



1 Form A 8A/16A, Small Polarized Power Relays (latching type)

DW RELAYS (ADW1)



New



RoHS compliant

FEATURES

1. Inrush current 100A type available
2. IEC60335-1* compliant, PTI 325V (VDE approved) type available
3. Surge breakdown voltage (between contact and coil): 12,000 V
4. Breakdown voltage (between contact and coil): 5,000 V
5. Reflow possible (pin-in-paste)

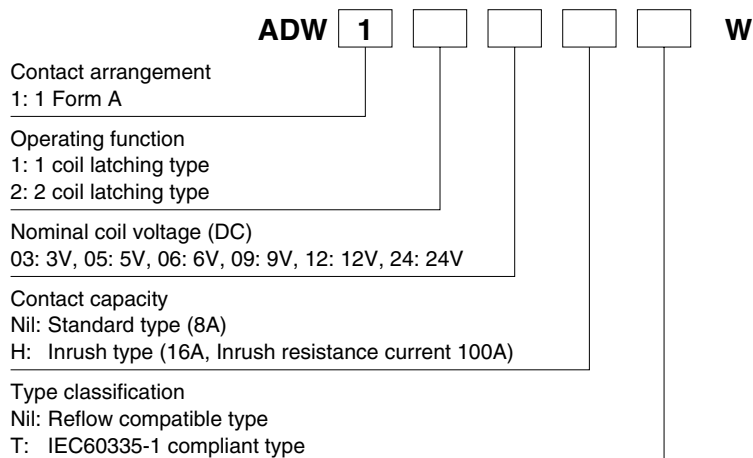
* Common safety standard for major electrical appliance

TYPICAL APPLICATIONS

1. Smart meters
2. Industrial equipment
3. Security equipment
4. Home appliances
5. Various power supplies
6. Lighting

Protective construction: Flux-resistant type

ORDERING INFORMATION



Notes: 1. T type is non-compliant reflow soldering.
2. The suffix "W" on the part number is only displayed on the inner and outer packaging. It is not displayed on the relay.

TYPES

1. Standard type (8A) (Reflow compatible type)

Contact arrangement	Nominal coil voltage	Part No.	
		1 coil latching type	2 coil latching type
1 Form A	3V DC	ADW1103W	ADW1203W
	5V DC	ADW1105W	ADW1205W
	6V DC	ADW1106W	ADW1206W
	9V DC	ADW1109W	ADW1209W
	12V DC	ADW1112W	ADW1212W
	24V DC	ADW1124W	ADW1224W

Standard packing: Carton: 100 pcs.; Case: 500 pcs.
Note: Carton packing is standard. Tube packing type is also available. Please consult us for details.

2. Standard type (8A) (IEC60335-1 compliant type)

Contact arrangement	Nominal coil voltage	Part No.	
		1 coil latching type	2 coil latching type
1 Form A	3V DC	ADW1103TW	ADW1203TW
	5V DC	ADW1105TW	ADW1205TW
	6V DC	ADW1106TW	ADW1206TW
	9V DC	ADW1109TW	ADW1209TW
	12V DC	ADW1112TW	ADW1212TW
	24V DC	ADW1124TW	ADW1224TW

Standard packing: Carton: 100 pcs.; Case: 500 pcs.
Note: Carton packing is standard. Tube packing type is also available. Please consult us for details.

3. Inrush type (16A, Inrush current 100A)

Contact arrangement	Nominal coil voltage	Part No.	
		1 coil latching type	2 coil latching type
1 Form A	3V DC	ADW1103HTW	ADW1203HTW
	5V DC	ADW1105HTW	ADW1205HTW
	6V DC	ADW1106HTW	ADW1206HTW
	9V DC	ADW1109HTW	ADW1209HTW
	12V DC	ADW1112HTW	ADW1212HTW
	24V DC	ADW1124HTW	ADW1224HTW

Standard packing: 100 pcs.; Case: 500 pcs.
Notes: *1. Carton packing is standard. Tube packing type is also available. Please contact us for details.
*2. Please contact us for the reflow compatible type of inrush resistance current 100A.

RATING

1. Coil data

1) 1 coil latching type

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)
3V DC	*80%V or less of nominal voltage (Initial)	*80%V or less of nominal voltage (Initial)	66.7mA		45Ω	200mW	110%V of nominal voltage
5V DC			40.0mA		125Ω		
6V DC			33.3mA		180Ω		
9V DC			22.2mA		405Ω		
12V DC			16.7mA		720Ω		
24V DC			8.3mA		2,880Ω		

2) 2 coil latching type

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	
3V DC	*80%V or less of nominal voltage (Initial)	*80%V or less of nominal voltage (Initial)	133.3mA	133.3mA	22.5Ω	22.5Ω	400mW	400mW	110%V of nominal voltage
5V DC			80.0mA	80.0mA	62.5Ω	62.5Ω			
6V DC			66.7mA	66.7mA	90 Ω	90 Ω			
9V DC			44.4mA	44.4mA	202.5Ω	202.5Ω			
12V DC			33.3mA	33.3mA	360 Ω	360 Ω			
24V DC			16.7mA	16.7mA	1,440 Ω	1,440 Ω			

*Pulse drive (JIS C 5442-1996)

2. Specifications

Characteristics	Item	Specifications	
		Standard type (8A Reflow compatible type, IEC60335-1 compliant type)	Inrush type (16A IEC60335-1 compliant type)
Contact	Arrangement	1 Form A	
	Contact resistance (Initial)	Max. 100 mΩ (By voltage drop 6 V DC 1A)	
	Contact material	AgSnO ₂ type	
Rating	Nominal switching capacity (resistive load)	8A 250V AC	16A 277V AC
	Max. switching power (resistive load)	2,000V A	4,432V A
	Max. switching voltage	250V AC	277V AC
	Max. switching current	8A AC	16A AC
	Nominal operating power	200mW (1 coil latching type), 400mW (2 coil latching type)	
	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	1,000 Vrms for 1min. (Detection current: 10mA)
		Between contact and coil	5,000 Vrms for 1min. (Detection current: 10mA)
	Temperature rise (coil) (at 85°C 185°F)	Max. 35°C 95°F (By resistive method, contact carrying current: 8A, Coil: de-energized)	
	Surge breakdown voltage*2 (Between contact and coil)	12,000 V (Initial)	
	Set time (at 20°C 68°F)	Max. 15 ms (Nominal voltage applied to the coil, excluding contact bounce time)	
Mechanical characteristics	Shock resistance	Functional	100 m/s ² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs)
		Destructive	1,000 m/s ² (Half-wave pulse of sine wave: 6 ms)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2 mm (Detection time: 10μs)
		Destructive	10 to 55 Hz at double amplitude of 3 mm
Expected life	Mechanical	Min. 10 ⁶ (at 180 times/min.)	
	Electrical	Resistive load	Both types: Min. 5 × 10 ⁴ (at 8A 250V AC, at 20 times/min.) IEC60335-1 type: Min. 10 ⁵ (at 5A 250V AC, at 20 times/min.)
		Inrush current	Min. 2 × 10 ⁴ (at 16A 277V AC, ON:OFF = 1s:5s) Min. 5 × 10 ⁴ (at 8A 250V AC, at 20 times/min.)
Conditions	Conditions for operation, transport and storage*3 *4	Temperature: -40°C to +85°C -40°F to +185°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	Temperature: -40°C to +85°C -40°F to +185°F (8A and less), -40°C to +70°C -40°F to +158°F (Over 8A to 16A) Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
Unit weight		Approx. 8 g .28 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.

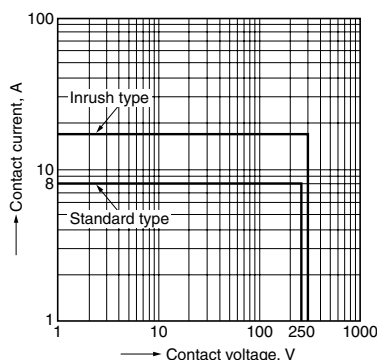
*2. Wave is standard shock voltage of $\pm 1.2 \times 50\mu\text{s}$ according to JEC-212-1981

*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.

*4. Allowable range when in original packaging is -40°C to +70°C -40°F to +158°F.

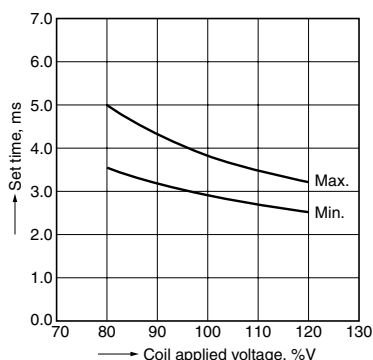
REFERENCE DATA

1. Max. switching capacity (AC resistive load)



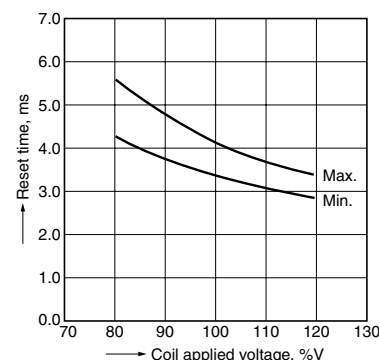
2. Set time

Tested sample: ADW1106, 15 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



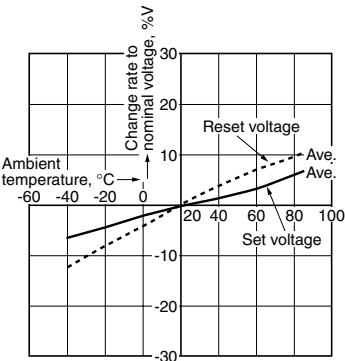
3. Reset time

Tested sample: ADW1106, 15 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA

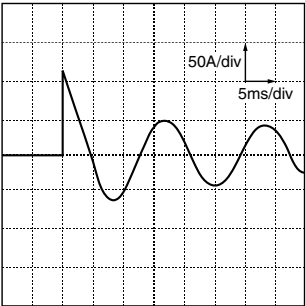


4. Ambient temperature characteristics

Tested sample: ADW1106, 6pcs
Ambient temperature: -40°C to +85°C
-40°F to +185°F



5. Inrush current wave form



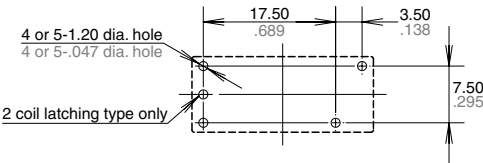
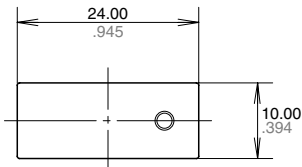
DIMENSIONS (mm inch)

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

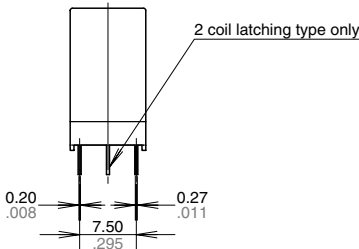
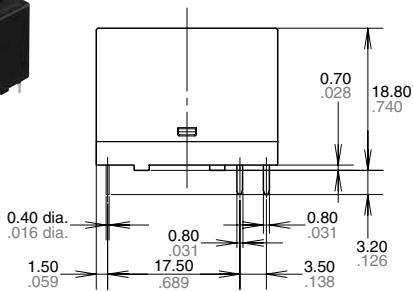
CAD Data

External dimensions

PC board pattern (Bottom view)

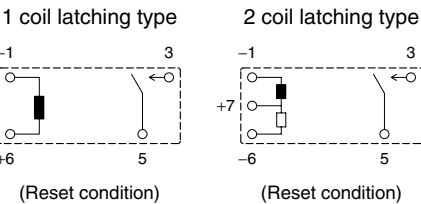


Tolerance: $\pm 0.1 \pm .004$



General tolerance: $\pm 0.3 \pm .012$

Schematic (Bottom view)



SAFETY STANDARDS

Item	UL/C-UL (Recognized)		VDE (Recognized)	
	File No.	Contact rating	File No.	Contact rating
Standard type (8A)	E43149	8A 250V AC R 85°C 185°F 5A 30V DC R 85°C 185°F	40032254	8A 250V AC ($\cos\phi=1.0$) 85°C 185°F 5A 30V DC (0ms) 85°C 185°F
Inrush type (16A)	E43149	8A 250V AC R 85°C 185°F 16A 277V AC R 60°C 140°F 5A 30V DC R 85°C 185°F 600W Tungsten, 120V AC 50°C 122°F 1200W Tungsten, 240V AC 50°C 122°F 1200W Standard ballast 277V AC 50°C 122°F 5A 347V AC R 85°C 185°F (UL standards only)	40032254	8A 250V AC ($\cos\phi=1.0$) 85°C 185°F 16A 277V AC ($\cos\phi=1.0$) 70°C 158°F 5A 30V DC (0ms) 85°C 185°F

Note: CSA standards; Certified by C-UL

NOTES

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

2. Usage, transport and storage conditions

1) Temperature:

−40 to +85°C −40 to +185°F (Allowable range is −40 to +70°C −40 to +158°F when in original packaging and when the contact current is in excess of 8 A for the inrush type.)

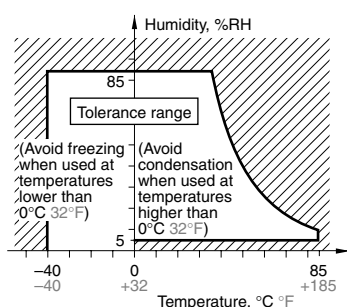
2) Humidity: 5 to 85% RH

(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) Condensation

Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Condensation will cause deterioration of the relay insulation.

5) Freezing

Condensation or other moisture may freeze on the relay when the temperature is lower than 0°C 32°F. This causes problems such as sticking of movable parts or operational time lags.

6) Low temperature, low humidity environments

The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

3. Solder and cleaning conditions

1) Flow solder mounting conditions

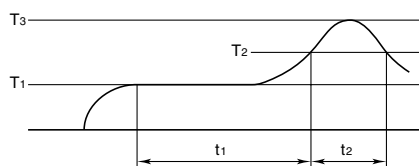
Please obey the following conditions when soldering automatically.

(1) Preheating: within 120°C 248°F (solder surface terminal portion) and within 120 seconds

(2) Soldering iron: 260°C±5°C 500°F±41°F (solder temperature) and within 6 seconds (soldering time)

* Furthermore, because the type of PC board used and other factors may influence the relays, test that the relays function properly on the actual PC board on which they are mounted.

2) Reflow solder mounting (Pin-in-Paste mounting) conditions



T₁ = 150 to 180°C 302 to 356°F
 T₂ = 230°C 446°F or more
 T₃ = 250°C 482°F or less
 t₁ = 60 to 120 seconds
 t₂ = within 30 seconds

• Cautions to observe when mounting temperature increases in the relay are greatly dependent on the way different parts are located a PC board and the heating method of the reflow device. Therefore, please conduct testing on the actual device beforehand after making sure the parts soldered on the relay terminals and the top of the relay case are within the temperature conditions given above.

3) Since this is not a sealed type relay, do not clean it as is. Also, be careful not to allow flux to overflow above the PC board or enter the inside of the relay.