Panasonic
ideas for life

**1a 30A polarized power relays**

# DQ RELAYS (ADQ)

**RoHS compliant**

## FEATURES

1. **30A capacity in small size**
2. **Contributes to device energy savings with latching type.**
3. **High insulation**
   4,000V AC (between contacts and coil)
   Surge 10,000V (between contacts and coil)
4. **Cd-free, Pb-free**
5. **Sealed construction**
6. **UL/C-UL approved**

## TYPICAL APPLICATIONS

1. **Time switches**
2. **Electric water heaters**
3. **Remote control of electric power meters**

## ORDERING INFORMATION

**ADQ** [ ] [3] [Q] [0] [ ]

Operating function
1: 1 coil latching (1 Form A)
2: 2 coil latching (1 Form A)

Contact capacity
3: 30 A

Terminal shape
Q: 250 Faston terminal

Contact characteristics
0: Standard contact

Nominal coil voltage (DC)
4H: 4.5 V, 06: 6 V, 09: 9 V, 12: 12 V, 24: 24 V

## TYPES

| Contact arrangement | Nominal coil voltage | Part No. | |
|---|---|---|---|
| | | 1 coil latching | 2 coil latching |
| 1 Form A | 4.5V DC | ADQ13Q04H | ADQ23Q04H |
| | 6V DC | ADQ13Q006 | ADQ23Q006 |
| | 9V DC | ADQ13Q009 | ADQ23Q009 |
| | 12V DC | ADQ13Q012 | ADQ23Q012 |
| | 24V DC | ADQ13Q024 | ADQ23Q024 |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

## RATING

**1. Coil data**

1) 1 coil latching

| Nominal coil voltage | Set voltage* (at 20°C 68°F) | Reset 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) |
|---|---|---|---|---|---|---|
| 4.5V DC | 70%V or less of nominal voltage (Initial) | 70%V or less of nominal voltage (Initial) | 111.1mA | 40.5Ω | 500mW | 130%V of nominal voltage |
| 6V DC | | | 83.3mA | 72Ω | | |
| 9V DC | | | 55.6mA | 162Ω | | |
| 12V DC | | | 41.7mA | 288Ω | | |
| 24V DC | | | 20.8mA | 1,152Ω | | |

* Pulse, direction of measurement: Terminal is downward.

2) 2 coil latching

| Nominal coil voltage | Set voltage* (at 20°C 68°F) | Reset 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) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Set coil | Reset coil | Set coil | Reset coil | Set coil | Reset coil | |
| 4.5V DC | 70%V or less of nominal voltage (Initial) | 70%V or less of nominal voltage (Initial) | 221.7mA | 221.7mA | 20.3Ω | 20.3Ω | 1,000mW | 1,000mW | 130%V of nominal voltage |
| 6V DC | | | 166.7mA | 166.7mA | 36Ω | 36Ω | | | |
| 9V DC | | | 111.1mA | 111.1mA | 81Ω | 81Ω | | | |
| 12V DC | | | 83.3mA | 83.3mA | 144Ω | 144Ω | | | |
| 24V DC | | | 41.7mA | 41.7mA | 576Ω | 576Ω | | | |

* Pulse, direction of measurement: Terminal is downward.

## 2. Specifications

| Characteristics | Item | | Specifications |
|---|---|---|---|
| Contact | Arrangement | | 1 Form A |
| | Contact resistance (Initial) | | Max. 30 mΩ (By voltage drop 6 V DC 1A) |
| | Contact material | | $AgSnO_2$ type |
| Rating | Nominal switching capacity (resistive load) | | 30 A 250V AC |
| | Max. switching power (resistive load) | | 7,500 V A |
| | Max. switching voltage | | 250V AC |
| | Max. switching current | | 30 A |
| | Nominal operating power | | 500mW (1 coil latching), 1,000mW (2 coil latching) |
| | Min. switching capacity (Reference value)*1 | | 100mA 5 V DC |
| Electrical characteristics | Insulation resistance (Initial) | | Min. 1,000MΩ (at 500V DC) Measurement at same location as “Breakdown voltage” section. |
| | Breakdown voltage (Initial) | Between open contacts | 1,500 Vrms for 1min. (Detection current: 10mA.) |
| | | Between contact and coil | 4,000 Vrms for 1min. (Detection current: 10mA.) |
| | Surge breakdown voltage*2 (Initial) | Between contact and coil | Min. 10,000 V |
| | Temperature rise (at 65°C 149°F) (coil) | | Max. 50°C (By resistive method, max. switching current) (Coil; de-energized) |
| | Set time (at 20°C 68°F) | | Max. 20 ms (Nominal coil voltage applied to the coil, excluding contact bounce time.) |
| | Reset time (at 20°C 68°F) | | Max. 20 ms (Nominal coil voltage applied to the coil, excluding contact bounce time.) |
| Mechanical characteristics | Shock resistance | Functional | Min. 200 $m/s^2$ (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.) |
| | | Destructive | Min. 1,000 $m/s^2$ (Half-wave pulse of sine wave: 6 ms.) |
| | Vibration resistance | Functional | 10 to 55 Hz at double amplitude of 1.5 mm (Detection time: 10μs.) |
| | | Destructive | 10 to 55 Hz at double amplitude of 2 mm |
| Expected life | Mechanical | | Min. $10^6$ (at 180 times/min.) |
| | Electrical | | Min. $10^4$ (At nominal switching capacity, operating frequency: 3s ON, 3s OFF) |
| Conditions | Conditions for operation, transport and storage*3 | | Ambient temperature: –40°C to +65°C –40°F to +149°F<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) |
| | Max. operating speed | | 10 times/min. (at rated load) |
| Unit weight | | | Approx. 35 g 1.23 oz |

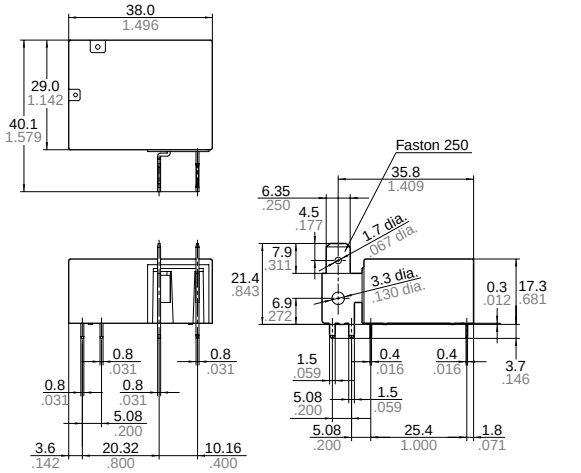
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

## DIMENSIONS (mm inch)

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

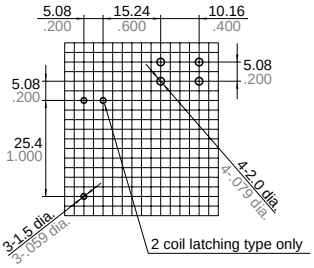
**CAD Data**

External dimensions




General tolerance: ±0.3 ±.012

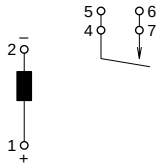
PC board pattern (Bottom view)



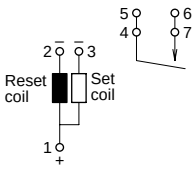

Tolerance: ±0.1 ±.004

Schematic (Bottom view)

1 coil latching type (Reset condition)




2 coil latching type (Reset condition)




## SAFETY STANDARDS

| UL/C-UL (Recognized) | |
|---|---|
| File No. | Contact rating |
| E43149 | 30A 277V AC |

* CSA standard: Certified by C-UL

## NOTES

**1. Coil connection**

When connecting coils, refer to the wiring diagram to prevent mis-operation or malfunction.

**2. Others**

If more than 20 A is delivered via the plug-in terminal connection, to prevent loosening of contacts loss long periods of operation, ensure that the plug-in terminal is soldered to the receptacle terminal.

## For Cautions for Use.

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