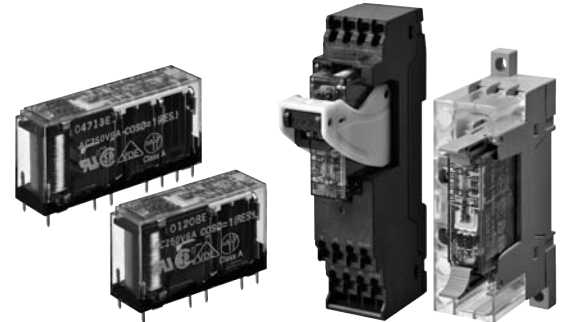


Relays with Forcibly Guided Contacts G7SA

Compact, Slim Relays Conforming to EN Standards

- Additional Push-In Plus terminal sockets are used to save wiring work in comparison with traditional screw terminals. (Wiring time is reduced by 60%* in comparison with traditional screw terminals.)
 - Relays with forcibly guided contacts (EN/IEC 61810-3, Certified by VDE).
 - Supports the CE marking of machinery (Machinery Directive).
 - Helps avoid hazardous machine status when used as part of an interlocking circuit.
 - Four-pole and six-pole Relays are available.
 - The Relay's terminal arrangement simplifies PWB pattern design.
 - Reinforced insulation between inputs and outputs.
Reinforced insulation between some poles of different polarity.
- * According to OMRON actual measurement data



Note: Sockets are sold separately.

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

 Be sure to read the *Safety Precautions* on page 13.

Model Number Structure

Model Number Legend

Main unit

Relays with forcibly guided contacts

G7SA- A B

1 2 3

Specify the power supply voltage (coil rated voltage) when ordering.

1. NO Contact Poles	2. NC Contact Poles	3. Coil Rated Voltage (V)
2: DPST-NO	1: SPST-NC	12 VDC
3: 3PST-NO	2: DPST-NC	18 VDC
4: 4PST-NO	3: 3PST-NC	21 VDC
5: 5PST-NO		24 VDC
		48 VDC
		110 VDC

Relays use PCB terminals.
This allows for mounting on PCBs and for connection to optional dedicated sockets (order separately).

Options (order separately)

Sockets

P7SA- - - -

1 2 3 4 5 6

- 1. Basic Model Name**
P7SA: Socket for G7SA
- 2. Number of Poles**
10: 4 poles (10 terminals)
14: 6 poles (14 terminals)
- 3. Mounting Type**
F: Front-mounting
P: Back-mounting

- 4. LED Indicator**
Blank: Without operation indicator LED/built-in diode
ND: With operation indicator LED/built-in diode

- 5. Terminal Type**
Blank: Screw terminals when 3. is F type
PCB terminals when 3. is P type
PU: Push-In Plus terminals

- 6. Coil Rated Voltage (V)**
24 VDC: When 4. is ND

G7SA

Ordering Information

Main unit

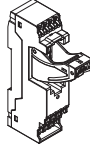
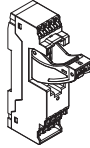
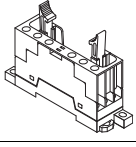
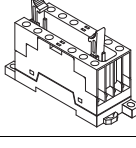
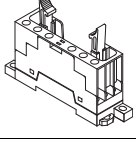
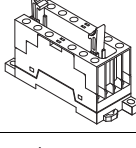
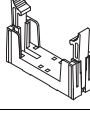
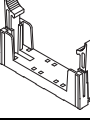
Relays with Forcibly Guided Contacts

Specify the coil rated voltage when ordering.

Terminal type	Sealing	Poles	Contact configuration	Coil rated voltage	Model
PCB terminals	Flux-tight	4 poles	3PST-NO, SPST-NC	12, 18, 21, 24, 48, 110 VDC	G7SA-3A1B
			DPST-NO, DPST-NC	12, 18, 21, 24, 48, 110 VDC	G7SA-2A2B
		6 poles	5PST-NO, SPST-NC	12, 18, 21, 24, 48, 110 VDC	G7SA-5A1B
			4PST-NO, DPST-NC	12, 18, 21, 24, 48, 110 VDC	G7SA-4A2B
			3PST-NO, 3PST-NC	12, 18, 21, 24, 48, 110 VDC	G7SA-3A3B

Options (order separately)

Sockets

Mounting	Terminal Type	LED Indicator	Poles	Coil rated voltage	Appearance	Model	
Front-mounting	Push-In Plus terminals	Yes	4 poles	24 VDC		P7SA-10F-ND-PU DC24	
			6 poles			P7SA-14F-ND-PU DC24	
	Screw terminals	Yes	4 poles			P7SA-10F-ND DC24	
			6 poles			P7SA-14F-ND DC24	
	Screw terminals	No	4 poles	—		P7SA-10F	
			6 poles			P7SA-14F	
	Back-mounting	PCB terminals	No	4 poles	—		P7SA-10P
				6 poles			P7SA-14P

Socket Accessories

Short Bars (For P7SA-□F-ND-PU)

Pitch	No. of poles	Colors	Model*1*2
5.2 mm	2	Red (RD) Blue (BL) Yellow (YL)	XW5S-P2.5-2□
	3		XW5S-P2.5-3□
	4		XW5S-P2.5-4□
	5		XW5S-P2.5-5□

Note: Use for crossover wiring of adjacent contact terminals (bottom) within one Socket.

*1. Replace the box (□) in the model number with the code for the covering color. Color Options: RD = red, BL = blue, YL = yellow

Example: XW5S-P2.5-10RD when the covering color is red.

*2. XW5S-P2.5-5□ cannot be used with P7SA-10F-ND-PU.

Parts for DIN Track Mounting

Type	Model	Minimum Order (quantity)
DIN Tracks	1 m	1
	0.5 m	
End Plate *	PFP-M	10
Spacer	PFP-S	

* When mounting DIN track, please use End Plate (Model PFP-M).

Specifications

Ratings

Safety Relay Unit

Coil (4 poles)

Item	Rated current (mA)	Coil resistance (Ω)	Max. voltage (V)	Power consumption (mW)
Rated voltage				
12 VDC	30	400	110%	Approx. 360
18 VDC	20	900		
21 VDC	17.1	1,225		
24 VDC	15	1,600		
48 VDC	7.5	6,400		
110 VDC	3.8	28,810		

Coil (6 poles)

Item	Rated current (mA)	Coil resistance (Ω)	Max. voltage (V)	Power consumption (mW)
Rated voltage				
12 VDC	41.7	288	110%	Approx. 500
18 VDC	27.8	648		
21 VDC	23.8	882		
24 VDC	20.8	1,152		
48 VDC	10.4	4,606		
110 VDC	5.3	20,862		

- Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of $\pm 15\%$.
2. The maximum voltage is based on an ambient operating temperature of 23°C maximum.

Characteristics

Safety Relay Unit

Contact resistance *1		100 m Ω max.
Operating time *2		20 ms max.
Response time *3		10 ms max.
Release time *2		20 ms max.
Must operate voltage		75% max.
Must release voltage		10% min.
Maximum operating frequency	Mechanical	36,000 operations/h
	Rated load	1,800 operations/h
Insulation resistance *4		1,000 M Ω min.
Dielectric Strength *5 *6	Between coil and contacts	4,000 VAC, 50/60 Hz for 1 min.
	Between contacts of different polarity	4,000 VAC, 50/60 Hz for 1 min. (except for followings) 4 poles (for poles 3-4 in 4-pole Relays), 6 poles (for poles 3-5, 4-6, and 5-6 in 6-pole Relays): 2,500 VAC, 50/60 Hz for 1 min.
	Between contacts of the same polarity	1,500 VAC, 50/60 Hz for 1 min.
Vibration resistance		10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)
Shock resistance	Destruction	1,000 m/s ²
	Malfunction	100 m/s ²
Durability *7	Mechanical	10,000,000 operations min. (at approx. 36,000 operations/h)
	Electrical	100,000 operations min. (at the rated load)
Inductive load switching capability *8 (IEC60947-5-1)		AC15 240 VAC, 2 A DC13 24 VDC, 1 A/48 VDC, 0.5 A/110 VDC, 0.2 A
Failure rate (P level) (reference value *9)		5 VDC, 1 mA
Ambient operating temperature *10		12 to 48 VDC: -40 to 85°C (with no icing or condensation) 110 VDC: -40 to 60°C (with no icing or condensation)
Ambient operating humidity		5% to 85%
Weight		4 poles: Approx. 22 g 6 poles: Approx. 25 g

Note: 1. The above values are initial values.

2. Performance characteristics are based on coil temperature of 23°C.

*1. The contact resistance was measured with 1 A at 5 VDC using the voltage-drop method.

*2. These times were measured at the rated voltage and an ambient temperature of 23°C. Contact bounce time is not included.

*3. The response time is the time it takes for the normally open contacts to open after the coil voltage is turned OFF. Contact bounce time is included. Measurement conditions: Rated voltage operation, Ambient temperature: 23°C

*4. The insulation resistance was measured with a 500-VDC megohmmeter at the same locations as the dielectric strength was measured.

*5. Pole 3 refers to terminals 31-32 or 33-34, pole 4 refers to terminals 43-44, pole 5 refers to terminals 53-54, and pole 6 refers to terminals 63-64.

*6. When using a P7SA Socket, the dielectric strength between coil contacts/different poles is 2,500 VAC, 50/60 Hz for 1 min. When using Push-In Plus terminal sockets (P7SA-□F-ND-PU), the dielectric strength between coil contacts as well as between different poles is 4,000 VAC, 50/60 Hz for 1 min.

*7. The durability is for an ambient temperature of 15 to 35°C and an ambient humidity of 25% to 75%. For the durability performance to the load, refer to the Durability Curve.

*8. AC15: $\cos\phi = 0.3$, DC13: L/R = 48-ms.

*9. The failure rate is based on an operating frequency of 300 operations/min.

*10. 12 to 48 VDC: When operating between 70 and 85°C, reduce the rated carry current of 6 A by 0.1 A for each degree above 70°C.

110 VDC: When operating between 40 and 60°C, reduce the rated carry current of 6 A by 0.27 A for each degree above 40°C.

Contacts

Item	Load	Resistive load
Rated load		6 A at 250 VAC, 6 A at 30 VDC
Rated carry current		6 A
Max. switching voltage		250 VAC, 125 VDC
Max. switching current		6 A
Contact materials		Au plating + Ag alloy

Options (order separately)

Sockets

Items	Models	Push-In Plus terminals		Screw terminals		PCB terminals	
		4 poles	6 poles	4 poles	6 poles	4 poles	6 poles
		P7SA-10F-ND-PU	P7SA-14F-ND-PU	P7SA-10F(-ND)	P7SA-14F(-ND)	P7SA-10P	P7SA-14P
Ambient operating temperature		<ul style="list-style-type: none"> With operation indicator LED/built-in diode P7SA-□F-ND(-PU): -20 to +70°C Without operation indicator LED/built-in diode P7SA-□F: -40 to +85°C (with no icing or condensation) 				-40 to +85°C (with no icing or condensation)	
Ambient operating humidity		25% to 85%				5% to 85%	
Continuous carry current		6 A *1					
Dielectric strength	Between coil and contact terminals	4,000 VAC for 1 min.		2,500 VAC for 1 min.			
	Between contact terminals of different polarity	2,500 VAC for 1 min.					
	Between contact terminals of same polarity	1,500 VAC for 1 min.					
Insulation resistance		1,000 MΩ min. *2					
Weight		Approx. 58 g	Approx. 70 g	Approx. 44 g	Approx. 59 g	Approx. 9 g	Approx. 10 g

*1. When operating the P7SA-□F-ND-PU at a temperature between 50 and 70°C, reduce the continuous current (6 A at 50°C or less) by 0.25 A for each degree above 50°C.

When operating the P7SA-□F-ND at a temperature between 50 and 70°C, reduce the continuous current (6 A at 50°C or less) by 0.3 A for each degree above 50°C.

When operating the P7SA-□F at a temperature between 50 and 85°C, reduce the continuous current (6 A at 50°C or less) by 0.1 A for each degree above 50°C.

*2. Measurement conditions: For 500 VDC applied to the same location as for dielectric strength measurement.

Short Bars (for P7SA-□F-ND-PU)

Application	Applicable sockets	Models	Maximum carry current	Ambient operating temperature	Ambient operating humidity
Crossover wiring of contact terminals (bottom)	P7SA-□F-ND-PU	XW5S-P2.5-2□	24 A	-40 to 55°C	5% to 95%
		XW5S-P2.5-3□			
		XW5S-P2.5-4□			
		XW5S-P2.5-5□			

Certified Standards

Safety Relay Unit

EN Standards, VDE Certified

Models	Ratings	Standard number	Certification No.	Operating coil	Contact ratings
G7SA-2A2B	12, 18, 21, 24, 48, 110 VDC	EN/IEC 61810-1 Electromagnetic relay EN/IEC 61810-3 Relays with forcibly guided contacts	125547	12, 18, 21, 24, 48, 110 VDC	6 A, 240 VAC (Resistive) 6 A, 30 VDC (Resistive)
G7SA-3A1B					
G7SA-3A3B					
G7SA-4A2B					
G7SA-5A1B					

UL Standards Certification (File No. E41515) Industrial Control Devices

Models	Category	Listed/Recognized	Contact ratings	Operating Coil ratings
G7SA-2A2B	E41515	Recognized	6 A, 250 VAC (Resistive) 6 A, 30 VDC (Resistive)	12, 18, 21, 24, 48, 110 VDC
G7SA-3A1B				
G7SA-3A3B				
G7SA-4A2B				
G7SA-5A1B				

CSA standard CSA C22.2 No.14 Industrial Control Devices

Models	Class number	File No.	Contact ratings	Operating Coil ratings
G7SA-2A2B	3211-07	LR35535	6 A, 250 VAC (Resistive) 6 A, 30 VDC (Resistive)	12, 18, 21, 24, 48, 110 VDC
G7SA-3A1B				
G7SA-4A2B				
G7SA-5A1B				

G7SA

South Korea S-mark certified (Rated voltage 24VDC only)

Models	Applicable standard number	Certification No.
G7SA-2A2B DC24	KS C IEC 61810-1	EN 50205
G7SA-3A1B DC24		
G7SA-3A3B DC24		
G7SA-4A2B DC24		
G7SA-5A1B DC24		

CQC

Models	Standard number	Certification No.
G7SA	GB/T, 21711.1	CQC14002119869

Sockets

CE Marking Compliance

Models	EMC Directive	Low Voltage Directive	Machinery Directive	Safety Category
P7SA (Excluding -P type)	Not applicable	Applicable	Not applicable	1
P7SA-PU	Not applicable	Applicable	Not applicable	1

The CE compliance declaration was made in combination with the Safety Relay.

Note: 1. The Safety Category refers to the maximum applicable category selected when constructing control system safety components. The category does not apply to individual components.

2. Details and other information on conformity levels are issued as part of the "EU Declaration of Conformity". Please contact your OMRON representative for more information.

EN Standards, VDE Certified

Models	Ratings	Standard number	Certification No.
P7SA	---	EN61984	40007586

EN Standards, TÜV Certified

Models	Ratings	Standard number	Certification No.
P7SA-PU	---	EN61984	R50356981

UL Standards Certification (File No. E87929) Industrial Control Devices

Models	Category	Listed/Recognized
P7SA	SWIV2	Recognized
P7SA-PU	SWIV2, SWIV8	Recognized

CSA standard CSA C22.2 No.14 Industrial Control Devices

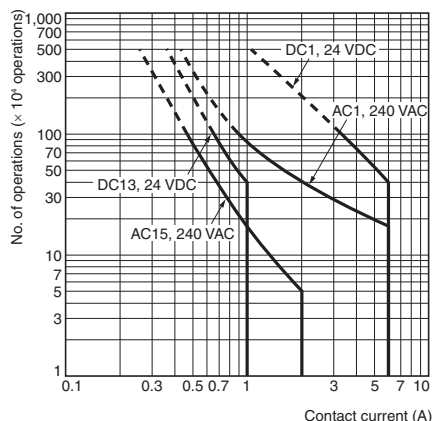
Models	Class number	File No.
P7SA	3211-07, 3211-87	LR35535
P7SA-PU	3211-07, 3211-87	LR35535

Engineering Data (Reference Value)

Safety Relay Unit

Durability Curve

G7SA-□A□B



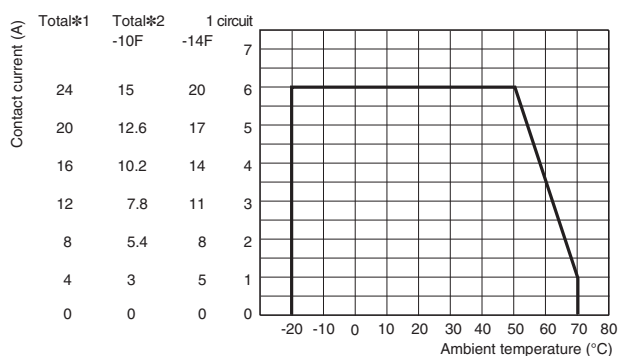
Options (order separately)

Sockets

Front-connecting Sockets

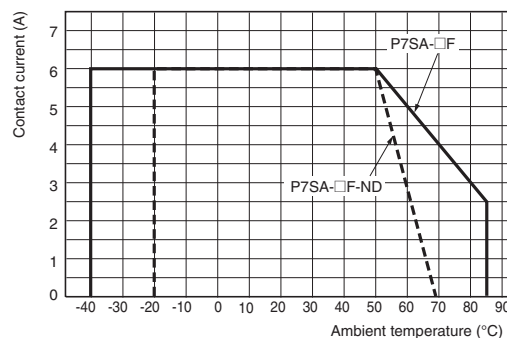
Ambient temperature and contact current

P7SA-□F-ND-PU



P7SA-□F-ND

P7SA-□F



*1. When using a G7SA-5A1B relay, be careful not to exceed the total current (24 A).

(Example: at 50°C, 5 contacts × 4.8 A)

*2. Certification conditions for the TÜV certification. Care should be taken not to exceed the total current.

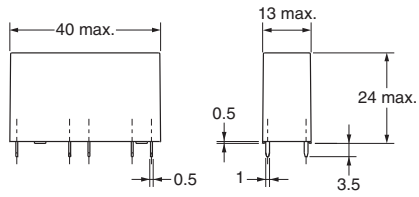
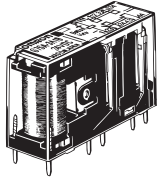
G7SA

Dimensions

(Unit: mm)

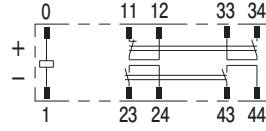
Safety Relay Unit

4 poles
G7SA-3A1B
G7SA-2A2B

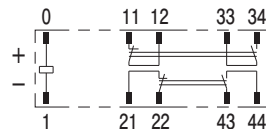


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

G7SA-3A1B

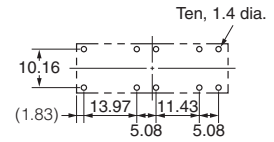


G7SA-2A2B



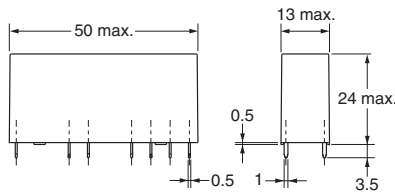
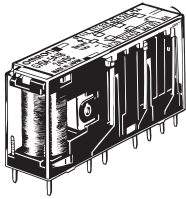
Printed Circuit Board Design Diagram (Bottom View)

(±0.1 tolerance)



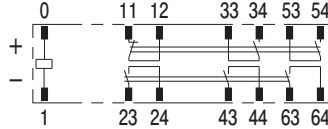
- Note: 1.** Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.
- 2.** The colors of the cards inside the Relays are as follows: G7SA-3A1B: Blue and G7SA-2A2B: White.

6 poles
G7SA-5A1B
G7SA-4A2B
G7SA-3A3B

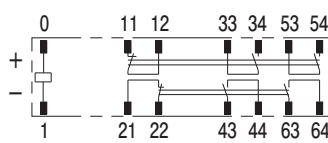


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

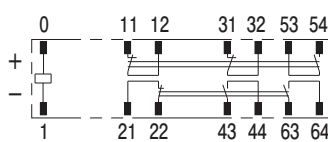
G7SA-5A1B



G7SA-4A2B

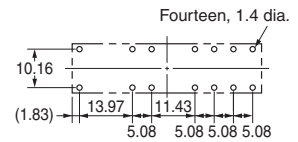


G7SA-3A3B



Printed Circuit Board Design Diagram (Bottom View)

(±0.1 tolerance)

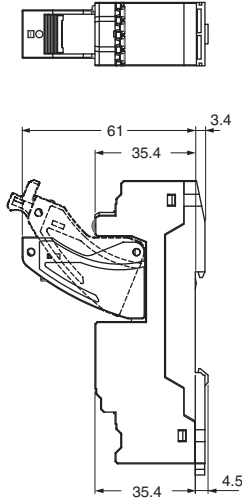
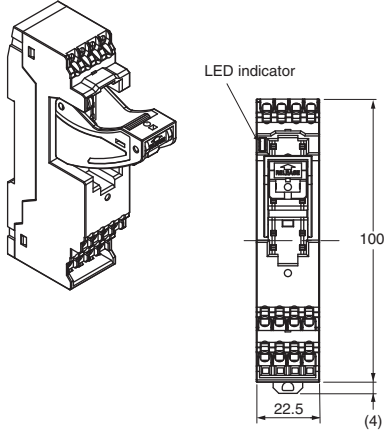


- Note: 1.** Terminals 23-24, 33-34, 43-44, 53-54, and 63-64 are normally open. Terminals 11-12, 21-22, and 31-32 are normally closed.
- 2.** The colors of the cards inside the Relays are as follows: G7SA-5A1B: Blue, G7SA-4A2B: White, and G7SA-3A3B: Yellow.

Options (order separately)

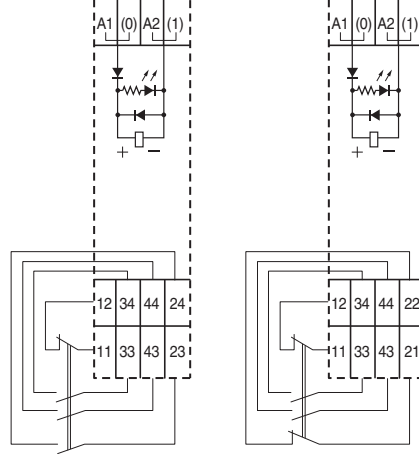
Sockets

Front-mounting Sockets
Push-In Plus terminals 4 poles
P7SA-10F-ND-PU



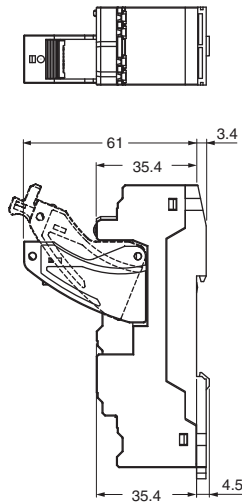
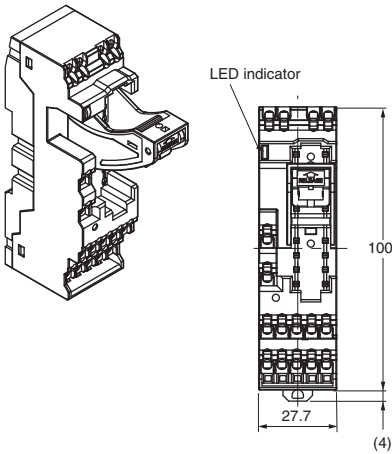
Terminals Arrangement/Internal Connections Diagram (Top View)

G7SA-3A1B Mounted G7SA-2A2B Mounted



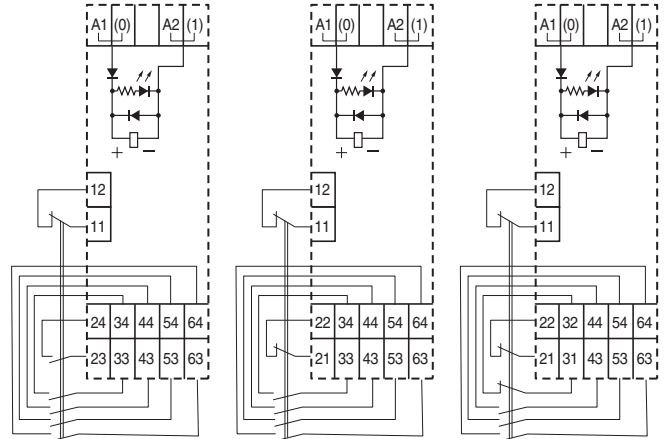
- Note: 1. The numbers in parentheses are traditionally used terminal numbers.
- 2. Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

Push-In Plus terminals 6 poles
P7SA-14F-ND-PU



Terminals Arrangement/Internal Connections Diagram (Top View)

G7SA-5A1B Mounted G7SA-4A2B Mounted G7SA-3A3B Mounted

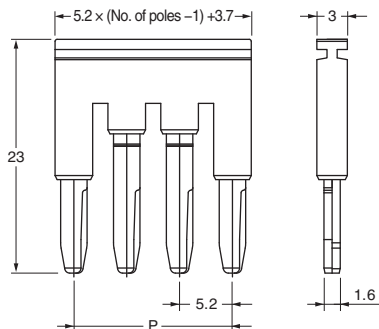


- Note: 1. The numbers in parentheses are traditionally used terminal numbers.
- 2. Terminals 23-24, 33-34, 43-44, 53-54, and 63-64 are normally open. Terminals 11-12, 21-22, and 31-32 are normally closed.

Accessories for Push-In Plus Sockets

Short Bars (for P7SA-□F-ND-PU)

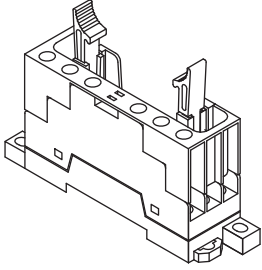
XW5S-P2.5-□□



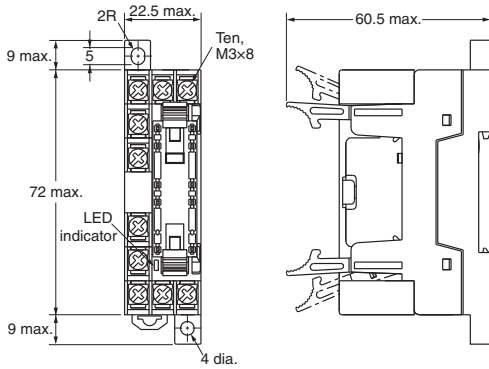
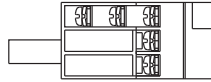
Pitch	Compatible models	No. of poles	P(mm)	Colors	Model *
5.2 mm	For P7SA-□F-ND-PU	2	5.2	Red (RD) Blue (BL) Yellow (YL)	XW5S-P2.5-2□
		3	10.4		XW5S-P2.5-3□
		4	15.6		XW5S-P2.5-4□
		5	20.8		XW5S-P2.5-5□

- Note: Use for crossover wiring of adjacent contact terminals (bottom) within one Socket.
- * Replace the box (□) in the model number with the code for the covering color.
- Color Options: RD = red, BL = blue, YL = yellow

Front-mounting Sockets Screw terminals 4 poles P7SA-10F, P7SA-10F-ND

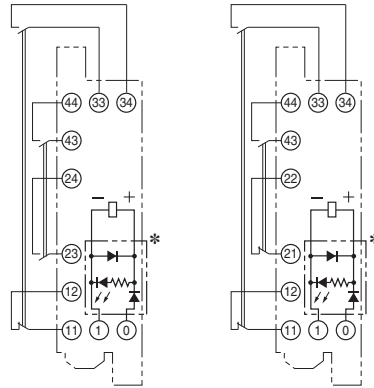


The above figure shows with the finger cover mounted.



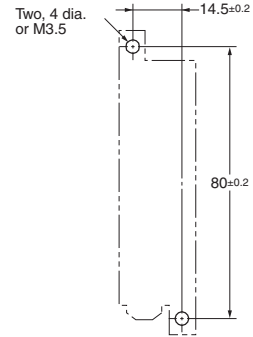
Note 1: The front view shows with the finger cover removed.
Note 2: Only the -ND Sockets have LED indicators (orange)

Terminal Arrangement/Internal Connection Diagram (Top View) G7SA-3A1B Mounted G7SA-2A2B Mounted

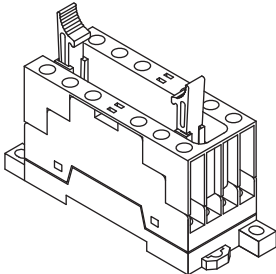


* This display circuit is available only for "-ND" models.
Note: Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

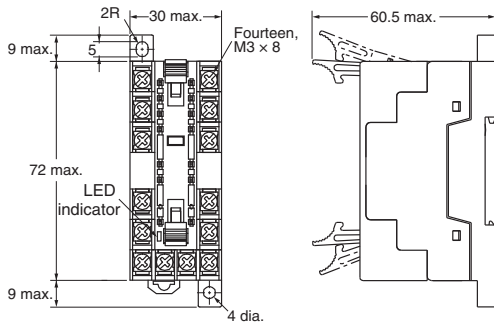
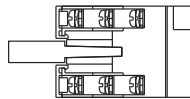
Mounting Hole Placement Diagram (Top View)



Screw terminals 6 poles P7SA-14F, P7SA-14F-ND

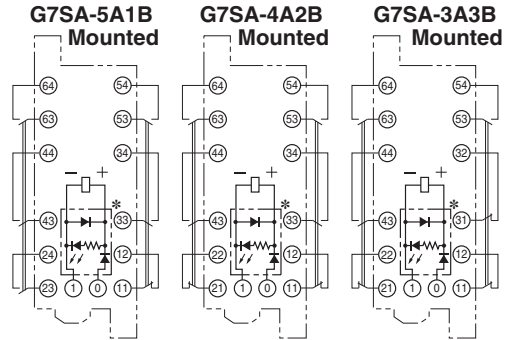


The above figure shows with the finger cover mounted.



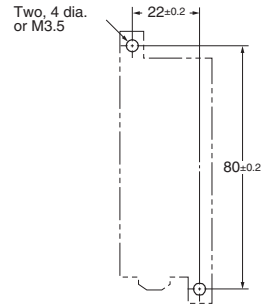
Note 1: The front view shows with the finger cover removed.
Note 2: Only the -ND Sockets have LED indicators (orange).

Terminal Arrangement/Internal Connection Diagram (Top View)



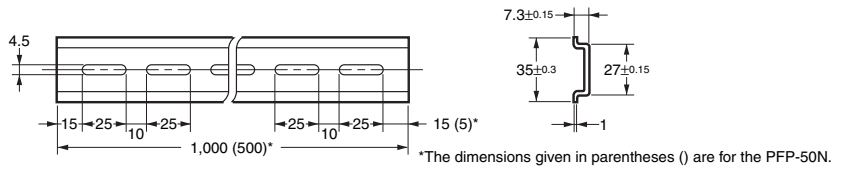
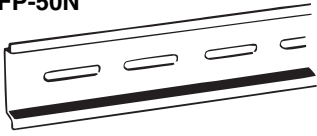
* This display circuit is available only for "-ND" models.
Note: Terminals 23-24, 33-34, 43-44, 53-54, and 63-64 are normally open. Terminals 11-12, 21-22, and 31-32 are normally closed.

Mounting Hole Placement Diagram (Top View)

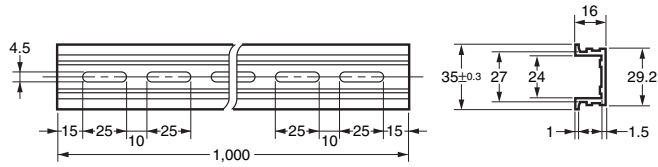
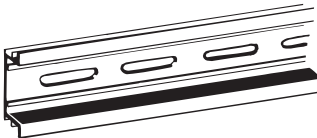


Parts for DIN Track Mounting

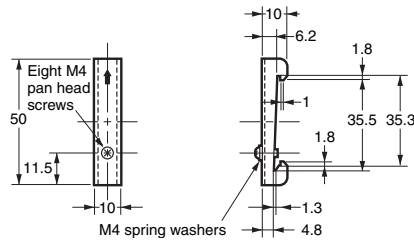
DIN Track
PFP-100N
PFP-50N



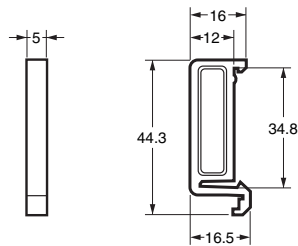
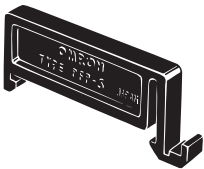
DIN Track
PFP-100N2



End Plate
PFP-M

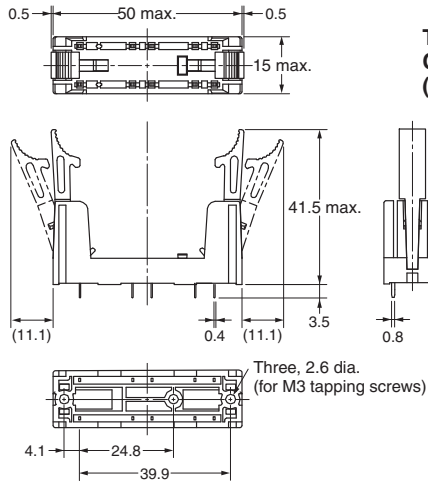
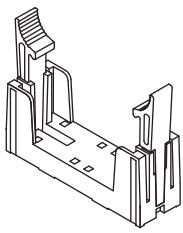


Spacer
PFP-S



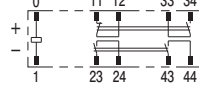
G7SA

Back-mounting Sockets (for PCB) PCB terminals 4 poles P7SA-10P

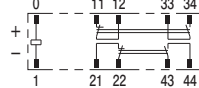


Terminal Arrangement/Internal Connection Diagram (Bottom View)

G7SA-3A1B Mounted

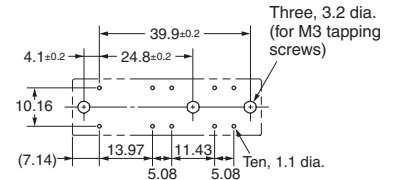


G7SA-2A2B Mounted



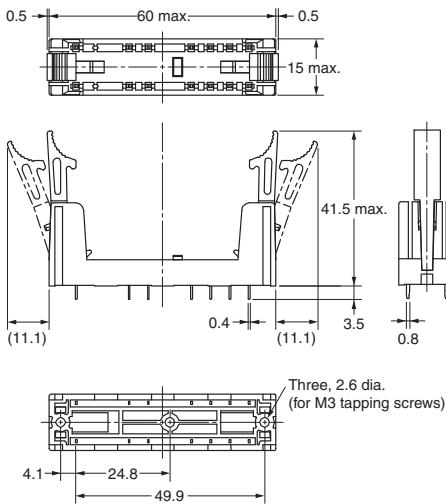
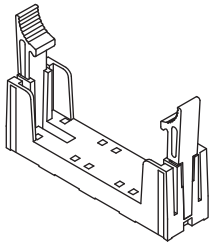
Mounting Hole Placement (Bottom View)

(±0.1 tolerance)



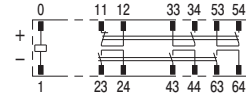
Note: Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

PCB terminals 6 poles P7SA-14P

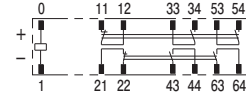


Terminal Arrangement/Internal Connection Diagram (Bottom View)

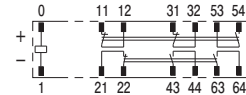
G7SA-5A1B Mounted



G7SA-4A2B Mounted

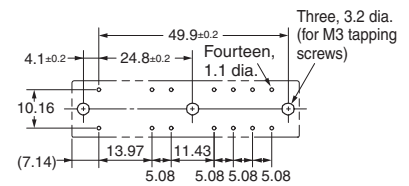


G7SA-3A3B Mounted



Mounting Hole Placement (Bottom View)

(±0.1 tolerance)



Note: Terminals 23-24, 33-34, 43-44, 53-54, and 63-64 are normally open. Terminals 11-12, 21-22, and 31-32 are normally closed.

Safety Precautions

Be sure to read the *Common Precautions for All Relays with Forcibly Guided Contacts* at the following URL: <http://www.ia.omron.com/>.

Warning Indications

Precautions for Safe Use	Supplementary comments on what to do or avoid doing to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing to prevent failure to operate, malfunction, or undesirable effects on product performance.

Precautions for Safe Use

Push-In Plus Terminal Sockets (P7SA-□F-ND-PU)

- 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 screwdriver into the release holes at an angle. The terminal block may be damaged if the flat-blade screwdriver is inserted straight in.
- Do not allow the flat-blade screwdriver to fall when you are holding it in a release 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 insert more than one wire into each terminal insertion hole.
- To prevent wiring materials from smoking or igniting, confirm wire ratings and use the wiring materials given in the following table.

Recommended wire	Stripping length (Ferrules not used)
0.25 to 1.5mm ² /AWG24 to 16	8 mm

- Insert a flat-blade screwdriver all the way to the bottom of the release hole. If the flat-blade screwdriver is not inserted correctly, the wire may not be connected correctly.
- When crossover wiring with wires or short bars, make sure not to insert them in the wrong position. It may cause a short circuit, a malfunction, or a failure.

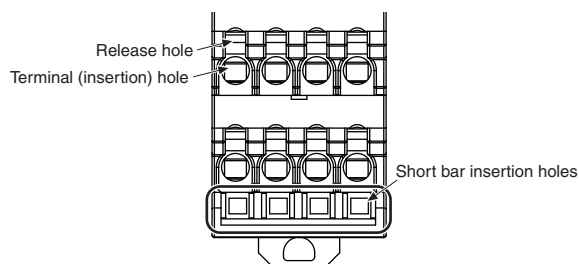
Precautions for Correct Use

Wiring

- The coil terminals have polarity (+, -). Inverting the polarity when wiring the terminals will cause the unit not to operate.
- The release time and the response time of the G7SA will be longer when using the P7SA-□F-ND(-PU) because it has a built-in diode to absorb coil surge. Because of that, confirm operation under actual conditions before using the P7SA-□F-ND(-PU).

<Using with P7SA-□F-ND-PU Push-In Plus terminal sockets>

- If there is lubrication, such as oil, on the tip of the flat-blade screwdriver, the flat-blade screwdriver may fall and possibly injure a worker.
- 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.



Screw Terminal Sockets (P7SA-□F(-ND))

- Use one of the following wires to connect to the P7SA-□F(-ND).
Stranded wire: 0.75 to 1.5 mm²
Solid wire: 1.0 to 1.5 mm²
- Tighten the screws of the P7SA-□F(-ND) to a torque of 0.78 to 0.98 N·m.
Tighten firmly so as not to have any loose wires.

Cleaning

The G7SA is not of enclosed construction. Therefore, do not wash the G7SA with water or detergent.

Mounting

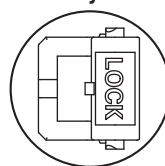
The G7SA can be installed in any direction.

Mounting and Removing the Relays to and from the Socket

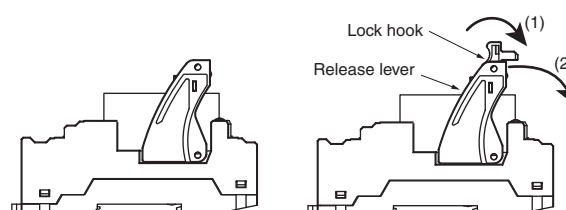
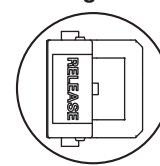
<Using with front-connecting sockets, Push-In Plus terminal sockets (P7SA-□F-ND-PU)>

- After mounting the relay, make sure to lock the lock hook. If not, the relay may become loose upon vibration or impact.
- When removing the relay, (1) unlock the lock hook on the release side, (2) then press the release lever.
- You can release the locked block easily by inserting a tip of a flat screwdriver into the square hole.

With the relay mounted



Removing the relay



<Using with front-connecting sockets, screw terminal sockets (P7SA-10F(-ND), P7SA-14F(-ND))>

Refer to *Common Precautions for All Relays with Forcibly Guided Contacts* at the following URL: <http://www.ia.omron.com/>.

5-1-1. Front-connecting Sockets

5-1-2. Direction for Inserting and Removing Relays

5-3. Common Items

<Using with back-connecting sockets, PCB terminal sockets (P7SA-10P, P7SA-14P)>

Refer to *Common Precautions for All Relays with Forcibly Guided Contacts* at the following URL: <http://www.ia.omron.com/>.

5-1-3. Soldering of Terminals

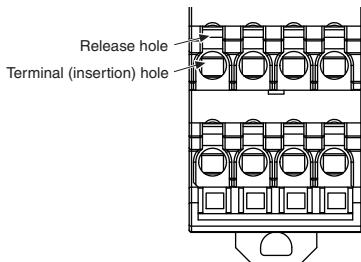
5-2. PCB Relays

5-3. Common Items

Push-In Plus Terminal Sockets (P7SA-□F-ND-PU)

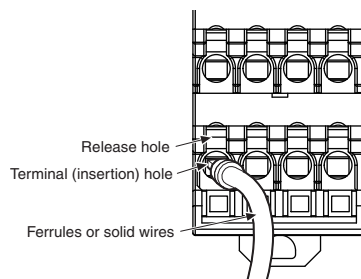
1. Connecting Wires to the Push-In Plus Terminal Block

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.

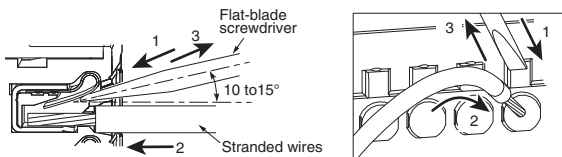


- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wire.

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° and 15°. 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 the end strikes the terminal block.
3. Remove the flat-blade screwdriver from the release hole.



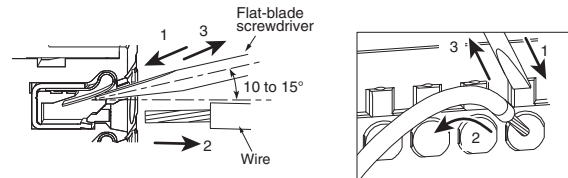
Checking Connections

- 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.

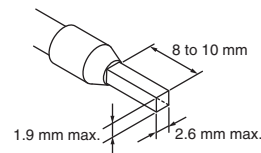


3. Recommended Ferrules and Crimp Tools

Recommended ferrules

Applicable wire (mm ²)	AWG	Ferrule Conductor Length (mm)	Stripping length (mm) (Ferrules used)	Recommended ferrules		
				Phoenix Contact product	Weidmuller product	Wago product
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
Recommended crimp tool				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrimp4

- Note:**
1. Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.
 2. Make sure that the ferrule processing dimensions conform to the following figures.

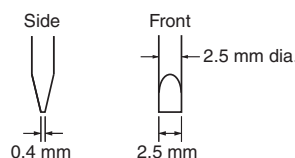


Recommended Flat-blade Screwdriver

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
SZS 0,4x2,5 SZF 0-0,4x2,5 *	Phoenix Contact
ESD 0,40x2,5	Wera
0.4x2.5x75 302	Wiha
AEF.2,5x75	Facom
210-719	Wago
SDI 0.4x2.5x75	Weidmuller

* OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4x2,5 (manufactured by Phoenix Contact).

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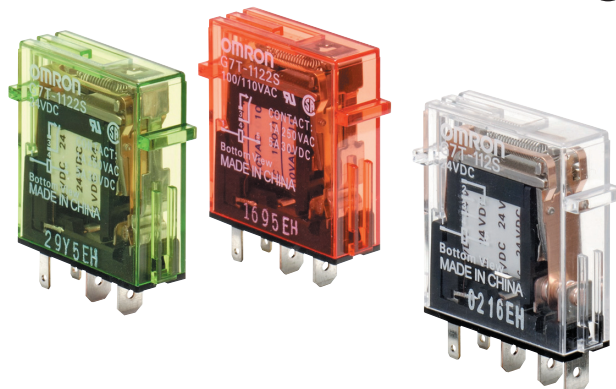
CSM_12_7

Cat. No. J120-E1-06

1221 (0100)

Slim-styled I/O Relay Saves Space in Panel

- SPST-NO, SPST-NC, and SPDT contact forms available for output (SPST-NO only for input).
- Ultra-slim housing measuring 29 (W) x 10 (D) x 32 (H) mm.
- All Output Relays provide a long endurance (1,000,000 operations at 5 A), while all Input Relays provide microswitching power (100 μ A at 1 V).
- Approved by UL and CSA standards.



Refer to *Safety Precautions for All Relays*.

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

Ordering Information

When your order, specify the rated voltage.

Classification		Model	Rated voltage
Input (bifurcated contact)	SPST-NO	G7T-1122S (see note 2)	12 VDC
			24 VDC
			100/110 VAC
			200/220 VAC
Output (single contact)	SPST-NO	G7T-1112S (see note 2)	12 VDC
			24 VDC
	SPST-NC	G7T-1012S	12 VDC
			24 VDC
	SPDT	G7T-112S	12 VDC
			24 VDC

Note: 1. When ordering, add the rated voltage to the model number. Rated voltages are given in the coil ratings table in *Specifications*.

Example: G7T-112S 12 VDC
Rated voltage

- The G7T-1122S and G7T-1112S are approved by UL and CSA. Contact your OMRON representative for the coil ratings of other models. The G7T-112S cannot be used in place of the G7TC. The G7T-112S can only be used with the P7TF-05 Socket.
- “Input” and “output” indicate the I/O relationship to a PLC. Input Relays are mainly suitable for input signals to a PLC or other device. Output Relays are mainly suitable to switching loads that receive output signals from a PLC or other device. The Input and Output Relays have different switching performances. Select a suitable Relay for the application.

Model Number Legend

G7T-□□□□S
1 2 3 4 5

- No. of Contact Poles**
- Contact Form**
No indication: Transfer contact
Number: Number of NO contacts
- Contact Mechanism**
1: Single contact
2: Bifurcated contact
- Enclosure Construction**
2: Casing
- Terminal Type**
S: Plug-in Terminal

■ Accessories

Socket

Applicable Relay	Model
All G7T I/O Relay and the G3TA models.	P7TF-05

P70 Indicator Module

Remove the transparent style strip of the Socket and mount this module. It will function as an operation indicator with surge suppression.

Model	Applicable Relay coil voltage	Remarks
For AC Relay	P70A	100/110 VAC
		200/220 VAC
For DC Relay	P70D	12/24 VDC

- Note:**
1. Order the Indicator Module that is suited to the Relay coil voltage.
 2. The Indicator Module for DC Relays has a multiple power supply common to 12 and 24 VDC.
 3. Input current (reference values):
 100/110 VAC: 1.14 to 1.38 mA
 200/220 VAC: 1.40 to 1.71 mA
 12/24 VDC: 4.83 to 5.90 mA

Specifications

■ Ratings

Coil Ratings (Common to Both Input and Output)

Rated voltage (V)	Item	Rated current		Coil resistance	Must operate voltage	Must release voltage	Max. voltage	Power consumption
		50 Hz	60 Hz					
AC	100/110	8.2/9 mA	7/7.7 mA	8,700 Ω	80% max. of rated value	30% min. of rated value	110% of rated value	0.7 VA
	200/220	4.1/4.5 mA	3.5/3.85 mA	33,300 Ω				
DC	12	42 mA		290 Ω	80% max. of rated value	10% min. of rated value	110% of rated value	0.5 W
	24	21 mA		1,150 Ω				
	100/110	5 mA		20,000 Ω				

- Note:**
1. The rated current and coil resistance values are measured at a coil temperature of 23°C. Tolerances of AC rated current are +15%, -20% and tolerances of coil resistance are ±15%.
 2. Four rated voltages or currents are available to single AC models used with the P7TF-05 Socket. Only three rated voltages or currents are available, however, when the Relay is used in place of the G7TC.
 3. The operating characteristics values are for a coil temperature of 23°C.
 4. The maximum voltage is one that is applicable to the Relay coil instantaneously at 23°C and not continuously.

Contact Ratings

Item	Classification	For input		For output	
		Resistive load (cosφ = 1)	Inductive load (L/R = 7 ms)	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4, L/R = 7 ms)
Contact mechanism	Crossbar bifurcated			Single	
Contact material	AgAu-clad Ag			AgSnIn	
Rated load		1 A at 24 VDC	0.5 A at 24 VDC	5 A at 24 VDC 2 A at 220 VAC	2 A at 24 VDC 1 A at 220 VAC
Rated carry current		1 A		5 A	
Max. switching voltage		250 VAC, 125 VDC			
Max. switching current		1 A		5 A	
Failure rate (reference value)		100 μA at 1 VDC		10 mA at 5 VDC	

■ Characteristics

Contact resistance (see note 2)	50 mΩ max.
Operate time (see note 3)	15 ms max.
Release time (see note 3)	15 ms max.
Max. operating frequency	Mechanical: 18,000 operations/hour Electrical: 1,800 operations/hour (under rated load)
Insulation resistance (see note 4)	100 MΩ (at 500 VDC)
Dielectric strength	Between coil and contacts: 2,000 VAC, 50/60 Hz for 1 minute Between contacts of same polarity: 1,000 VAC, 50/60 Hz for 1 minute
Vibration resistance	Malfunction: 10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude)
Shock resistance	Malfunction: 200 m/s ²
Mechanical endurance	50,000,000 operations
Electrical endurance (see note 5)	Input: 10,000,000 operations (10 mA) or 50,000 operations (1 A) with resistive load 2,500,000 operations (10 mA) or 20,000 operations (1 A) with inductive load Output: 1,000,000 operations with rated load
Error rate (level P) (Reference value) (see note 6)	Input: 100 μA at 1 VDC Output: 10 mA at 5 VDC
Ambient temperature	Operating: -40°C to 70°C (with no icing or condensation)
Ambient humidity	Operating: 5% to 85% (with no icing or condensation)
Weight	Approx. 17 g

Note: 1. The above values are all initial values.

2. The contact resistance was measured with 1 A at 5 VDC using the voltage drop method.

3. The operate and the release times were measured with the rated voltage imposed with any contact bounce ignored at an ambient temperature of 23°C.

4. The insulation resistance was measured with a 500-VDC megger applied to the same places as those used for checking the dielectric strength.

5. The electrical endurance was measured at an ambient temperature of 23°C.

6. This value was measured at a switching frequency of 120 operations per minute.

■ Socket Ratings

Features

- Easily mounts or dismounts the G7T I/O Relay.
- Also mounts the Indicator Module (with surge suppressing function).
- Only 19 mm in width.
- Terminals corresponding to the NO and NC contacts of a Relay are arranged on top of the Socket to enhance maintainability.
- Also permits mounting of the G3TA Solid-state I/O Relay.

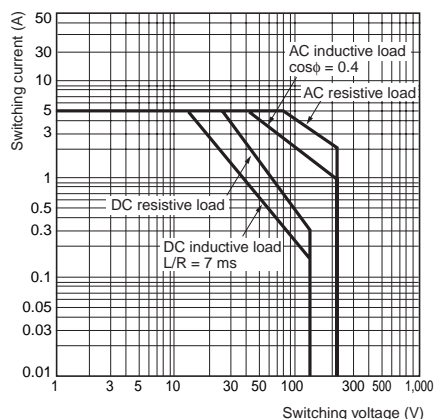
Specifications

Model	P7TF-05
Contact resistance *	10 mΩ max.
Dielectric strength	2,000 VAC for 1 minute
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Vibration resistance	10 to 55 to 10 Hz, 0.5 mm single amplitude (1.0 mm double amplitude)
Shock resistance	1,000 m/s ²
Ambient temperature	Operating: -40°C to 70°C (with no icing or condensation)
Ambient Humidity	Operating: 5% to 85%RH
Weight	Approx. 28 g

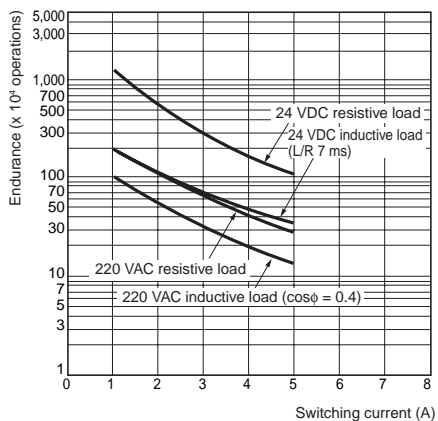
* Measurement condition: 1 A at 5 VDC.

Engineering Data

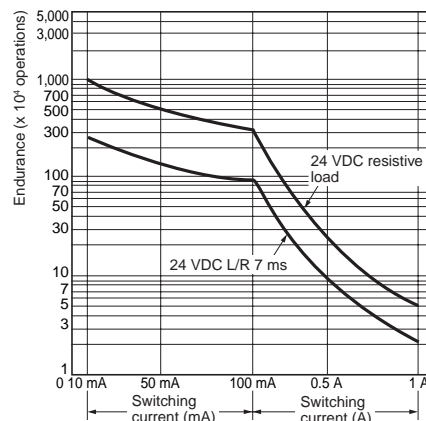
Maximum Switching Power (Output Model with Life of 1,000,000 Operations)



Electrical Endurance Output Relay



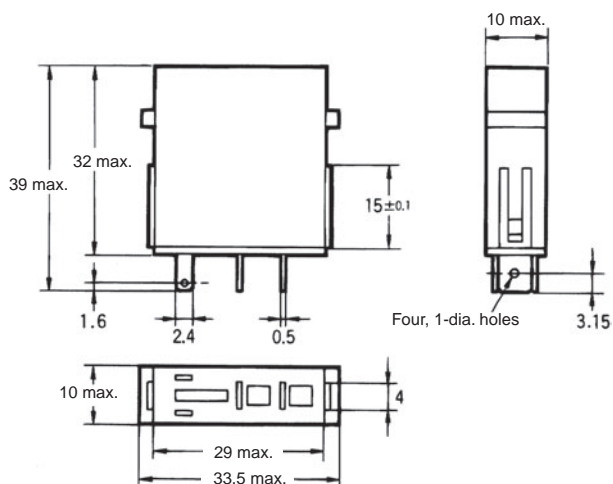
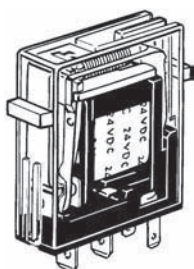
Input Relay



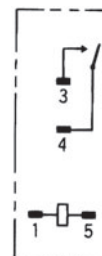
Dimensions

Note: All units are in millimeters unless otherwise indicated.

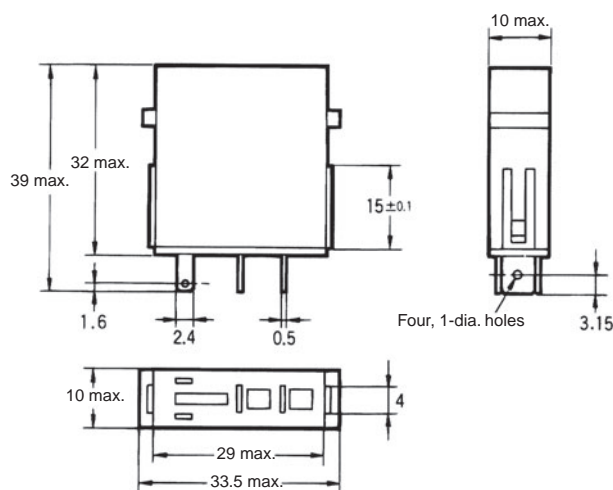
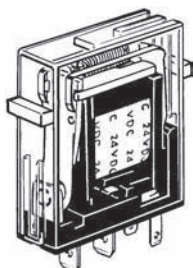
SPST-NO Type G7T-1122S (for input) G7T-1112S (for output)



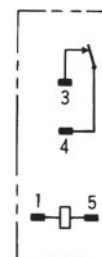
Terminal Arrangement/ Internal Connections (Bottom View)



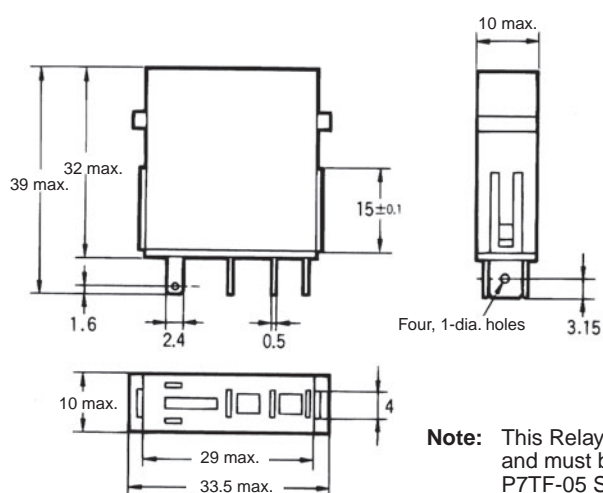
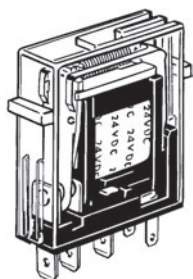
SPST-NC Type G7T-1012S (for output)



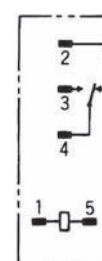
Terminal Arrangement/ Internal Connections (Bottom View)



SPDT Type G7T-112S (for output)



Terminal Arrangement/ Internal Connections (Bottom View)

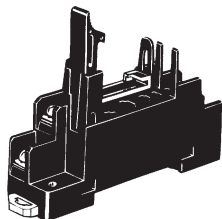


Note: This Relay cannot be used as an I/O relay terminals and must be used in combination with the exclusive P7TF-05 Socket.

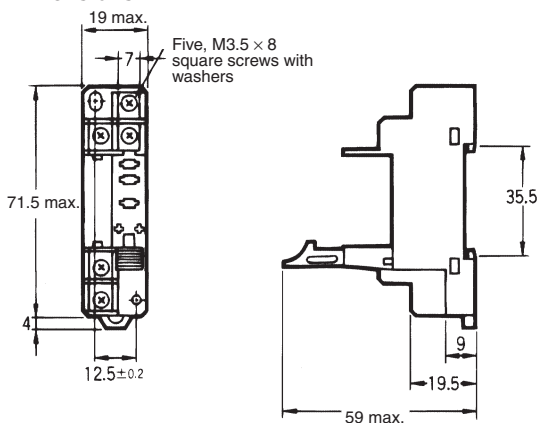
■ Accessories

Socket

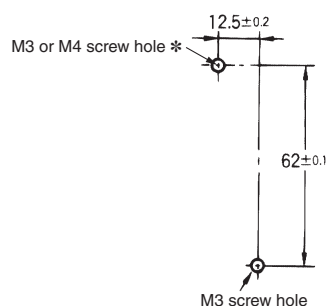
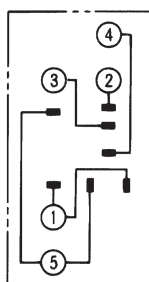
P7TF-05



Dimensions



Internal Connections (Top View)



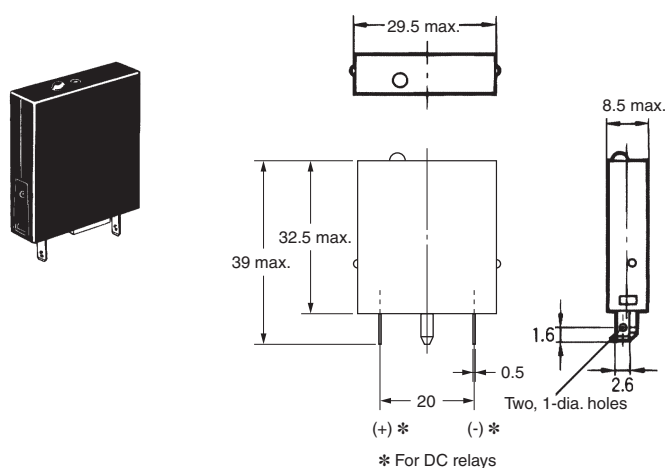
Note: If the I/O SSR or Indicator Module is used, be aware that the polarity of terminal 1 is positive.

* We recommend that you insert washers when mounting with M3 screws. A washers are not required when mounting with M4 screws.

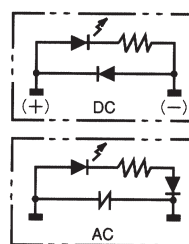
Indicator Module (with Surge Suppressing Function)

P70□

Dimensions



Internal Connections



Safety Precautions

Refer to *Safety Precautions for All Relays*.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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