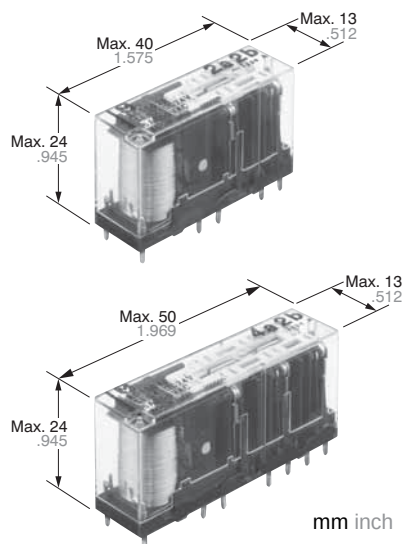


Panasonic

Slim compact safety relay

SF RELAYS

Slim type



FEATURES

- **Forcibly guide contact structure**
(EN50205 Class A TÜV recognized)
- **Slim profile (mm inch)**
Compact size with slim profile relay reduces substrate size.
[4-pole type] 40 (L) × 13 (W) × 24 (H)
1.575 (L) × .512 (W) × .945 (H)
[6-pole type] 50 (L) × 13 (W) × 24 (H)
1.969 (L) × .512 (W) × .945 (H)
- **Built-in LED indication type available**
Built-in LED eliminates need for design and mounting of separate LED circuit. This cuts costs and saves labor.
- Fast response time is achieved (8 ms or less)
Circuit is quickly opened to ensure safety.
- High shock resistance
(Functional: Min. 200m/s²)
Improved anti-shock properties meaning that the relay can be safely used in high shock and vibration environments such as in machine tools and other factory equipment.

- PC board sockets also available (4 and 6-poles)
- Lineup also includes DIN terminal socket with finger protect construction (4 and 6-poles)

TYPICAL APPLICATIONS

- Machine tools
- Robots
- Safety PLCs
- Circuits with stringent safety standard requirements such as those in motor vehicle production equipment.

SPECIFICATIONS

Contact

Item		4 poles	6 poles
Contact arrangement		2 Form A/2 Form B 3 Form A/1 Form B	4 Form A/2 Form B 5 Form A/1 Form B 3 Form A/3 Form B
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		Gold-flashed AgSnO ₂ type	
Rating (resistive load)	Nominal switching capacity	6 A 250 V AC, 6 A 30 V DC	
	Max. switching power	1,500 VA, 180 W	
	Max. switching voltage	250 V AC, 30 V DC	
	Max. switching current	6 A (Reduce by 0.1 A/°C for temperatures 70 to 85°C.)	
	Min. switching capacity (Reference value) #1	1 mA 5 V DC	
Expected life (min. operations)	Mechanical (at 180 times/min.)	10 ⁷	
	Electrical	250 V AC 6 A resistive load: 10 ⁵ (at 20 times/min.)	
		30 V DC 6 A resistive load: 10 ⁵ (at 20 times/min.)	
		250 V AC 1 A resistive load: 5 × 10 ⁵ (at 30 times/min.)	
		30 V DC 1 A resistive load: 5 × 10 ⁵ (at 30 times/min.)	
		[AC 15] 240 V AC 2 A inductive load: 10 ⁵ (at 20 times/min., cosφ = 0.3)	
		[DC 13] 24 V DC 1 A inductive load: 10 ⁵ (at 20 times/min., L/R = 48 ms)	

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Coil

	4 poles	6 poles
	2 Form A/2 Form B 3 Form A/1 Form B	4 Form A/2 Form B 5 Form A/1 Form B 3 Form A/3 Form B
Nominal operating power	360 mW	500 mW

Characteristics (at 20°C 68°F)

Item		4 poles	6 poles
		2 Form A/2 Form B 3 Form A/1 Form B	4 Form A/2 Form B 5 Form A/1 Form B 3 Form A/3 Form B
Max. operating speed		20 times/min. (at nominal voltage)	
Initial insulation resistance*1		Min. 1,000 MΩ at 500 V DC	
Initial breakdown voltage*2	Between open contacts	1,500 Vrms for 1 min.	
	Between contact sets	2,500 Vrms for 1 min.: 7-8/9-10	2,500 Vrms for 1 min.: 7-8/11-12 9-10/13-14 11-12/13-14
		4,000 Vrms for 1 min.: 3-4/5-6 3-4/7-8 5-6/9-10	4,000 Vrms for 1 min.: 3-4/5-6 3-4/7-8 5-6/9-10 7-8/9-10
		Between contact and coil	4,000 Vrms for 1 min.
Operate time (at nominal voltage)		Max. 20 ms*3	
Response time*4 (without diode) (at nominal voltage)		Max. 8 ms*3	
Release time (without diode) (at nominal voltage)		Max. 20 ms*3	
Shock resistance	Functional*5	Min. 200 m/s ²	
	Destructive*6	Min. 1,000 m/s ²	
Vibration resistance	Functional*7	10 to 55 Hz at double amplitude of 1.5 mm	
	Destructive	10 to 55 Hz at double amplitude of 1.5 mm	
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	-40°C to +85°C -40°F to +185°F	
	Humidity	5 to 85% R.H.	
Unit weight		Approx. 20 g Approx. .71 oz	Approx. 23 g Approx. .81 oz

• Outline of performance [Socket for PC board/DIN terminal socket]

Max. carrying current	6 A (Reduce by 0.1 A/°C for temperatures 70 to 85°C.)
Initial breakdown voltage	Between each terminal: 2,500 Vrms for 1 min. (Detection current: 10mA)
Initial insulation resistance*1	Min. 1,000 MΩ at 500V DC

Remarks

*1 Measurement at same location as “Initial breakdown voltage” section
*2 Detection current: 10mA
*3 Excluding contact bounce time
*4 Response time is the time after the coil voltage turns off until the time when “a” contact turns off.
*5 Half-wave pulse of sine wave: 11ms; detection time: 10μs
*6 Half-wave pulse of sine wave: 6ms
*7 Detection time: 10μs
*8 Refer to “NOTES” on page 9, 7. Usage, transport and storage conditions.

ORDERING INFORMATION

Ex. SF

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Product name	Contact arrangement	Operation indication	Coil voltage
Slim type	2: 2 Form A/2 Form B 3: 3 Form A/1 Form B 4: 4 Form A/2 Form B 5: 5 Form A/1 Form B 6: 3 Form A/3 Form B	Nil: Without LED indication L: With LED indication	DC12, 18, 21, 24, 48V

Note: Standard packing: Carton 50 pcs. Case 200 pcs. (Accessories: Carton 10 pcs. Case 100 pcs.)
Please inquire about other coil voltages.