

Panasonic ideas for life

1a 5A slim power relay for interface

PA RELAYS



RoHS compliant

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.

FEATURES

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

Despite the slim 5 mm width, the 20 mm 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. Suitable for high-density mounting, these relays enable device size smaller.

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.	
1 Form A	5V DC	PA1a-5V	
	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.

^{*} For sockets, see page 84.

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	70%V or less of		24mA	208Ω	120mW	120%V of nominal voltage
6V DC		5%V or more of nominal voltage*1 (Initial)	20mA	300Ω		
9V DC			13.3mA	675Ω		
12V DC	nominal voltage *1 (Initial)		10mA	1,200Ω		
18V DC	(12,	(,	6.7mA	2,700Ω		
24V DC			7.5mA	3,200Ω	180mW*2	

2. Specifications

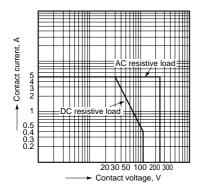
Characteristics	Item		Specifications		
	Arrangement		1 Form A		
Contact	Contact resistance (Initial)		Max. 30 mΩ (By voltage drop 6 V DC 1A)		
	Contact material		Au-clad AgNi type		
	Nominal switching capacity (resistive load)		5 A 250 V AC, 5 A 30 V DC		
	Max. switching power (resistive load)		1,250 VA, 150 W		
Dating	Max. switching voltage		250 V (AC), 110 V (DC)		
Rating	Max. switching curre	nt	5 A		
	Nominal operating power		120 mW (5 to 18 V DC), 180 mW (24 V DC)		
	Min. switching capacity (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		
Cilaracteristics	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 nominal 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	\(\text{C} \)	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 (at rated load)		20 times/min.		
Unit weight			Approx. 3 g .15 oz		
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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.

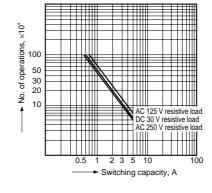
*2. Wave is standard shock voltage of $\pm 1.2 \times 50 \mu s$ according to JEC-212-1981

REFERENCE DATA

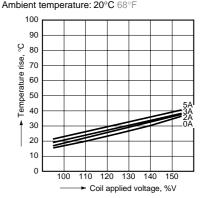
1. Max. switching capacity



2. Life curve



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

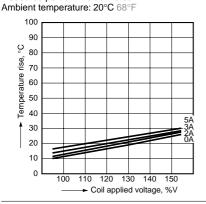


Notes: *1 Pulse drive (JIS C 5442)

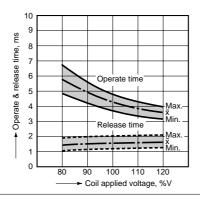
*2 24V DC, 120mW type are also available, please consult us.

^{*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.

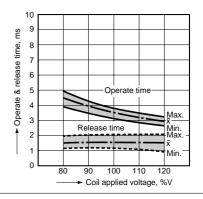
3.-(2) Coil temperature rise (180 mW) Tested sample: PA1a-24V Measured portion: Inside the coil



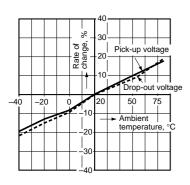
4.-(1) Operate & release time (120 mW) Tested sample: PA1a-12V, 20 pcs.



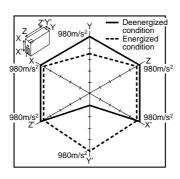
4.-(2) Operate & release time (180 mW) Tested sample: PA1a-24V, 20 pcs.



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



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



DIMENSIONS (mm inch)

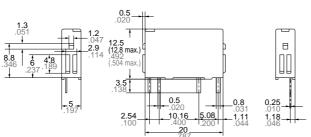
The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

Relay

CAD Data



External dimensions



General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

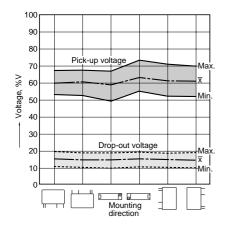


SAFETY STANDARDS

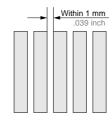
UL/C-UL (Recognized)		CSA (Certified)			TÜV (Certified)	Remarks	
File No.	Contact rating	File No.	Contact rating	File No.	Rating	Remarks	
E43149	3A 250V AC (10 ⁵) 3A 30V DC (10 ⁵) 5A 250V AC (5×10 ⁴) 5A 250V AC (5×10 ⁴)	LR26550 etc.	5A 250V AC (5×10 ⁴) 5A 30V DC (5×10 ⁴) 3A 250V AC (10 ⁵) 3A 30V DC (10 ⁵)	B 01 08 13461 209	IEL1131-2 Reinforced	TÜV rating 5A 250V AC (cosφ=1.0) (5×10 ⁴) 5A 30V AC (0ms) (5×10 ⁴) 3A 250V AC (cosφ=1.0) (10 ⁵) 3A 30V AC (0ms) (10 ⁵)	

NOTES

- 1. If it includes ripple, the ripple factor should be less than 5%.
- 2. Specification values for pick-up and drop-out voltages are for the relay mounting with its terminals below.



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

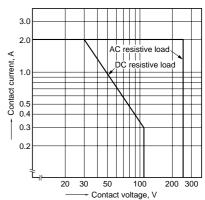


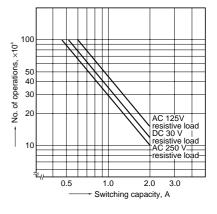
2) Coil terminals (Terminal No. 1 & 2) polarity should be arranged in the same direction.



3) Allowable contact current is 2 A.

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





For Cautions for Use.