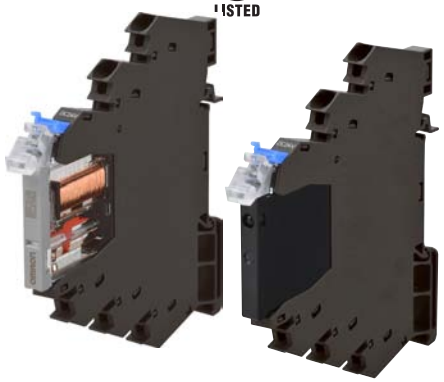
Slim I/O Relay/Slim I/O Solid State Relay

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

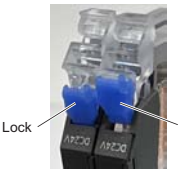
Wiring standardization is also supported by 2.5 mm^2 compatibility

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.

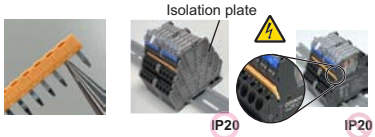
Work efficiency is enhanced by DIN rail sliding performance and short bar improvements.

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.

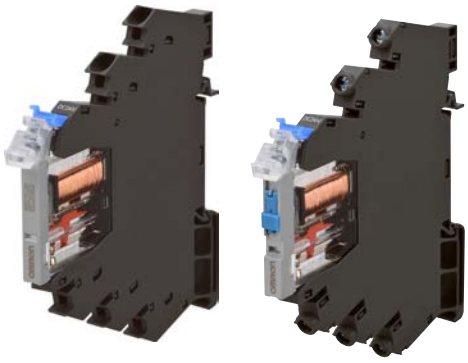
Slim I/O Relay

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

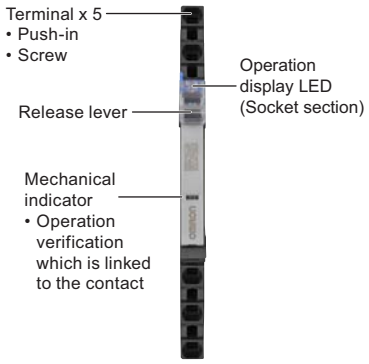


For the recent information on models that have been certified for safety standards, refer to your OMRON website.

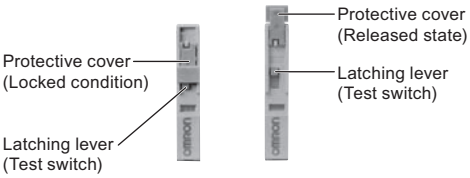
Refer to *Safety Precautions* on page 22.

Features

Standard model/Micro load

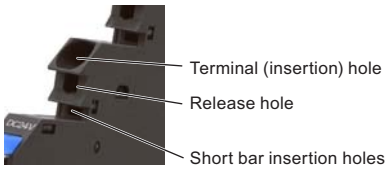


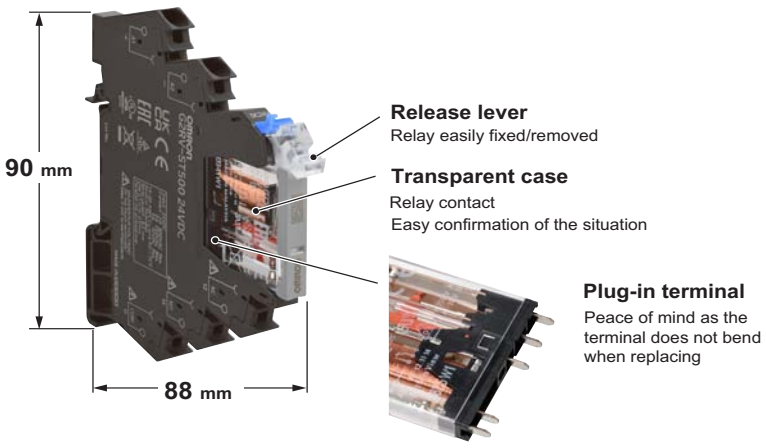
With latching lever (Test switch)



• 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

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.

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.

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. 0.4 VA	Approx. 300 mW	
48 VAC/VDC	5.9 mA	6.4 mA	5.4 mA			Approx. 0.3 VA	Approx. 250 mW	
100 VAC	6.8 mA	7.1 mA	–			Approx. 0.7 VA	–	
110 VAC	6.1 mA	6.4 mA	–			Approx. 0.7 VA	–	
200 VAC	6.1 mA	7.3 mA	–			Approx. 1.5 VA	–	
230 VAC	6.8 mA	8.2 mA	–			Approx. 1.9 VA	–	

Note: The operating characteristics are measured at ambient temperature of 23°C.
The rated current tolerances are as follows. AC rating: +15%/-20%, DC rating: ±10%

✻ 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 6 A at 30 VDC	2.5 A at 250 VAC 2 A at 30 VDC	50 mA at 30 VAC 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 180 W	500 VA 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.

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. DC: 20 ms max.	
Maximum operating frequency		Mechanical: 18,000 operations/h 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 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) 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 Malfunction: Energized 200m/s^2, Non-energized 100m/s^2	
Endurance *	**Mechanical**	5,000,000 operations min.	
	Electrical	NO contact: 70,000 operations min. 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

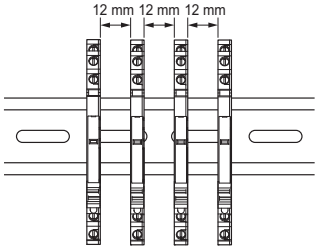
Note: Above values are initial values.
✻Value is at ambient temperature of 23°C.

Approved standards

UL (File No.E41515)

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

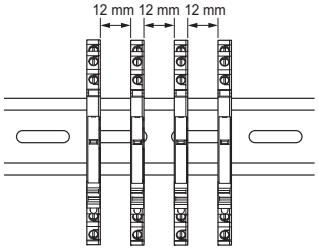
✻ If the load voltage exceeds 250 VAC, please attach with a spacing of 12 mm min., or use a separate plate (XW5Z-EP12) or 4psc of isolation plate (P2RV-P3.1T).



TÜV (File No.R50559210, EN61810-1)

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

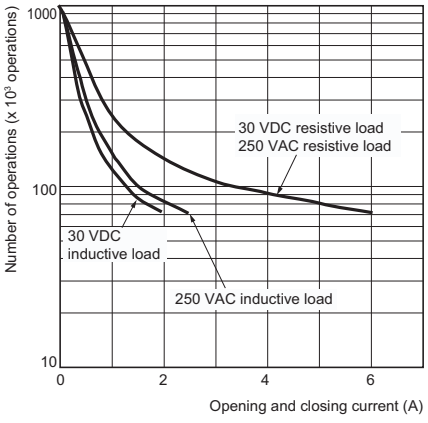


Lloyd's (File No.LR23158192TA)

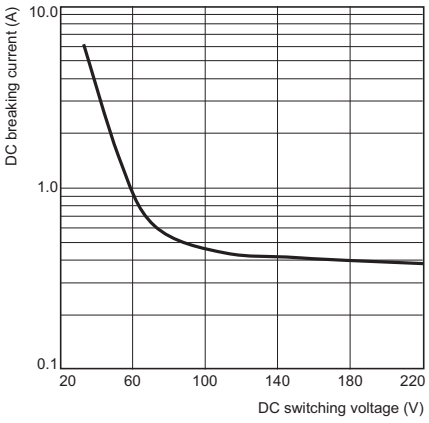
Model	No. of poles	Operation coil ratings	Contact ratings
G2RV-ST500 G2RV-ST700	1c	12, 24 VDC 24, 48 VAC/VDC 100, 110, 200, 230 VAC	6 A at 250 VAC (Resistive load) 2.5 A at 250 VAC (PF0.4) 6 A at 30 VDC (Resistive load) 2 A at 30 VDC (L/R=7 ms)
G2RV-ST501 G2RV-ST701	1c	12, 24 VDC 24 VAC/VDC	6 A at 250 VAC (Resistive load) 2.5 A at 250 VAC (PF0.4) 6 A at 30 VDC (Resistive load) 2 A at 30 VDC (L/R=7 ms)
G2RV-ST500-AP G2RV-ST700-AP	1c	12, 24 VDC 24, 48 VAC/VDC 100, 110, 200, 230 VAC	0.05 A at 30 VAC (Resistive load) 0.05 A at 36 VDC (Resistive load)

Reference Data

Endurance curve (N.O. side)



Switching capacity of DC resistive load



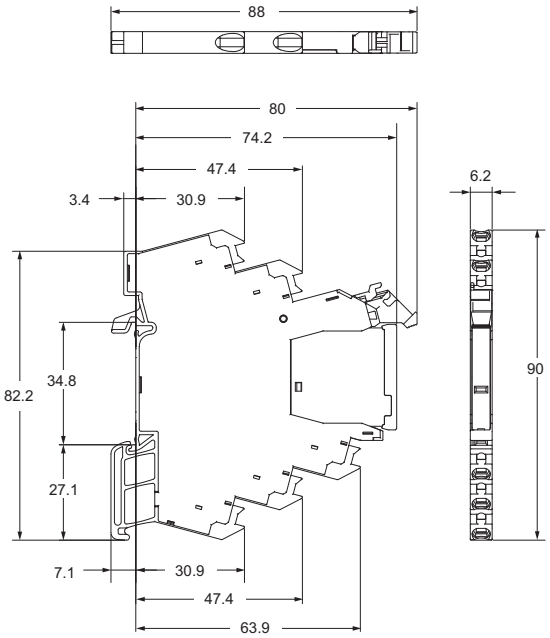
Dimensions

(unit: mm)

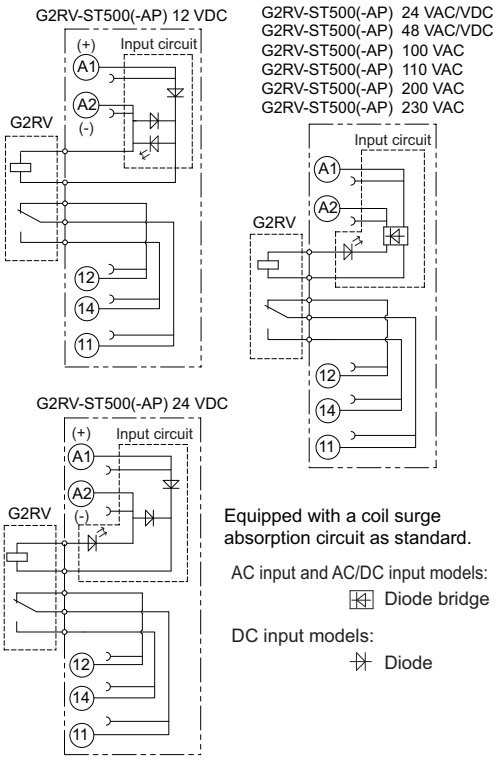
Slim I/O Relay + socket

Push-In Plus Terminal Block

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



Terminal Arrangement/Internal Connection Diagram (TOP VIEW)



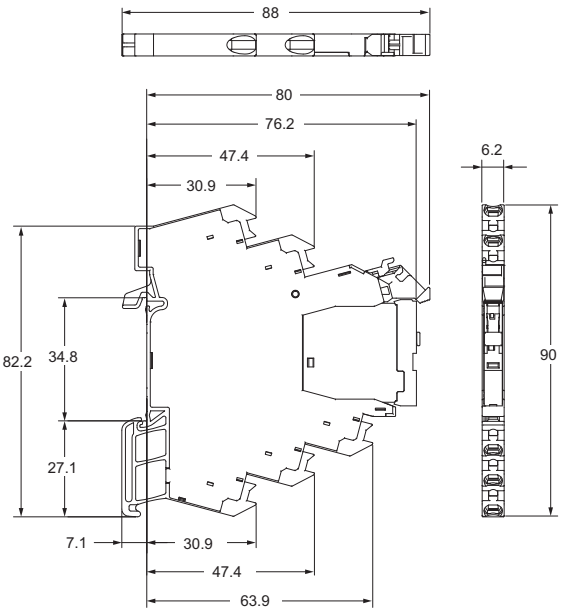
Equipped with a coil surge absorption circuit as standard.

AC input and AC/DC input models: Diode bridge

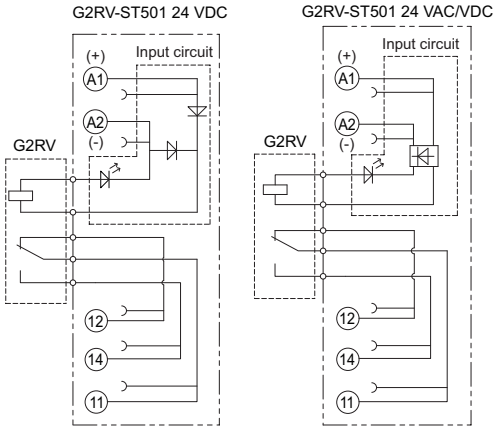
DC input models: Diode

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)



Equipped with a coil surge absorption circuit as standard.

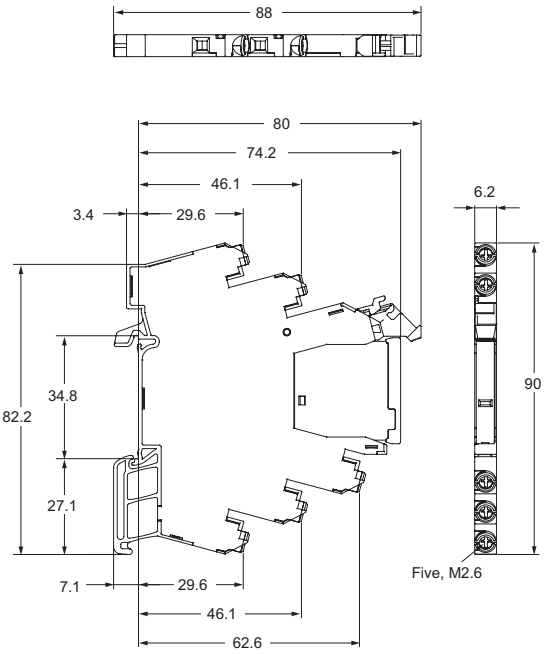
AC input and AC/DC input models: Diode bridge

DC input models: Diode

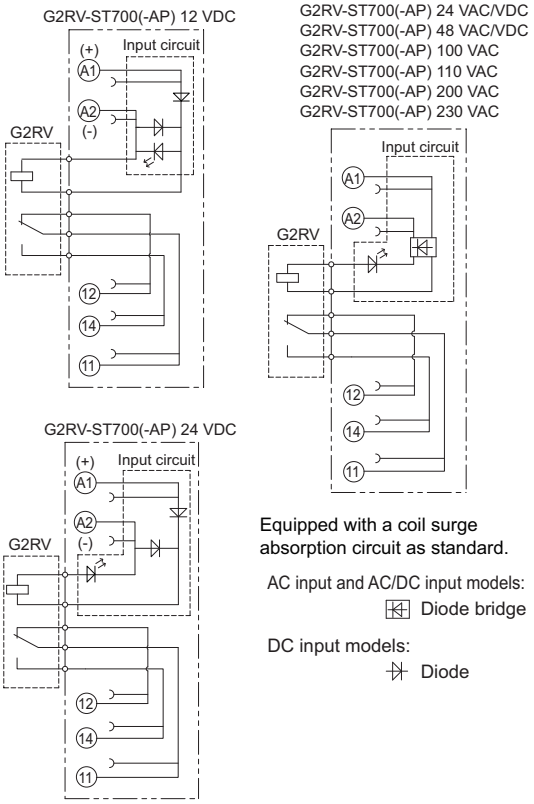
Note: For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

Screw terminal

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



Terminal Arrangement/Internal Connection Diagram (TOP VIEW)



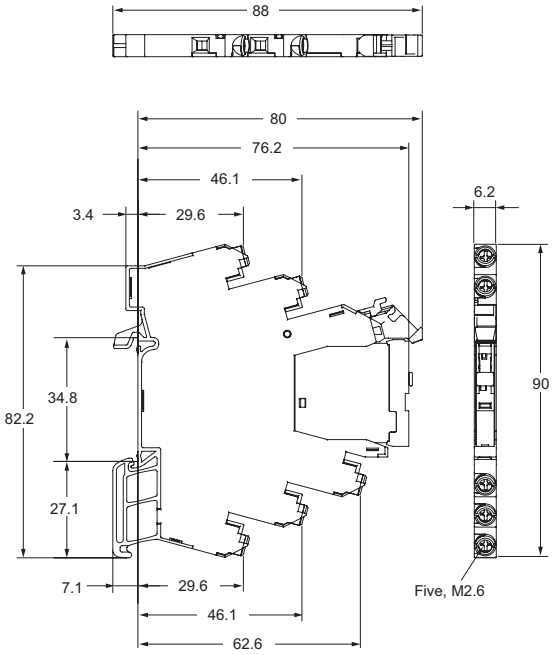
Equipped with a coil surge absorption circuit as standard.

AC input and AC/DC input models: Diode bridge

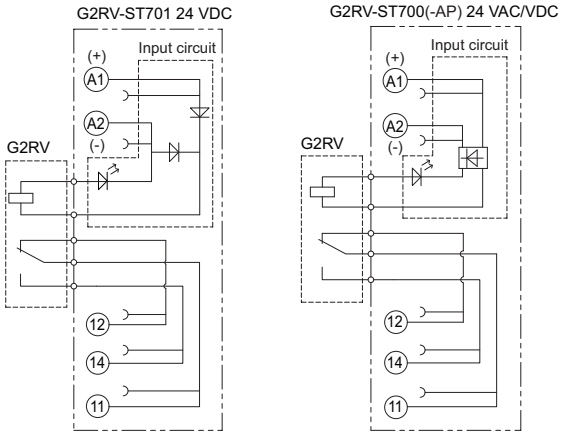
DC input models: Diode

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)



Equipped with a coil surge absorption circuit as standard.

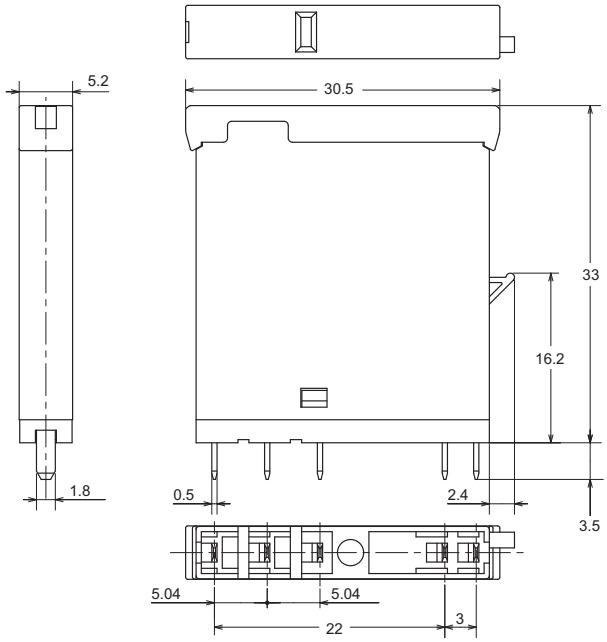
AC input and AC/DC input models: Diode bridge

DC input models: Diode

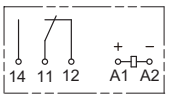
Note: For recommended ferrules, crimp tools, and types and gauges of wires, refer to *3. Recommended Ferrules and Crimp Tools* on page 26.

Relay for maintenance

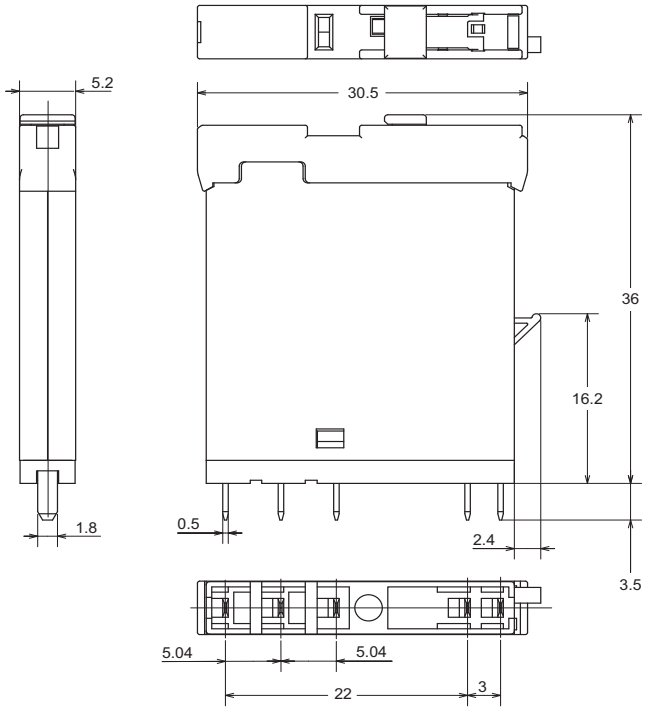
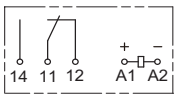
Models without latching lever
G2RV-1-S-G
G2RV-1-S-AP-G



Terminal Arrangement/
Internal Connection Diagram
(TOP VIEW)



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



Terminal Arrangement/
Internal Connection Diagram
(TOP VIEW)