NAiS

DIN HALF SIZE LCD DISPLAY COUNTER

LC24 Counters

- **Large 7-digit display**
- **Leading "0"s in the display are eliminated for easy reading**
- **Wide counting range**

PRODUCT TYPE

1) Non-voltage input type

Types	Part No.		Rated operating voltage	Max. current consumption	No. of digits	Counting speed	Input
	With manual reset	Without manual reset					
LC24-F Flush mounting type	LC24-F	LC24-F-N	Built-in battery (Battery life: 10 years)	—	7	30 cps	Non-voltage input
LC24-C PC board mounting type	LC24-C	—	3V DC (Uses manganese dioxide lithium battery)	20 μA (When resetting: 200 μA)			

2) Voltage input type

Types	Part No.		Rated operating voltage	No. of digits	Counting speed	Input
	With manual reset	Without manual reset				
LC24-F Flush mounting type	LC24-F-AL	LC24-F-AL-N	Built-in battery (Battery life: 6 years)	7	30 cps	100 to 120V AC/DC (Signal reset is controlled by non-voltage type input)
	LC24-F-AH	LC24-F-AH-N				200 to 240V AC/DC (Signal reset is controlled by non-voltage type input)
	LC24-F-DL	LC24-F-DL-N	Built-in battery (Battery life: 10 years)		70 cps	4.5 to 30V DC

SPECIFICATIONS

Input signals

		Non-voltage input type		Voltage input type	
		Flush mounting type	PC board mounting type	AC/DC input type	DC input type
Operation signal	Min. operating signal width	16.7 ms (ON:OFF = 1:1)			7.15 ms (ON:OFF = 1:1)
	Input method	Non-voltage input: Contact/Open collector		ON: 100 to 120V AC/DC, 200 to 240V AC/DC OFF: 0 to 2V AC/DC	ON: 4.5 to 30V DC OFF: 0 to 2V DC
	Input impedance	Max. 1 kΩ when short-circuited Min. 100 kΩ when open-circuited			10 kΩ
	Residual voltage	Max. 0.5 V			—
Signal reset	Min. signal reset width	20ms	500ms	20ms	
	Input method	Non-voltage input: Contact/Open collector			ON: 4.5 to 30V DC OFF: 0 to 2V DC
	Input impedance	Max. 1 kΩ when short-circuited Min. 100 kΩ when open-circuited			7.5 kΩ
	Residual voltage	Max. 0.5V			—
Manual reset min. input width		20ms	500ms	20ms	

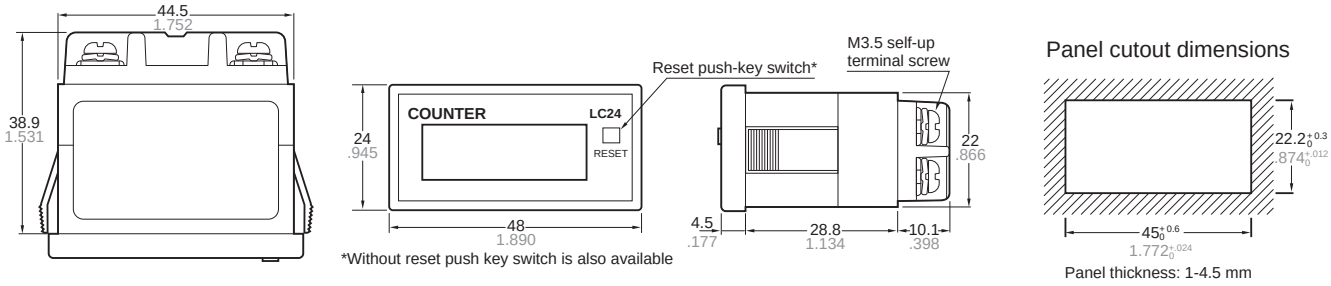
Characteristics

		Non-voltage input type		Voltage input type	
		LC24-F Flush-mounting type	LC24-C PC board mounting type	AC/DC input type	DC input type
Rated operating voltage		Built-in battery	3V DC (manganese dioxide lithium battery)	Built-in battery	
Battery life		10 years	—	6 years	10 years
Shock resistance	Functional	10G (4 times on 3 axes)			
	Destructive	30G (5 times on 3 axes)			
Vibration resistance	Functional	10 to 55 Hz: 1 cycle/min double amplitude of 0.3 mm (10 min on 3 axes)			
	Destructive	10 to 55 Hz: 1 cycle/min double amplitude of 0.75 mm (1 h on 3 axes)			
Ambient temperature		-10 to +55°C +14 to 131°F			
Storage temperature		-25 to +65°C +13 to 149°F			
Ambient humidity		35 to 85% RH			
Counting direction		Addition (UP)			

DIMENSIONS

mm (inch)

LC24-F, flush mounting type (Common for non-voltage input type and voltage input type)



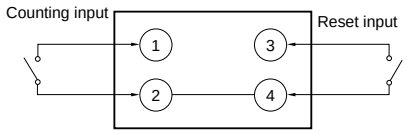
*Without reset push key switch is also available

Panel thickness: 1-4.5 mm

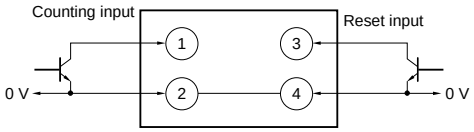
WIRING DIAGRAM

1) Non-voltage input type

Contact input



Open collector input

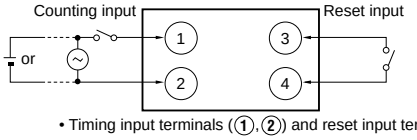


Note: ②–④ are connected internally.

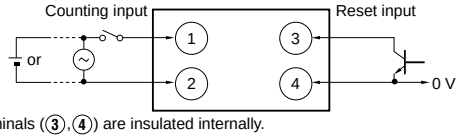
2) Voltage input type

• AC/DC voltage input

(1) Reset terminal (contact input)



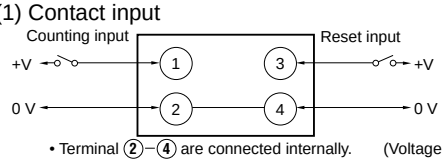
(2) Reset terminal (open collector input)



• Timing input terminals (①,②) and reset input terminals (③,④) are insulated internally.

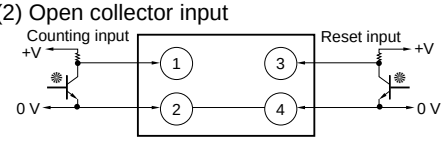
• DC voltage input

(1) Contact input



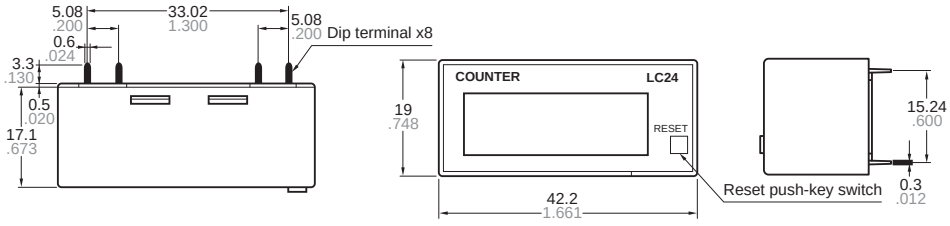
• Terminal ②–④ are connected internally.

(2) Open collector input

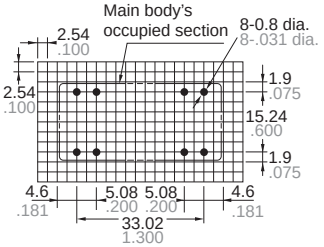


(Voltage signal is recognized when the transistor ❋ is switched to OFF.)

LH24-C, PC board mounting type



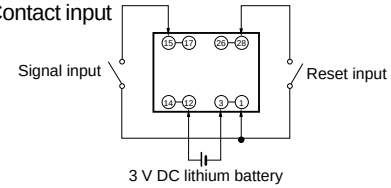
PC board pattern (Bottom view)



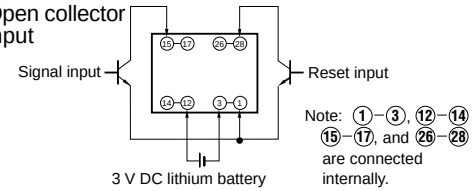
Compatible 28-pin dip terminal

WIRING DIAGRAM

Contact input

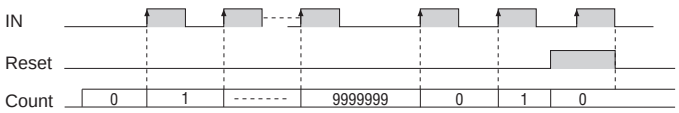
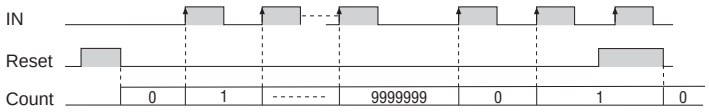


Open collector input



Note: ①–③, ⑫–⑭ ⑮–⑰, and ㉖–㉘ are connected internally.

OPERATION EXPLANATION

Addition UP	**LC24-F type** • Counts when the operation signal is ON. • While the reset input is ON, the signal time is not counted and the display is "0".	**Example** 
	LC24-C type • Counts when the operation signal is ON. • While the reset input is ON, the signal does not change.	**Example** 

CAUTIONS

<Non-voltage input type>

1. Since the current from the operation signal and reset input terminals [①-③ (flush mounting type), ⑮-⑱ (PC board mounting type)] is small, use relays and switches which have high-reliability contact performance.
2. When input signals are triggered through the transistor's open collector, use a small signal transistor with an I_{CBO} less than 1 μA, being sure to trigger them with no voltage across the collector.
3. When connecting the signal input and reset input wires, do not run them parallel to high-voltage or power cables and avoid using the same conduit. Use shielded wires or metallic conduits which are as short as possible. If the floating capacitance of the wires exceeds 500 pF (approx. 10 m for parallel wires of 2 mm^2), it will cause malfunctions.
4. Lithium batteries are built in the flush mounting types. Never throw them into a fire. Do not dispose of them in trash intended to be incinerated.

•PC board mounting type—

1. After connecting the external power, be sure to reset it to make sure that "0" appears on the display.
2. Battery life is calculated as follows:

$$t = \frac{A}{I}$$

t: Battery life (h)
I: Consumption current (mA)
A: Battery capacity when the operating voltage becomes minimum.

3. Hand soldering:

Soldering iron	30 W to 60 W
Iron tip temperature	Approx. 300°C (572°F)
Soldering time	Less than approx. 3 seconds

<Voltage input type>

• AC/DC Voltage input type

1. Apply voltage to the signal input terminal. Do not apply voltage to the reset input terminal. When voltage exceeding the range of the rated input voltage is applied to the signal input terminal, or if voltage is applied to the reset terminal, it may cause break-down of internal elements.
2. Since the current from the reset input terminal is small, use relays and switches which have high-reliability contact performance.
3. When reset is triggered through the transistor's open collector, use a small signal transistor with an I_{CBO} less than 1 μA, being sure to trigger it with no voltage across the collector.
4. For external reset, make a temporary short-circuit between the rear reset terminals [③-④].

• DC voltage input type

1. When more than 30 V DC is applied to the signal or reset input terminals, it may cause breakdown of internal elements.
2. For external reset, voltage is applied between the rear reset terminals [③-④] to the H level (4.5 to 30 V DC). In this case, connect (–) to terminal ④ and (+) to terminal ③]. Since they are polarized, they will not operate with reverse polarity.

• Common

1. When connecting the operation signal wires [①-②] and reset input wires [③-④], do not run them in parallel with high-voltage or power cables. Avoid running signal or reset wires in a power conduit. Use shielded wires or metal conduits which are as short as possible. If the floating capacitance of these wires exceeds 500 pF (approximately 10 m for parallel wires of 2 mm^2), it will cause malfunctions.
2. Lithium batteries are built in. Never throw them into a fire. Do not dispose of them in trash intended to be incinerated.