



Compliant with European standards 1a1b 10A/8A polarized power relays

DE RELAYS (ADE)



FEATURES

1. Conforms to European safety standard (VDE0700 and VDE0631). Insulating distance between coil and contacts:

Clearance Min. 8mm .315 inch Creepage Min. 8mm .315 inch

2. Low operating power

Nominal operating power at 200 mW (Single side stable, 2 coil latching)

3. Compact body saves space Size: $12.5(W) \times 25(L) \times 12.5(H)$ mm $.492(W) \times .984(L) \times .492(H)$ inch

4. Conforms to the various safety standards

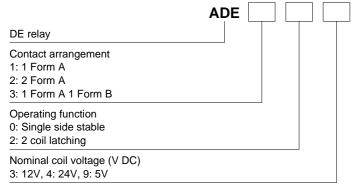
UL, CSA and VDE approved

TYPICAL APPLICATIONS

- 1. Temperature controller
- 2. Automatic meter reading
- 3. OA equipment
- 4. FA equipment

RoHS compliant

ORDERING INFORMATION



Notes: 1. Certified by UL, CSA and VDE

2. This product is manufactured by lot after an order is received.

TYPES

| Contact arrangement | Naminal pail valtage | Single side stable type | 2 coil latching type | |
|---------------------|----------------------|-------------------------|----------------------|--|
| Contact arrangement | Nominal coil voltage | Part No. | Part No. | |
| | 5V DC | ADE109 | ADE129 | |
| 1 Form A | 12V DC | ADE103 | ADE123 | |
| | 24V DC | ADE104 | ADE124 | |
| | 5V DC | ADE309 | ADE329 | |
| 1 Form A 1 Form B | 12V DC | ADE303 | ADE323 | |
| | 24V DC | ADE304 | ADE324 | |
| | 5V DC | ADE209 | ADE229 | |
| 2 Form A | 12V DC | ADE203 | ADE223 | |
| | 24V DC | ADE204 | ADE224 | |

Standard packing: Tube package: 20 pcs.; Case: 500 pcs.

Note: This product is manufactured by lot after an order is received.

RATING

1. Coil data

1) Single side stable type

| 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 | 10%V or more of | 40 mA | 125Ω | | 4000011 |
| 12V DC | nominal voltage | nominal voltage | 16.6mA | 720Ω | 200mW | 130%V of nominal voltage |
| 24V DC | (Initial) | (Initial) | 8.3mA | 2,880Ω | | Tioniniai voitage |

2) 2 coil latching type

| Nominal coil voltage | Set voltage (at 20°C 68°F) | Reset voltage (at 20°C 68°F) | cur | operating rent 20°C 68°F) | | sistance 20°C 68°F) | | operating wer | Max. applied voltage (at 20°C 68°F) |
|----------------------|-------------------------------|---------------------------------|----------|---------------------------------|----------|------------------------|----------|------------------|--|
| _ | | | Set coil | Reset coil | Set coil | Reset coil | Set coil | Reset coil | |
| 5V DC | 70%V or less of | 70%V or less of | 40 mA | 40 mA | 125Ω | 125Ω | | | 4000() (|
| 12V DC | nominal voltage | nominal voltage | 16.6mA | 16.6mA | 720Ω | 720Ω | 200mW | 200mW | 130%V of nominal voltage |
| 24V DC | (Initial) | (Initial) | 8.3mA | 8.3mA | 2,880Ω | 2,880Ω | | | nominal voltage |

2. Specifications

| Characteristics | | Item | Specifications | | | | | |
|----------------------------|---|--------------------------|--|--|----------------------|--|--|--|
| | Arrangement | | 1 Form A | 1 Form A 1 Form B | 2 Form A | | | |
| Contact | Contact resistance (Initial) | | Max. 30 mΩ (By voltage drop 6 V DC 1A) | | | | | |
| | Contact material | | AgSnO ₂ type | | | | | |
| | Nominal switching capacity (resistive load) | | 10A 250V AC, 10A 30V DC | 0A 250V AC, 10A 30V DC 8A 250V AC, 8A 30V DC | | | | |
| | Max. switching power (resistive load) | | 2,500VA, 300W | 2,000VA, 240W | | | | |
| Rating | Max. switching voltage | је | 250V AC, 30V DC | 250V AC, 30V DC | | | | |
| Raung | Max. switching curre | nt | 10A | 8A | | | | |
| | Nominal operating po | | 200mW | | | | | |
| | Min. switching capacity*1 | | 100mA 5V 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 1 min. (Detection current: 10 mA) | | | | | |
| | (Initial) | Between contact sets | — 4,000 Vrms for 1 min. (Detection current: 10 mA) | | | | | |
| | , , | Between contact and coil | 5,000 Vrms for 1 min. (Detection current: 10 mA) | | | | | |
| Electrical characteristics | Surge breakdown voltage*2 (Between contact and coil) (Initial) | | 12,000 V | | | | | |
| 0.10.00.00.00 | Temperature rise (coil) (at 70°C 158°F) | | Max. 50°C 122°F (By resistive method) | | | | | |
| | Operate time [Set time] (at 20°C 68°F) | | (Nominal coil voltage | Max. 10 ms [Max. 10 ms] applied to the coil, excluding co | ontact bounce time.) | | | |
| | Release time [Reset time] (at 20°C 68°F) | | Max. 5 ms [Max. 10 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) (without diode) | | | | | |
| | Chaele registeres | Functional | Min. 196 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.) | | | | | |
| Mechanical | Shock resistance | Destructive | Min. 980 m/s² (Half-wave pulse of sine wave: 6 ms.) | | | | | |
| characteristics | \(\(\text{i} \) = \(| Functional | 10 to 55 Hz at double amplitude of 2 mm (Detection time: 10μs.) | | | | | |
| | Vibration resistance | Destructive | 10 to 55 Hz at double amplitude of 3 mm | | | | | |
| | Mechanical | | Min. 107 (at 300 times/min.) | | | | | |
| Expected life | Electrical | | | Min. 10 ⁵ tive load, at 20 times/min., at nominal switching capacity) | | | | |
| 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 | | 20 times/min. (at nominal switching capacity) | | | | | |
| Unit weight | | | Approx. 7 g .25 oz | | | | | |

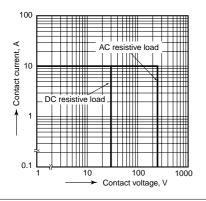
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

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

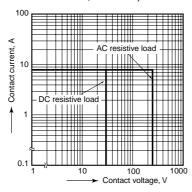
^{*3.} The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

REFERENCE DATA

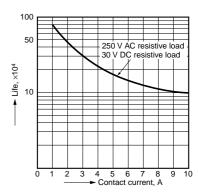
1.-(1) Maximum switching power (1 Form A)



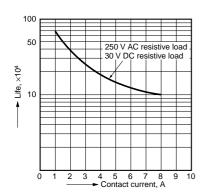
1.-(2) Maximum switching power (1 Form A 1 Form B, 2 Form A)



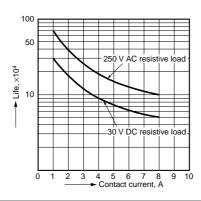
2.-(1) Life curve (1 Form A)



2.-(2) Life curve (1 Form A 1 Form B)



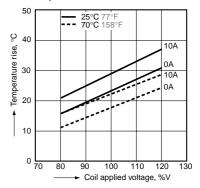
2.-(3) Life curve (2 Form A)



3.-(1) Coil temperature rise (1 Form A) Tested sample: ADE109

Quantity: n=6

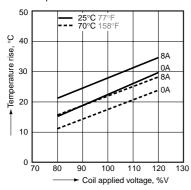
Ambient temperature: 25°C to 70°C 77°F to 158°F



3.-(2) Coil temperature rise (1 Form A 1 Form B) Tested sample: ADE309

Quantity: n=6

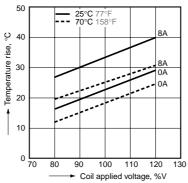
Ambient temperature: 25°C to 70°C 77°F to 158°F



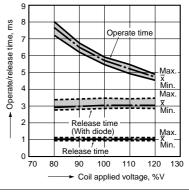
3.-(3) Coil temperature rise (2 Form A) Tested sample: ADE209

Quantity: n=6

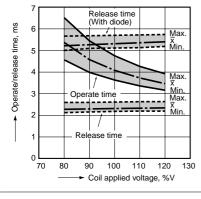
Ambient temperature: 25°C to 70°C 77°F to 158°F



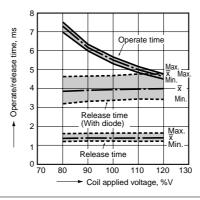
4.-(1) Operate/release time (1 Form A) Tested sample: ADE109 Quantity: n=5



4.-(2) Operate/release time (1 Form A 1 Form B) Tested sample: ADE309, Quantity: n=5

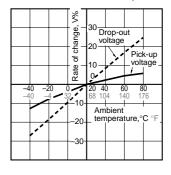


4.-(3) Operate/release time (2 Form A) Tested sample: ADE209, Quantity: n=5



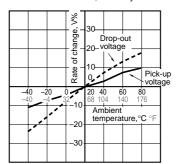
5.-(1) Ambient temperature characteristics (1 Form A)

Tested sample: ADE109, Ambient temperature: -40°C to 80°C -40°F to 176°F, Quantity: n=6



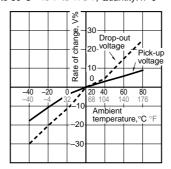
5.-(2) Ambient temperature characteristics (1 Form A 1 Form B)

Tested sample: ADE309, Ambient temperature: -40°C to 80°C -40°F to 176°F, Quantity: n=6



5.-(3) Ambient temperature characteristics (2 Form A)

Tested sample: ADE209, Ambient temperature: -40°C to 80°C -40°F to 176°F, Quantity: n=6

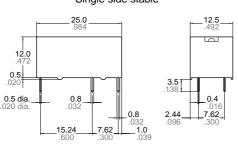


DIMENSIONS (mm inch)

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

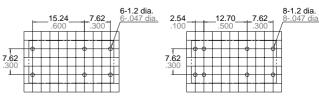
CAD Data

External dimensions Single side stable



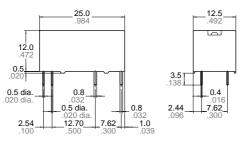
PC board pattern (Bottom view)

Single side stable 2 coil latching type



Tolerance: ±0.1 ±.004

2 coil latching type



(1 Form A)



Single side stable (1 Form A 1 Form B)



(Deenergized condition) 2coil latching type

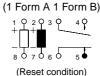
Schematic (Bottom view)



(5,6: dummy terminal)



(5,6: dummy terminal)





Tolerance: ±0.3 ±.012

SAFETY STANDARDS

| Item File No. | | UL/C-UL (Recognized) | | CSA (Certified) | VDE (Certified) | |
|----------------------|----------|-------------------------|----------|-------------------------|-----------------|-----------------------|
| | File No. | Contact rating | File No. | Contact rating | File No. | Contact rating |
| 1 Form A | E120782 | PILOT DUTY B300 R300 | LR85932 | PILOT DUTY B300 R300 | 115944 | 8A 250V AC (cosφ=1.0) |
| 1 Form A 1 Form B | E120782 | PILOT DUTY B300 R300 | LR85932 | PILOT DUTY B300 R300 | 115944 | 8A 250V AC (cosφ=1.0) |
| 2 Form A | E120782 | PILOT DUTY B300 R300 | LR85932 | PILOT DUTY B300 R300 | 115944 | 8A 250V AC (cosφ=1.0) |

For Cautions for Use.