

Compact, Slim Relays Conforming to EN Standards

- Relays with forcibly guided contacts (EN50205 Class A, 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.



Specifications

Ratings

Coil

Rated Voltage	Rated Current (mA)	Coil Resistance (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Max. Voltage (V)	Power Consumption (mW)
24 VDC	4 poles: 15 6 poles: 20.8	4 poles: 1,600 6 poles: 1,152	75% max.	10% min.	110%	4 poles: Approx. 360 6 poles: Approx. 500

Notes:

1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of ±15%.
2. Performance characteristics are based on a coil temperature of 23°C.
3. The maximum voltage is based on an ambient operating temperature of 23°C maximum.

Contacts

	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
Max. drop-out time*	10 ms

*The drop-out time is the time it takes for the N/O contacts to open after the coil voltage is turned OFF.

Certified Standards

- EN Standards, VDE Certified
EN61810-1 (Electromechanical non-specified time all-or-nothing relays)
EN50205 (Relays with forcibly guided (linked) contacts)
- UL standard UL508 Industrial Control Devices
- CSA standard CSA C22.2 No. 14 Industrial Control Devices

Forcibly-Guided Contacts (from EN50205)

If an NO contact becomes welded, all NC contacts will maintain a minimum distance of 0.5 mm when the coil is not energized. Likewise if an NC contact becomes welded, all NO contacts will maintain a minimum distance of 0.5 mm when the coil is energized.

Characteristics of Sockets

Model	Continuous Current	Dielectric Strength	Insulation Resistance
P7SA-1□	6 A *1	2,500 VAC for 1 min. between poles	1,000 MΩ min. *2

Notes:

Use the P7SA-1□F-ND in the ambient temperature range of -20 to 70°C.

Use the P7SA-1□F and P7SA-1□F-ND in the ambient humidity range of 45 to 85%.

*1. When operating the P7SA-1□F at a temperature between 55 and 85°C, reduce the continuous current (6 A at 55°C or less) by 0.1 A for each degree above 55°C.

When operating the P7SA-1□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.

*2. Measurement conditions: Measurement of the same points as for the dielectric strength at 500 VDC.

Specifications (continued)

Contact resistance *1	100 mΩ 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 operation/h
	Rated load	1,800 operation/h
Insulation resistance *4	1,000 MΩ min.	
Dielectric strength *5 *6	Between coil contacts/different poles (except for poles 3-4 in 4-pole relays and poles 3-5, 4-6, and 5-6 in 6-pole relays): 4,000 VAC, 50/60 Hz for 1 min.	
	Between different poles (poles 3-4 in 4-pole relays and poles 3-5, 4-6, and 5-6 in 6-pole relays): 2,500 VAC, 50/60 Hz for 1 min.	
	Between contacts of 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 and approx. 1,800 operations/h)
Inductive load switching capability *8 (IEC60947-5-1)	AC15 AC250V 2A DC13 DC24V 1A	
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)	
Ambient operating humidity	5% to 85%	
Weight	4 poles: Approx. 22 g	
	6 poles: Approx. 25 g	

Specifications are subject to change without notice.

Notes: 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.

*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.

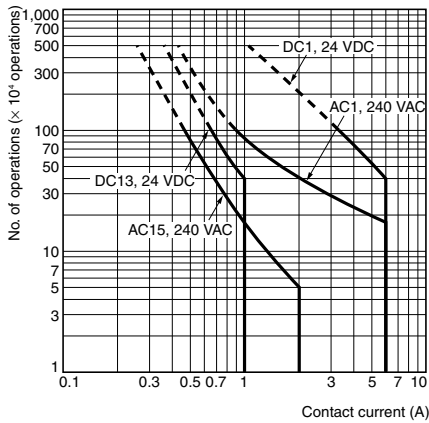
*8. AC15: $\cos\phi = 0.3$, DC14: $L/R = 48$ ms.

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

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

Engineering Data

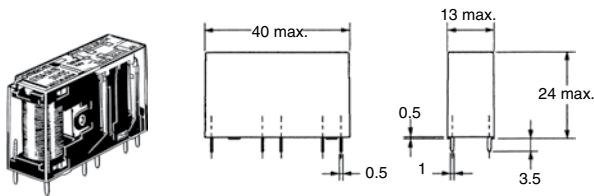
Durability Curve



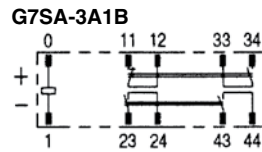
Dimensions

(mm)

G7SA-3A1B G7SA-2A2B

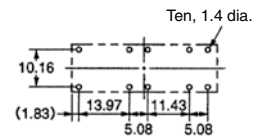


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

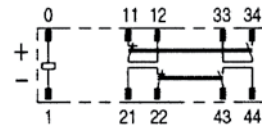


Printed Circuit Board Design Diagram (Bottom View)

(±0.1 tolerance)



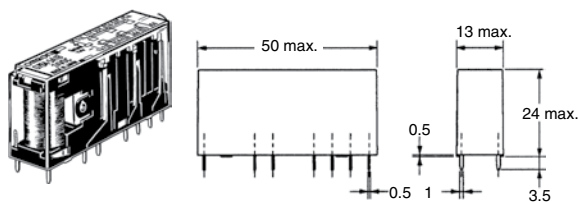
G7SA-2A2B



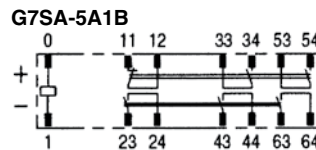
Notes:

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

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

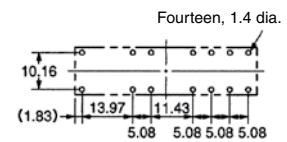


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

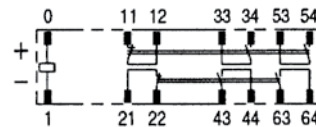


Printed Circuit Board Design Diagram (Bottom View)

(±0.1 tolerance)



G7SA-4A2B



Notes:

- 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.
- The colors of the cards inside the Relays are as follows: G7SA-5A1B: Blue, G7SA-4A2B: White, and G7SA-3A3B: Yellow.

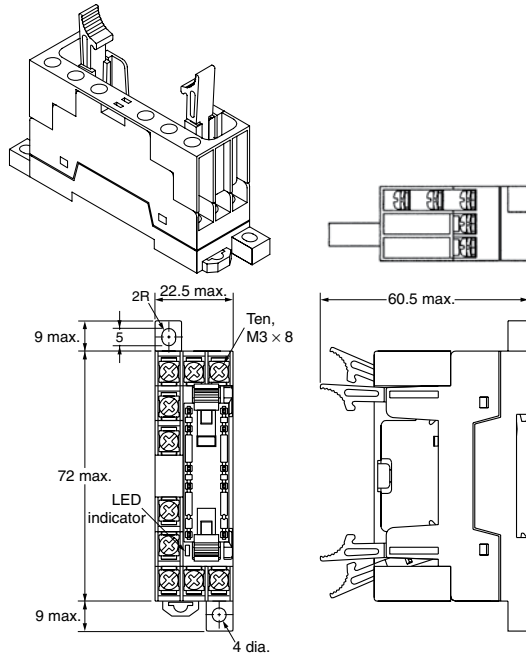
G7SA-3A3B



Dimensions (continued)

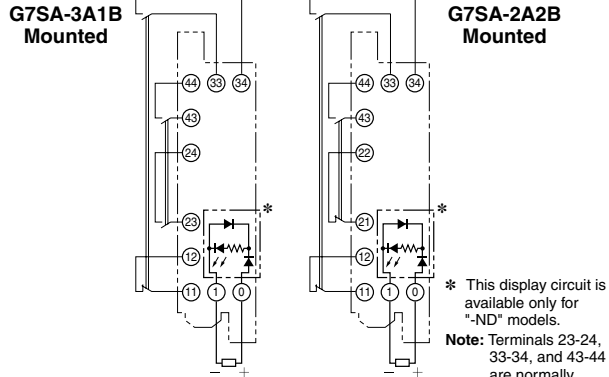
(mm)

Track-mounting Socket
P7SA-10F, P7SA-10F-ND



Note 1: The socket is shown with the finger cover removed.
2: Only the -ND Sockets have LED indicators (orange)

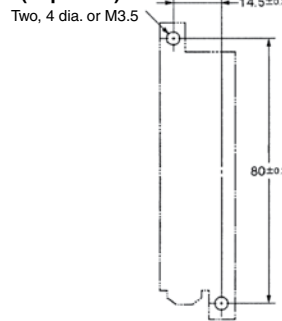
Terminal Arrangement/Internal Connection Diagram
(Top View)



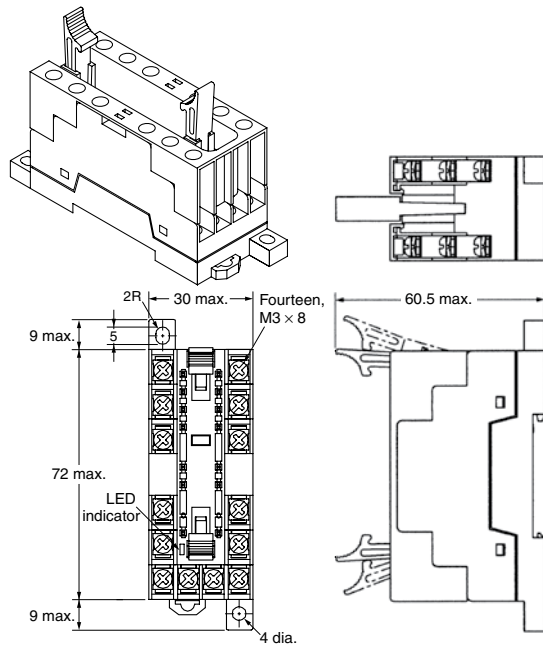
* This display circuit is available only for "-ND" models.

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

Mounting Hole Placement Diagram
(Top View)

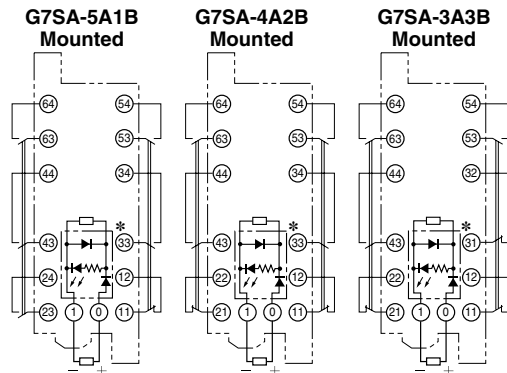


Track-mounting Socket
P7SA-14F, P7SA-14F-ND



Note 1: The socket is shown with the finger cover removed.
2: Only the -ND Sockets have LED indicators (orange).

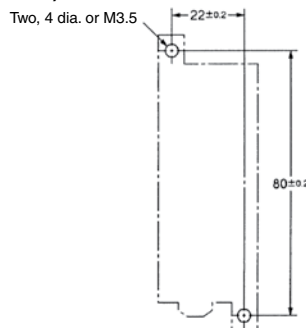
Terminal Arrangement/Internal Connection Diagram
(Top View)



* 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.

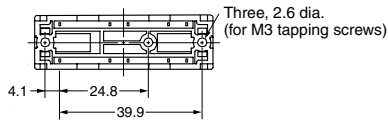
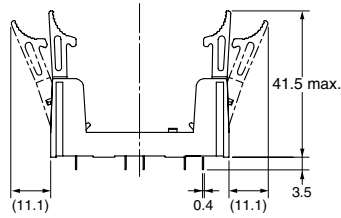
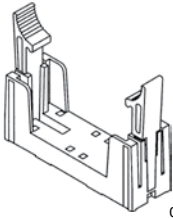
Mounting Hole Placement Diagram
(Top View)



Dimensions (continued)

(mm)

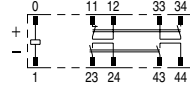
Back-mounting Socket (for PCB)
P7SA-10P



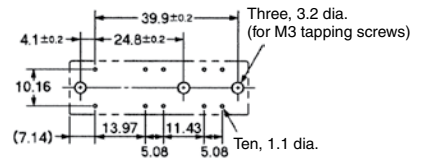
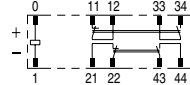
Terminal Arrangement/Internal Connection Diagram (Bottom View)

Mounting Hole Placement (Bottom View) (± 0.1 tolerance)

G7SA-3A1B Mounted

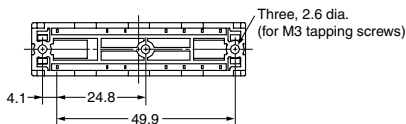
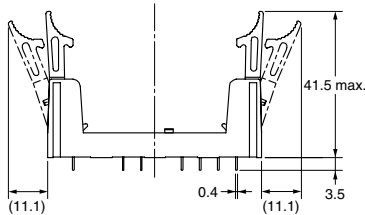
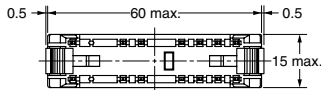
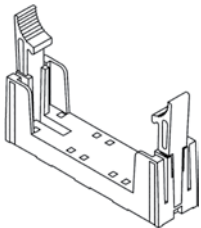


G7SA-2A2B Mounted



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

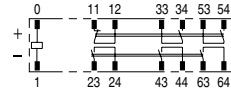
Back-mounting Socket (for PCB)
P7SA-14P



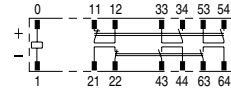
Terminal Arrangement/Internal Connection Diagram (Bottom View)

Mounting Hole Placement (Bottom View) (± 0.1 tolerance)

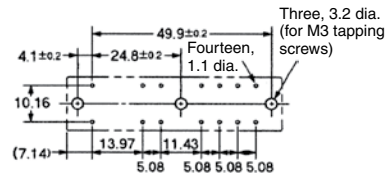
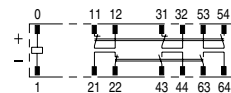
G7SA-5A1B Mounted



G7SA-4A2B Mounted



G7SA-3A3B Mounted



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.

Ordering

Model Number Legend

G7SA - □ A □ B

① ②

- ① NO Contact Poles
 2: DPST-NO
 3: 3PST-NO
 4: 4PST-NO
 5: 5PST-NO
- ② NC Contact Poles
 1: SPST-NC
 2: DPST-NC
 3: 3PST-NC

Relays with Forcibly Guided Contacts

Type	Sealing	Poles	Contact Configuration	Rated Voltage*	Model
Standard	Flux-tight	4 poles	3PST-NO, SPST-NC	24 VDC	G7SA-3A1B DC24
			DPST-NO, DPST-NC		G7SA-2A2B DC24
		6 poles	5PST-NO, SPST-NC		G7SA-5A1B DC24
			4PST-NO, DPST-NC		G7SA-4A2B DC24
			3PST-NO, 3PST-NC		G7SA-3A3B DC24

*Consult your Omron representative for details on rated voltages of 12 VDC, 18 VDC, 21 VDC and 48 VDC.

Sockets

Type	LED Indicator	Poles	Rated Voltage	Model
Track-mounting	No	4 poles	---	P7SA-10F
		6 poles		P7SA-14F
	Yes	4 poles	24 VDC	P7SA-10F-ND DC24
		6 poles		P7SA-14F-ND DC24
Back-mounting	No	4 poles	---	P7SA-10P
		6 poles		P7SA-14P