

Safety I/O Terminal GI-S Series GI-SMD/SID

Safety I/O Terminals for CIP Safety™

- Standard-feature EtherNet/IP™ port
- Support for CIP Safety™ on EtherNet/IP™
- Safety I/O of NX Safety Control System easily programmable with Sysmac Studio



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

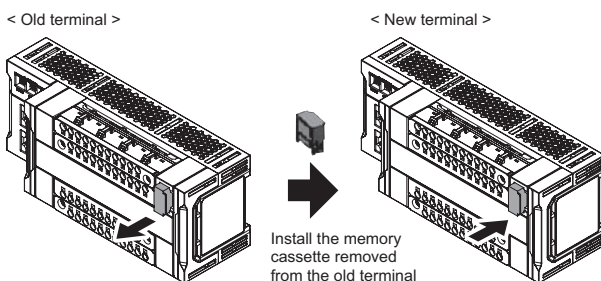
Features

- Meets EN ISO 13849- 1 (PLe/Category 4) and IEC 61508 (SIL3)
- Memory cassette for quick replacement of terminal
- Removable terminal block for easy maintenance
- Push-In Plus (screwless clamping) terminal block

Quick replacement of terminal

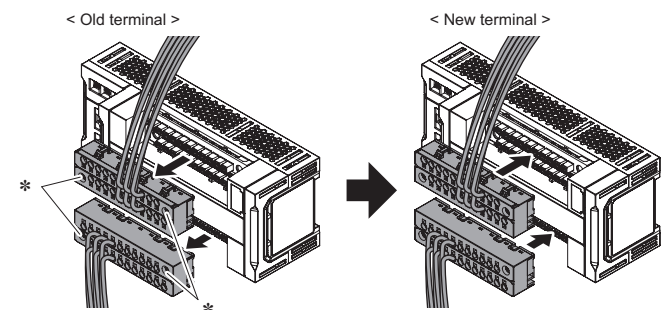
■ Memory cassette for quick replacement of terminal

Remove the memory cassette from the old terminal and install it into the new one to inherit the settings. No software is required.



■ Removable terminal block

Remove the wired terminal block from the old terminal and install it into the new one. No re-wiring is required.



* The Common Industrial Protocol (CIP™) is an industry standard open network, enabling seamless communication among CIP networks. CIP Safety™ adds safety functionality to CIP networks.

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GI-SMD/SID

Ordering Information

GI-S-series safety I/O terminals

Unit type	Appearance	Specification							Unit version	Model
		Corresponding communication protocol	Number of connectors	Number of networks	Number of safety input points	Number of test output point	Number of safety output points	OMRON special safety input devices		
Safety I/O Terminals		EtherNet/IP	2	1 *1	12 points	12 points	4 points	Cannot be connected. *2	Ver. 1.0	GI-SMD1624
					12 points	12 points	---		Ver. 1.0	GI-SID1224

*1. PORT1 and PORT2 are ports with switching hub.

*2. OMRON special safety input devices that require dedicated controllers cannot be connected directly to the GI-S Series. Refer to *Individual Unit Specifications* for details.

Accessories

Not included.

Automation Software Sysmac Studio

The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI.

For details, refer to your local OMRON website and *Sysmac Studio Catalog* (Cat. No. P138).

Specifications

Regulations and Standards

GI-S-series safety I/O terminals

Certification body	Standards
TÜV Rheinland	• EN ISO 13849-1 • IEC 61508 parts 1-7 • IEC/EN 61131-2
UL	• NRAG (UL 61010-1, UL 61010-2-201 and UL 121201) • NRAG7 (CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201 and CSA C22.2 No. 213)

- The FSoE protocol was certified for applications in which OMRON FSoE devices are connected to each other. For compatibility with FSoE devices other than OMRON FSoE devices, the customer must validate FSoE communications.

By using GI-S-series safety I/O terminals, you can build a safety control system that meets the followings.

- Requirements for SIL 3 in IEC 61508
- Requirements for PLe/category 4 in EN ISO13849-1

Also, GI-S-series safety I/O terminals have been registered for conformity to RCM and KC (Korean radio regulation).

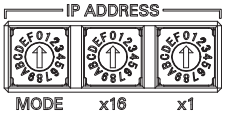
General Specifications

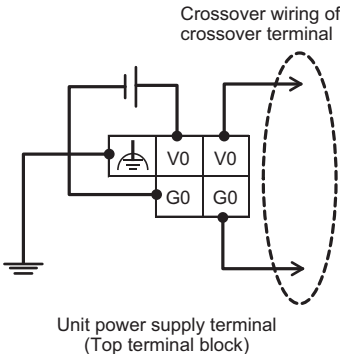
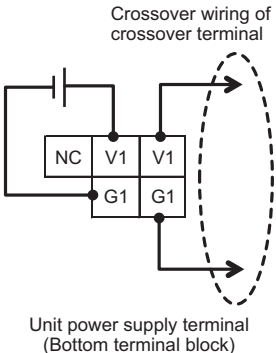
Item		Specification
Enclosure		Mounted in a panel (open type)
Operating environment	Ambient operating temperature	0 to 55°C
	Ambient operating humidity	10% to 95% (with no condensation or icing)
	Atmosphere	Must be free from corrosive gases
	Ambient storage temperature	–25 to 70°C (with no condensation or icing)
	Altitude	2,000 m max.
	Pollution degree	2
	Insulation class	CLASS III (SELV)
	Overvoltage category	II
	EMC immunity level	Zone B: IEC 61131-2
	Vibration resistance	Conforms to IEC 60068-2-6 5 to 8.4 Hz with amplitude of 3.5 mm 8.4 to 150 Hz, acceleration of 9.8 m/s ² 100 min. in each X, Y, and Z directions (10 sweeps of 10 min. each = 100 min. total)
	Shock resistance	Conforms to IEC 60068-2-27 147 m/s ² 3 times in each X, Y, and Z directions
	Insulation resistance	20 MΩ between isolated circuits (at 100 VDC)
	Dielectric strength	500 VAC between isolated circuits for 1 minute at a leakage current of 10 mA max.
Installation method		DIN Track mounting (IEC 60715 TH35-7.5/TH35-15)
Degree of protection		IP20

GI-SMD/SID

Individual Unit Specifications

GI-SMD1624/GI-SID1224

Model		GI-SMD1624	GI-SID1224
Number of safety input points		12	
Number of safety output points		4	----
Number of test output points		12	
OMRON special safety input device *1		Connection unavailable	
LED indication		[V0] LED, [IN□] LED x 12, [V1] LED, [OUT□] LED x 4, [MS] LED, [NS] LED, [PORT□ LINK] LED x 2	[V0] LED, [IN□] LED x 12, [V1] LED, [MS] LED, [NS] LED, [PORT□ LINK] LED x 2
Hardware switch setting		[IP ADDRESS] switch x3 (MODE, x16, x1)  * Factory default GI-SMD1624 : 192.168.250.2 [IP ADDRESS] Switch= "002" GI-SID1224 : 192.168.250.3 [IP ADDRESS] Switch= "003"	
Safety input type		IEC61131-2 type3 PNP (sinking inputs)	
Safety input current		6 mA max.	
Safety input ON voltage		11 VDC min.	
Safety input OFF voltage/OFF current		5 VDC max./1 mA max.	
Safety output type		Source output (for PNP)	
Safety output rated current		0.5 A max.	*2
Maximum total safety output current		2.0 A	
Safety output ON residual voltage		1.2 V max. (between V1 and each output terminal)	
Safety output OFF residual voltage		2.0 V max. (between G1 and each output terminal)	
Safety output leakage current		0.1 mA max.	
Test output type		Source output (for PNP)	
Test output rated current		0.7 A max.	
Maximum total test output current		5.0 A	
Test output ON residual voltage		1.2 V max. (between V0 and each output terminal)	
Test output leakage current		0.1 mA max.	
External dimensions *3		170 (W) x 65 (H) x 55 (D)	
Weight		400 g	
Number of communications that can be set between NX Units		254 ports max. *3	
Unit power supplies	Power supply voltage	24 VDC (20.4 to 28.8 VDC)	
	Current consumption *4	250 A max.	
	Inrush current	On cold start at normal temperature 50 A max., 0.1 ms max.	
	Power supply terminal current carrying capacity *5	5 A	
	Insulation type	No insulation: Between unit power supply terminal and internal circuit	
Output power supply	Power supply voltage	24 VDC (20.4 to 28.8 VDC)	*2
	Current consumption	50 A max.	
	Inrush current	On cold start at normal temperature 50 A max., 0.1 ms max.	
	Power supply terminal current carrying capacity *5	5 A	
	Insulation type	Photocoupler insulation	
External connection terminal	Communication connector	EtherNet/IP communication RJ45 x 2	
	Screwless clamp terminal block	Top terminal block Functional earthing Unit power supply Input/Test output Bottom terminal block Output power supply Output/Input/Test output	Top terminal block Functional earthing Unit power supply Input/Test output Bottom terminal block Input/Test output

Model		GI-SMD1624	GI-SID1224
Inter-terminal connection diagram	V0/G0 Unit power supply		
	V1/G1 Output power supply		*2
Installation direction and restriction		No restriction	
Protective function		Overvoltage protection, overcurrent protection	

*1. OMRON special safety input devices are the following input devices:

- Safety mat UMA, UM (The UM Series was discontinued at the end of June 2019.)
- Safety edge SGE
- Single-beam safety sensor E3ZS
- Non-contact door switch D40A-2, D40A, and D40Z

*2. GI-SID1224 has no output signal terminal and no output power supply is connected.

*3. Projections are not included.

*4. Inrush current when the supply power is turned ON from the static power-OFF state. Inrush current value may vary depending on conditions. For your selection of fuses, breakers, and external power supply units, take into account the conditions to be used to select those that have a margin in characteristics and capacity.

*5. Current-carrying capacity allowed to continuously flow through the terminal. This current must not be exceeded in case crossover wiring is done for the unit power supply.

GI-SMD/SID

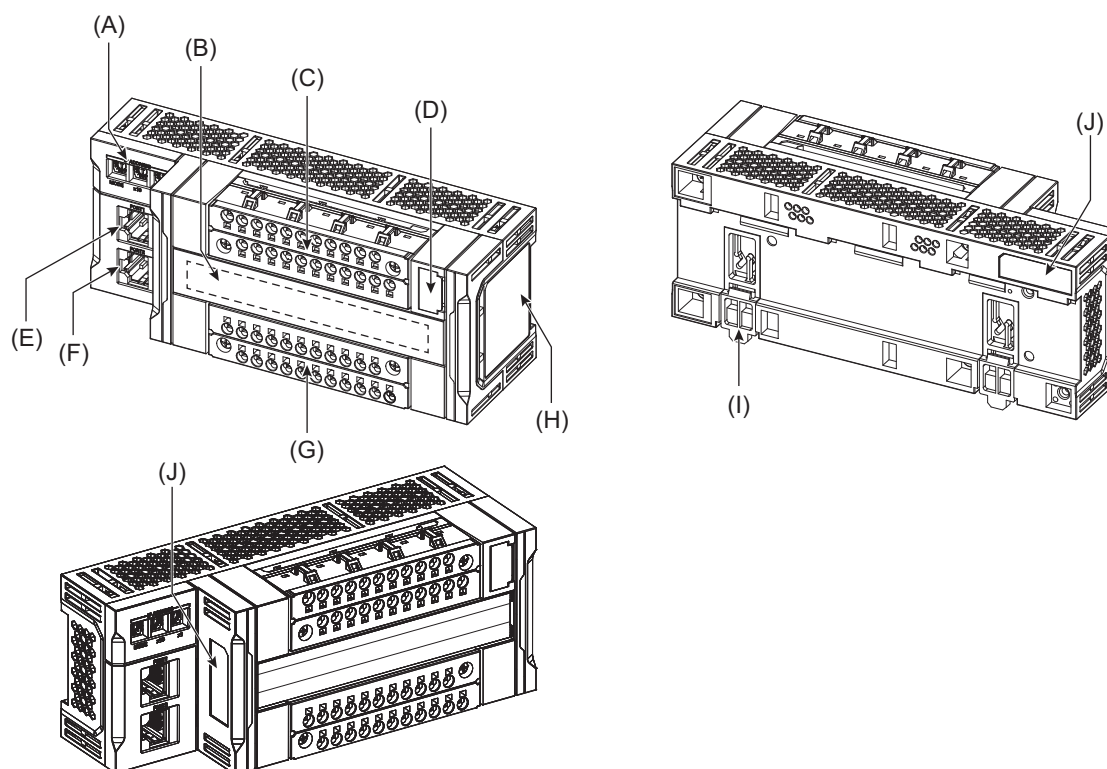
Item			Specifications
			GI-SMD1624 / GI-SID1224
Communications protocol			TCP/IP, UDP/IP
Support services			Sysmac Studio connection, tag data links, CIP message communication, DHCP (client)
Number of logical ports			1
Physical layer			100BASE-TX
Transmission specifications	Media access method		CSMA/CD
	Modulation		Baseband
	Transmission path		Star, daisy chain, mixed (star and daisy chain), ring (DLR)
	Transmission rate		100M bit/s (100BASE-TX)
	Transmission media		Twisted-pair cable (shielded: STP): category 5/5e or higher
	Transmission distance		100m max. (distance between hub and node)
Number of cascaded connections			50 nodes or less recommended
CIP messaging service: Explicit message UCMM (non-connection type)			Maximum number of clients that can communicate simultaneously: 8/Logical ports
Safety process data communications	Exclusive Owner (EO)	Input	1
		Output	1
Standard process data communications	Input Only		1 (Point to Point)
	Listen Only		7 (Multi-Cast)
EtherNet/IP conformance test			CT9 compliant
Ethernet interface			100BASE-TX Auto Negotiation Auto-MDI
DLR (Device Level Ring)			Ring Node (Beacon-based)

Version Information

The following table shows the possible combinations of versions of GI-SMD/SID Safety I/O Terminals, Safety CPU Units, Communication Control Unit, NX-series CPU Unit, and software. Refer to the *GI-S-series Safety I/O Terminal User's Manual* (Cat. No. Z400) for details.

Safety I/O Terminal		Supported Version					
Model	Unit Version	Safety CPU Unit NX-SL5700 NX-SL5500	Communication Control Unit NX-CSG320	Machine Automation Controller NX102-□□□□	Sysmac Studio	Network Configurator	Network Configurator for DeviceNet Safety
GI-SMD1624	Ver.1.0	Ver.1.3	Ver.1.01	Ver.1.31	Ver.1.24 or higher	Ver.3.67 or higher	Ver.3.42 or higher
GI-SID1224	Ver.1.0	Ver.1.3	Ver.1.01	Ver.1.31	Ver.1.24 or higher	Ver.3.67 or higher	Ver.3.42 or higher

Component and Functions



Symbol	Name	Description
(A)	Rotary switch	Used to set the mode switching and IP address of the built-in EtherNet/IP ports (PORT1/PORT2), in hexadecimal expression.
(B)	LED indicator	Shows the operation, signal, power supply and statuses of the safety I/O terminal itself by LED.
(C)	Top terminal block	Terminal block to connect unit power supply, grounding, and input devices.
(D)	Memory cassette slot	A memory cassette is set on delivery. The memory cassette allows a user to inherit the settings when replacing GI-S-series.
(E)	Built-in EtherNet/IP port (PORT1)	Connects the built-in EtherNet/IP with an Ethernet cable.
(F)	Built-in EtherNet/IP port (PORT2)	Connects the built-in EtherNet/IP with an Ethernet cable.
(G)	Bottom terminal block	Terminal block to connect output power supply and input/output devices. *
(H)	Unit specifications	Shows the product information, standards marking, and ID information (lot number/unit version) of the safety I/O terminal.
(I)	DIN Track mounting hooks	These hooks are used to mount the Unit to a DIN Track.
(J)	ID information indication	Shows the ID information (MAC address) of the safety I/O terminal.

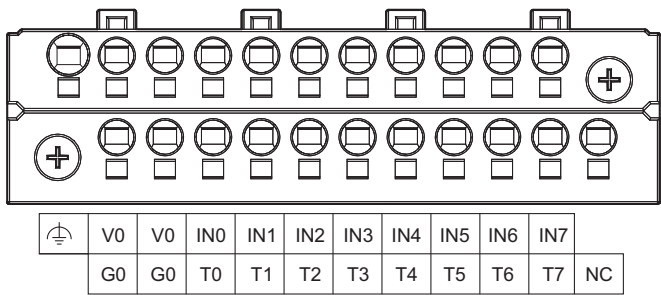
* Connection of output device is for GI-SMD1624 only.

GI-SMD/SID

Wiring

Terminal arrangement

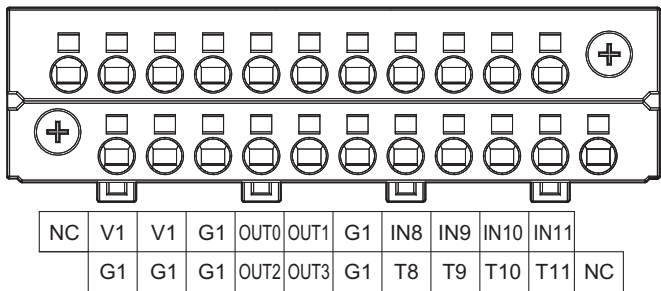
Top terminal block



Symbol	Terminal name	Description
	Functional grounding	Functional grounding terminal to connect the grounding wire.
V0, G0	Unit power supply terminal	Terminal to connect the safety I/O terminal's power supply and to supply power to external devices. Power supply 24VDC is connected to V0 and 0VDC to G0, respectively. V0 and G0 terminals are internally connected.
IN0 - IN7	Input terminal	Terminal to connect a safety input device.
T0 - T7	Test output terminal	Terminal for test output.

Bottom terminal block

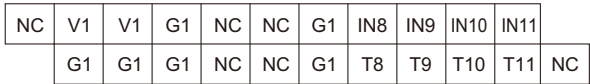
GI-SMD1624



Symbol	Terminal name	Description
V1, G1	Output power supply terminal	Terminal to supply power to internal output control circuit and external devices. V1 and G1 terminals are internally connected.
OUT0 - OUT3	Output terminal	Terminal to connect a safety output device.
IN8 - IN11	Input terminal	Terminal to connect a safety input device.
T8 - T11	Test output terminal	Terminal for test output.

GI-SID1224

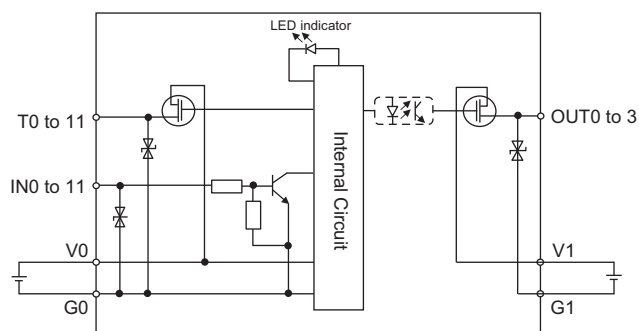
The terminal block form is same as GI-SMD1624.



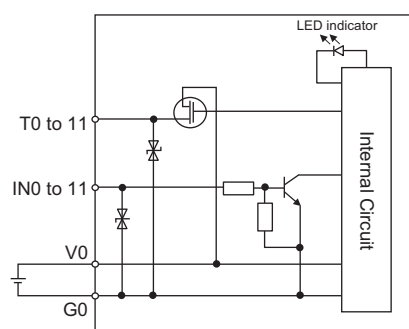
Symbol	Terminal name	Description
V1, G1	Output power supply terminal	V1 and G1 terminals are internally connected. GI-SID1224 is not connected to an output device and must not be wired.
NC	NC	Do not connect.
IN8 - IN11	Input terminal	Terminal to connect a safety input device.
T8 - T11	Test output terminal	Terminal for test output.

Internal Circuit Diagram

GI-SMD1624



GI-SID1224

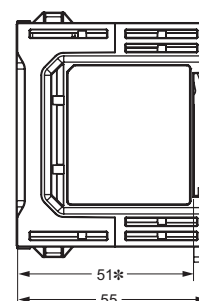
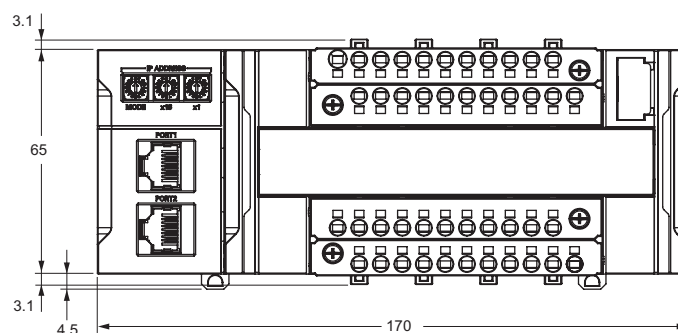


Dimensions

(Unit: mm)

GI-SMD1624

GI-SID1224



Note: For dimensions with the communications cable connected, refer to the *GI-S-series Safety I/O Terminal User's Manual*.

* This is a dimension from the DIN Track seat to the safety I/O terminal surface.

GI-SMD/SID

Related Manuals

Manual name	Cat. No.	Model numbers	Application	Description
GI-S-series Safety I/O Terminal User's Manual	Z400	GI-S□□□□□□	Learning how to use the GI-S-series safety I/O terminals.	The hardware, setup methods, and functions of the GI-S-series safety I/O terminals are described.

Safety Precautions

Be sure to read the *Common Precautions for Safety Warning* at the following URL: <http://www.ia.omron.com/>.
Be sure to read the following user's manual for other details required for correct use of the Safety I/O Terminals.

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OMRON's Products Support IoT for Control Panels and Production Lines



NX-series Safety Controller
CIP Safety System
Brochure

Cat. No. F104



Safety CPU Unit
NX-SL5 Datasheet

Cat. No. F124



Communication
Control Unit
NX-CSG Datasheet

Cat. No. F125



Automation Software
Sysmac Studio Brochure

Cat. No. P138



Automation Software
Sysmac Studio Ver.1 Datasheet

Note: Do not use this document to operate the Unit.

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