



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

DW RELAYS (ADW1)

New



Low profile type
(Inrush type)



Reflow
compatible type
(Standard type)



IEC60335-1
compliant type
(Standard & Inrush type)

RoHS compliant

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

Protective construction: Flux-resistant
type

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.

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.

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 [$\pm 10\%$] (at 20°C 68°F) | Coil resistance [$\pm 10\%$] (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 | 45 Ω | 200mW | 110%V of nominal voltage |
| 5V DC | | | 40.0mA | 125 Ω | | |
| 6V DC | | | 33.3mA | 180 Ω | | |
| 9V DC | | | 22.2mA | 405 Ω | | |
| 12V DC | | | 16.7mA | 720 Ω | | |
| 24V DC | | | 8.3mA | 2,880 Ω | | |

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 [$\pm 10\%$] (at 20°C 68°F) | | Coil resistance [$\pm 10\%$] (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 | 22.5 Ω | 22.5 Ω | 400mW | 400mW | 110%V of nominal voltage |
| 5V DC | | | 80.0mA | 80.0mA | 62.5 Ω | 62.5 Ω | | | |
| 6V DC | | | 66.7mA | 66.7mA | 90 Ω | 90 Ω | | | |
| 9V DC | | | 44.4mA | 44.4mA | 202.5 Ω | 202.5 Ω | | | |
| 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 m Ω (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) | | |
| Electrical characteristics | Min. switching capacity (Reference value)*1 | 100mA 5 V DC | | |
| | Insulation resistance (Initial) | Min. 1,000M Ω (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: 10 μ s) | |
| | | 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: 10 μ s) | |
| | | 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 \times 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 \times 10 ⁴ (at 16A 277V AC, ON:OFF = 1s:5s) Min. 5 \times 10 ⁴ (at 8A 250V AC, at 20 times/min.) |
| | | Inrush current | — | Min. 2.5 \times 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 $\pm 1.2 \times 50\mu$ s according to JEC-212-1981

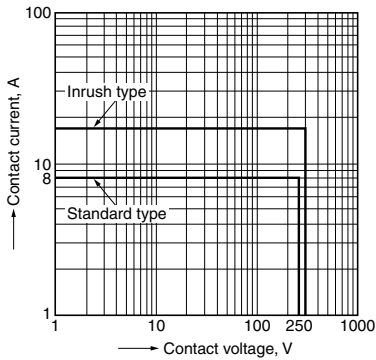
*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

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

REFERENCE DATA

■ Standard type and Inrush type

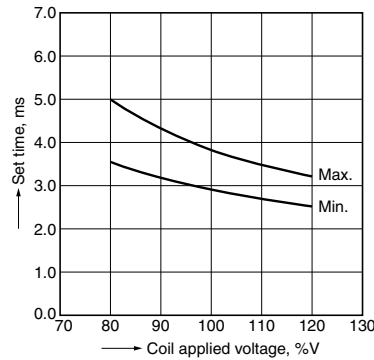
1. Max. switching capacity (AC resistive load)



■ Standard type

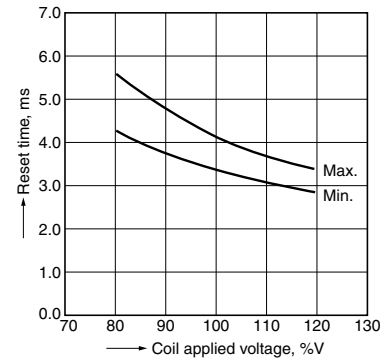
1. Set time (1 coil latching type)

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



2. Reset time (1 coil latching type)

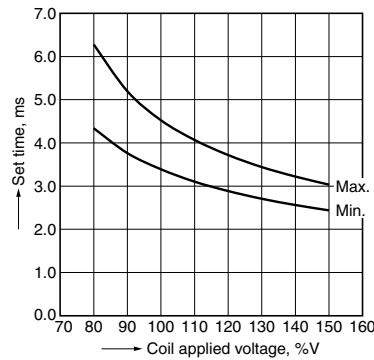
Tested sample: ADW1106, 15 pcs
Ambient temperature: 28°C 82.4°F
Contact load: 5V DC, 10mA



■ Inrush type

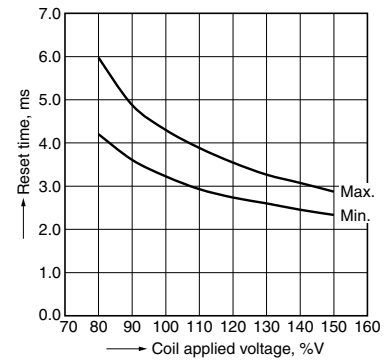
1. Set time (1 coil latching type)

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



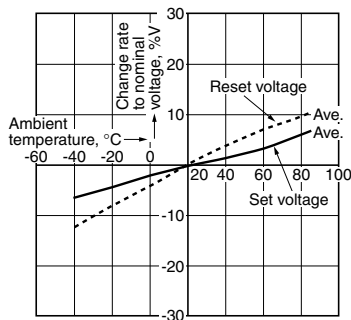
2. Reset time (1 coil latching type)

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



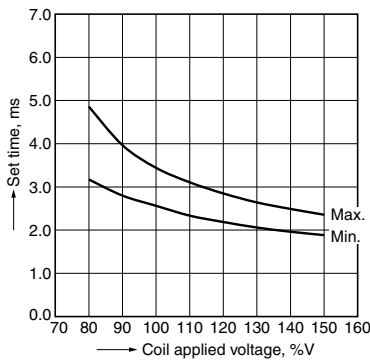
3. Ambient temperature characteristics

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



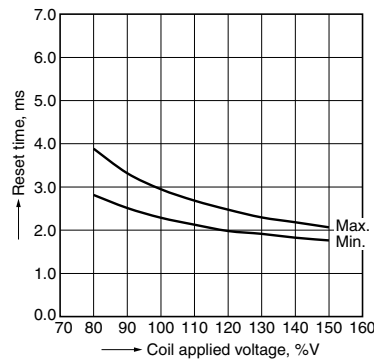
3. Set time (2 coil latching type)

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



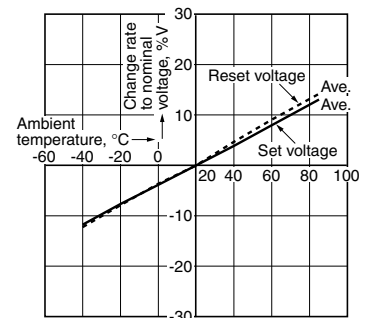
4. Reset time (2 coil latching type)

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



DIMENSIONS (mm inch)

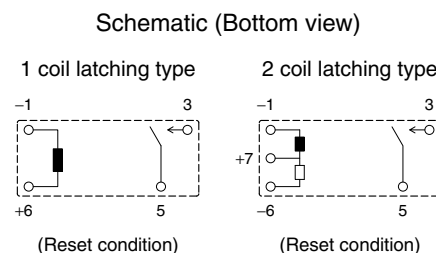
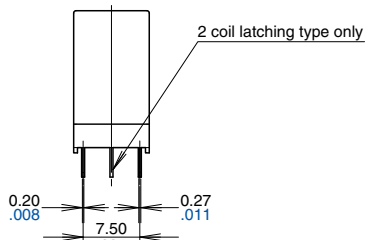
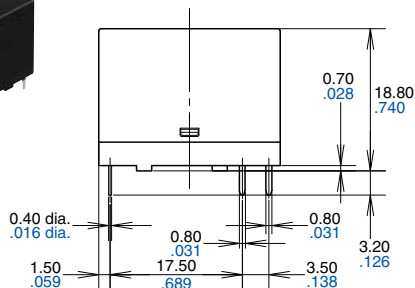
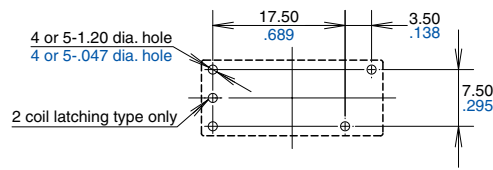
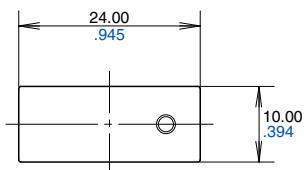
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

1. Standard height type

CAD Data

External dimensions

PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm 0.04$

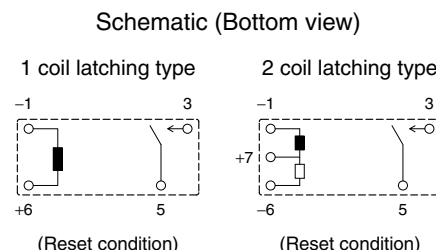
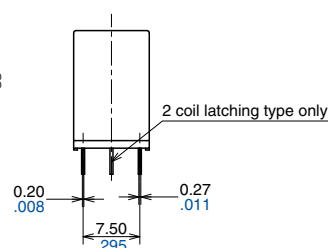
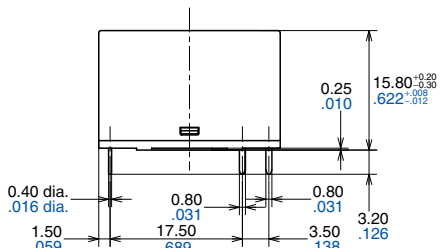
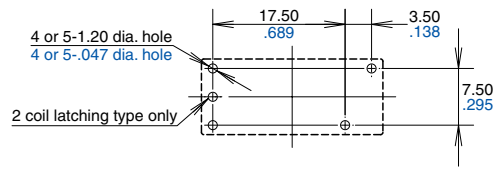
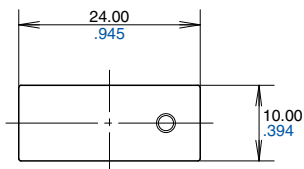
General tolerance: $\pm 0.3 \pm 0.12$

2. Low profile type

CAD Data

External dimensions

PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm 0.04$

General tolerance: $\pm 0.3 \pm 0.12$

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 5×10 ⁴ 5A 30V DC R 85°C 185°F 5×10 ⁴ | 40032254 | 8A 250V AC (cosφ=1.0) 85°C 185°F 5×10 ⁴ 5A 30V DC (0ms) 85°C 185°F 5×10 ⁴ | — | — |
| Inrush type (16A) | E43149 | 16A 277V AC R 60°C 140°F 5×10 ⁴ 8A 250V AC R 85°C 185°F 5×10 ⁴ 5A 30V DC R 85°C 185°F 5×10 ⁴ 1200W Standard ballast 277V AC 50°C 122°F 6×10 ³ 1200W Tungsten, 240V AC 50°C 122°F 6×10 ³ 600W Tungsten, 120V AC 50°C 122°F 2.5×10 ⁴ 5A 347V AC R 85°C 185°F (UL standards only) 5×10 ⁴ | 40032254 | 16A 277V AC (cosφ=1.0) 70°C 158°F 5×10 ⁴ 8A 250V AC (cosφ=1.0) 85°C 185°F 5×10 ⁴ 5A 30V DC (0ms) 85°C 185°F 5×10 ⁴ | E43149 | TV-8 rating 240V AC 40°C 104°F 2.5×10 ⁴ |

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

NOTES

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

2. Solder and cleaning conditions

1) Flow solder mounting conditions

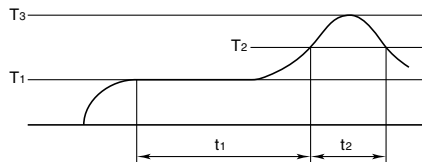
Please obey the following conditions when soldering automatically.

(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



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.

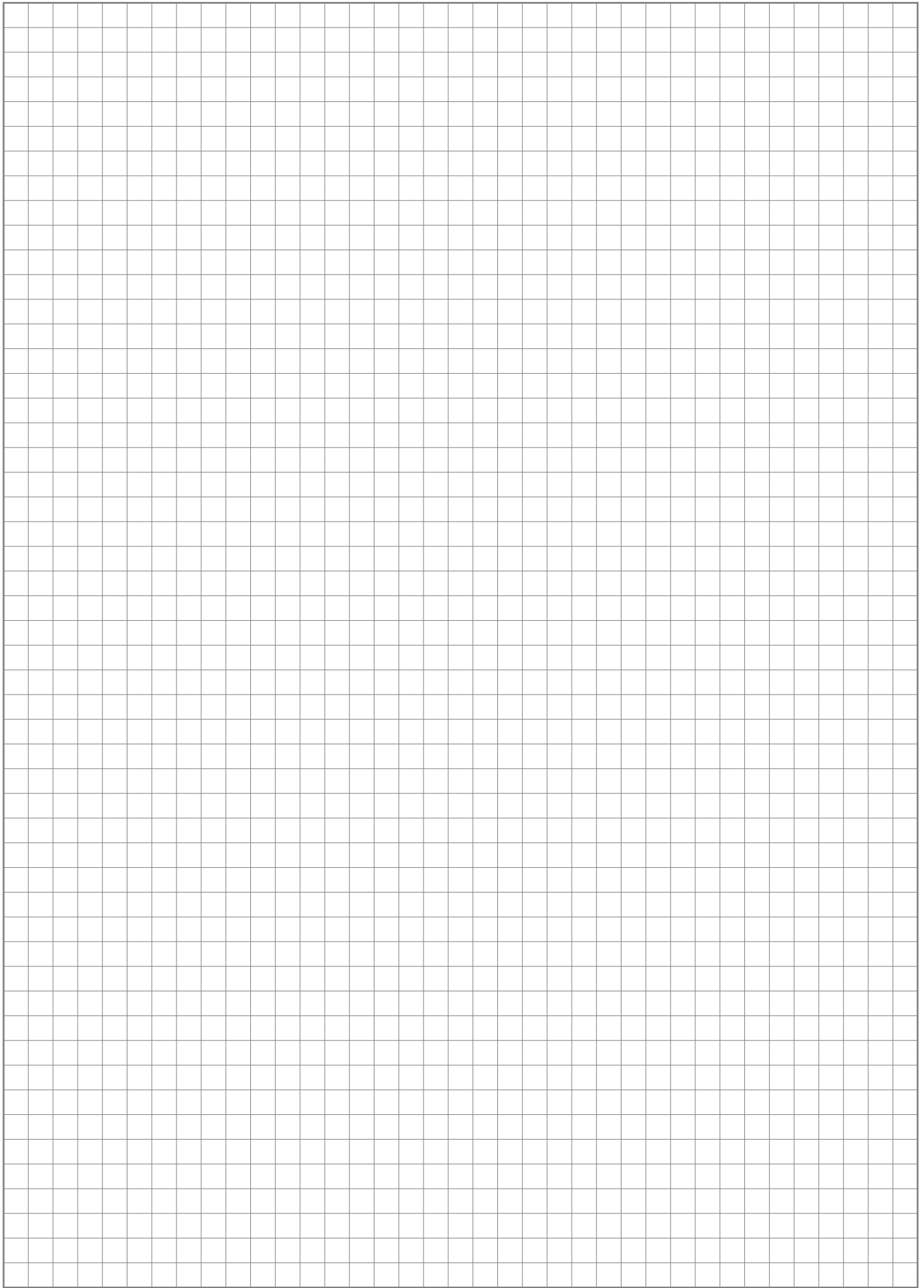
3. Max. applied voltage

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.



Please contact

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