Panasonic



1 Form A 5A slim power relay for interface

PA RELAYS



RoHS compliant

Protective construction: Sealed type

FEATURES

1. Slim size (width 5 mm .197 inch, height 12.5 mm .492 inch) permits higher density mounting

Despite the slim 5 mm .197 inch width, the 20 mm .787 inch length is still compact and the 12.5 mm profile is low. Even when a socket is used, the height is still only 18 mm .709 inch. Suitable for high-density mounting, these relays enable device size smaller.

2. Nominal operating power: High sensitivity of 120mW

Enables smaller power supplies, facilitates energy saving applications, and contributes to device size smaller.

- 3. Control from low level loads to 5 A Use of gold-clad twin contacts enables control of low level loads down to 100 mV 100 μ A and up to 5 A 250 V AC and 30 V DC
- 4. Reinforced according to IEC1131-2 (TÜV)
- 5. High surge breakdown voltage (4000 V) and high breakdown voltage (2000 V)

Between contacts and coil of 2,000 V and surge resistance of 4,000 V work to prevent controller malfunctions caused by noise and surges.

6. Outstanding vibration and shock resistance

Functional shock resistance: 147 m/s² Functional vibration resistance: 10 to 55 Hz (at double amplitude of 2.5 mm .098 inch)

Keeps equipment from miss-operation due to vibration and shock.
Can be used as mounted on control panel doors.

- 7. Sealed construction allows automatic washing
- 8. SIL (single in line) terminal layout
- **9. Complies with safety standards**Complies with Japanese Electrical
 Appliance and Material Safety Law, and
 certified by UL, CSA, and TÜV.
- 10. Sockets are available

TYPICAL APPLICATIONS

- 1. Industrial equipment, office equipment
- 2. Measuring devices and test equipment
- 3. Interface relays for programmable controllers
- 4. Output relays in small devices such as timers, counters, sensors, and temperature controllers

ORDERING INFORMATION

Contact arrangement
1a: 1 Form A (Bifurcated)

Nominal coil voltage (DC)
5, 6, 9, 12, 18, 24V

Note: Certified by UL, CSA and TÜV

TYPES

| Contact arrangement | Nominal coil voltage | Part No. | |
|---------------------|----------------------|----------|--|
| | 5V DC | PA1a-5V | |
| 1 Form A | 6V DC | PA1a-6V | |
| | 9V DC | PA1a-9V | |
| | 12V DC | PA1a-12V | |
| | 18V DC | PA1a-18V | |
| | 24V DC | PA1a-24V | |

Standard packing: Tube: 25 pcs.; Case: 1,000 pcs.

^{*} Terminal sockets available.

RATING

1. Coil data

| Nominal coil voltage | Pick-up voltage (at 20°C 68°F) | Drop-out voltage (at 20°C 68°F) | Nominal operating current [±10%] (at 20°C 68°F) | Coil resistance [±10%] (at 20°C 68°F) | Nominal operating power | Max. applied voltage (at 20°C 68°F) |
|----------------------|-----------------------------------|------------------------------------|---|--|-------------------------|--|
| 5V DC | | | 24mA | 208Ω | 120mW | 120%V of nominal voltage |
| 6V DC | 70%V or less of | 5%V or more of | 20mA | 300Ω | | |
| 9V DC | | | 13.3mA | 675Ω | | |
| 12V DC | nominal voltage *1 (Initial) | nominal voltage*1 (Initial) | 10mA | 1,200Ω | | |
| 18V DC | () | () | 6.7mA | 2,700Ω | | |
| 24V DC | | | 7.5mA | 3,200Ω | 180mW*2 | |

Notes: *1 Pulse drive (JIS C 5442)

2. Specifications

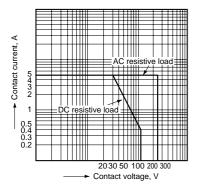
| Characteristics | Item | | Specifications | | | |
|----------------------------|---|-------------------------------|---|--|--|--|
| | Arrangement | | 1 Form A (Bifurcated) | | | |
| Contact | Contact resistance (Initial) | | Max. 30 mΩ (By voltage drop 6 V DC 1A) | | | |
| | Contact material | | Au-clad AgNi type | | | |
| D.: | Nominal switching ca | pacity (resistive load) | 5 A 250 V AC, 5 A 30 V DC | | | |
| | Max. switching powe | r (resistive load) | 1,250 VA, 150 W | | | |
| | Max. switching voltage | | 250 V (AC), 110 V (DC) | | | |
| Rating | Max. switching current | | 5 A | | | |
| | Nominal operating po | ower | 120 mW (5 to 18 V DC), 180 mW (24 V DC) | | | |
| | Min. switching capac | ity (Reference value)*1 | 100μA 100mV DC | | | |
| | Insulation resistance | (Initial) | Min. 1,000M Ω (at 500V DC) Measurement at same location as "Breakdown voltage" section. | | | |
| | Breakdown voltage | Between open contacts | 1,000 Vrms for 1min. (Detection current: 10mA.) | | | |
| | (Initial) | Between contact and coil | 2,000 Vrms for 1min. (Detection current: 10mA.) | | | |
| Electrical characteristics | Surge breakdown voltage (Initial) | Between contacts and coil*2 | 4,000 V | | | |
| | Temperature rise (coil) (at 20°C 68°F) | | Max. 45°C (By resistive method, nominal coil voltage applied to the coil, nominal switching capacity.) | | | |
| | Operate time (at nominal voltage) (at 20°C 68°F) | | Max. 10 ms | | | |
| | Release time (at non | ninal voltage) (at 20°C 68°F) | Max. 5 ms | | | |
| | Shock resistance | Functional | Min. 147 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.) | | | |
| Mechanical | | Destructive | Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms.) | | | |
| characteristics | Vibration registeres | Functional | 10 to 55 Hz at double amplitude of 2.5 mm (Detection time: 10μs.) | | | |
| | Vibration resistance | Destructive | 10 to 55 Hz at double amplitude of 3.5 mm | | | |
| Expected life | Mechanical | | Min. 2×10 ⁷ (at 180 times/min.) | | | |
| | Electrical | | Min. 10 ⁵ (3 A 250 V AC, 30 V DC, resistive load) Min. 5×10 ⁴ (5 A 250 V AC, 30 V DC, resistive load) (at 20 times/min.) | | | |
| Conditions | Conditions for operation, transport and storage*3 | | Ambient temperature: -40°C to 70°C -40°F to 158°F; Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) | | | |
| | Max. operating speed | t | 20 times/min. (at nominal switching capacity) | | | |
| Unit weight | | | Approx. 3 g .15 oz | | | |
| | - | | · | | | |

Notes: *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.

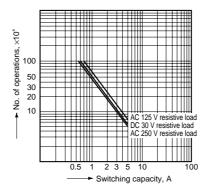
*2. Wave is standard shock voltage of ±1.2×50µs according to JEC-212-1981

REFERENCE DATA

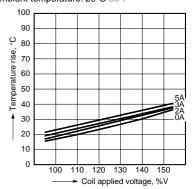
1. Max. switching capacity



2. Life curve



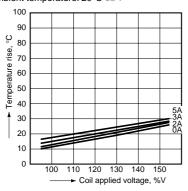
3.-(1) Coil temperature rise (180 mW) Tested sample: PA1a-24V Measured portion: Inside the coil Ambient temperature: 20°C 68°F



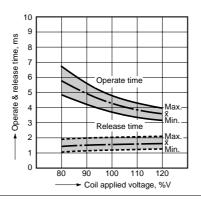
^{*2 24}V DC, 120mW type are also available, please consult us.

^{*3.} The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

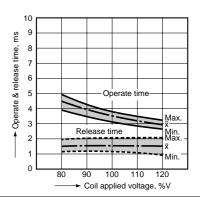
3.-(2) Coil temperature rise (120 mW) Tested sample: PA1a-12V Measured portion: Inside the coil Ambient temperature: 20°C 68°F



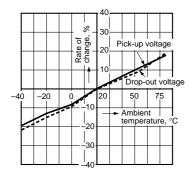
4.-(1) Operate & release time (120 mW) Tested sample: PA1a-12V, 20 pcs.



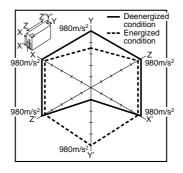
4.-(2) Operate & release time (180 mW) Tested sample: PA1a-24V, 20 pcs.



5. Ambient temperature characteristics Tested sample: PA1a-12V, 6 pcs.



6. Malfunctional shock Tested sample: PA1a-12V, 6 pcs.



DIMENSIONS (mm inch)

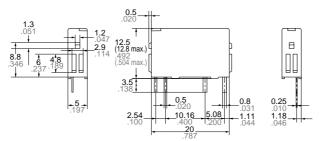
The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

Relay

CAD Data

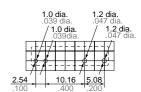


External dimensions



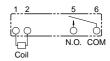
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

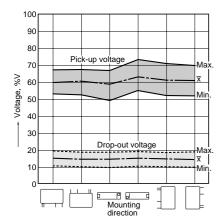


SAFETY STANDARDS

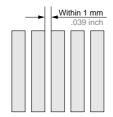
| UL/C-UL (Recognized) | | CSA (Certified) | | TÜV (Certified) | | Remarks |
|----------------------|--|-----------------|--|----------------------|-------------------------|--|
| File No. | Contact rating | File No. | Contact rating | File No. | Rating | Remarks |
| E43149 | 5A 250V AC (5×10 ⁴) 5A 30V DC (5×10 ⁴) 3A 250V AC (10 ⁵) 3A 30V DC (10 ⁵) | LR26550 etc. | 5A 250V AC (5×10 ⁴) 5A 30V DC (5×10 ⁴) 3A 250V AC (10 ⁵) 3A 30V DC (10 ⁵) | B 12 01 13461 316 | IEC1131-2 Reinforced | TÜV rating 5A 250V AC (cosφ=1.0) (5×10 ⁴) 5A 30V DC (0ms) (5×10 ⁴) 3A 250V AC (cosφ=1.0) (10 ⁵) 3A 30V DC (0ms) (10 ⁵) |

NOTES

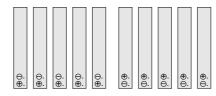
- 1. For cautions for use, please read "GENERAL APPLICATION GUIDELINES" on page B-1.
- 2. If it includes ripple, the ripple factor should be less than 5%.
- 3. Specification values for pick-up and drop-out voltages are for the relay mounting with its terminals below.



- 4. When mounting the relays within 1 mm .039 inch, please notice the condition below.
- 1) Mount the relays in the same direction.

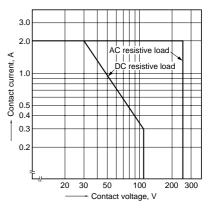


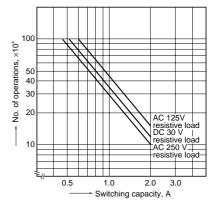
2) Coil terminals (Terminal No. 1 & 2) polarity should be arranged in the same direction.



3) Allowable contact current is 2 A.

4) About the electrical life for close mounting, please refer to data below.





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Panasonic

ACCESSORIES

PA RELAYS TERMINAL SOCKETS







Self clinching type terminal socket

TYPES

| Product name | Part No. | | |
|-------------------------------------|-----------|--|--|
| Standard type terminal socket | PA1a-PS | | |
| Self clinching type terminal socket | PA1a-PS-H | | |

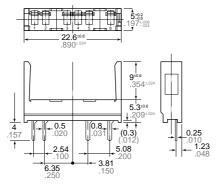
DIMENSIONS (mm inch)

The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

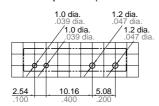
Standard type terminal socket

CAD Data

External dimensions



General tolerance: ±0.3 ±.012 PC board pattern (Bottom view)

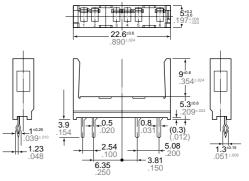


Tolerance: ±0.1 ±.004

Self clinching type terminal socket

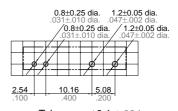
CAD Data

External dimensions



General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

INSTALLING AND REMOVING

Installing and removing the relay

- 1) Firmly insert the relay into the socket with the terminals going in the direction of the blade receptacles.
- (1) Insert the removal key into the socket slots.
- 2) The relay can be easily removed using the removal key (APA801).
- (2) Pull the removal key up to remove the relay.
- (3) Slide the removal key off of the relay.

