1 Form A 60A power latching relays

DQ-M RELAYS (ADQM)

RoHS compliant

Protective construction: Flux-resistant type

FEATURES

1. Miniature and high capacity
Miniature relay capable of high 60 A capacity control.
Size: 29.0(L)×38.0(W)×17.3(H) mm
1.142(L)×1.496(W)×.681(H) inch
Nominal switching capacity:
60A 250V AC

2. Latching type
Latching type contributes to device energy efficiency.
Nominal operating power
• 500mW (1 coil latching)
• 1W (2 coil latching)

3. High insulation
Between contact and coil
Breakdown voltage: 4,000 V AC
Surge breakdown voltage: 10,000 V

4. Cd-free, Pb-free

5. Flux-Resistant type

TYPICAL APPLICATIONS

1. Remote control of electric power meters

2. Time switches

ORDERING INFORMATION

ADQM [ ] **6** [ ] **0** [ ][ ]

DQ-M relays

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

Contact capacity
6: 60 A

Terminal shape
Nil: M4 securing screw

Contact material
0: AgNi type

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	ADQM1604H	ADQM2604H
	6V DC	ADQM16006	ADQM26006
	9V DC	ADQM16009	ADQM26009
	12V DC	ADQM16012	ADQM26012
	24V DC	ADQM16024	ADQM26024

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	80%V or less of nominal voltage (Initial)	80%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		

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)
4.5V DC	80%V or less of nominal voltage (Initial)	80%V or less of nominal voltage (Initial)	221.7mA	20.3Ω	1,000mW	130%V of nominal voltage
6V DC			166.7mA	36Ω		
9V DC			111.1mA	81Ω		
12V DC			83.3mA	144Ω		
24V DC			41.7mA	576Ω		

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		Ag alloy (Cadmium free)
Rating	Nominal switching capacity (resistive load)		60 A 250V AC
	Max. switching power (resistive load)		15,000 V A
	Max. switching voltage		250V AC
	Max. switching current		60 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 (coil) (at 20°C 68°F)		Max. 50°C (By resistive method, max. switching current) (Coil; de-energized)
	Set time (at 20°C 68°F)		Max. 20 ms (Nominal voltage applied to the coil, excluding contact bounce time.)
	Reset time (at 20°C 68°F)		Max. 20 ms (Nominal voltage applied to the coil, excluding contact bounce time.)
Mechanical characteristics	Shock resistance	Functional	Min. 200 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	Min. 1,000 m/s² (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 2.0 mm
Expected life	Mechanical		Min. 10^6 (at 180 times/min.)
	Electrical		60A 250V AC Min. 10^3 (resistive load, operating frequency: 15s ON, 45s OFF)
			50A 250V AC Min. 10^4 (resistive load, operating frequency: 15s ON, 45s OFF)
Conditions	Conditions for operation, transport and storage*3		Ambient temperature: –40°C to +70°C –40°F to +158°F Humidity: 5 to 75% R.H. (Not freezing and condensing at low temperature)
	Max. operating speed		1 times/min. (at rated load)
Unit weight			Approx. 35 g 1.23 oz

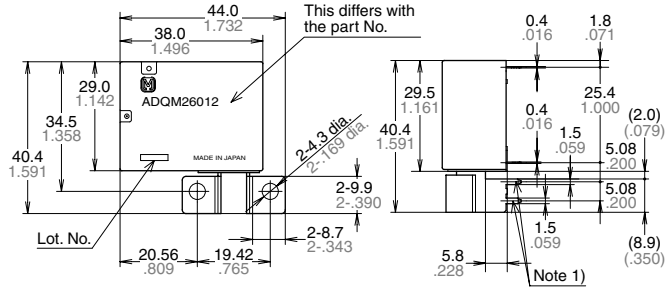
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3. The upper limit of the ambient temperature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

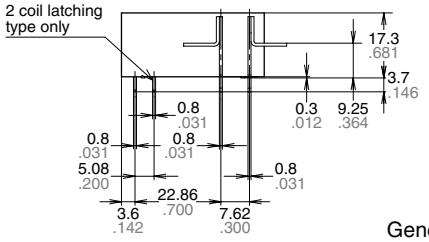
DIMENSIONS (mm inch)

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

CAD Data

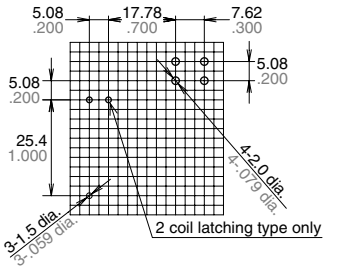
External dimensions





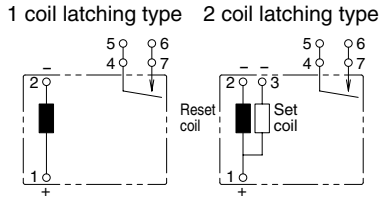
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



Notes: 1. These are dummy terminals for the strength reinforcement for the M4 screw terminal connection.
Fix or solder these to the PC board in case setting M4 screw.
However, do not use the dummy terminals as wiring to the PC board. In case wiring of the dummy terminals, the conductor destruction may occur due to the high current.
2. No 3rd terminal on 1 coil latching type.

NOTES

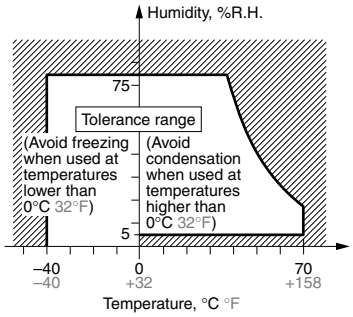
1. For cautions for use, please read "GENERAL APPLICATION GUIDELINES" on page B-1.

2. Coil operating power

Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics may be slightly different. Also, the power waveform should be square and we recommend it be at least 0.1 seconds. Please keep continuous power to the coil to within 10 seconds.

3. Usage, transport and storage conditions

1) Temperature:
–40 to +70°C –40 to +158°F
2) Humidity: 5 to 75% RH
(Avoid freezing and condensation.)
The humidity range varies with the temperature. Use within the range indicated in the graph below.
3) Atmospheric pressure: 86 to 106 kPa
Temperature and humidity range for usage, transport, and storage



4. Others

Installation of M4 securing screw

Do not apply excessive pressure on the terminals. This could adversely affect relay performance. Secure to the PC board a dummy terminal designed for reinforcement of the terminal and use a washer in order to prevent deformation. Keep the installation torque to within 1.2 and 1.4 N·m (12 to 14 kgf·cm). Also, use a spring washer to prevent it from loosening. Do not use the dummy terminals as wiring to the PC board. In case wiring of the dummy terminals, the conductor destruction may occur due to the high current.