OMRON

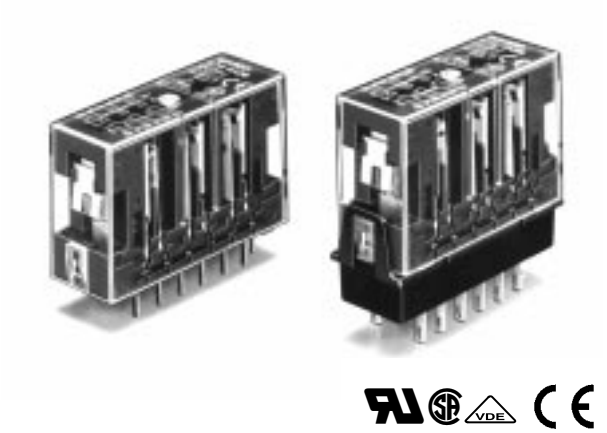
Safety Relay

G7S

Safety Relay Conforming to EN Standard

- Conforms to prEN50205.
- Forcibly guided contacts. (pr EN50205 Class A)
- The G7S contributes to the protection of machinery when used as part of an interlocking circuit.
- Most suitable for safety circuits in press machinery, machine tools, and other production machinery.
- CE mark (EC Low-voltage Directive 73/23/EEC)
- Track-mounting and Back-mounting Sockets are available.

Note: Be sure to refer to the *Precautions* on page 225.



Ordering Information

Type	Poles	Contact form	Rated voltage	Model
Standard	6 poles	4PST-NO, DPST-NC	24 VDC	G7S-4A2B
		3PST-NO, 3PST-NC		G7S-3A3B

Model Number Legend

G7S-□A□B

1 2

1. NO Contact Poles

4: 4PST-NO

3: 3PST-NO

2. NC Contact Poles

2: DPST-NC

3: 3PST-NC

Safety Relays

■ Accessories

Safety Relay Sockets

Type		Model
Track-mounting	Common for track mounting and screw mounting	P7S-14F
Back-mounting	Solder terminals	P7S-14A
	PCB terminals	P7S-14P

Socket Mounting Plate

Applicable Socket	Quantity	Model
P7S-14A	10	P7S-A10

Relay Removal Tool

Applicable Sockets	Model
P7S-14F P7S-14A P7S-14P	P7S-B

Specifications

■ Coil Ratings

Rated voltage	Rated current	Coil resistance	Must-operate voltage	Must-release voltage	Max. voltage	Power consumption
24 VDC	30 mA	800 Ω	80% max. (V)	10% min. (V)	110% (V)	Approx. 0.8 W

Note: 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.

■ Contact Ratings

Load	Resistive load (cos ϕ =1)	Inductive load (cos ϕ = 0.4, L/R = 7 ms)
Rated load	3 A at 240 VAC, 3 A at 24 VDC	3 A at 240 VAC, 1 A at 24 VDC
Rated carry current	6 A	
Max. switching voltage	250 VAC, 24 VDC	
Max. switching current	6 A	
Contact material	Ag + Au	

■ Characteristics

Contact resistance (see note 2)		100 mΩ max.
Operate time (see note 3)		50 ms max.
Release time (see note 3)		50 ms max.
Maximum operating frequency	**Mechanical**	18,000 operations/hr
	Rated load	1,800 operations/hr
Insulation resistance (see note 4)		100 MΩ min. (at 500 VDC)
Dielectric strength		2,500 VAC, 50/60 Hz for 1 min (1,500 VAC between contacts of same polarity)
Vibration	**Destruction**	10 to 55 Hz, 1.5-mm double amplitude
	Malfunction	10 to 55 Hz, 0.75-mm double amplitude
Shock	**Destruction**	1,000 m/s^2
	Malfunction	100 m/s^2
Life expectancy	**Mechanical**	10,000,000 operations min. (at approx. 18,000 operations/hr)
	Electrical	100,000 operations min. (at the rated load and approx. 1,800 operations/hr)
Error rate (level P) (Reference value) (see note 5)		10 mA at 5 VDC
Ambient operating temperature		Operating: –25°C to 70°C (with no icing or condensation) Storage: –25°C to 70°C (with no icing or condensation)
Ambient operating humidity		Operating: 35% to 85% Storage:: 35% to 85%
Weight		Approx. 65 g

Note: 1. The above values are all initial values.
2. The contact resistance was measured with 10 mA at 5 VDC using the fall-of-potential 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. This value was measured at a switching frequency of 60 operations per minute.

■ Characteristics of Safety Relay Socket

Model	Continuous current	Dielectric strength	Insulation resistance
P7S-14□	6 A	2000 VAC for 1 min. between terminals	1000 MΩ min. (see note)

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

■ Standards

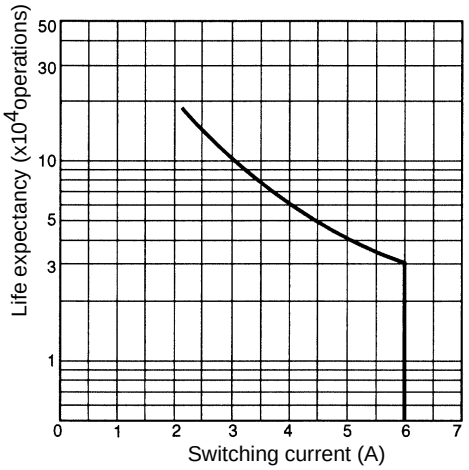
VDE0435 (Electrical Relays); Approved by VDE
IEC255 (Electrical Relays); Approved by VDE
prEN50205 (Electrical Relays); Approved by VDE
UL508 (Industrial Control Device)
CSA22.2 No.14 (Industrial Control Device)

Forcibly Guided Contacts

When NO contacts are welded, the coil will be non-energized so all NC contacts will maintain a distance between the contacts of 0.5 mm minimum. Likewise if NC contacts are welded, the coil will be energized so all NO contacts will maintain a distance between each other of 0.5 mm minimum.

Engineering Data

Life Expectancy (240 VAC; cosϕ=0.4, cosϕ=1)

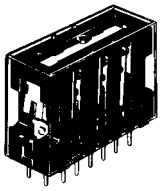


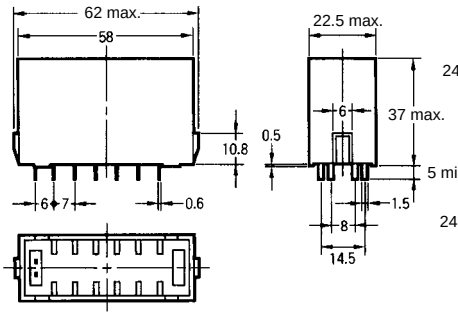
Dimensions

Note: All units are in millimeters unless otherwise indicated.

■ Safety Relays

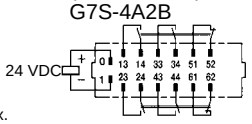
G7S-4A2B
G7S-3A3B



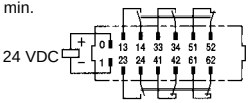


Terminal Installation/Internal Connection Diagram (Bottom View)

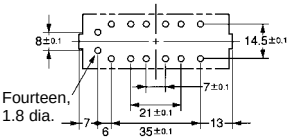
G7S-4A2B



G7S-3A3B

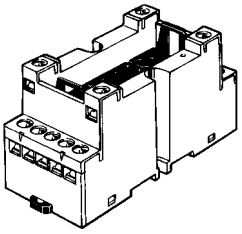


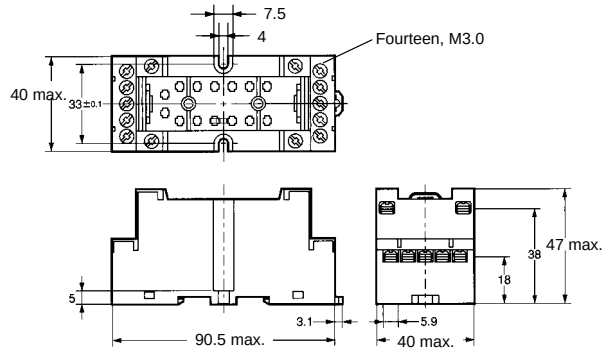
Cross-section of Mounting Holes



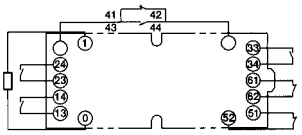
■ Safety Relay Sockets

P7S-14F Track-mounting Socket

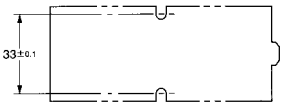




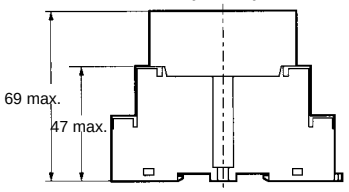
Terminal Installation/Internal Connection Diagram (Top View)



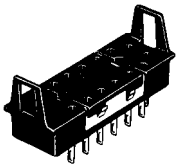
Cross-section of Mounting Holes

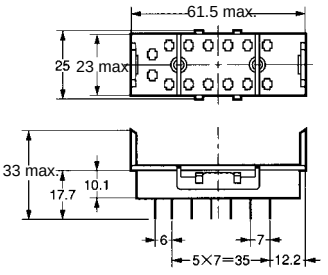


With Safety Relay Mounted

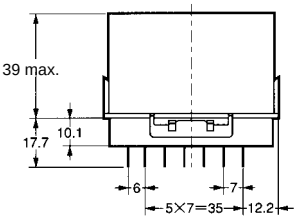


P7S-14A Back-mounting Socket (Solder Terminals)

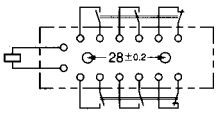




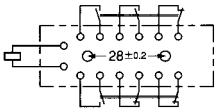
With Safety Relay Mounted



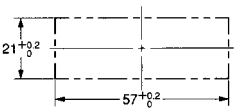
Terminal Installation/Internal Connection Diagram (Bottom View)
G7S-4A2B



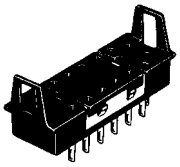
G7S-3A3B

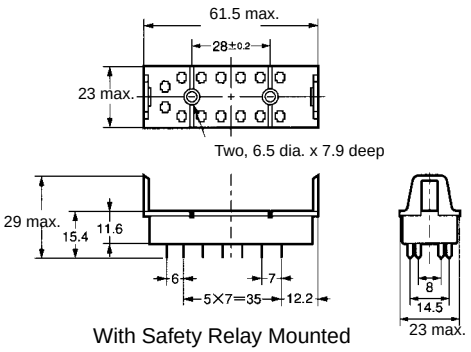


Cross-section of Mounting Holes

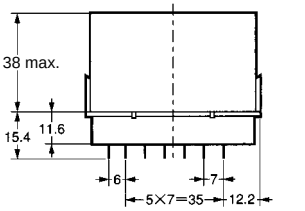


P7S-14P Back-mounting Socket (PCB Terminals)

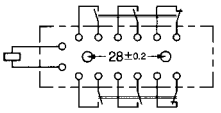




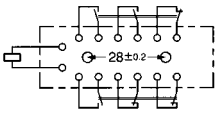
With Safety Relay Mounted



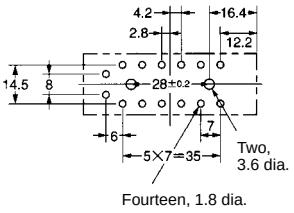
Terminal Installation/Internal Connection Diagram (Bottom View)
G7S-4A2B



G7S-3A3B

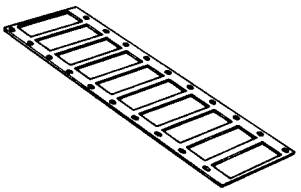


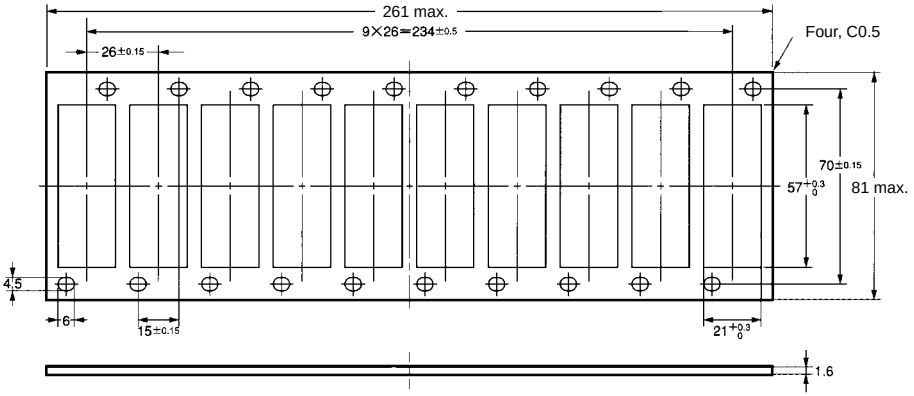
Cross-section of Mounting Holes



■ Socket Mounting Plate

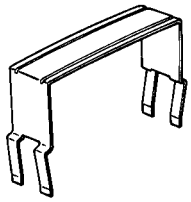
P7S-A10 (Special Mounting Plate for P7S-14A)

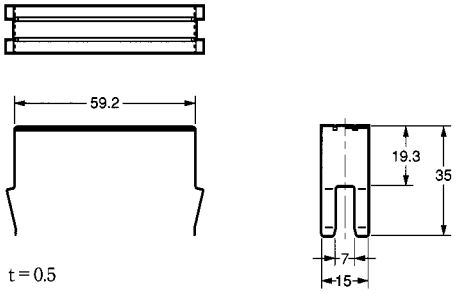




■ Relay Removal Tool

P7S-B





Precautions

Refer to page 12 for general precautions.

Safety Relays

A Safety Relay is a Relay with which a safety circuit can be configured. For common precautions when using and handling Relays, refer to OMRON's Relay Catalog.

Contacts

The coil terminals have polarity (positive and negative). Operation is not possible if these are connected in reverse.

Wiring

Use one of the following wires to connect to the P7S-14F.

Stranded wire: 0.75 to 1.5 mm^2
Single wire: 1.0 to 1.5 mm^2

Tighten each screw of the P7S-14F to a torque of 0.98 N • m securely.

Refer to the internal connections of the G9S Safety Relay Unit before using the G7S.

Wire the terminals correctly with no mistakes in coil polarity, otherwise the G7S will malfunction.

Cleaning

The G7S is not of enclosed construction. Therefore, do not wash the G7S with water or any detergent.

Relay Removal Tool

Attach the Relay Removal Tool to the sides and Socket hooks of the Relay, check the space between the Socket hooks and protrusions of the Relay, and dismount the Relay from the Socket.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. J107-E1-2A