

Solid State Relays G3R-I/O

Refer to *Warranty and Application Considerations* (page 1), *Safety Precautions* (page 4), and *Technical and Safety Information* (page 6).

Compact SSRs for I/O Interface with High Dielectric Strength Requirements

- High-speed models with optimum input ratings for a variety of sensors are available.
- Input Modules and Output Modules that can be used for the G2R are available.
- Use a coupler conforming to VDE 0884 and assuring an I/O dielectric strength of 4,000 V.
- Incorporate an easy-to-see monitoring indicator.
- -UTU models certified by UL, CSA, and TÜV.



Model Number Structure

■ Model Number Legend

G3R-□□□□□□□□-□-□
1 2 3 4 5 6 7 8 9 10

1. Basic Model Name

G3R: Solid State Relay

2. I/O Classification

I: Input module

O: Output module

3. Load Power Supply Type

A: Switches AC loads

D: Switches DC loads

4. Rated Load Power Supply Voltage

Z: 24 VDC

X: 48 VDC

2: 240 VAC

5. Rated Load Current

R1: 0.1 A

01: 1 A

02: 2 A

6. Terminal Type

S: Plug-in terminals

7. Zero Cross Function

Z: Equipped with zero cross function

L: Not equipped with zero cross function

Blank: DC-output model

8. Operation Indicator

N: Equipped with operation indicator

9. Response Speed (only for DC Input Models)

I: Low-speed (10 Hz)

Blank: High-speed (1 kHz)

10. Certification

UTU: Certified by UL, CSA, and TÜV

Ordering Information

■ List of Models

Input Module

| Isolation | Indicator | Response speed | Logic level | | Rated input voltage | Model |
|--------------|-----------|-----------------------|----------------|----------------|---------------------|-------------------|
| | | | Supply voltage | Supply current | | |
| Photocoupler | Yes | --- | 4 to 32 VDC | 0.1 to 100 mA | 100 to 240 VAC | G3R-IAZR1SN-UTU |
| | | High-speed (1 kHz) | | | 5 VDC | G3R-IDZR1SN-UTU |
| | | Low-speed (10 Hz) | | | 12 to 24 VDC | |
| | | | | | 5 VDC | G3R-IDZR1SN-1-UTU |
| | | | | | 12 to 24 VDC | |

Output Module

| Isolation | Indicator | Zero cross function | Rated output load | Rated input voltage | Model |
|--------------|-----------|---------------------|------------------------|---------------------|------------------|
| Phototriac | Yes | Yes | 2 A at 100 to 240 VAC | 5 to 24 VDC | G3R-OA202SZN-UTU |
| | | No | | | G3R-OA202SLN-UTU |
| Photocoupler | | --- | 2 A at 5 to 48 VDC | | G3R-ODX02SN-UTU |
| | | | 1.5 A at 48 to 200 VDC | | G3R-OD201SN-UTU |

Note: When ordering, specify the rated input voltage.

■ Accessories (Order Separately)

Track/Surface Mounting Socket (Recommended)

| Model | Number of poles |
|-----------|----------------------------|
| P2RF-05-E | 1 pole (G2R: 1 pole usage) |

Note: Refer to page 236 for details on other Sockets.

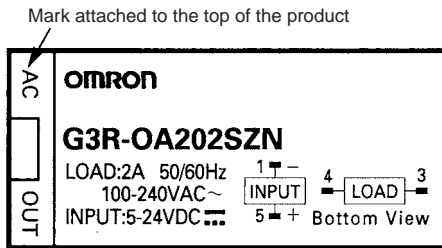
Connecting Socket Attaching Plate

| Model | Applicable Socket |
|-------|-------------------|
| P2R-P | P2R-05A |

I/O Indication

I/O module classification and AC/DC use are indicated on the mark affixed to the top of the product.

| Mark indication | Specification |
|-----------------|--------------------------|
| AC IN | Input module, AC input |
| DC IN | Input module, DC input |
| AC OUT | Output module, AC output |
| DC OUT | Output module, DC output |



Specifications

Ratings (at an Ambient Temperature of 25°C)

Input Module

Input

| Model | Rated voltage | Operating voltage | Input current | Must operate voltage | Must release voltage |
|-------------------|----------------|-------------------|---------------|----------------------|----------------------|
| G3R-IAZR1SN-UTU | 100 to 240 VAC | 60 to 264 VAC | 15 mA max. | 60 VAC max. | 20 VAC min. |
| G3R-IDZR1SN-UTU | 5 VDC | 4 to 6 VDC | 8 mA max. | 4 VDC max. | 1 VDC min. |
| | 12 to 24 VDC | 6.6 to 32 VDC | | 6.6 VDC max. | 3.6 VDC min. |
| G3R-IDZR1SN-1-UTU | 5 VDC | 4 to 6 VDC | | 4 VDC max. | 1 VDC min. |
| | 12 to 24 VDC | 6.6 to 32 VDC | | 6.6 VDC max. | 3.6 VDC min. |

Output

| Model | Logic level supply voltage | Logic level supply current |
|-------------------|----------------------------|----------------------------|
| G3R-IAZR1SN-UTU | 4 to 32 VDC | 0.1 to 100 mA |
| G3R-IDZR1SN-UTU | | |
| G3R-IDZR1SN-1-UTU | | |

Output Module

Input

| Model | Rated voltage | Operating voltage | Input current | Must operate voltage | Must release voltage |
|------------------|---------------|-------------------|-------------------------|----------------------|----------------------|
| G3R-OA202SZN-UTU | 5 to 24 VDC | 4 to 32 VDC | 15 mA max. (at 25°C) | 4 VDC max. | 1 VDC min. |
| G3R-OA202SLN-UTU | | | 8 mA max. | | |
| G3R-ODX02SN-UTU | | | | | |
| G3R-OD201SN-UTU | | | | | |

Output

| Model | Rated load voltage | Load voltage range | Load current (See note.) | Inrush current |
|------------------|--------------------|--------------------|--------------------------|-----------------------|
| G3R-OA202SZN-UTU | 100 to 240 VAC | 75 to 264 VAC | 0.05 to 2 A | 30 A (60 Hz, 1 cycle) |
| G3R-OA202SLN-UTU | | | | |
| G3R-ODX02SN-UTU | 5 to 48 VDC | 4 to 60 VDC | 0.01 to 2 A | 8 A (10 ms) |
| G3R-OD201SN-UTU | 48 to 200 VDC | 40 to 200 VDC | 0.01 to 1.5 A | 8 A (10 ms) |

Note: The minimum current value is measured at 10°C min.

■ Characteristics

Input Module

| Item | G3R-IAZR1SN-UTU | G3R-IDZR1SN-UTU | G3R-IDZR1SN-1-UTU |
|------------------------|--|-----------------|-------------------|
| Operate time | 20 ms max. | 0.1 ms max. | 15 ms max. |
| Release time | 20 ms max. | 0.1 ms max. | 15 ms max. |
| Response frequency | 10 Hz | 1 kHz | 10 Hz |
| Output ON voltage drop | 1.6 V max. | | |
| Leakage current | 5 μ A max. | | |
| Insulation resistance | 100 M Ω min. between input and output | | |
| Dielectric strength | 4,000 VAC, 50/60 Hz for 1 min between input and output | | |
| Vibration resistance | 10 to 55 to 10 Hz, 0.75-mm single amplitude | | |
| Shock resistance | 1,000 m/s ² | | |
| Ambient temperature | Operating: -30°C to 80°C (with no icing) Storage: -30°C to 100°C (with no icing) | | |
| Certified standards | UL508 File No. E64562 CSA C22.2 (No. 14, No. 950) File No. LR35535 TÜV File No. R9650094 (EN60950) | | |
| Ambient humidity | Operating: 45% to 85% | | |
| Weight | Approx. 18 g | | |

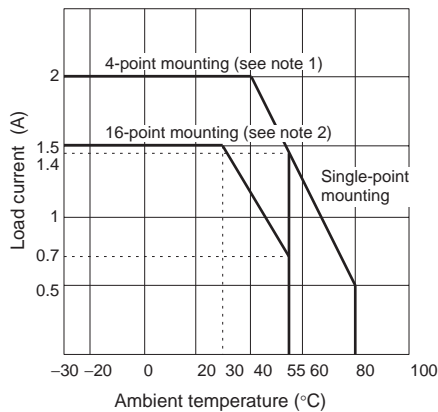
Output Module

| Item | G3R-OA202SZN-UTU | G3R-OA202SLN-UTU | G3R-ODX02SN-UTU | G3R-OD201SN-UTU |
|------------------------|--|------------------|-----------------|-----------------|
| Operate time | 1/2 of load power source cycle + 1 ms max. | 1 ms max. | 1 ms max. | |
| Release time | 1/2 of load power source cycle + 1 ms max. | | 2 ms max. | |
| Response frequency | 20 Hz | | 100 Hz | |
| Output ON voltage drop | 1.6 V max. | | | 2.5 V max. |
| Leakage current | 1.5 mA max. | | 1 mA max. | |
| Insulation resistance | 100 M Ω min. between input and output | | | |
| Dielectric strength | 4,000 VAC, 50/60 Hz for 1 min between input and output | | | |
| Vibration resistance | Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude | | | |
| Shock resistance | Destruction: 1,000 m/s ² | | | |
| Ambient temperature | Operating: -30°C to 80°C (with no icing) Storage: -30°C to 100°C (with no icing) | | | |
| Certified standards | UL508 File No. E64562 CSA C22.2 (No. 14, No. 950) File No. LR35535 TÜV File No. R9650094 (EN60950) | | | |
| Ambient humidity | Operating: 45% to 85% | | | |
| Weight | Approx. 18 g | | | |

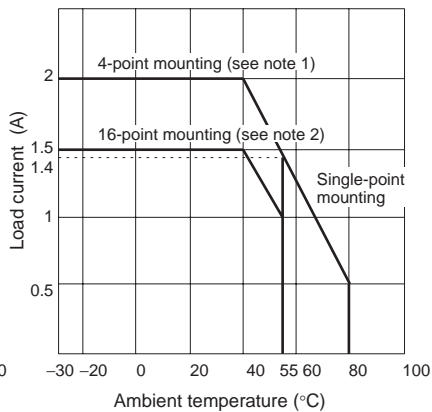
Engineering Data

Load Current vs. Ambient Temperature

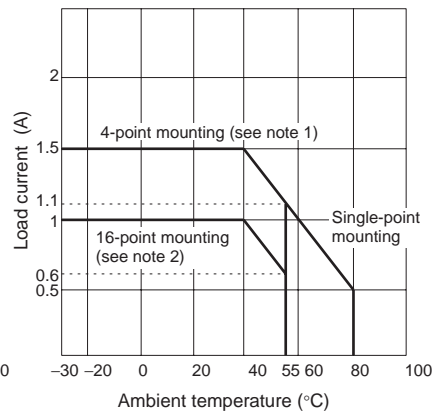
G3R-OA202SZN-UTU/OA202SLN-UTU



G3R-ODX02SN-UTU (4 to 60 VDC)



G3R-OD201SN-UTU (40 to 200 VAC)

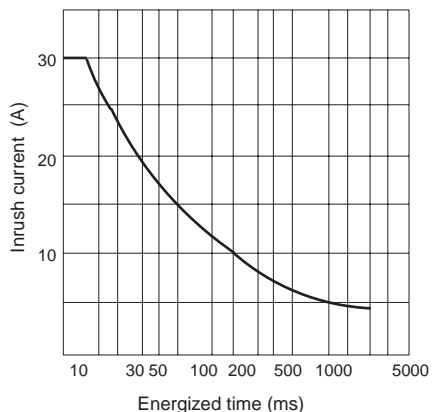


Note: 1. When G730-Z0M04-B is mounted.
 2. When G70A-Z0C16 is mounted.

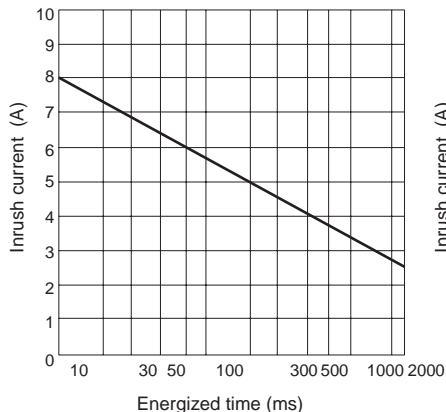
One Cycle Surge Current: Non-repetitive

Note: Keep the inrush current to half the rated value if it occurs repetitively.

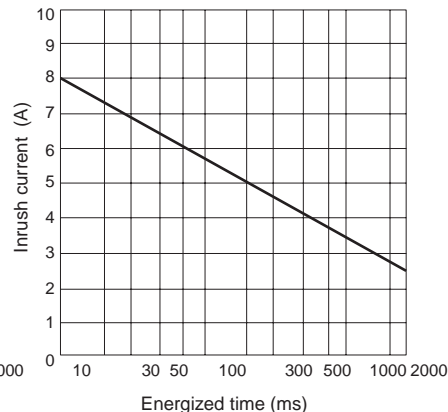
G3R-OA202SZN-UTU/OA202SLN-UTU



G3R-ODX02SN-UTU



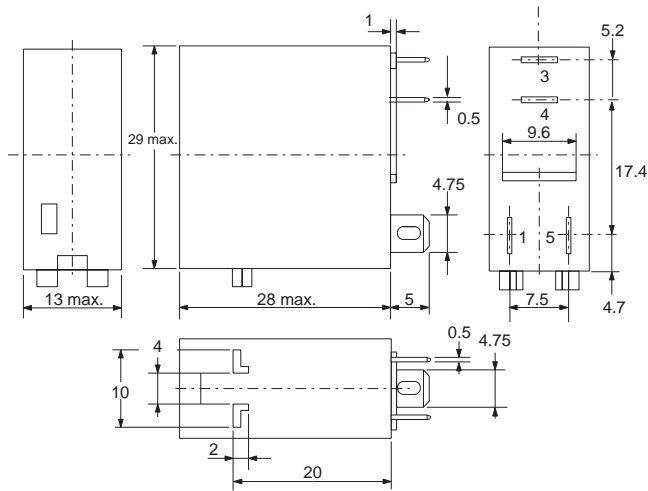
G3R-OD201SN-UTU



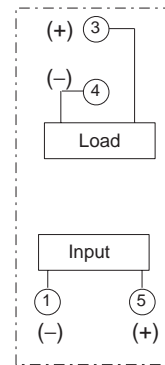
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3R



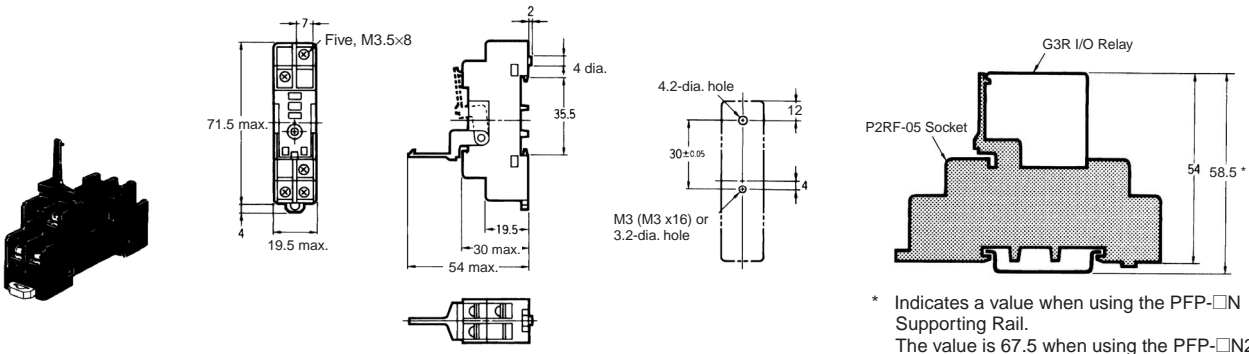
Terminal Arrangement/
Internal Connections
(Bottom View)



Connecting Sockets

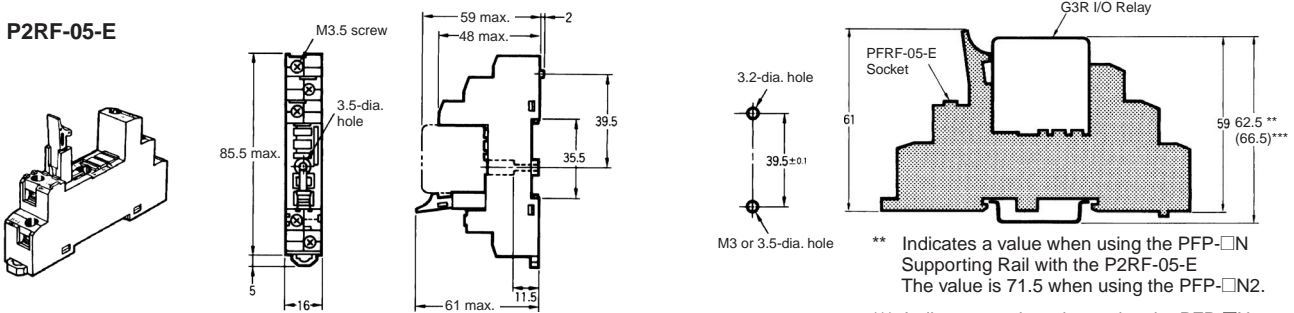
Connecting Socket Attaching Plates

P2RF-05



* Indicates a value when using the PFP-□N Supporting Rail.
The value is 67.5 when using the PFP-□N2.

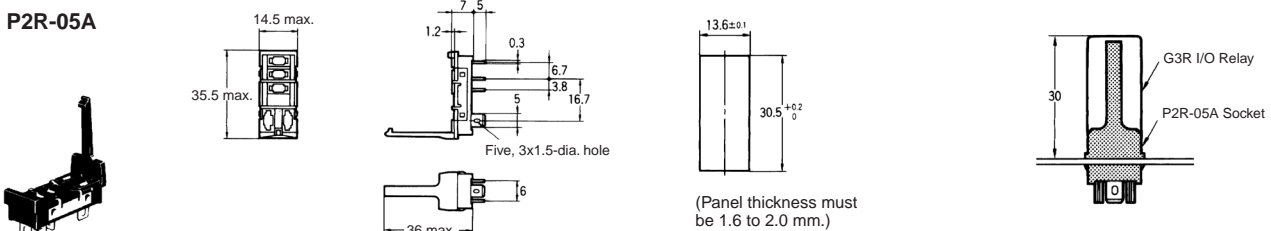
P2RF-05-E



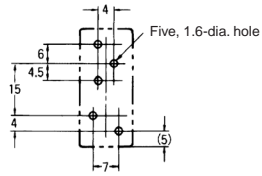
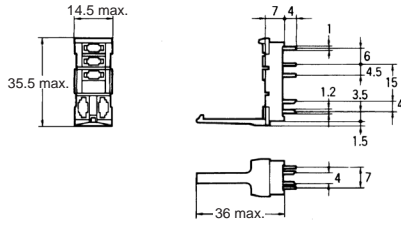
** Indicates a value when using the PFP-□N Supporting Rail with the P2RF-05-E.
The value is 71.5 when using the PFP-□N2.

*** Indicates a value when using the PFP-□N Supporting Rail with the P2RF-08-E.
The value is 75.5 when using the PFP-□N2.

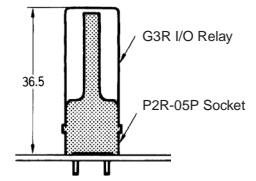
P2R-05A



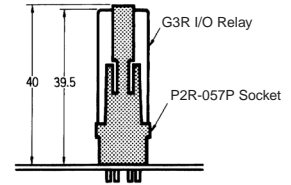
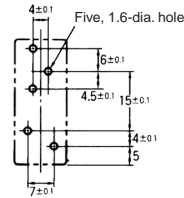
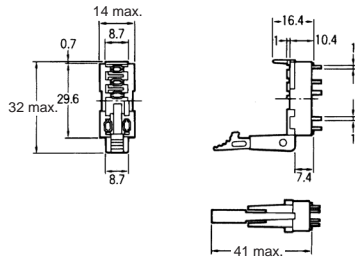
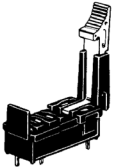
P2R-05P



Dimensional tolerance is ± 0.1 .

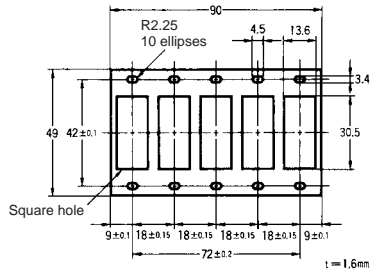


P2R-057P



Socket Mounting Plate

Use the Socket Mounting Plate when arranging several Sockets in a row.



G70A I/O Block Base

Ordering Information

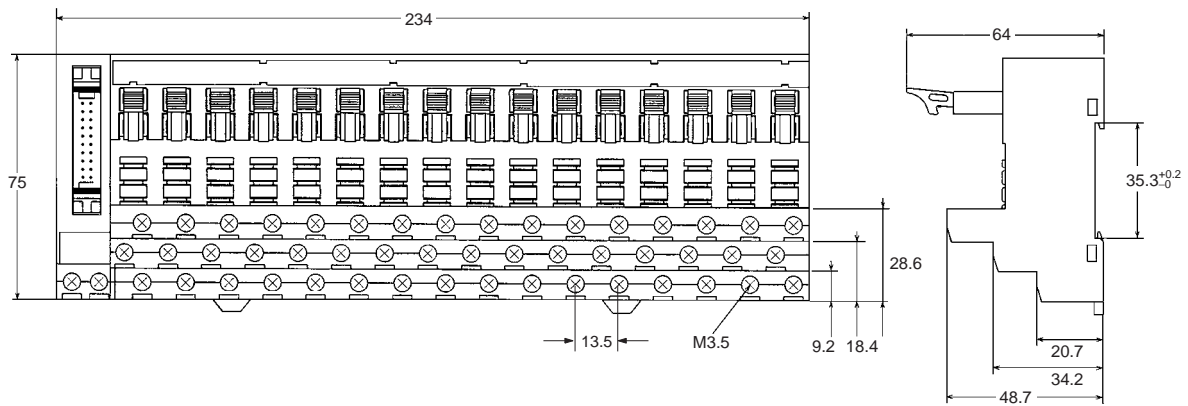
| Classification | Internal I/O circuit common | Rated voltage | Model |
|----------------|-----------------------------|---|--------------|
| Output | NPN (+ common) | 24 VDC | G70A-ZOC16-3 |
| | PNP (- common) | 24 VDC | G70A-ZOC16-4 |
| Input | NPN/PNP | 110 VDC max., 240 VAC max. (See note.) | G70A-ZIM16-5 |

Note: Each relay to be mounted must incorporate a coil that has proper specifications within the maximum rated voltage range.

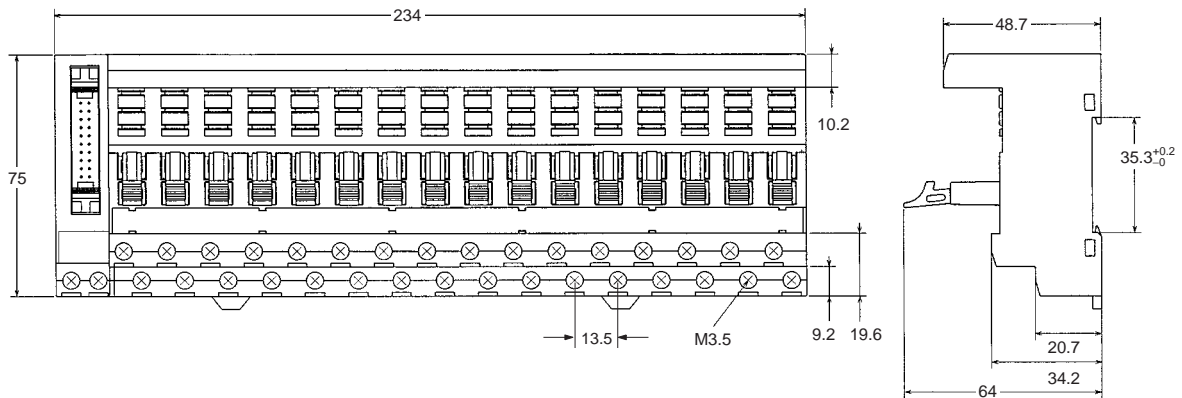
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G70A-ZOC16 (Output)

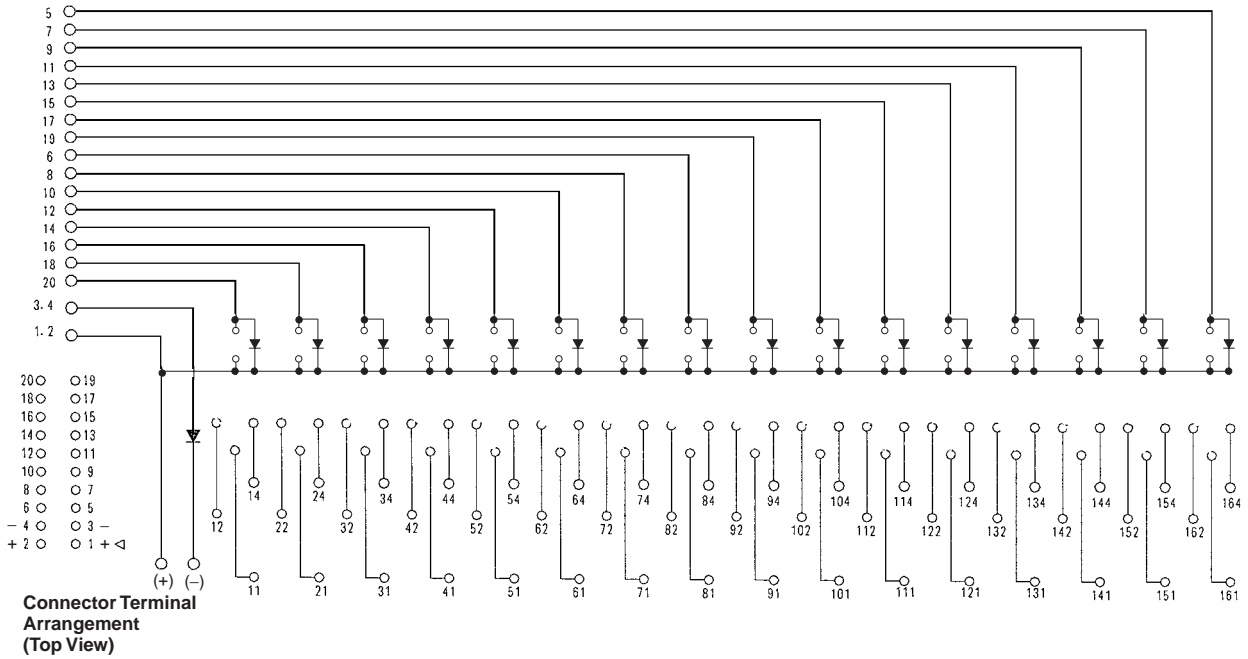


G70A-ZIM16 (Input)

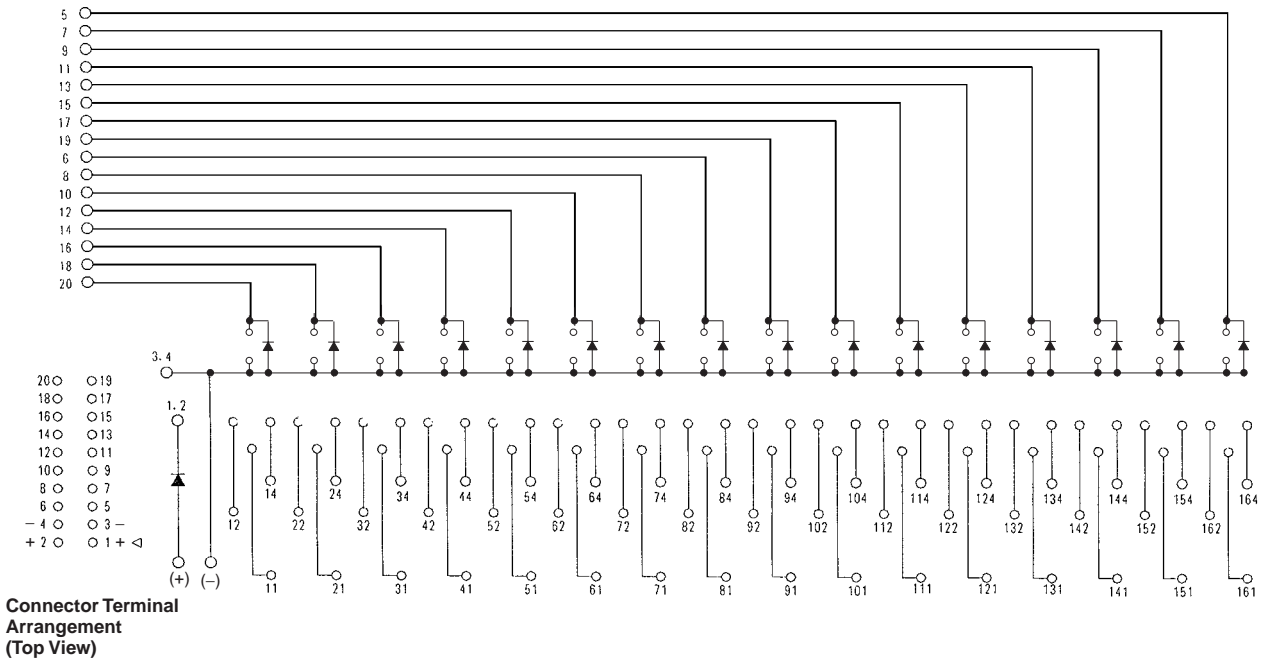


Terminal Arrangement/Internal Connection

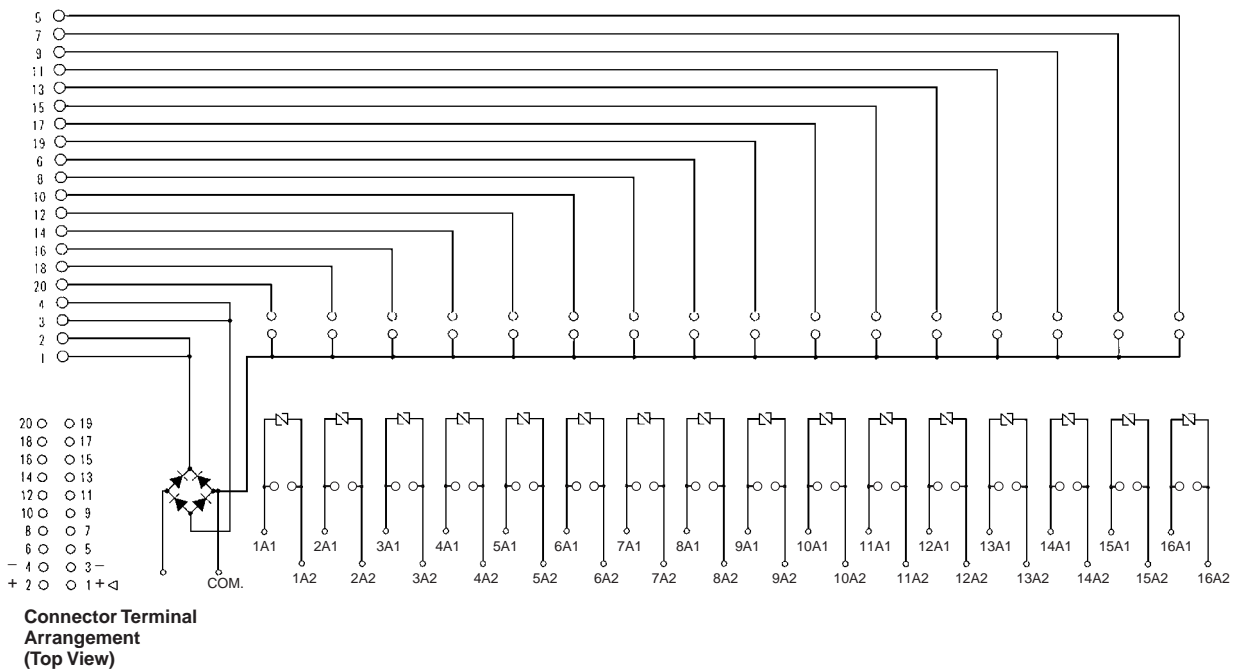
G70A-ZOC16-3 (NPN)



G70A-ZOC16-4 (PNP)



G70A-ZIM16-5 (NPN/PNP)



Safety Precautions

■ Precautions for Correct Use

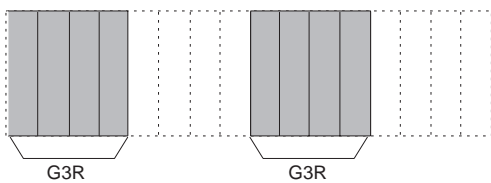
Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

Connection

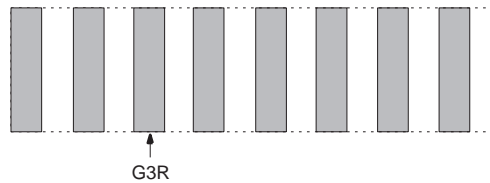
With the SSR for DC switching, the load can be connected to either positive or negative output terminal of the SSR.

Precaution of Mounting Output Modules

With up to four G3R SSRs mounted closely and side by side, 2-A loads can be switched.



With a G3R SSRs mounted every other slot, 2-A loads can be switched.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.