
| 110 VAC | 6.7 mA | 6.7 mA | – | 99 V max. | | |
| 200 VAC | 6.7 mA | 7.9 mA | – | 180 V max. | | |
| 230 VAC | 7.5 mA | 8.8 mA | – | 207 V max. | | |

#### High-speed type G3RV-ST700/500-D-H series

| Rated input voltage | Rated current | | | Must operate voltage | Must release voltage | Input voltage |
|---|---|---|---|---|---|---|
| | AC | | DC | | | Percentage of the rated voltage |
| | 50 Hz | 60 Hz | | | | |
| 24 VDC | – | – | 9.0 mA | 21.6 V max. | 1 V min. | ±10% |
| 24 VAC/VDC | 9.0 mA | 9.5 mA | 8.4 mA | 21.6 V max. | | |

### Output

| Item | G3RV-ST700/500-A(L) | G3RV-ST700/500-D |
|---|---|---|
| **Rated load voltage** | 100 to 240 VAC (50/60 Hz) | 5 to 24 VDC |
| **Load voltage range** | 75 to 264 VAC (50/60 Hz) | 3 to 26.4 VDC |
| **Load current** | 0.1 to 2 A (Ambient temperature=25°C) | 100 μA to 3 A (Ambient temperature=25°C) |
| **Inrush current resistance** | 30 A (10 ms) | 30 A (10 ms) |
| **Permissible $I^2t$; Joule integral value (reference value)** | $15A^2s$ | $9\ A^2\ s$ |
| **Applied load capacity** | 400 W (Output voltage: 200 VAC) | 72 W (Output voltage: 24 VDC) |

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## Characteristics

| Item | G3RV-ST700/500-A | G3RV-ST700/500-AL | G3RV-ST700/500-D-H 24 VDC | G3RV-ST700/500-D-H 24 VAC/VDC | G3RV-ST700/500-D |
|---|---|---|---|---|---|
| **Operate time** | 11 ms max. * | 3 ms max. | 0.2 ms max. | 3 ms max. * | 6 ms max. |
| **Release time** | 31 ms max. * | 31 ms max. * | 0.4 ms max. | 21 ms max. * | 21 ms max. * |
| **Output ON voltage drop** | 1.6 V (RMS) max. | | – | | |
| **Output ON resistance** | – | | 0.3 Ω max. (at 24 VDC) | | |
| **Leaked current** | 5 mA max. (at 200 VAC, 50/60 Hz) | | 10 μA max. (at 24 VDC) | | |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) | | | | |
| **Dielectric strength** | Between input and output 2,500 VAC 50/60 Hz 1 min | | | | |
| **Vibration resistance** | Malfunction: 10 to 55 to 10 Hz double amplitude 0.70 mm | | | | |
| **Shock resistance** | 300m/s$^2$ | | | | |
| **Ambient operating temperature** | Storage: –30 to +100°C (with no icing or no condensation)<br>Operating: –30 to +55°C (with no icing or no condensation) | | | | |
| **Ambient operating humidity** | 45 to 85% RH | | | | |
| **Weight** | Approx. 30 g | | | | |
| **Pollution degree** | 2 | | | | |
| **The degree of protection by IEC60529** | IP20 | | | | |
| **Rated impulse dielectric strength** | 4.0 kV/III | | | | |
| **Load category** | LC-A | | DC-12 | | |
| **Overload current profile** | 1.5Ie 1.1Ue<br>5s ON, 10s OFF, 10 cycles | | | | |
| **Rated insulation voltage** | 240 V | | | | |

✻ Operate time is 1/2cycle of load power supply + 1ms, and release time is 1/2 cycle of load power supply + 1ms + 1cycle of input power supply frequency.

## Approved standards

### UL (File No.E64562)

| Model | Input ratings | Contact ratings |
|---|---|---|
| G3RV-ST700/500-D series | 12, 24 VDC<br>24, 48 VAC/VDC<br>100, 110, 200, 230 VAC | 24 VDC 3 A (resistive load) at 25°C |
| G3RV-ST700/500-A(L) series | 12, 24 VDC<br>24, 48 VAC/DC<br>100, 110, 200, 230 VAC | 240 VAC 2 A (resistive load) at 25°C |

### TÜV (EN 62314)

| Model | Input ratings | Contact ratings |
|---|---|---|
| G3RV-ST700/500-D series | 12, 24 VDC<br>24, 48 VAC/VDC<br>100, 110, 200, 230 VAC | 24 VDC 3 A (resistive load) |
| G3RV-ST700/500-A(L) series | 12, 24 VDC<br>24, 48 VAC/VDC<br>100, 110, 200, 230 VAC | 240 VAC 2 A (resistive load) |

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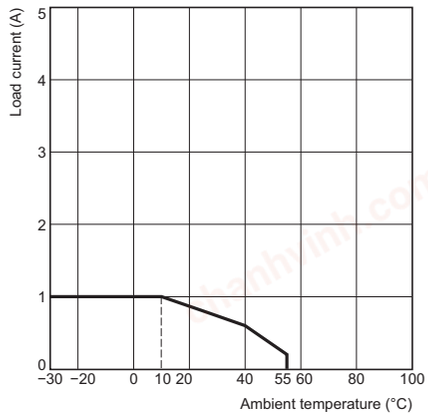


# Engineering Data

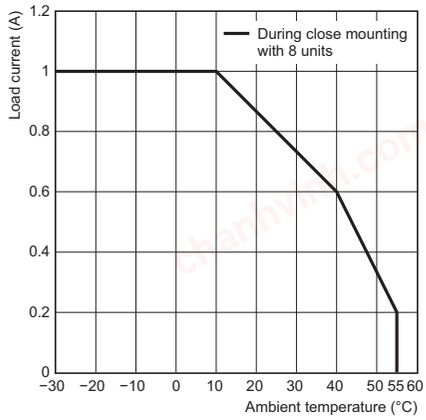
## Load current vs. ambient rated temperature

### G3RV-ST700/500-A(L) series

Product mounting spacing 10 mm (Separate Mounting)

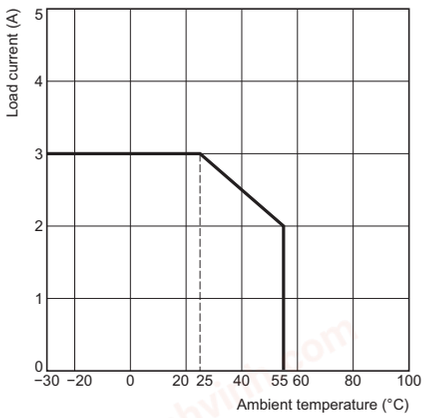



Close mounting (up to 8 units *)

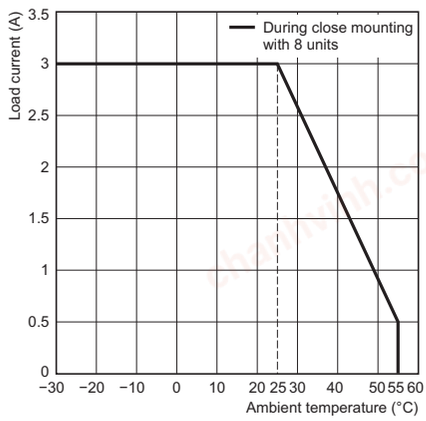



### G3RV-ST700/500-D series

Product mounting spacing 10 mm (Separate Mounting)




Close mounting (up to 8 units *)

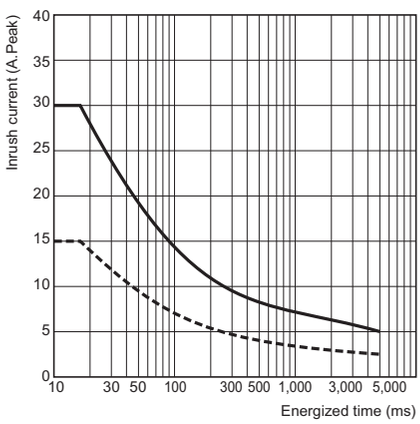



✻When eight or more are installed, install with 10 mm space between each.
For details, please refer to *Mounting* on page 27.

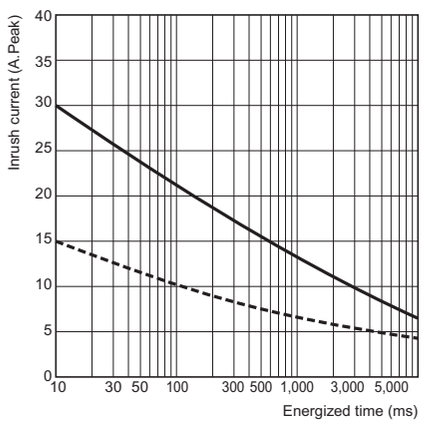
## Inrush Current Resistance: Non-repetitive

Keep the inrush current to below the inrush current resistance value (i.e., below the broken line) if it occurs repetitively.

### G3RV-ST700/500-A(L) series




### G3RV-ST700/500-D series



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# Dimensions

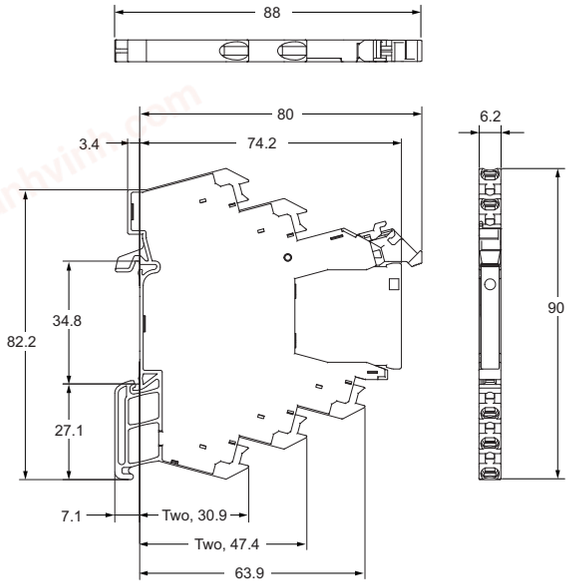
(unit: mm)

## Solid state relay + socket

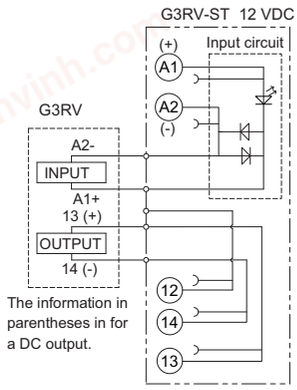
### Push-In Plus Terminal Block

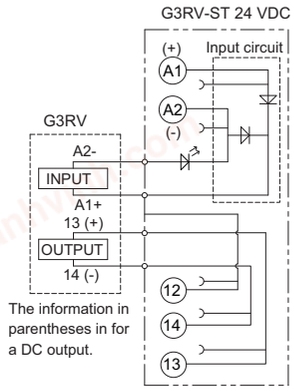
### G3RV-ST500

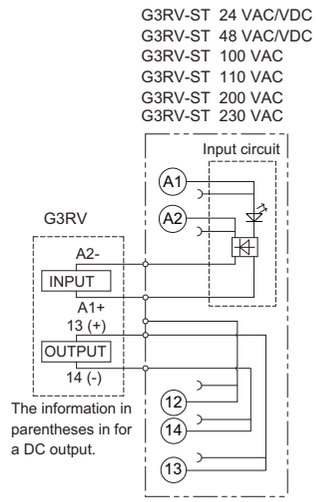





**Terminal Arrangement/ Internal Connection Diagram (TOP VIEW)**




Equipped with a coil surge absorption circuit as standard.

: Diode bridge

: Light emitting diode

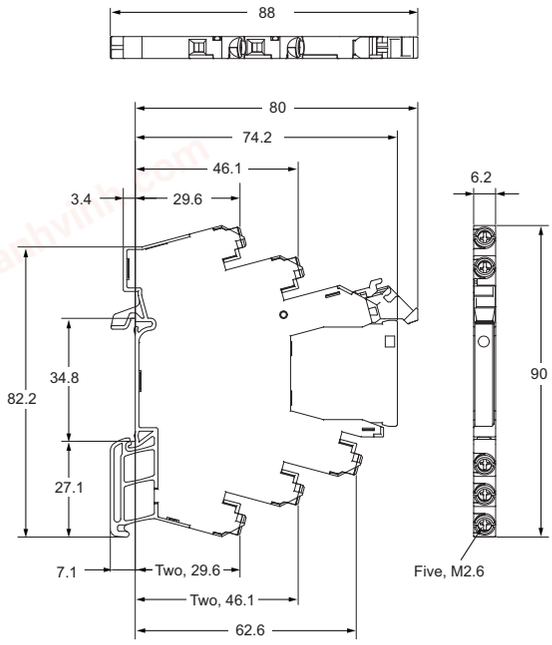
**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

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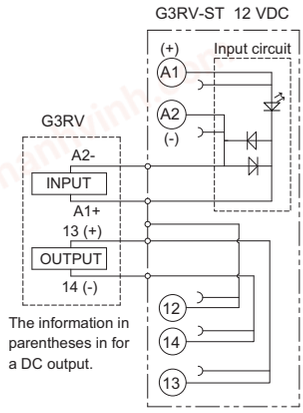


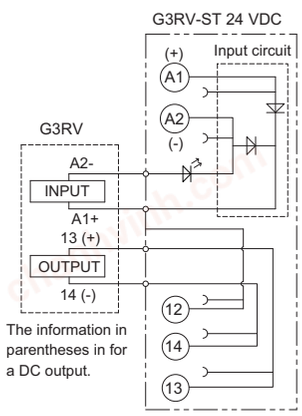
## Screw terminal
## G3RV-ST700

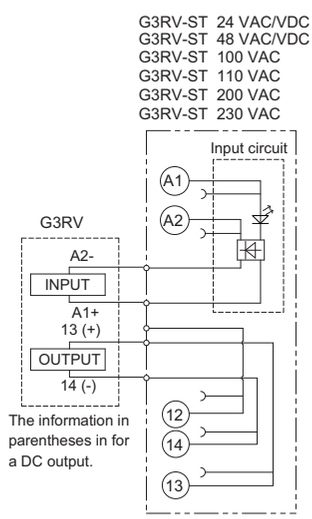





**Terminal Arrangement/ Internal Connection Diagram (TOP VIEW)**




Equipped with a coil surge absorption circuit as standard.

: Diode bridge

: Light emitting diode

**Note:** For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

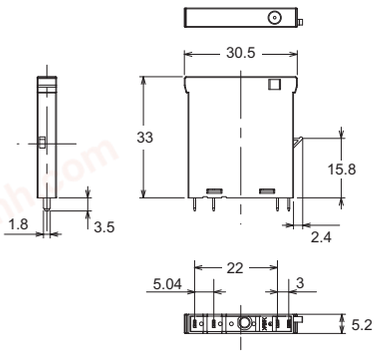
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## Solid state relay for maintenance

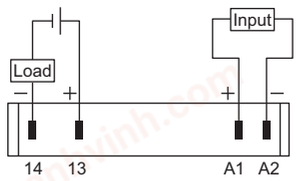
**G3RV-D03SL**
**G3RV-202S(L)**



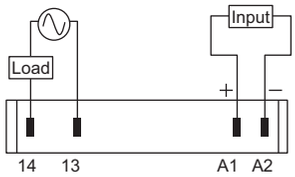

**Terminal Arrangement/ Internal Connection Diagram (TOP VIEW)**

**G3RV-D03SL (input circuit)**




**Note:** The load can be connected to either the positive or negative terminals.

**G3RV-202S(L) (input circuit)**



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# Safety Precautions

**Be sure to read the *Safety Precautions for All Relays* in the website at the following URL: http://www.ia.omron.com/.**

### Format of Warning Indications

| | |
|---|---|
| ⚠ WARNING | Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage. |
| ⚠ CAUTION | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage. |
| Precautions for Safe Use | Indicates supplementary comments on what to do or avoid doing, to use the product safety. |
| Precautions for Correct Use | Includes operating precautions to ensure that the product will operate properly and that performance and functions will not be adversely affected. |

### Meaning of Graphic Symbols for Ensuring Product Safety

| | |
|---|---|
|  | Indicates the possibility of electric shock under specific conditions. |
|  | Used for general CAUTION, WARNING, or DANGER precautions for which there is no specified symbol. (This symbol is also used as the alerting symbol, but shall not be used in this meaning on the product.) |
|  | Indicates the possibility of explosion or rupture under specific conditions. |
|  | Indicates the possibility of injuries by high temperature under specific conditions. |

### ⚠ WARNING

Ensure that the socket is not charged during wiring and maintenance. Not doing so may result in electric shock.



Do not touch the terminal section of the G2RV-ST or the surrounding area while the power is being supplied. Doing so may result in electric shock.



### ⚠ CAUTION

Minor electrical shock may occasionally occur.
Do not touch the G3RV terminal section (i.e., current carrying parts) while the power is being supplied.



The G3RV may rupture if short-circuit current flows.
As protection against accidents due to short-circuiting, be sure to install protective devices, such as fuses and no-fuse breakers, on the power supply side.



Minor electrical shock may occasionally occur.
Do not touch the main circuit terminals on the G3RV immediately after the power supply has been turned OFF.
Shock may result due to the electrical charge stored in the built-in snubber circuit.
Note: G3RV-202S(L), G3RV-ST500/700-A(L) series models only



Minor burns may occasionally occur.
Do not touch the G3RV or the heat sink while the power is being supplied or immediately after the power supply has been turned OFF.
The G3RV becomes extremely hot.



Provide a space of at least 3 mm or place an insulating plate (P2RV-P3.1ST) between the G2RV-ST or G3RV-ST and ground and other adjacent components. Not doing so may result in an electric shock.



When mounting the G2RV-ST or G3RV-ST with its input and output opposite to the input and output of an adjacent product, provide a space of at least 3 mm or place an insulating plate (P2RV-P3.1ST) between them.



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## Precautions for Safe Use

### Transport

- Do not use the product if it has been dropped on the ground. Dropping the product may adversely affect performance.
- Do not drop the product or subject it to abnormal vibration or shock during transportation or mounting. Doing so may result in deterioration of performance, malfunction, or failure.
- Do not transport the product without it being packaged. Doing so may result in damage, malfunction, or failure.
- Do not transport the G3RV under the following conditions. Doing so may result in damage, malfunction, or deterioration of performance characteristics.
  - High temperature, high humidity conditions
  - Conditions such as temperature change that causes rapid condensation
  - Condition where it is not packaged

### Operating and Storage Environments

- Do not use or store the product in the following locations. Doing so may result in damage, malfunction, or deterioration of performance characteristics.
  - Storage in locations subject to ambient temperature outside the range -40 to 70°C (for G2RV) and -30 to 100°C (for G3RV), and usage in locations subject to ambient temperature outside the range -40 to 55°C (for G2RV) and -30 to 55°C (for G3RV).
  - Locations subject to relative humidity outside the range 5% to 85% (for G2RV) and outside the range 45% to 85% (for G3RV).
  - Locations subject to high temperature or high humidity.
  - Conditions such as temperature change that causes rapid condensation
  - Locations where corrosive gases or flammable gases are present
  - Location where rainwater or water droplets gets splashed
  - Location with splashes of water, oil, and chemicals, etc.
  - Locations with much dust, salt, and iron powder
  - Location with blockers
  - Where static electricity or noise occurs
  - Where strong electromagnetic field is generated
  - Where there is a risk of exposure to radioactivity
  - Storage in a state with a load applied to the product
  - Locations subject to ultraviolet rays from direct sunlight
- Do not use or store Sockets in environments that contain silicone gas, sulfidizing gas (e.g., $SO_2$ or $H_2S$), or organic gas, or near materials that contain silicone. Doing so may cause the contacts to be unstable or to fail.

### Handling <G3RV>

- Keep the G3RV well ventilated.
  There is a risk of short-circuiting or burning due to G3RV overheating.

### Mounting

- Before you start wiring, please make sure that the socket is securely attached to the mounting rail. If the socket is unstable, it may come loose and risk of injury towards the workers.
- Please insert the flat-blade screwdriver to the bottom of the hole. If you do not insert the flat-blade screwdriver correctly, the cable will not be connected correctly.
- When lubricant such as oil is attached to the tip of the driver, the driver will fall off, with a risk of injury towards the workers.
- When replacing a relay, set the stopper to the unlocked state and then eject the relay with the ejector lever. In addition, press the stopper after replacement to change the state from unlocked to locked.

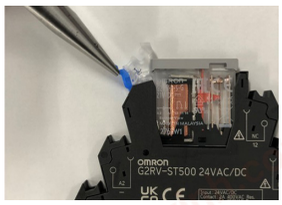


Locked state



Unlocked state

- To operate the stopper, you can change the state from locked to unlocked by gripping the stopper protruding part with the recommended needle-nose pliers. (Needle-nose pliers with a tip shape that is 4 mm wide or less and 3 mm thick or less.)
- Do not use cutting nippers to operate the stopper. Doing so may damage the stopper.




- If the stopper is operated with an exceedingly strong force, the stopper protruding part may be damaged and the stopper may drop out. Since the function of the stopper is to fix the ejector lever, use as a product is possible even in the event that the stopper is damaged or drops out because the functionality is satisfied even without a stopper in respect to vibrations and impacts.

### Usage

- Please select the load within the rated range. Doing so may result in damage, malfunction, or failure.
- Please use the power of the rated frequency. It may cause malfunction, failure, or risk of burnout.

**<G3RV>**

- Install G3RV according to instructions *Mounting* on page 27. If you install in the wrong direction, abnormal heat is generated, and may lead to short-circuiting or burning the output element.
- G3RV is an SSR that generates heat. Please observe the ambient temperature setting range of G3RV. If installing in an enclosed space, set a fan, and ventilate.
- When mounting G3RV to DIN rail, firmly fits into the groove. If it is not properly installed, there is a risk of it falling.

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## Wiring

- For the current to be applied, make sure a wire size with margin is used. Otherwise, excessive heat generated by the wires may cause burning.
- Do not attempt to use the wire if the coat is torn. Not doing so may result in electric shock.
- Always turn OFF the power supply before performing wiring. Not doing so may cause electrical shock.

**<G3RV>**

- The wires of the socket for G3RV socket should not be passed through the same duct as that being connected to the high-voltage power supply. Otherwise, inductive noise may damage the G3RV or cause it to malfunction.

## Push-In Plus Terminal Block

- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend the wire past its natural bending radius or pull on it with excessive force. Doing so may cause the wire disconnection.
- Do not insert more than one wire into each terminal (insertion) hole.
- To prevent wiring materials from smoking or ignition, confirm wire ratings and use the wiring materials given in the following table.

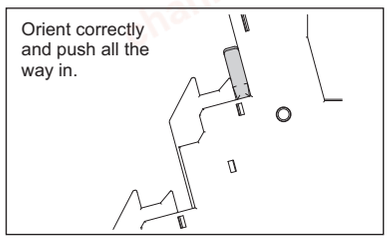
| Recommended Wire | Stripping length (Ferrules not used) |
|---|---|
| 0.5 to 2.5 $mm^2$/ AWG20 to AWG14 stranded wire | 8 mm |

## Disposal

- When disposing of the product, do not put into the fire.

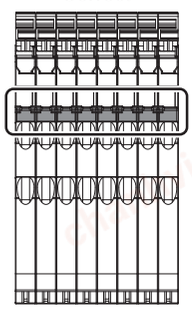
## Precautions for Correct Use

- Do not use or store the product in the following locations. Doing so may result in damage, malfunction, or deterioration of performance characteristics.
  - Where vibration or shock is directly transmitted to the body
  - Where the socket could come into contact with a solvent or alkaline agent
- When installing the short bar, insert it into the insertion hole, and insert until all terminals are all the way in.



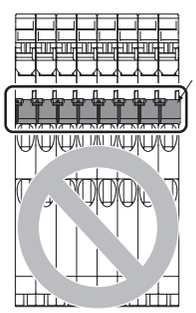

Completely inserted
All terminals are inserted all the way in.

Correct



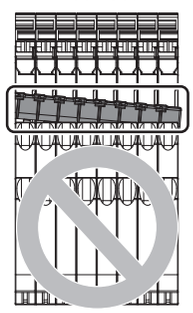
Incomplete insertion
All terminals are not inserted all the way in.

Incorrect

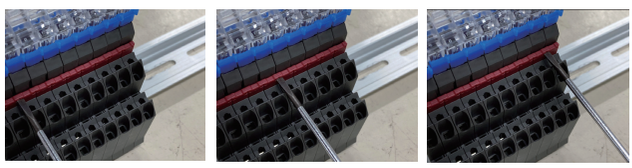



Incorrect installation
Some terminals not inserted completely.

Incorrect



- To remove the short bar, insert a screwdirver beneath the hole on top of the short bar and lift up.
  Start lifting up from either end, lift up all screwdriver in order, and then remove the short bar.

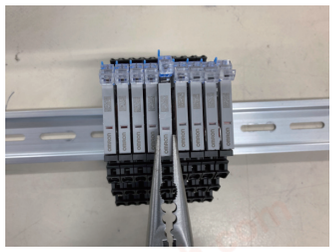


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- If using a short bar, install the short bar before performing wiring work.
- A push-in Plus terminal block type and a screw terminal type have different insertion positions, so a mixed installation using the same short bar is not possible.
- Do not insert short bar in the hole for wire or screw driver, it may cause the result of failure of pull out.
  If insert short bar in the hole for wire or screw driver and try to pull out, it may cause damage for short bar or socket and failure in electric conductivity.
- Please insert P2RVC terminal into the short bar insertion hole of G2RV-ST/G3RV-ST. If insert P2RVC into the release hole or terminal (insertion) hole wrongly, P2RVC may stuck and can not remove and it may cause result of damage on P2RVC and G2RV-ST/G3RV-ST.
  Please turn off the power of input and output side and remove PLC interface unit when replacing mounting relays and SSRs for maintenance.
- When replacing relays, there is a possibility the relay will pop out and fall. Take care to prevent the relay from falling during replacement.
- When replacing a relay, remove it by tilting it to the left as shown in the figure below because the protrusion to prevent pop-out relay will get in the way.



- Dedicated accessories for G2RV-SR/G3RV-SR are not compatible and cannot be used.

**Short Bars**

- PYDN-6.2-020□
- PYDN-6.2-030□
- PYDN-6.2-040□
- PYDN-6.2-100□
- PYDN-6.2-200□

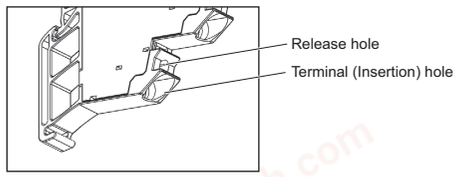
**PLC interface unit**

- P2RVC-8-I-5-1
- P2RVC-8-I-5
- P2RVC-8-I-7-1
- P2RVC-8-O-5-1
- P2RVC-8-O-5
- P2RVC-8-O-7-1

## Push-In Plus Terminal Block

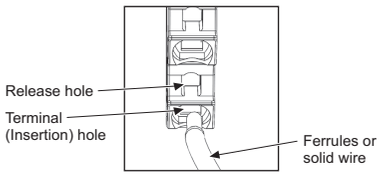
### 1. Connecting Wires to the Push-In Plus Terminal Block

**Part Names of the Terminal Block**




**Connecting Wires with Ferrules and Solid Wires**

Insert the solid wire or ferrule straight into the terminal block until the end strikes the terminal block.

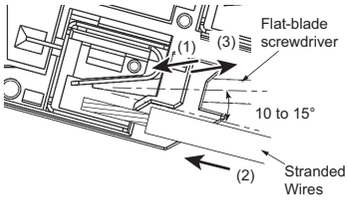


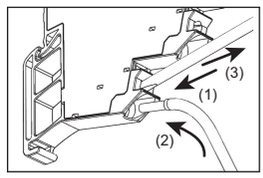

- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wire.

**Connecting Stranded Wires**

Use the following procedure to connect the wires to the terminal block.

(1) Hold a flat-blade screwdriver at an angle and insert it into the release hole.
The angle should be between 10°and15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
(2) With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
(3) Remove the flat-blade screwdriver from the release hole.



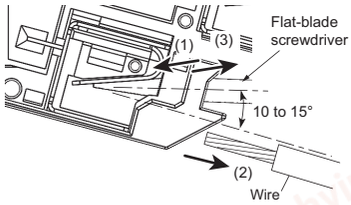

**Checking Connections**

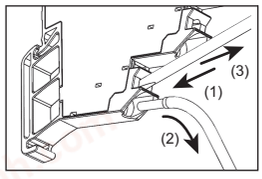
- After the insertion, pull gently on the wire to make sure that it will not come off and the wire is securely fastened to the terminal block.
- If you use a ferrule with a conductor length of 10 mm, part of the conductor may be visible after the ferrule is inserted into the terminal block, but the product insulation distance will still be satisfied.

### 2. Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

(1) Hold a flat-blade screwdriver at an angle and insert it into the release hole.
(2) With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
(3) Remove the flat-blade screwdriver from the release hole.



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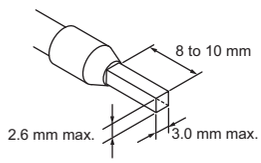
### 3. Recommended ferrules and Crimp Tools

#### Recommended ferrules

| Applicable wire | | Ferrules Conduct length (mm) | Stripping length (mm) (Ferrules used) | Recommended ferrules | | |
|---|---|---|---|---|---|---|
| ($mm^2$) | (AWG) | | | Phoenix Contact product | Weidmuller product | Wago product |
| 0.25 | 24 | 8 | 10 | AI 0,25-8 | H0.25/12 | 216-301 |
| | | 10 | 12 | AI 0,25-10 | --- | --- |
| 0.34 | 22 | 8 | 10 | AI 0,34-8 | H0.34/12 | 216-302 |
| | | 10 | 12 | AI 0,34-10 | --- | --- |
| 0.5 | 20 | 8 | 10 | AI 0,5-8 | H0.5/14 | 216-201 |
| | | 10 | 12 | AI 0,5-10 | H0.5/16 | 216-241 |
| 0.75 | 18 | 8 | 10 | AI 0,75-8 | H0.75/14 | 216-202 |
| | | 10 | 12 | AI 0,75-10 | H0.75/16 | 216-242 |
| 1/1.25 | 18/17 | 8 | 10 | AI 1-8 | H1.0/14 | 216-203 |
| | | 10 | 12 | AI 1-10 | H1.0/16 | 216-243 |
| 1.25/1.5 | 17/16 | 8 | 10 | AI 1,5-8 | H1.5/14 | 216-204 |
| | | 10 | 12 | AI 1,5-10 | H1.5/16 | 216-244 |
| 2.0/2.5 | 14 | 10 | 12 | AI 2,5-10 | H2.5/16DS | |
| Recommended crimp tool | | | | CRIMPFOX6<br>CRIMPFOX6T-F<br>CRIMPFOX10S | PZ6 roto | Variocrimp4 |

**Note: 1.** Make sure that the outer diameter of the wire is smaller than the inner diameter of the insulating sleeve of the recommended ferrule.

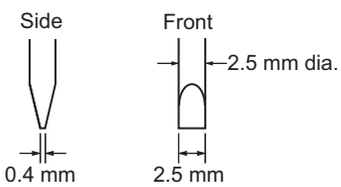
**2.** Make sure that the ferrule processing dimensions conform to the following figure.




**3.** If you use AWG24 to AWG22 (0.25 to 0.34 $mm^2$) wires, UL certification will not apply.

#### Recommended Flat-blade Screwdriver

Use a flat-blade screwdriver to connect and remove wires.
Use the following flat-blade screwdriver.
The following table shows manufacturers and models as of 2015/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 |
| SDI 0.4×2.5×75 | Weidmuller |

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

## Screw Terminal

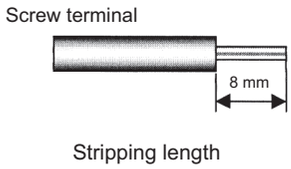
### • Screw terminal

| Wired type | Applicable wire size | Stripping length |
|---|---|---|
| Stranded wires, without ferrule | 0.5 to 2.5 $mm^2$ | 8 mm |
| Stranded wires, with ferrule and plastic collar | 0.5 to 2.5 $mm^2$ | 8 mm |
| Stranded wires with ferrule, without plastic collar | 0.5 to 2.5 $mm^2$ | 8 mm |
| Single wire | 0.5 to 2.5 $mm^2$ | 8 mm |

### • Tightening Torque
**0.36 to 0.46 N • m**

### • Electric wiring

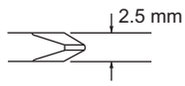
Use the electric wire of specified size as shown above. The length of the that is not covered is 8 mm.



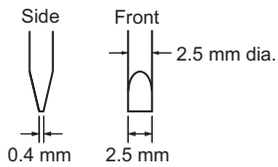

#### Recommended Flat-blade Screwdriver/ Phillips Screwdriver

Use a Phillips screwdriver or flat-blade screwdriver to remove the product from a DIN rail and connect and remove the electric wires.
Use a Phillips screwdriver with the shape specified below and a flat-blade screwdriver in the table below.
The following table shows manufacturers and models as of 2015/Dec.

**Recommended Phillips Screwdriver**




**Recommended Flat-blade Screwdriver**




| 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 |
| SDI 0.4×2.5×75 | Weidmuller |

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

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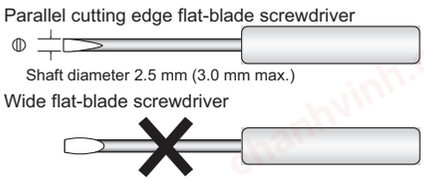
## <G2RV>

### Operating latching lever (test switch)

**When operating the latching lever for G2RV-ST701/501 series, use a 2.5 mm width flat-blade screwdriver.**

- **Applicable flat-blade screwdriver**

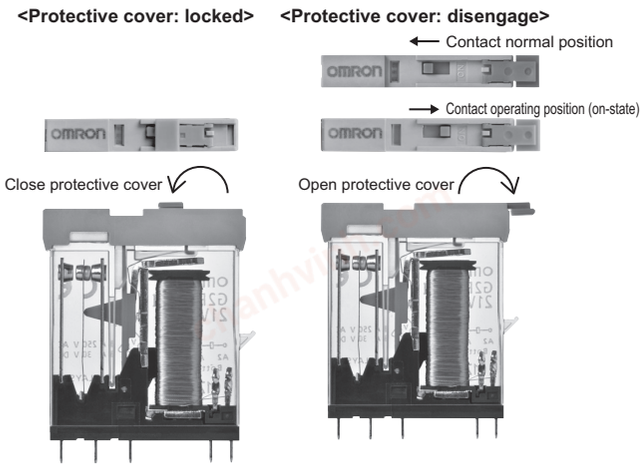
Flat-blade screwdriver with parallel cutting edge: shaft diameter 2.5 mm (3.0 mm max.)




**Driver with a thick shaft cannot be used.**

- Always turn OFF the power supply before operating latching lever.
- Return to its original state after using the latching lever.
- Do not use the latching lever as a switch.
- Operation durability of the latching lever is 100 times or more.
- Do not keep the latching lever ON for a long period of time (24 hours or more) in order to maintain the operation check function.

### Method of operation of the latching lever (test switch)




Keep the protective cover open when using the latching lever. Move until the latching lever clicks to the ON position (ON state). After use latching lever, in order to prevent malfunction, return the switch to contact normal position (OFF state), and make sure the protective cover is firmly closed.

### Using the latching lever

Example: check the operation of the relay and the sequence circuit

### Input ratings

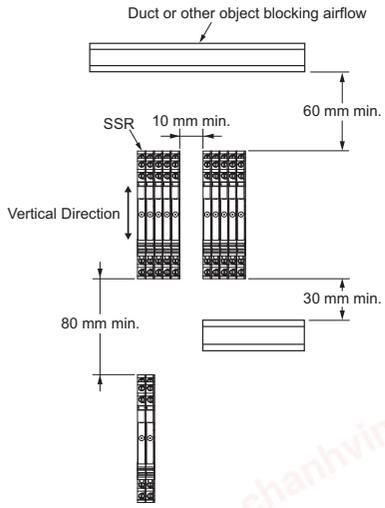
Smoothing capacitors are used in the internal circuits of AC/DC-type G2RV-ST devices. AC/DC-type G2RV-ST devices driven by the sensor may not operate normally due to the characteristics of the smoothing capacitor. When driving such devices by the sensor, use the DC specification settings.

## <G3RV>

- Since the G3RV uses electronic components, do not allow it to fall, vibrate, or apply shock that exceeds the criteria. Doing so may result in failure, malfunction, or deterioration of performance.
- Tighten screw terminal for G3RV at torque 0.36 to 0.46 N · m. It may cause short-circuit failure or burning.
- Please use the voltage and current suitable for the input and output terminal portion of G3RV. It may cause short-circuit failure or burning.

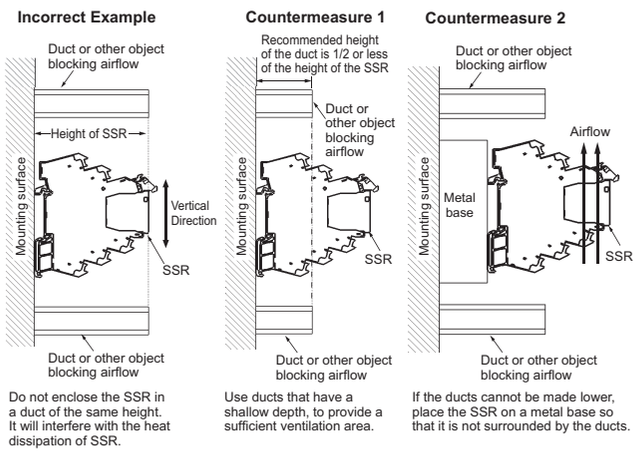
### Mounting

**<The SSR Mounting Pitch (Panel Mounting)>**




✻ When five or more are installed, install with 10 mm space between each.
✻ Please ask distributor or sales when need assistance in detail of mounting pitch.

**<Relationship of SSR and duct (duct depth)>**

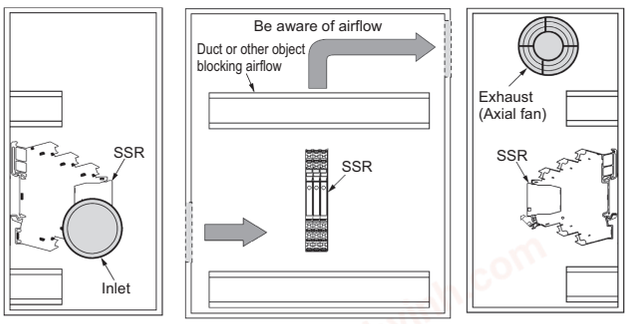


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**<Ventilation Outside the Control Panel>**




- If the air inlet or air outlet has a filter, clean the filter regularly to prevent it from clogging to ensure an efficient flow of air.
- Do not place objects that may obstruct the proper ventilation for outside or inside the inlet or exhaust port, and in the outside vicinity.
- A heat exchanger, if used, should be located in front of the G3RV to ensure the efficiency of the heat exchanger.
- Please observe the ambient temperature of G3RV. The rated current of the G3RV is measured at an ambient temperature of 25°C.
- The G3RV uses a semiconductor in the output element. This causes the temperature inside the control panel to increase due to heating resulting from the flow of electrical current through the load. The G3RV reliability can be increased by adding a ventilation fan to the control panel to dispel this heat, thus lowering the ambient temperature of the G3RV. (It suggests that life expectancy is doubled by each 10°C reduction in ambient temperature.)

## EMI

The G3RV is a Class A product (for industrial environments). When used in a residential environment, it may cause radio interference. In such case, the user may be required to take appropriate measures.

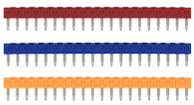
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For G2RV-ST/G3RV-ST
## Common Accessories (order separately)

# Ordering Information

### Short Bars

| Appearance | Pitch | No. of poles | Colors | Model * | Minimum order (Quantity) | Maximum energizing current |
|---|---|---|---|---|---|---|
|  | 6.2 mm | 20 | Red (R), Blue (S), Yellow (Y) | **PYDN-6.2ST-200□** | 10 | 32 A |

**Note:** Use for wiring to the adjacent socket.
✻Replace the box (□) in the model number with the code for the covering color. □ color selection: R = red, S = blue, Y = yellow

### Label

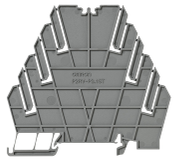
| Model | Manufacturer | Minimum order (Box) (quantity per box) | |
|---|---|---|---|
| **MG-CPM-04 41390N** | Cembre | Box | 1,680 pieces (35 sheet / 48 pieces) |
| **XW5Z-P2.5LB1** | Omron | Sheet | 360 pieces (5 sheet / 72 pieces) |

**Note:** PRINTER: MARKINGENIUS MG3 (Ask to your Omron contact for more details on printers)

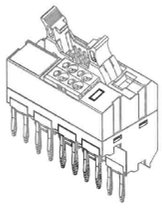
### Separate Plate

| Appearance | Model |
|---|---|
|  | **XW5Z-EP12** |

### Isolation plate

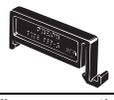
| Appearance | Model |
|---|---|
|  | **P2RV-P3.1ST** |

### PLC interface unit Coming Soon

| Appearance | I/O classification | Connection method | Common process | Applicable Models ✻ | Model |
|---|---|---|---|---|---|
|  | For input | Push-In | PNP | G2RV-ST500-AP | **P2RVC-8ST-I-5-1** |
| | | | NPN | | **P2RVC-8ST-I-5** |
| | | Screw | PNP | G2RV-ST700-AP | **P2RVC-8ST-I-7-1** |
| | For output | Push-In | PNP | G2RV-ST500<br>G2RV-ST501<br>G3RV-ST500 | **P2RVC-8ST-O-5-1** |
| | | | NPN | | **P2RVC-8ST-O-5** |
| | | Screw | PNP | G2RV-ST700<br>G2RV-ST701<br>G3RV-ST700 | **P2RVC-8ST-O-7-1** |

✻Please make sure applicable models, P2RVC can not be used other combination than the above table.

### Parts for DIN Track Mounting

| Appearance | Type | | Model | Minimum order (Quantity) |
|---|---|---|---|---|
|  | DIN Tracks | 1 m | **PFP-100N** | 1 |
| | | 0.5 m | **PFP-50N** | |
|  | End Plate ✻ | | **PFP-M** | 10 |
|  | Spacer | | **PFP-S** | |

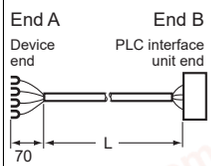
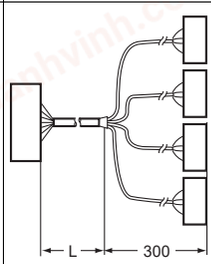
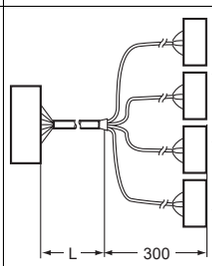
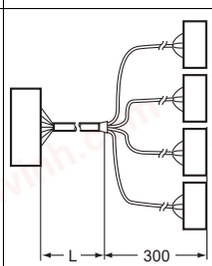
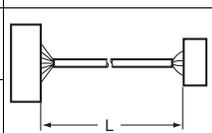
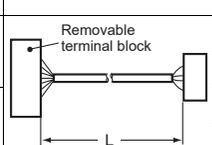
✻When mounting DIN Track, please use End Plate (PFP-M).
Refer to your OMRON website for details on PFP-□.

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## Applicable Cables

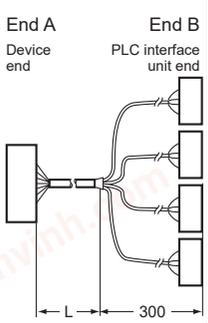
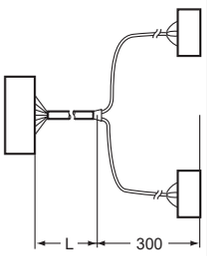
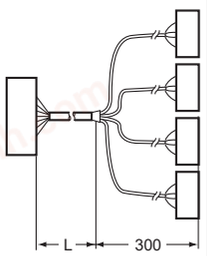
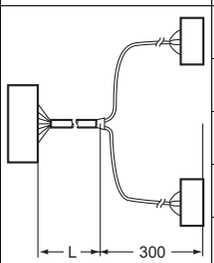
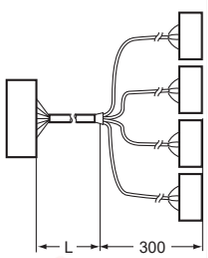
| Name | | Appearance | Cable length L (mm) | Connecting Cables | Applicable Connectors |
|---|---|---|---|---|---|
| Cables with Loose Wires P2RV-A□C | 8 I/O points |  | 1,000 | **P2RV-A100C** | Various devices |
| | | | 2,000 | **P2RV-A200C** | |
| | | | 3,000 | **P2RV-A300C** | |
| | | | 5,000 | **P2RV-A500C** | |
| OMRON PLC Connecting Cables with Connectors (1:4) P2RV-4-□C | 32 output points |  | 1,000 | **P2RV-4-100C** | PLC I/O Units with MIL connectors (1:4) CJ1W-OD232/OD262, etc. |
| | | | 2,000 | **P2RV-4-200C** | |
| | | | 3,000 | **P2RV-4-300C** | |
| | | | 5,000 | **P2RV-4-500C** | |
| OMRON PLC Connecting Cables with Connectors (1:4) P2RV-4-□IMC | 32 input points |  | 1,000 | **P2RV-4-100IMC** | PLC I/O Units with MIL connectors (1:4) CJ1W-ID232/ID262, etc. *1 |
| | | | 2,000 | **P2RV-4-200IMC** | |
| | | | 3,000 | **P2RV-4-300IMC** | |
| | | | 5,000 | **P2RV-4-500IMC** | |
| OMRON PLC Connecting Cables with Connectors (1:4) P2RV-4-□IFC | 32 input points |  | 1,000 | **P2RV-4-100IFC** | PLC I/O Units with Fujitsu connectors (1:4) CJ1W-ID231/ID261, etc. *2 |
| | | | 2,000 | **P2RV-4-200IFC** | |
| | | | 3,000 | **P2RV-4-300IFC** | |
| | | | 5,000 | **P2RV-4-500IFC** | |
| OMRON PLC Connecting Cables with Connectors (1:1) P2RV-A□C-OMR GRT1 | 8 output points<br>8 input points |  | 500 | **P2RV-A050C-OMR GRT1** | Slice I/O Units (1:1)<br>For inputs: GRT1-ID8-1<br>For outputs: GRT1-OD8-1 |
| | | | 1,000 | **P2RV-A100C-OMR GRT1** | |
| | | | 500 | **P2RV-A050IC-OMR GRT1** | |
| | | | 1,000 | **P2RV-A100IC-OMR GRT1** | |
| OMRON PLC Connecting Cables with Connectors (1:1) P2RV-A□C-OMR NX | 8 output points<br>8 input points |  | 500 | **P2RV-A050C-OMR NX** | PLC I/O Units with screw-less clamp terminal block (1:1)<br>For inputs: NX-ID4442<br>For outputs: NX-OD4256 |
| | | | 1,000 | **P2RV-A100C-OMR NX** | |
| | | | 500 | **P2RV-A050IC-OMR NX** | |
| | | | 1,000 | **P2RV-A100IC-OMR NX** | |

***1.** Use the P2RVC-8-I-□-1(PNP) as the PLC interface unit when connecting to the CJ1W-ID232/ID262 (or a unit with an equivalent terminal arrangement).
***2.** Use the P2RVC-8-I-□-1(PNP) as the PLC interface unit when connecting to the CJ1W-ID231/ID261 (or a unit with an equivalent terminal arrangement).

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| Name | | Appearance | Cable length L (mm) | Connecting Cables | Applicable Connectors |
|---|---|---|---|---|---|
| Schneider Electric PLC Connecting Cables P2RV-□C-SCH-□ | 32 input points |  | 500 | P2RV-050C-SCH-A | Schneider Electric PLCs with 32-point connectors (1:4)<br>For inputs: 140 DDI 353 00<br>For outputs: 140 DDO 353 00 |
| | | | 1,000 | P2RV-100C-SCH-A | |
| | | | 2,000 | P2RV-200C-SCH-A | |
| | | | 3,000 | P2RV-300C-SCH-A | |
| | | | 5,000 | P2RV-500C-SCH-A | |
| | 32 output points | | 500 | P2RV-050C-SCH-B | |
| | | | 1,000 | P2RV-100C-SCH-B | |
| | | | 2,000 | P2RV-200C-SCH-B | |
| | | | 3,000 | P2RV-300C-SCH-B | |
| | | | 5,000 | P2RV-500C-SCH-B | |
| | 16 input points |  | 500 | P2RV-050C-SCH-C | Schneider Electric PLCs with 16-point connectors (1:2)<br>For inputs: BMX DDI 1602<br>For outputs: BMX DDO 1602 |
| | | | 1,000 | P2RV-100C-SCH-C | |
| | | | 2,000 | P2RV-200C-SCH-C | |
| | | | 3,000 | P2RV-300C-SCH-C | |
| | | | 5,000 | P2RV-500C-SCH-C | |
| | 16 output points | | 500 | P2RV-050C-SCH-D | |
| | | | 1,000 | P2RV-100C-SCH-D | |
| | | | 2,000 | P2RV-200C-SCH-D | |
| | | | 3,000 | P2RV-300C-SCH-D | |
| | | | 5,000 | P2RV-500C-SCH-D | |
| Siemens PLC Connecting Cables P2RV-□C-SIM-□ | 32 input points |  | 500 | P2RV-050C-SIM-A | Siemens PLCs with 32-point connectors (1:4)<br>For inputs: 6ES7 321-1BL00-0AA0<br>For outputs: 6ES7 322-1BL00-0AA0 |
| | | | 1,000 | P2RV-100C-SIM-A | |
| | | | 2,000 | P2RV-200C-SIM-A | |
| | | | 3,000 | P2RV-300C-SIM-A | |
| | | | 5,000 | P2RV-500C-SIM-A | |
| | 32 output points | | 500 | P2RV-050C-SIM-B | |
| | | | 1,000 | P2RV-100C-SIM-B | |
| | | | 2,000 | P2RV-200C-SIM-B | |
| | | | 3,000 | P2RV-300C-SIM-B | |
| | | | 5,000 | P2RV-500C-SIM-B | |
| | 16 input points |  | 500 | P2RV-050C-SIM-C | Siemens PLCs with 16-point connectors (1:2)<br>For inputs: 6ES7 321-1BH02-0AA0 |
| | | | 1,000 | P2RV-100C-SIM-C | |
| | | | 2,000 | P2RV-200C-SIM-C | |
| | | | 3,000 | P2RV-300C-SIM-C | |
| | | | 5,000 | P2RV-500C-SIM-C | |
| | 32 input points |  | 500 | P2RV-050C-SIM-D | Siemens PLCs with 32-point connectors (1:4)<br>For inputs: 6ES7 421-1BL-0AA0<br>For outputs: 6ES7 422-1BL-0AA0 |
| | | | 1,000 | P2RV-100C-SIM-D | |
| | | | 2,000 | P2RV-200C-SIM-D | |
| | | | 3,000 | P2RV-300C-SIM-D | |
| | | | 5,000 | P2RV-500C-SIM-D | |
| | 32 output points | | 500 | P2RV-050C-SIM-E | |
| | | | 1,000 | P2RV-100C-SIM-E | |
| | | | 2,000 | P2RV-200C-SIM-E | |
| | | | 3,000 | P2RV-300C-SIM-E | |
| | | | 5,000 | P2RV-500C-SIM-E | |

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# G2RV-ST/G3RV-ST

## PLC interface unit

Coming Soon

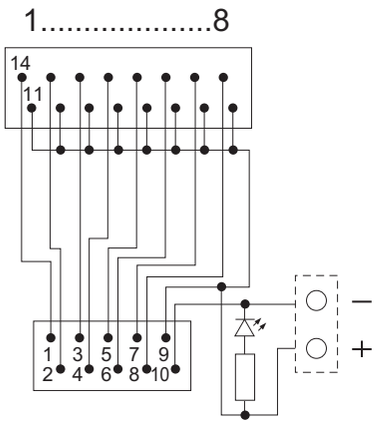
### Ratings / characteristics

| | | |
|---|---|---|
| **Rated voltage** | | 30 VAC/DC |
| **Rated current** | | 0.5 A/poles, 2 A/unit |
| **Ambient operating temperature** | | –40 to 55°C |
| **Vibration resistance** | **Destruction** | 10 to 55 to 10 Hz, single amplitude 0.50 mm (double amplitude 1.0 mm) |
| | **Malfunction** | 10 to 55 to 10 Hz, single amplitude 0.50 mm (double amplitude 1.0 mm) |
| **Shock resistance** | **Destruction** | 300 $m/s^2$ |
| | **Malfunction** | 100 $m/s^2$ |

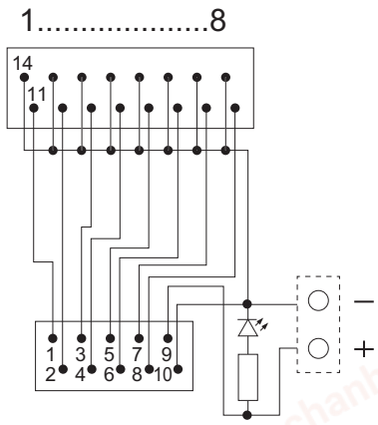
### Electrical schematic

**Input**

**P2RVC-8ST-I-□-1 (PNP)**

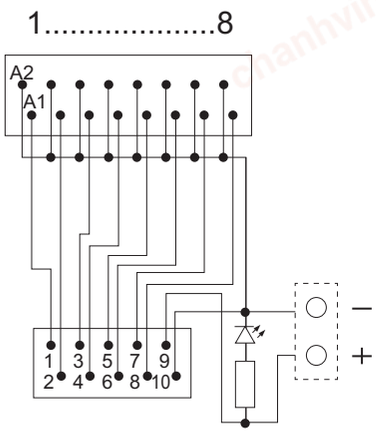



**P2RVC-8ST-I-5 (NPN)**

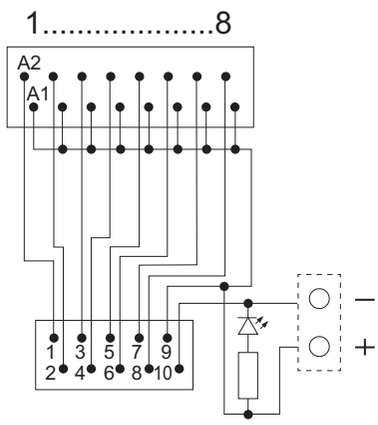



**Output**

**P2RVC-8ST-O-□-1 (PNP)**




**P2RVC-8ST-O-5 (NPN)**



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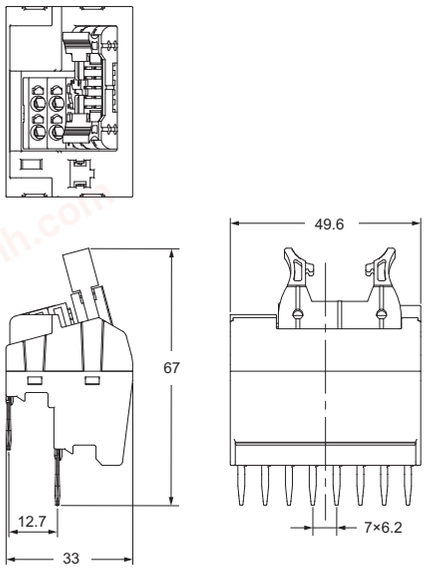
# Dimensions

(unit: mm)

## PLC interface unit

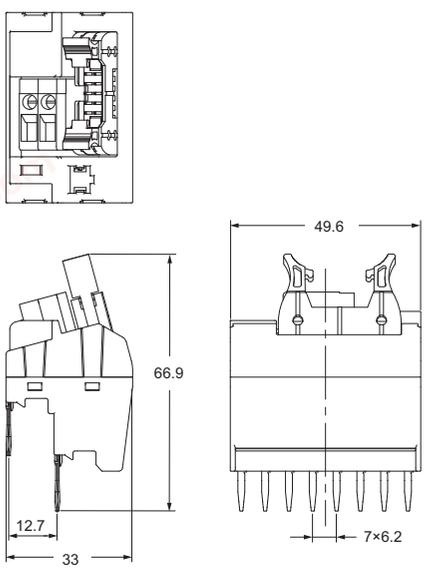
### Push-IN

**P2RVC-8ST-I-5(-1)**
**P2RVC-8ST-O-5(-1)**




### Screw

**P2RVC-8ST-I-7-1**
**P2RVC-8ST-O-7-1**



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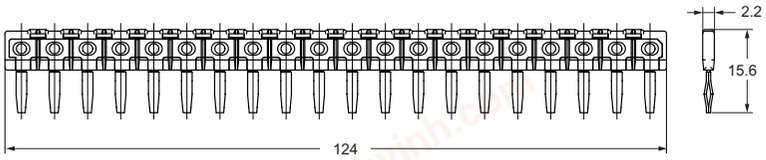
(Except for PLC interface unit)
# Common Accessories (order separately)

## Dimensions

(unit: mm)

### Short Bars

**PYDN-6.2ST-200□**

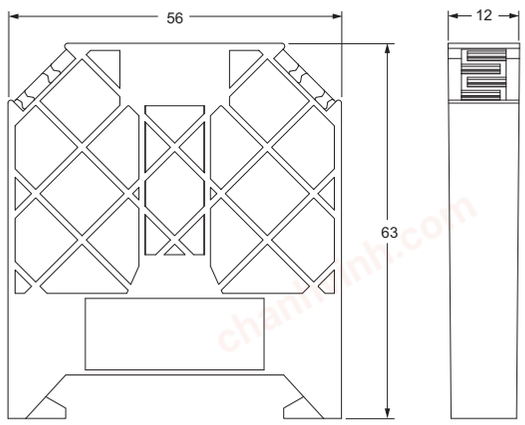



| Pitch | No. of poles | L (Length) | Colors | Model ✻ | Maximum carry current |
|---|---|---|---|---|---|
| 6.2 mm | 20 | 124 | Red (R)<br>Blue (S)<br>Yellow (Y) | **PYDN-6.2ST-200□** | 32 A |

**Note:** Use the Short Bars for crossover wiring within one Socket or between Sockets.
✻ Replace the box (□) in the model number with the code for the covering color.

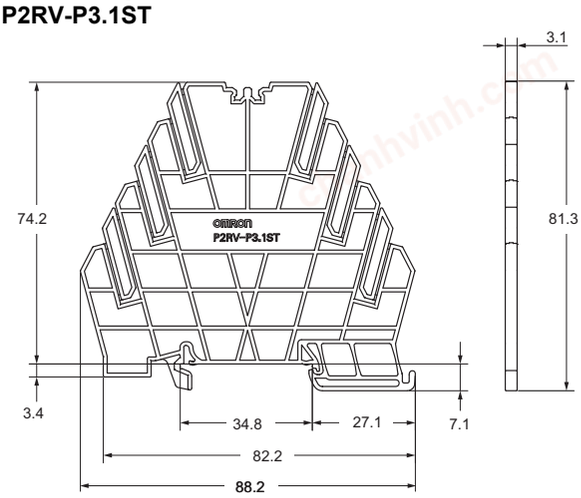
### Separate Plate

**XW5Z-EP12**




### Isolation plate

**P2RV-P3.1ST**




### Parts for DIN Track Mounting

Refer to your OMRON website for details on the PFP-□.

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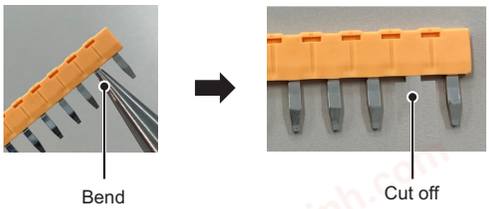


# Safety Precautions

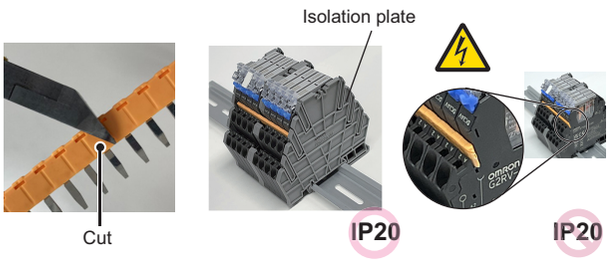
## Precautions for Correct Use

### When mounting a short bar

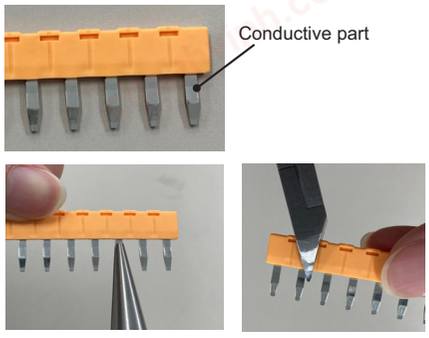
- Intermediate pins can be bent by a tool and cut off for use.




- The short bar can be cut to as many poles as needed. Insert the tool from the plastic part side, and cut along the groove in the plastic part between the terminals. When cutting, take care not to break or deform the terminals.
  However, since the metal on the cut surface will be exposed, human safety and insulation countermeasures between adjacent products must be ensured.
  Such countermeasures include using insulating plate model P2RV-P3.1-ST or taking an equivalent insulation countermeasure.

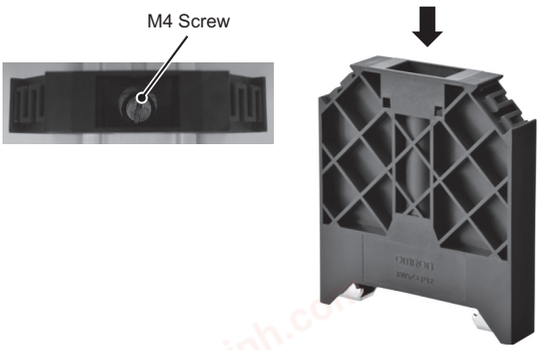



- When cutting the short bar or its pins, do not touch the conductive part. If the conductive part is deformed, contact failure may result.
- When cutting the product, check that there is no person nearby and take care that a cut off piece does not fly off.

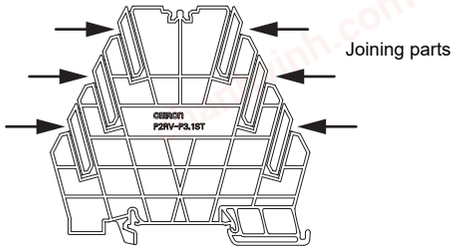



### Mounting a separate plate

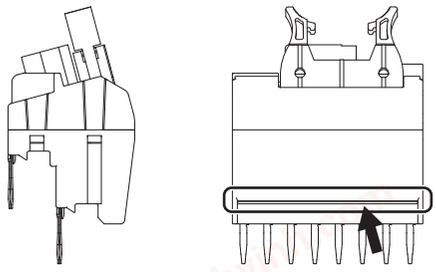
- Use a flat-blade screwdriver to tighten the center top screw and secure the plate. Loosen the screw to remove the plate from the DIN rail.




- When using both an isolation plate and short bar together, use without removing the insulating plate will be possible if you cut the joining parts. Furthermore, the joining parts can be cut easily by using needle-nose pliers to cut them.
- After mounting to a DIN rail, check that the product is correctly held in place.




- When removing the PLC interface, place a finger at the place below and pull it out.



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**OMRON Corporation** **Industrial Automation Company**

**Kyoto, JAPAN** **Contact : www.ia.omron.com**

***Regional Headquarters***

**OMRON EUROPE B.V.**
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

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

**OMRON ASIA PACIFIC PTE. LTD.**
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-2711

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

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