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

DW RELAYS (ADW1)



Low profile type
(Inrush type)



Reflow
compatible type
(Standard type)



IEC60335-1
compliant type
(Standard & Inrush type)

RoHS compliant

Protective construction: Flux-resistant type

FEATURES

1. **Low profile type available (h = 15.8 mm .622 inch)**
2. **Inrush type available (TV-8 UL/C-UL approved)**
3. **IEC60335-1* compliant type available (PTI 325V VDE approved)**
4. **Reflow possible (pin-in-paste)**
5. **Certified by UL/C-UL, VDE**

* Common safety standard for major electrical appliance

TYPICAL APPLICATIONS

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

ORDERING INFORMATION

ADW [1] [ ] [ ] [ ] [ ] **W**

Contact arrangement
1: 1 Form A

Operating function
1: 1 coil latching type
2: 2 coil latching type

Nominal coil voltage (DC)
03: 3V, 05: 5V, 06: 6V, 09: 9V, 12: 12V, 24: 24V

Contact capacity
Nil: Standard type (8A)
H: Inrush type (16A, Inrush current 100A)

Type classification
Nil: Reflow compatible type
L: Low profile type
T: IEC60335-1 compliant type

Notes: 1. "L" and "T" type are non-compliant reflow soldering.
2. Low profile type is available (inrush type only).
3. The suffix "W" on the part number is only displayed on the inner and outer packaging. It is not displayed on the relay.

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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 · IEC60335-1 compliant type)*1, *2

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 type (16A, Inrush current 100A · IEC60335-1 compliant type).

4. Inrush type (16A, Inrush current 100A · Low profile type)

Contact arrangement	Nominal coil voltage	Part No.	
		1 coil latching type	2 coil latching type
1 Form A	3V DC	ADW1103HLW	ADW1203HLW
	5V DC	ADW1105HLW	ADW1205HLW
	6V DC	ADW1106HLW	ADW1206HLW
	9V DC	ADW1109HLW	ADW1209HLW
	12V DC	ADW1112HLW	ADW1212HLW
	24V DC	ADW1124HLW	ADW1224HLW

Standard packing: 100 pcs.; Case: 500 pcs.

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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			

*Square, pulse drive

2. Specifications

Characteristics	Item		Specifications	
			Standard type	Inrush 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)		2,000VA	4,432VA
	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)	
	Surge breakdown voltage*2 (Between contact and coil)		12,000 V (Initial)	
	Set time (at 20°C 68°F) (Initial)		Max. 15 ms (Nominal voltage applied to the coil, excluding contact bounce time)	
	Reset time (at 20°C 68°F) (Initial)		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	Min. 5×10^4 (at 8A 250V AC, at 20 times/min.) Min. 10^5 (at 5A 250V AC, at 20 times/min.) (IEC60335-1 type only)	Min. 2×10^4 (at 16A 277V AC, ON:OFF = 1s:5s) Min. 5×10^4 (at 8A 250V AC, at 20 times/min.)
		Inrush current	—	Min. 2.5×10^4 [Inrush 100A 600W (120V AC) Tungsten] Cycle rate ON:OFF = 1s:59s
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 or 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 (Low profile type: Approx. 7.5 g .26 oz)	

Notes: *1. Minimum switching load is a guide to the lower current limit of switching under the micro-load. This parameter is changed by the condition, such as switching times, environment condition, and expected reliability. Therefore, Panasonic Corporation cannot assure the reliability. When the relay is used lower than minimum switching load, reliability is attrition. Please use the relay over minimum switching 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.

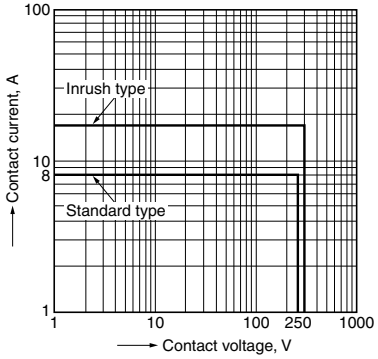
*4. Allowable range when in original packaging is –40°C to +70°C –40°F to +158°F.

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REFERENCE DATA

■ Standard type and Inrush type

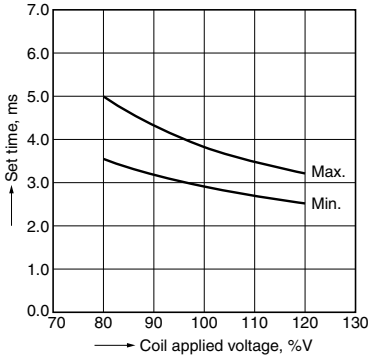
1. Max. switching capacity (AC resistive load)



■ Standard type

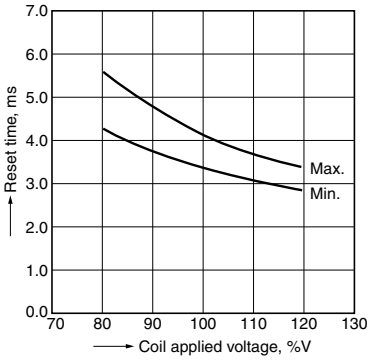
1. Set time (1 coil latching type)

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



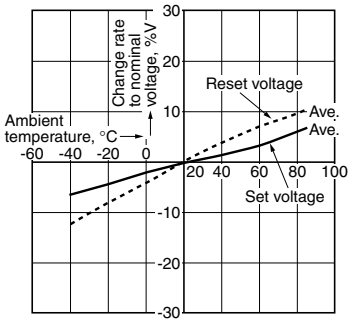
2. Reset time (1 coil latching type)

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



3. Ambient temperature characteristics

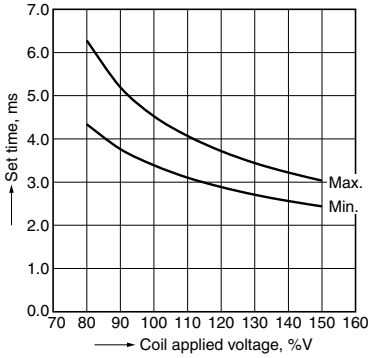
Tested sample: ADW1106, 6pcs
Ambient temperature: –40°C to +85°C
–40°F to +185°F



■ Inrush type

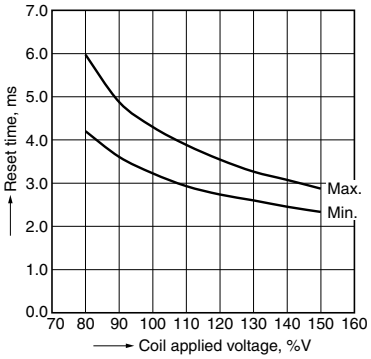
1. Set time (1 coil latching type)

Tested sample: ADW1112HL, 30 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



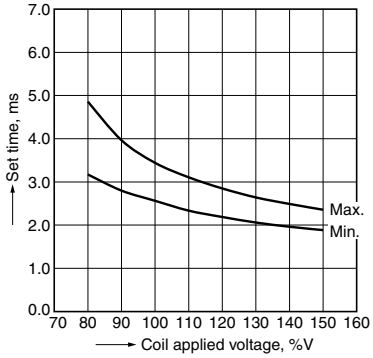
2. Reset time (1 coil latching type)

Tested sample: ADW1112HL, 30 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



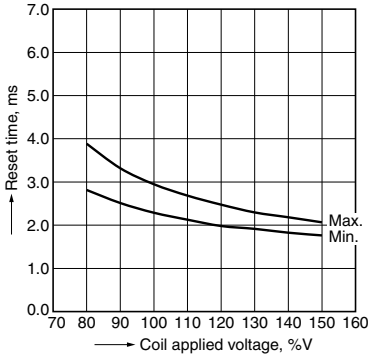
3. Set time (2 coil latching type)

Tested sample: ADW1212HL, 30 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



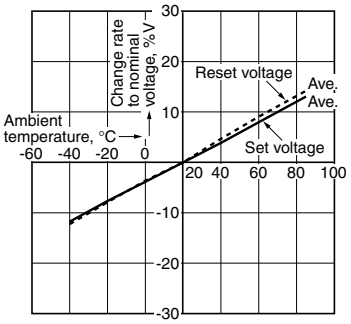
4. Reset time (2 coil latching type)

Tested sample: ADW1212HL, 30 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



5. Ambient temperature characteristics

Tested sample: ADW1105HL, 6pcs
Ambient temperature: –40°C to +85°C
–40°F to +185°F



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DIMENSIONS (mm inch)

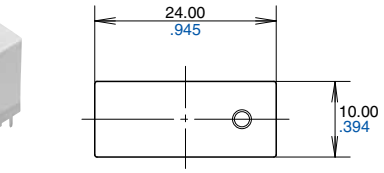
The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

1. Standard height type

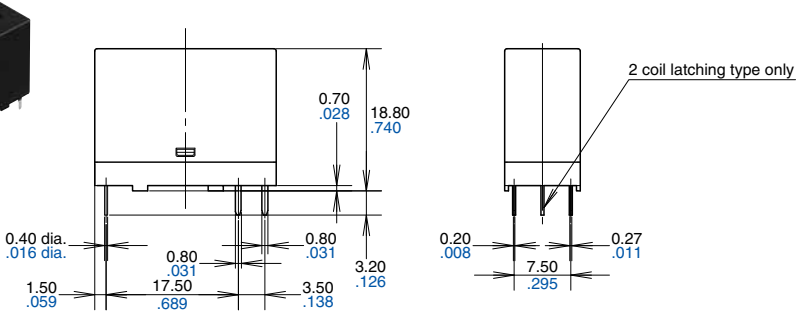
CAD Data

External dimensions



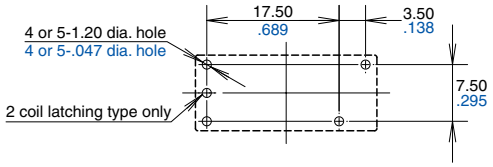






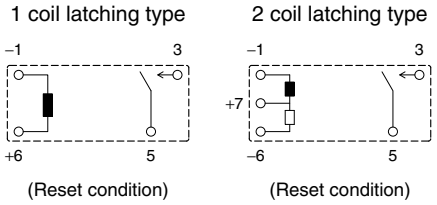
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

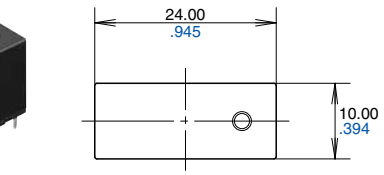


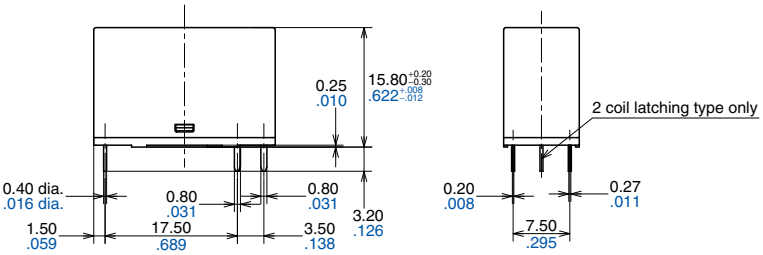
2. Low profile type

CAD Data

External dimensions

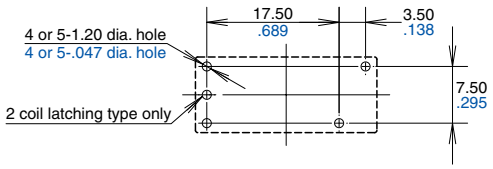






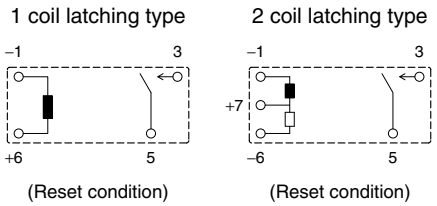
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



SAFETY STANDARDS

Item	UL/C-UL (Recognized)		VDE (Recognized)		TV rating (UL/C-UL)	
	File No.	Contact rating	File No.	Contact rating	File No.	Contact rating
Standard type (8A)	E43149	8A 250V AC R 85°C 185°F 5×10⁴ 5A 30V DC R 85°C 185°F 5×10⁴	40032254	8A 250V AC (cosϕ=1.0) 85°C 185°F 5×10⁴ 5A 30V DC (0ms) 85°C 185°F 5×10⁴	—	—
Inrush type (16A)	E43149	16A 277V AC R 60°C 140°F 5×10⁴ 8A 250V AC R 85°C 185°F 5×10⁴ 5A 30V DC R 85°C 185°F 5×10⁴ 1200W Standard ballast 277V AC 50°C 122°F 6×10³ 1200W Tungsten, 240V AC 50°C 122°F 6×10³ 600W Tungsten, 120V AC 50°C 122°F 2.5×10⁴ 5A 347V AC R 85°C 185°F (UL standards only) 5×10⁴	40032254	16A 277V AC (cosϕ=1.0) 70°C 158°F 5×10⁴ 8A 250V AC (cosϕ=1.0) 85°C 185°F 5×10⁴ 5A 30V DC (0ms) 85°C 185°F 5×10⁴	E43149	TV-8 rating 240V AC 40°C 104°F 2.5×10⁴

Notes: 1. CSA standards: Certified by C-UL
2. CQC standard: Application pending, Please contact us.

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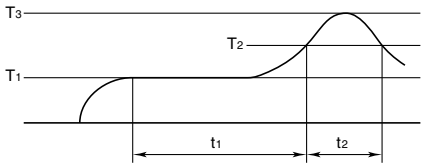
NOTES

1. For cautions for use, please read "GENERAL APPLICATION GUIDELINES".

2. 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



T_1 = 150 to 180°C 302 to 356°F
T_2 = 230°C 446°F or more
T_3 = 250°C 482°F or less
t_1 = 60 to 120 seconds
t_2 = 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.

3. Max. applied voltage
It is not allowed to apply the continuous maximum voltage to the coil.
In order to obtain the specified performance, please apply nominal coil voltage.

4. Set/reset pulse time of latching type relay
Regarding the set/reset pulse time of the latching type relay, it is recommended to apply nominal coil voltage for minimum 30ms pulse across the coil to secure the sure operation considering the ambient temperature and condition change through service life.

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