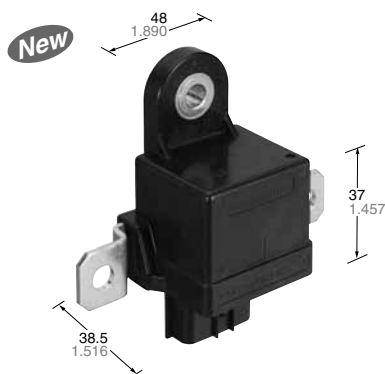


**Max. 150 A Continuous  
Carrying Current  
Latching Relay**

# CN-L RELAYS

<Protective construction>  
Sealed



(Unit: mm inch)

**RoHS compliant**

### FEATURES

- Continuous carrying current possible at 150 A (at 85°C 185°F) or 80 A (at 125°C 257°F)
- Maximum 1,500 A conductivity
- Can be used in environments with 125°C 257°F ambient temperature

### TYPICAL APPLICATIONS

- Main relay application for protection of lithium batteries, etc.
- Battery disconnect application (safe circuit shutoff possible during malfunctions)
- Dual power supply switching application

## ORDERING INFORMATION

ACNL

Contact arrangement  
1: 1 Form A (Screw mounting)

Contact capacity  
1: 150A

Rated coil voltage (DC)  
1: 12V

## TYPES

Contact arrangement	Rated coil voltage	Part No.	Packing
			Case
1 Form A (Latching type)	12V DC	ACNL111	25 pcs.

## RATING

### 1. Coil data

Rated coil voltage	Operate (Set) voltage* (at 20°C 68°F) (Initial)	Release (Reset) voltage* (at 20°C 68°F) (Initial)	Rated operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Rated operating power (at 20°C 68°F)	Max. applied voltage
12V DC	Max. 7.0V DC	Max. 7.0V DC	2.5A	4.8Ω	30W	16V DC

\* However, Impulse length is 100 ±50 ms (both Operate (Set) and Release (Reset) sides) and operation interval is 5 seconds or higher (Operate (Set)/Release (Reset) switching).

### 2. Specifications

Item		Specifications
Contact data	Contact arrangement	1 Form A (Latching type)
	Contact resistance (initial)	Max. 1.5mΩ (Typ. 0.4mΩ) (By voltage drop 1A 6V DC) Max. 1.0mΩ (By voltage drop 10A 6V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	150A 14V DC
	Continuous carrying current	150 A (at 85°C 185°F, Connection cable: 38 mm <sup>2</sup> ) 80 A (at 125°C 257°F, Connection cable: 38 mm <sup>2</sup> )
	Max. carrying current* <sup>1</sup>	1,500 A for 0.5 seconds ([at forward direction] at 20°C 68°F, Connection cable: 38 mm <sup>2</sup> )
	Max. cut-off current	350 A 14 V DC (1,000 times or more in forward direction, Switching frequency: 1s ON, 9s OFF, at 20°C 68°F, Connection cable: 38 mm <sup>2</sup> )
	Min. switching load (resistive)* <sup>2</sup>	1 A 14 V DC (at 20°C 68°F)
	Contact voltage drop (initial)	Max. 0.1 V (at 100 A, 12 V DC)
Insulated resistance (initial)		Min. 10 MΩ (at 500 V DC)
Dielectric strength (initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
	Between contacts and coil	500 Vrms for 1 min. (Detection current: 10mA)
Time characteristics (initial)	Operate (Set) time (at rated coil voltage)	Max. 10ms (at 20°C 68°F, without bounce time)
	Release (Reset) time (at rated coil voltage)	Max. 10ms (at 20°C 68°F) (without diode)
Shock resistance	Functional	Min. 250 m/s <sup>2</sup> (N.O. side: closing) Min. 500 m/s <sup>2</sup> (N.O. side: open, set/reset reversal) (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
	Destructive	Min. 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6ms)
Vibration resistance	Functional	10 to 500 Hz, Min. 44.1m/s <sup>2</sup> (Detection time: 10μs)
	Destructive	10 to 500 Hz, Min. 44.1m/s <sup>2</sup> (Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours)
Expected life	Mechanical	Min. 3 × 10 <sup>5</sup> (Switching frequency: 30 times/min.)
	Electrical	150 A 14 V DC resistive load, Min. 3 × 10 <sup>4</sup> (Switching frequency: 1s ON, 9s OFF, at 85°C 185°F, Connection cable: 38 mm <sup>2</sup> )
Conditions	Conditions for usage, transport and storage* <sup>3</sup>	Ambient temperature: -40 to +125°C -40 to +257°F Humidity: 2 to 85% R.H. (Please avoid icing or condensation)
Weight		Approx. 150 g 5.29 oz

Notes: \*1. This does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

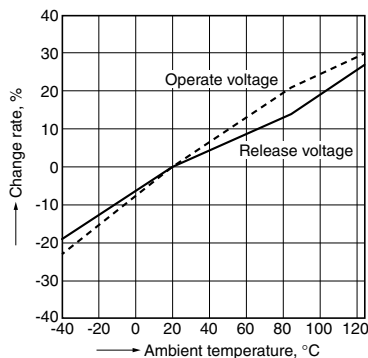
\*2. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*3. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. For details, please refer to the "Automotive Relay Users Guide".

## REFERENCE DATA

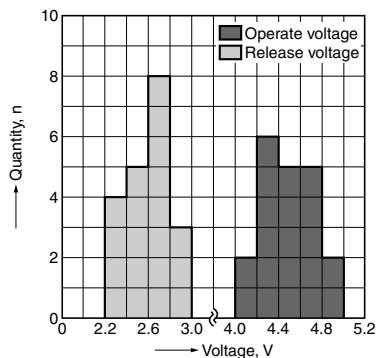
### 1. Ambient temperature characteristics

Sample: ACNL111, 3pcs.



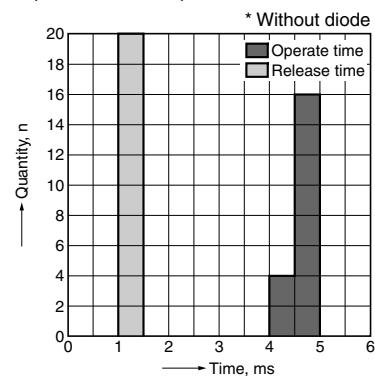
### 2. Distribution of operate (set) and release (reset) voltage

Sample: ACNL111, 20pcs.



### 3. Distribution of operate (set) time and release (reset) time

Sample: ACNL111, 20pcs.

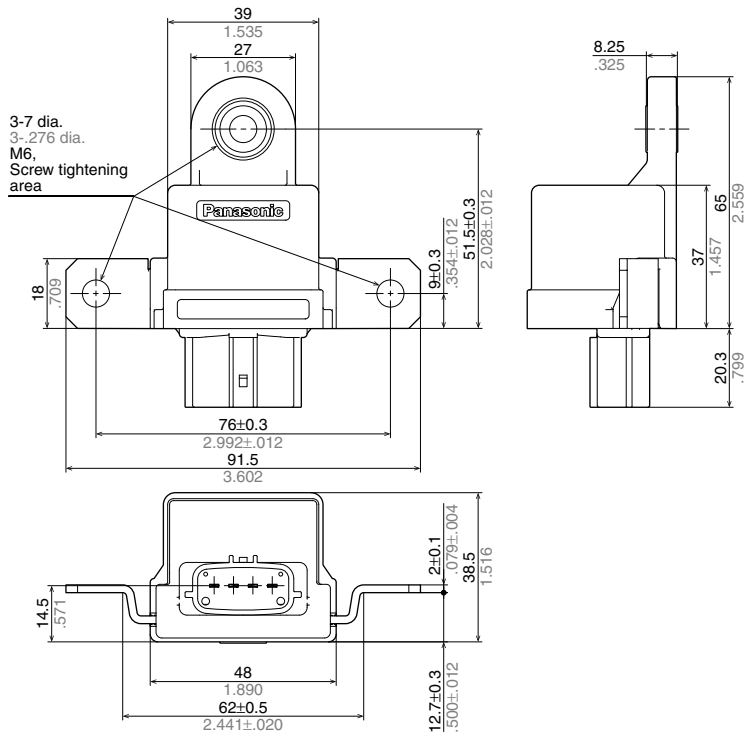


## DIMENSIONS (mm inch)

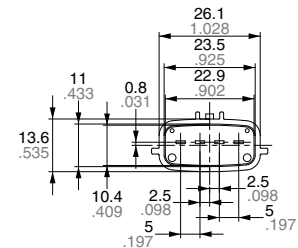
**CAD**

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

### External dimensions

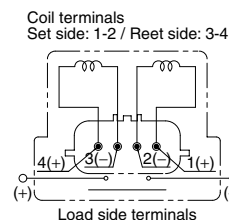


### Connector area enlarged view



Connector non-specified general tolerance  
Max. 10mm:  $\pm 0.15$  Max.  $.394$ inch:  $\pm .006$   
10 to 50mm:  $\pm 0.2$   $.394$  to  $1.969$ inch:  $\pm 0.08$

### Schematic (Bottom view)



Dimension:	Tolerance
Max. 10mm .394inch:	$\pm 0.3 \pm .012$
10 to 50mm .394 to 1.969 inch:	$\pm 0.6 \pm .024$
Min. 50mm 1.969 inch:	$\pm 1.0 \pm .039$

## NOTES

### Usage, transport and storage conditions

1) Ambient temperature, humidity, and air pressure during usage, transport, and storage of the relay:

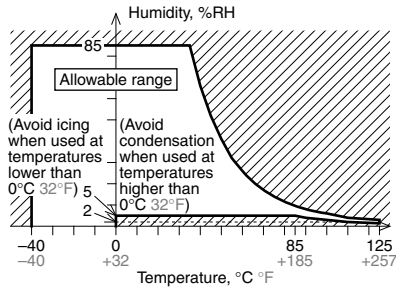
(1) Temperature:  $-40$  to  $+125^{\circ}\text{C}$   $-40$  to  $+257^{\circ}\text{F}$

(2) Humidity: 2 to 85% RH (Avoid icing and condensation.)

(3) Air pressure: 86 to 106 kPa

The humidity range varies with the temperature. Use within the range indicated in the graph below.

[Temperature and humidity range for usage, transport, and storage]



For general cautions for use, please refer to the “Automotive Relay Users Guide”.

## PRECAUTIONS REGARDING LATCHING RELAYS

- Latching relays are shipped from the factory in the reset state. A shock to the relay during shipping or installation may cause it to change to the set state. Therefore, it is recommended that the relay be used in a circuit which initializes the relay to the required state (reset) whenever the power is turned on.
- Avoid impressing voltages to the set coil and reset coil at the same time.
- When connecting coils, refer to the wiring diagram to prevent mis-operation or malfunction.

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Please contact .....

**Panasonic Corporation**

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

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