

# Force-Guided Relays G7SA



Rev. 9.09

## 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 ( $\Omega$ )     | Must Operate Voltage (V) | Must Release Voltage (V) | Max. Voltage (V) | Power Consumption (mW)                       |
|---------------|------------------------------|----------------------------------|--------------------------|--------------------------|------------------|----------------------------------------------|
| 24 VDC        | 4 poles: 15<br>6 poles: 20.8 | 4 poles: 1,600<br>6 poles: 1,152 | 75% max.                 | 10% min.                 | 110%             | 4 poles: Approx. 360<br>6 poles: Approx. 500 |

#### Notes:

1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of  $\pm 15\%$ .
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                           |

### 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 M $\Omega$ 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%.

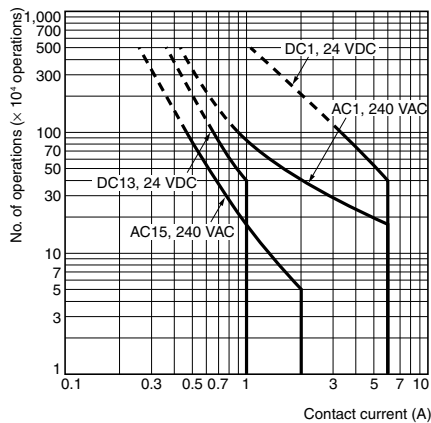
\*1. When operating the P7SA-1□F at a temperature between 55 and 85°C, reduce the continuous current (6 A at 55°C or less) by 0.1 A for each degree above 55°C.

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.

## Engineering Data

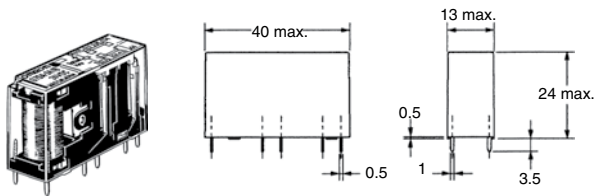
### Durability Curve



### Dimensions

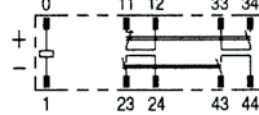
(mm)

#### G7SA-3A1B G7SA-2A2B

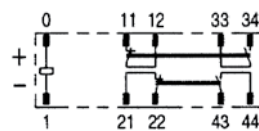


#### Terminal Arrangement/ Internal Connection Diagram (Bottom View)

##### G7SA-3A1B

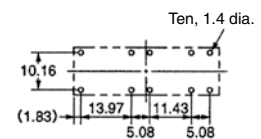


##### G7SA-2A2B



#### Printed Circuit Board Design Diagram (Bottom View)

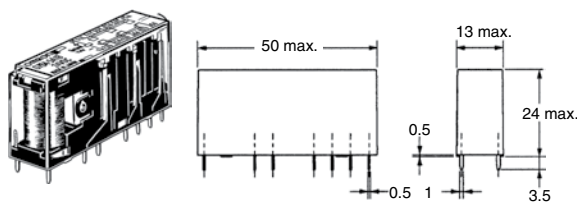
(±0.1 tolerance)



#### Notes:

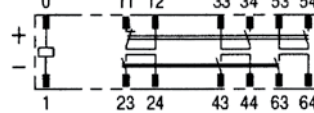
1. Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.
2. The colors of the cards inside the Relays are as follows: G7SA-3A1B: Blue and G7SA-2A2B: White.

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

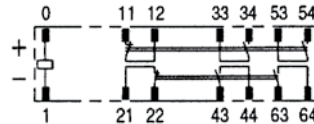


#### Terminal Arrangement/ Internal Connection Diagram (Bottom View)

##### G7SA-5A1B



##### G7SA-4A2B

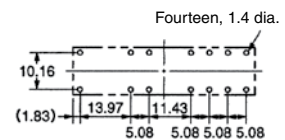


##### G7SA-3A3B



#### Printed Circuit Board Design Diagram (Bottom View)

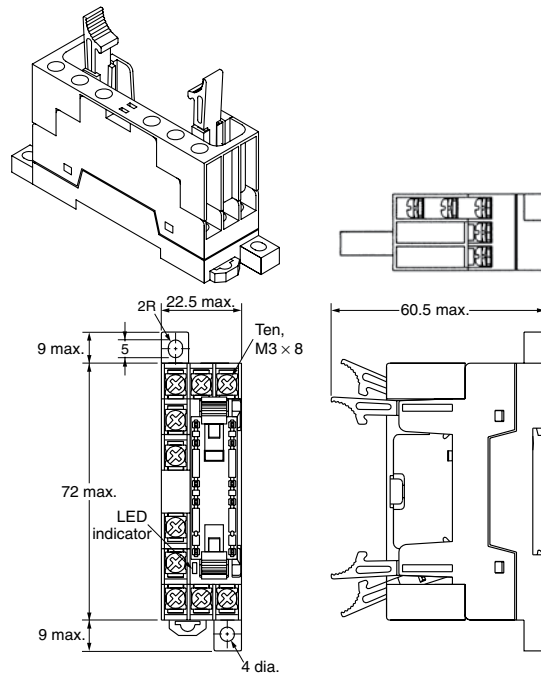
(±0.1 tolerance)



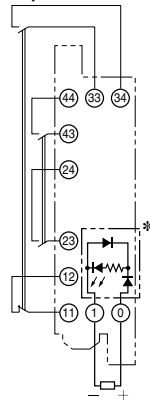
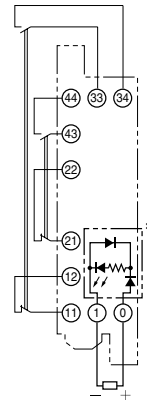
#### Notes:

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.

## Dimensions (continued)

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

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

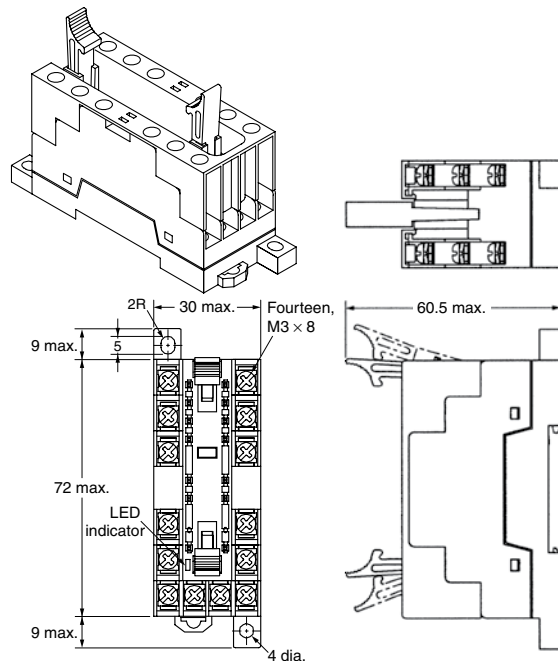
Terminal Arrangement/Internal Connection Diagram  
(Top View)G7SA-3A1B  
MountedG7SA-2A2B  
Mounted

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

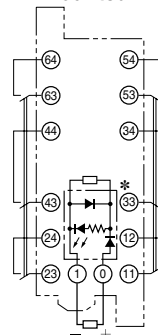
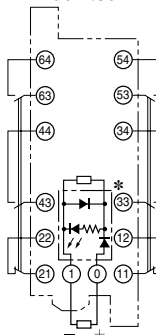
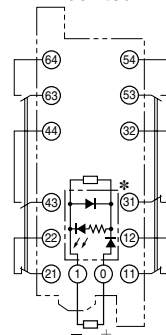
**Note:** Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

Mounting Hole Placement Diagram  
(Top View)

Two, 4 dia. or M3.5

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

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

Terminal Arrangement/Internal Connection Diagram  
(Top View)G7SA-5A1B  
MountedG7SA-4A2B  
MountedG7SA-3A3B  
MountedMounting Hole Placement Diagram  
(Top View)

Two, 4 dia. or M3.5

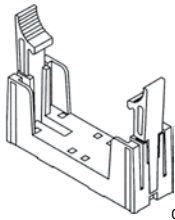
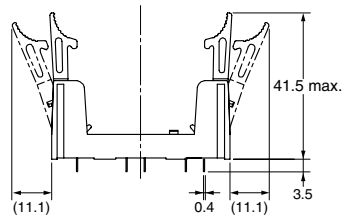


\* This display circuit is available only for "-ND" models.

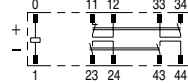
**Note:** Terminals 23-24, 33-34, 43-44, 53-54, and 63-64 are normally open. Terminals 11-12, 21-22, and 31-32 are normally closed.

## Dimensions (continued)

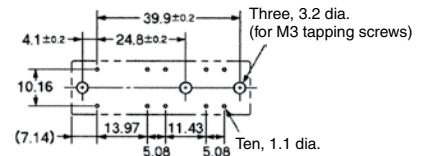
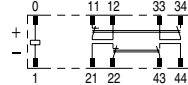
(mm)

Back-mounting Socket (for PCB)  
P7SA-10PTerminal Arrangement/Internal  
Connection Diagram  
(Bottom View)Mounting Hole Placement  
(Bottom View)  
( $\pm 0.1$  tolerance)

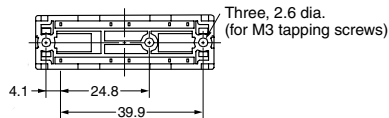
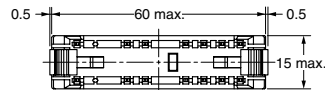
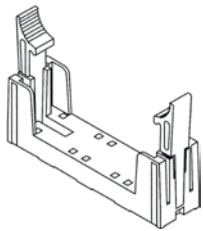
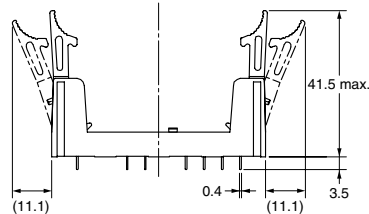
G7SA-3A1B Mounted



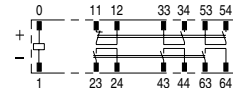
G7SA-2A2B Mounted



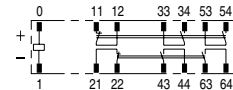
**Note:** Terminals 23-24, 33-34, and 43-44 are normally open. Terminals 11-12 and 21-22 are normally closed.

Back-mounting Socket (for PCB)  
P7SA-14PTerminal Arrangement/Internal  
Connection Diagram  
(Bottom View)Mounting Hole Placement  
(Bottom View)  
( $\pm 0.1$  tolerance)

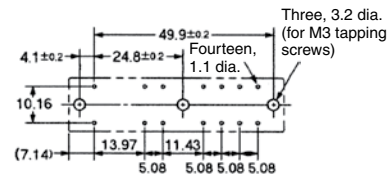
G7SA-5A1B Mounted



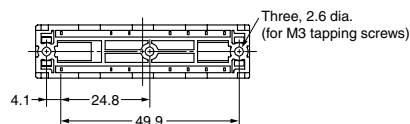
G7SA-4A2B Mounted



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 |
|          |            |         | DPST-NO, DPST-NC      |                | G7SA-2A2B |
|          |            | 6 poles | 5PST-NO, SPST-NC      |                | G7SA-5A1B |
|          |            |         | 4PST-NO, DPST-NC      |                | G7SA-4A2B |
|          |            |         | 3PST-NO, 3PST-NC      |                | G7SA-3A3B |

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

H

### 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 |
|                |                                            |               | 6 poles |               | P7SA-14F-ND |
| 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            |                   | FGRM-S31-24     |
| 6 poles              | 3PST-NO, 3PST-NC      | 24 VDC             | Track Mounting and screw mounting possible | No            |                   | FGRM-S33-24     |
| 6 poles              | 4PST-NO, 2PST-NC      | 24 VDC             | Track Mounting and screw mounting possible | No            |                   | FGRM-S42-24     |
| 6 poles              | 5PST-NO, SPST-NC      | 24 VDC             | Track Mounting and screw mounting possible | No            |                   | FGRM-S51-24     |
| 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            | FGRM-S31-24-LED |
| 6 poles              | 3PST-NO, 3PST-NC      | 24 VDC             | Track Mounting and screw mounting possible | Yes           | 24 VDC            | FGRM-S33-24-LED |
| 6 poles              | 4PST-NO, 2PST-NC      | 24 VDC             | Track Mounting and screw mounting possible | Yes           | 24 VDC            | FGRM-S42-24-LED |
| 6 poles              | 5PST-NO, SPST-NC      | 24 VDC             | Track Mounting and screw mounting possible | Yes           | 24 VDC            | FGRM-S51-24-LED |

 = Highlighted **Rapid Delivery** products are available for shipment today or within **FIVE** days.