

# OMRON

## TYPE G70V-SID16P

## TYPE G70V-SID16P-1

## TYPE G70V-SOC16P

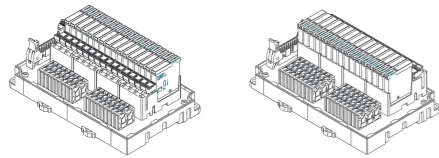
## TYPE G70V-SOC16P-1

### I/O Relay Terminal

#### English INSTRUCTION MANUAL

Thank you for purchasing this OMRON product. This manual primarily describes precautions required in installing and operating the product.

- Only qualified person trained in professional electrical technique should handle the G70V.
- Before operating the G70V, read this manual through to acquire sufficient knowledge of the G70V.
- If the G70V is used in a manner not specified by Omron, the protection provided by the G70V may be impaired.
- Keep this manual for future reference.



OMRON Corporation 9605007-5 A

#### Standards

G70V Series is designed and manufactured in accordance with the following standards:  
UL61010-2-201  
EN61810-1 Edition 3.0 2008-2  
EN61984 Edition 2.0 200-10

#### Precaution for Safe Use

##### Meanings of Signal Words

The following signal words are used in this manual.

**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.

##### Meaning of Alert Symbols

- Indicates prohibited actions
- Indicates mandatory actions

##### Alert Statements

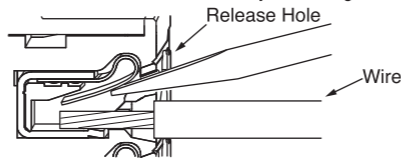
<b>WARNING</b>	
Serious injury may possibly occur due to loss of required safety functions. Do not use LEDs on the G70V for safety operations.	
Serious injury may possibly occur due to breakdown of outputs. Do not connect loads beyond the rated value to the outputs.	
Serious injury may possibly occur due to loss of required safety functions. Wire the G70V properly so that power line do NOT touch the outputs accidentally or unintentionally.	
Serious injury may possibly occur due to loss of required functions. Ground the 0V line of the power supply for external output devices so that the devices do Not turn ON when the output line is grounded.	
For Model G70V-SOC16P(-1), Apply only one AC line phase to the relays.	
For Model G70V-SOC16P(-1), Insert a fuse for each output terminal to protect output contacts from welding. Confirm the fuse selection with fuse manufacturer to ensure the dependability of the characteristics of the connected load.	
For Model G70V-SOC16P(-1), hazard by electric shock may occur. Do not touch the I/O terminals for Outputs while the power supply turned on.	

#### Precautions for Safe Use

- **Handle with care**  
Do not transport the I/O Relay Terminal under the following locations. Doing so may occasionally result in damage, malfunction, or deterioration of performance characteristics.
  - Locations subject to water or oil
  - Locations subject to high temperature or high humidity
  - Locations subject to condensation due to rapid changes in temperature
- **Installation and Storage Environments**  
Do not use or store the I/O Relay Terminal in the following locations. Doing so may result in damage, malfunction, or deterioration of performance characteristics.
  - Locations subject to corrosive gases or inflammable gases
  - Locations subject to temperatures or humidity outside the range specified in the specifications.
  - Locations subject to high temperature or high humidity
  - Locations subject to exposure to water, oil, or chemicals
  - Locations subject to dust, salts, or iron, or locations where there is salt damage
  - Locations subject to rainwater or water splashes
  - Locations subject to direct sunlight
  - Locations subject to shock or vibration

- **Installation and Mounting**
  - Mount the I/O Relay Terminal firmly to a DIN Track. Otherwise, the I/O Relay Terminal may fall off.
  - Do not handle the I/O Relay Terminal with oily or dusty (especially iron dust) hands.
  - Mount the I/O Relay Terminal in the specified direction. Otherwise excessive heat generated by the I/O Relay Terminal may occasionally cause burning.
  - Make sure that there is no excessive ambient temperature rise due to the heat generation of the I/O Relay Terminal. If the I/O Relay Terminal is mounted inside a panel, install a fan so that the interior of the panel is fully ventilated.
  - Use the I/O Relay Terminal within an enclosure with IP54 protection or higher.

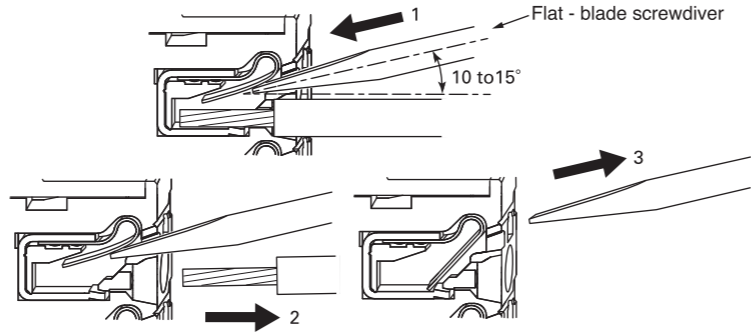
- **Installation and Wiring**
  - Use wires that are suited to the load current and voltage. Otherwise, excessive heat generated by the wires may cause burning or may cause the wire covering to melt, possibly leading to electric shock.
  - Do not use wires with a damaged outer covering. Otherwise, it may result in electric shock or ground leakage.
  - Do not wire any wiring in the same duct or conduit as power or high-tension lines. Otherwise, inductive noise may damage the I/O Relay Terminal or cause it to malfunction.
  - Do not insert more than one wire into each terminal insertion hole.
  - Do not bend a wire past its natural bending radius or pull on it with excessive force. Doing so may cause the wire disconnection.
  - 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.



- The I/O Relay Terminal may occasionally rupture if short-circuit current flows. As protection against accidents due to shortcircuiting, be sure to install protective devices, such as fuses and no-fuse breakers, on the power supply side.
- Be sure to use wire temperature rating 90°C or more.
- Be sure to ground the enclosure.

- **Installation and Operating environment**
  - Do not apply a voltage or current that exceeds the rating to any terminal. Doing so may result in failure or burning.
- **Load Selection**
  - Select a load within the rated values. Not doing so may result in malfunction, failure, or burning.
- **Power Supply Selection**
  - Use a power supply within the rated frequencies. Otherwise, malfunction, failure, or burning may occasionally occur.
  - Use a power supply with low noise.

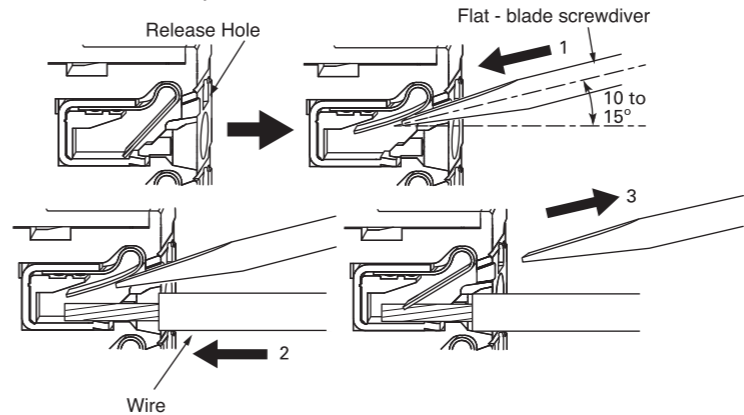
- **Periodical Inspection and Maintenance**
  1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
  2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
  3. Remove the flat-blade screwdriver from the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



- Minor electric shock may occasionally occur. Always turn OFF the power supply before performing wiring.

#### Precautions for Correct Use

- **Handle with care**
  - Do not drop the I/O Relay Terminal 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 an I/O Relay Terminal when it is not packaged. Damage or failure may occur.
- **Installation and Wiring**
  - Use the following procedure to connect the wires to the terminal block.
    1. Insert the wire or ferrule straight into the terminal block until the end strikes the terminal block. When connecting stranded wires, with the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
    2. Remove the flat-blade screwdriver from the release hole.
    3. 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.



- 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. The angle should be between 10° and 15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Properly wiring when connecting to the terminal block.
- Use the following to wire external I/O devices to the G70V.

Solid Wires	0.2 to 1.5mm <sup>2</sup>	AWG24 to 16	Stripped part:8~10mm
Stranded Wires	0.2 to 1.5mm <sup>2</sup>	AWG24 to 16	Stripped part:8~10mm

#### 1. SPECIFICATIONS

##### Environmental Specifications

Item	Specifications
Power supply voltage for Unit power supply terminal and Communication connector	DC24V -15%+10% (DC20.4 to 26.4V)
Current consumption of Unit power	SID : 4.2mA + External I/O device's current SOC : 240mA max.
Location	Indoor use
Altitude	Up to 2000m
Operating Temperature	-40 to 55°C (Product specifications) -40 to 40°C (Specifications certified by UL)
Storage Temperature	-40 to 65°C
Relative Humidity	35 to 85% non-condensing
Vibration resistance	5 min each in 3 directions along 3 axes 10 to 55 to 10Hz : 0.5mm
Shock resistance	100 m/s <sup>2</sup> , 3 times each in 6 directions along 3 axes
Protection degree	IP10
Over Voltage Category	II
Pollution degree	2
Weight	SID : 350g SOC : 370g

Note : Use a power supply that satisfies the requirements for SELV.

##### Input Specifications ( I/O terminals for Inputs of SID16P(-1) )

Item	Specifications
Input voltage	DC24V -15%+10% (DC20.4 to 26.4V)
Input current	15mA / point

Note : Use a power supply that satisfies the requirements for SELV.

##### Contact Ratings ( SID16P(-1) )

Item	Specifications
Relay	G2RV-1-S-AP-G DC21
Error rate (reference value)	1 mA at 100 mVDC
Rated load (Resistive load)	50 mA at 30 VAC 50 mA at 36 VDC
Mechanical life expectancy (Not a certified value of UL)	5,000,000 operations min. (Switching frequency 18,000 operations/hour)
Electrical life expectancy (Not a certified value of UL)	5,000,000 operations min. (Switching frequency 1,800 operations/hour (under rated load))

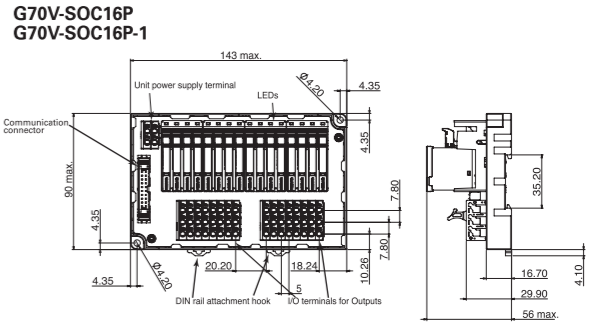
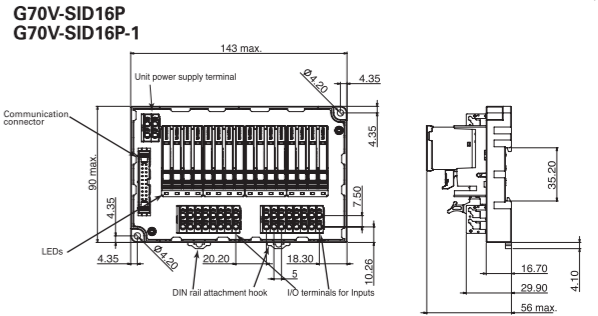
Note : Use a power supply that satisfies the requirements for SELV.

##### Contact Ratings ( SOC16P(-1) )

Item	Specifications
Relay	G2RV-1-S-G DC21
Error rate (reference value)	10 mA at 5VDC
Rated load (Resistive load)	6A at 250 VAC 6A at 30 VDC
Mechanical life expectancy (Not a certified value of UL)	5,000,000 operations min. (Switching frequency 18,000 operations/hour)
Electrical life expectancy (Not a certified value of UL)	NO contacts : 70,000 operations min. (Switching frequency 1,800 operations/hour (under rated load)) NC contacts : 50,000 operations min. (Switching frequency 1,800 operations/hour (under rated load))

#### 2. NOMENCLATURE AND FUNCTION / DIMENSIONS

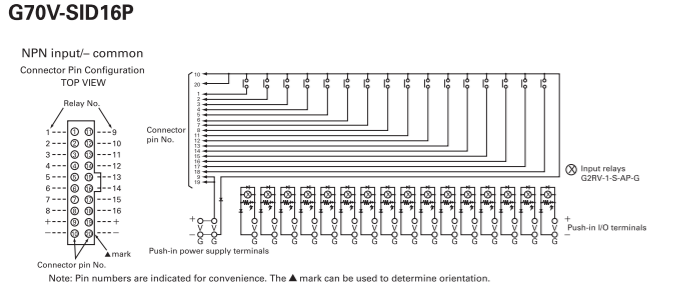
(Unit : mm)



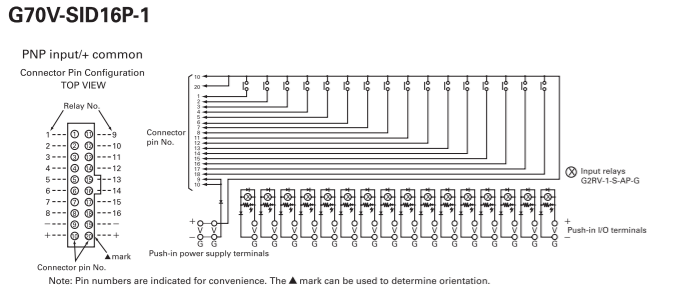
##### Indicators

LED name	Color	Status	Description
PWR	Green	Lit	Power supply is ON
		Not lit	No power
1...16:SID 1...16:SOC	Yellow	Lit	Input / Output signal ON
		Not lit	Input / Output signal OFF

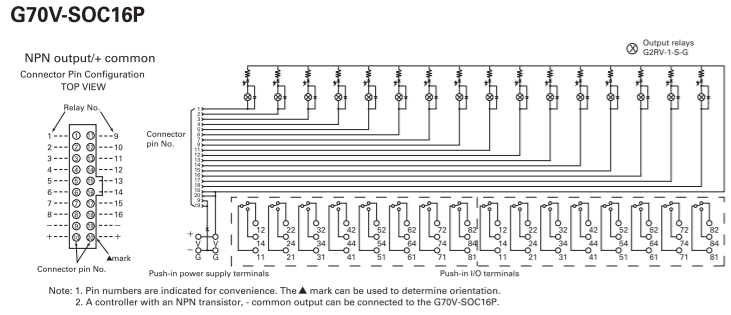
### 3. INTERNAL CIRCUITRY AND TERMINAL POSITION



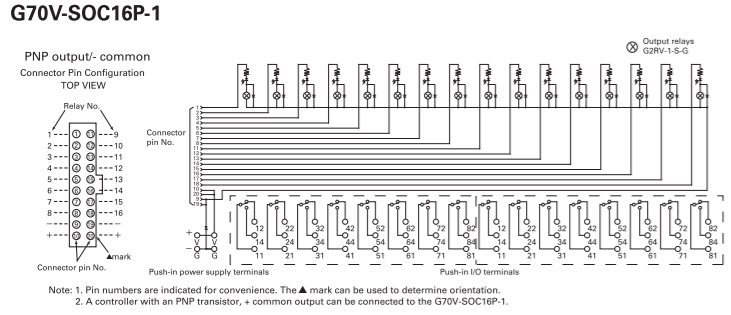
Terminal name	Description
V (push-in power supply terminals)	Unit power supply terminals (24 VDC)
G (push-in power supply terminals)	
V (push-in I/O terminals)	Relay-drive coil terminals (24 VDC)
G (push-in I/O terminals)	



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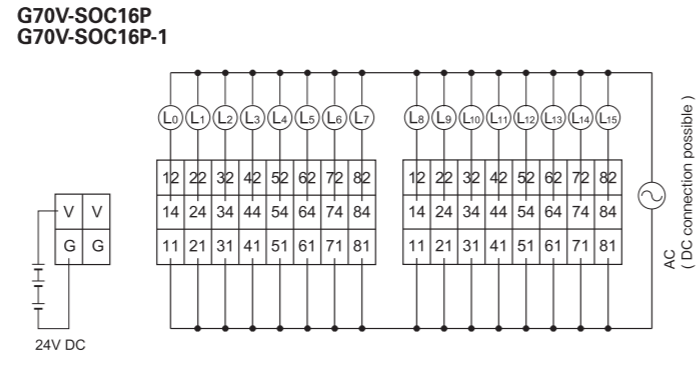
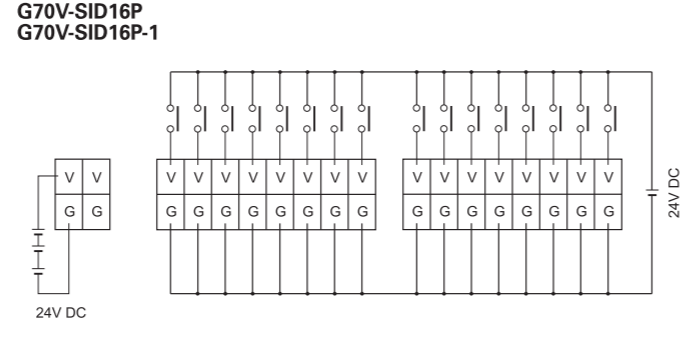


Terminal name	Description
V (push-in power supply terminals)	Unit power supply terminals (24 VDC)
G (push-in power supply terminals)	
11 to 81 (push-in I/O terminal common terminals)	Relay contact terminals
12 to 82 (push-in I/O terminal NC terminals)	
14 to 84 (push-in I/O terminal NO terminals)	



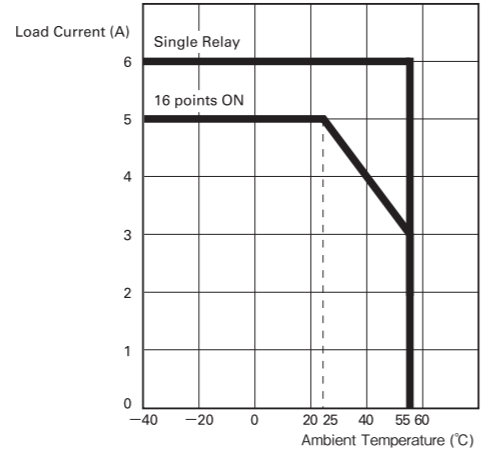
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### 4. APPLICATION EXAMPLE

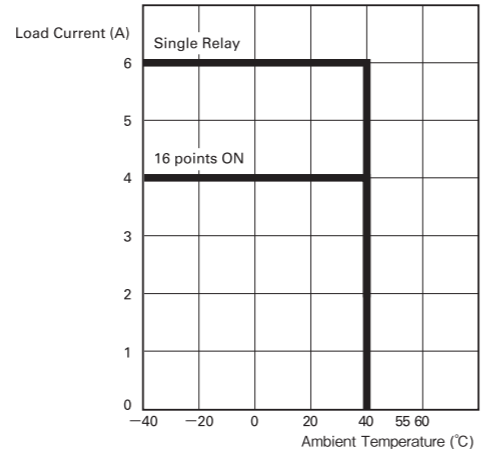


### 5. Load Current vs. Ambient Temperature

G70V-SOC16P(-1) : Product specifications



G70V-SOC16P(-1) : Specifications certified by UL



### 6. Accessories (Order Separately)

● Mountable Relays

Applicable Model	Classification	Relay Type
G70V-SID16P(-1)	Slim I/O Relays	G2RV-1-S-AP-G DC21
G70V-SOC16P(-1)	Slim I/O Relays	G2RV-1-S-G DC21
		G2RV-1-S1-G DC21

● Connecting Cables

Model / Spec.
XW2Z-RY□C / Cable with Loose Wire and Crimp Terminals
XW2Z-RA□C / Cable with Loose Wires
XW2Z-R□C / Cable with One Connector (1:1)
XW2Z-RO□-□(-□), XW2Z-R□-□(-□) / Cable with Two Connectors (1:2)
XW2Z-R□C-□-□ / Cable with Three Connectors (1:3)

● Parts for DIN Track Mounting

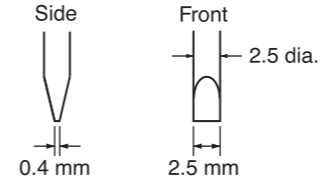
Type	Model
DIN Tracks	1m PFP-100N
	0.5m PFP-50N
End Plate	PFP-M
Spacer	PFP-S

● Labels

Model
XW5Z-P2.5LB2

### 7. 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
XW4Z-00B	Omron
ESD0.40X2.5	Wera
SZF 0.4X2.5	Phoenix Contact
0.4X2.5X75 302	Wiha
AEF.2.5X75	Facom
210-719	Wago
SDI 0.4X2.5X75	Weidmuller

### Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases. NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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