G7SA

SpeedSPEC
G7SA
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Rev. 6.14

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.
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days

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.

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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

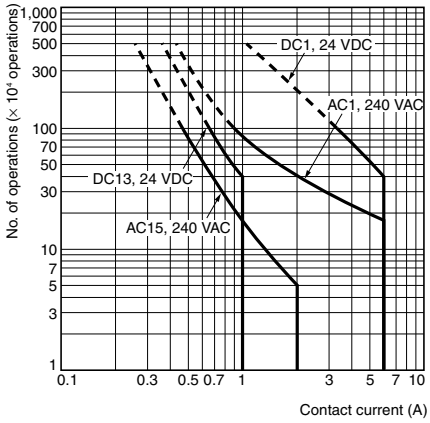
Specifications are subject to change without notice.

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 refere to the Durability Curve.
*8. AC15: cosø = 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

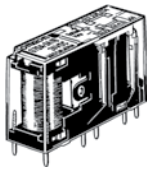
Durability Curve

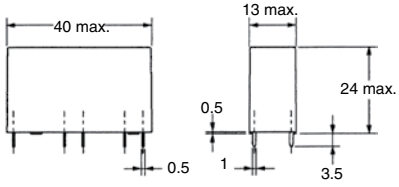


Dimensions

(mm)

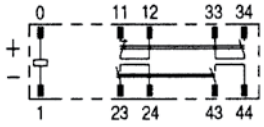
G7SA-3A1B
G7SA-2A2B



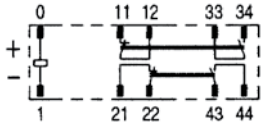


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

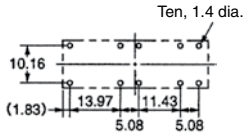
G7SA-3A1B



G7SA-2A2B

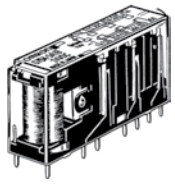


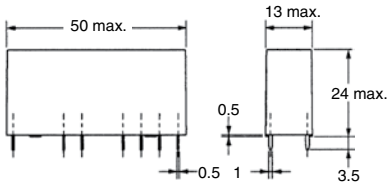
Printed Circuit Board Design Diagram (Bottom View)
(±0.1 tolerance)



Notes:
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.

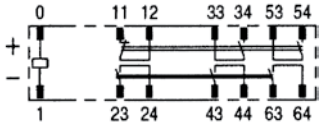
G7SA-5A1B
G7SA-4A2B
G7SA-3A3B



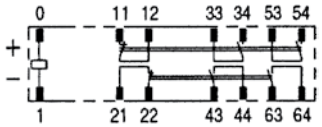


Terminal Arrangement/ Internal Connection Diagram (Bottom View)

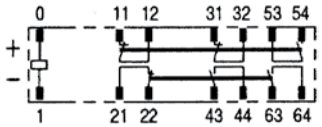
G7SA-5A1B



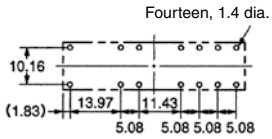
G7SA-4A2B



G7SA-3A3B



Printed Circuit Board Design Diagram (Bottom View)
(±0.1 tolerance)



Notes:
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.

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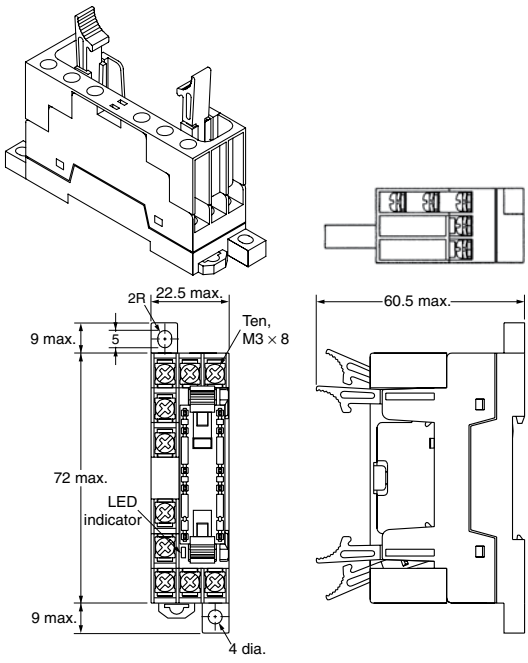
Dimensions (continued)

(mm)

Track-mounting Socket

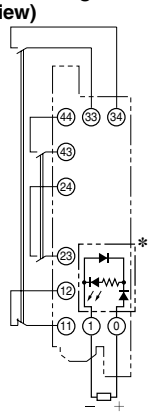
P7SA-10F, P7SA-10F-ND



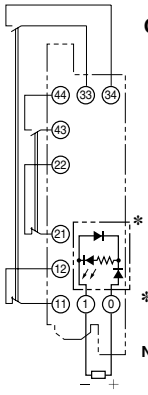
Note 1: The socket is shown with the finger cover removed.
2: Only the -ND Sockets have LED indicators (orange)

Terminal Arrangement/Internal Connection Diagram (Top View)

G7SA-3A1B Mounted



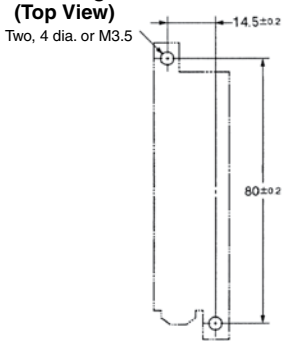
G7SA-2A2B Mounted



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

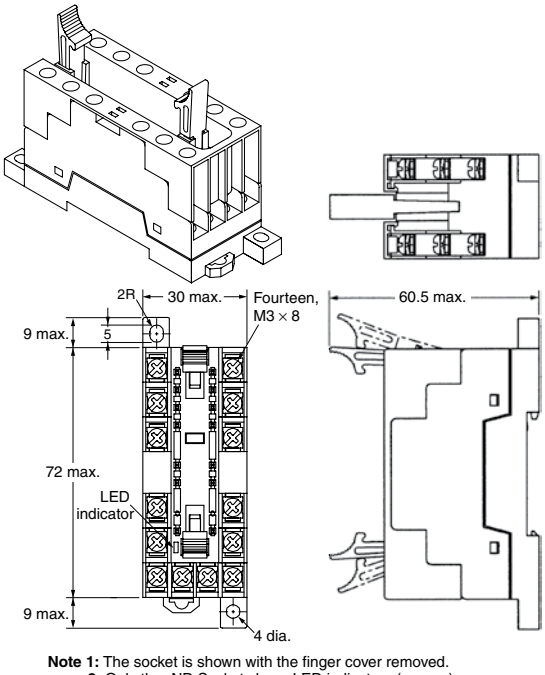
Note: Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

Mounting Hole Placement Diagram (Top View)



Track-mounting Socket

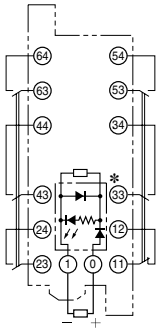
P7SA-14F, P7SA-14F-ND



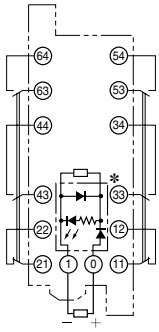
Note 1: The socket is shown with the finger cover removed.
2: Only the -ND Sockets have LED indicators (orange).

Terminal Arrangement/Internal Connection Diagram (Top View)

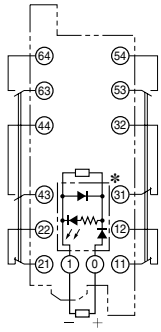
G7SA-5A1B Mounted



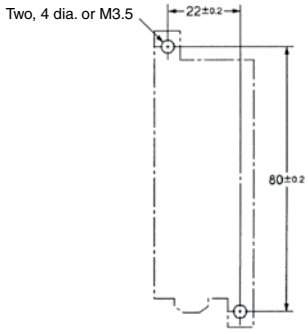
G7SA-4A2B Mounted



G7SA-3A3B Mounted



Mounting Hole Placement 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.

Select models are available for Rapid Delivery.

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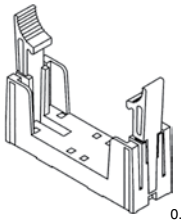
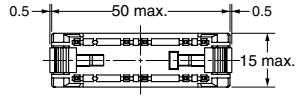
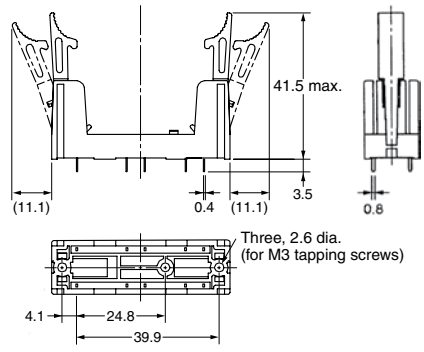
Dimensions (continued)

(mm)

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

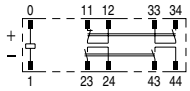




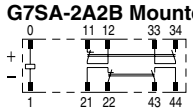


Terminal Arrangement/Internal Connection Diagram (Bottom View)

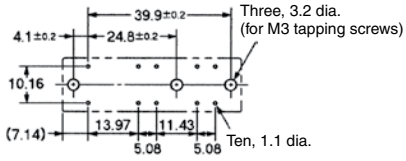
G7SA-3A1B Mounted



G7SA-2A2B Mounted

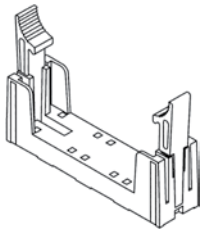


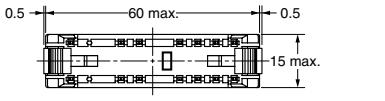
Mounting Hole Placement (Bottom View)
(±0.1 tolerance)

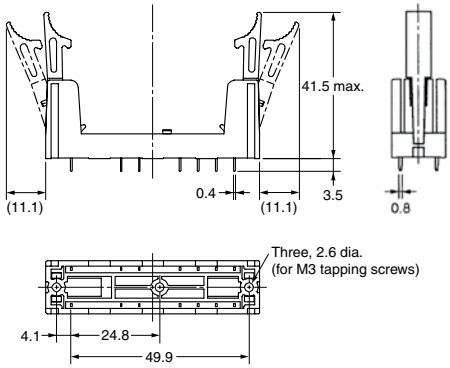


Note: Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

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

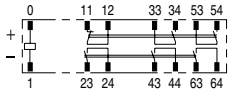




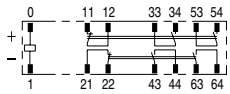


Terminal Arrangement/Internal Connection Diagram (Bottom View)

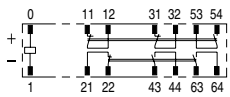
G7SA-5A1B Mounted



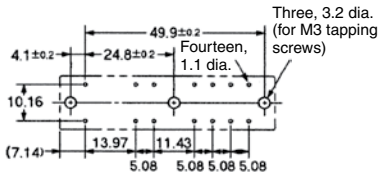
G7SA-4A2B Mounted



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.

Select models are available for Rapid Delivery.

Visit this product on www.sti.com for details..

Ordering

Model Number Legend

G7SA – ☐ A ☐ B
❶ ❷

❶ NO Contact Poles
2: DPST-NO
3: 3PST-NO
4: 4PST-NO
5: 5PST-NO

❷ 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	Track mounting and screw mounting possible	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	PCB terminals	No	4 poles	---	P7SA-10P
			6 poles		P7SA-14P

Relays with Forcibly Guided Contacts and Track Mounting Sockets (assemblies)

Relay Specifications			Socket Specifications			
Poles	Contact Configuration	Rated Coil Voltage	Type	LED Indicator	LED Rated Voltage	Assembly Model
4 poles	DPST-NO, DPST-NC	24 VDC	Track Mounting and screw mounting possible	No		FGRMS22-24
4 poles	3PST-NO, SPST-NC	24 VDC	Track Mounting and screw mounting possible	No		FGRMS31-24
6 poles	3PST-NO, 3PST-NC	24 VDC	Track Mounting and screw mounting possible	No		FGRMS33-24
6 poles	4PST-NO, 2PST-NC	24 VDC	Track Mounting and screw mounting possible	No		FGRMS42-24
6 poles	5PST-NO, SPST-NC	24 VDC	Track Mounting and screw mounting possible	No		FGRMS51-24
4 poles	DPST-NO, DPST-NC	24 VDC	Track Mounting and screw mounting possible	Yes	24 VDC	FGRMS22-24-LED
4 poles	3PST-NO, SPST-NC	24 VDC	Track Mounting and screw mounting possible	Yes	24 VDC	FGRMS31-24-LED
6 poles	3PST-NO, 3PST-NC	24 VDC	Track Mounting and screw mounting possible	Yes	24 VDC	FGRMS33-24-LED
6 poles	4PST-NO, 2PST-NC	24 VDC	Track Mounting and screw mounting possible	Yes	24 VDC	FGRMS42-24-LED
6 poles	5PST-NO, SPST-NC	24 VDC	Track Mounting and screw mounting possible	Yes	24 VDC	FGRMS51-24-LED

Select models are available for Rapid Delivery.
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