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LT1 / LC1 series



Display-only powerless timer / Display-only powerless counter

h Selection Guide

LT1

Input method	Model
Dry contact input [not shown]	LT1
Voltage Input (universal voltage) [F]	LT1-F

LC1


Input method	Model
Dry contact input [not shown]	LC1
Voltage Input (universal voltage) [F]	LC1-F

h Suffix code


Category	Code	Description
L	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	LCD Display
Features	T	Timer
	C	Counter
Exterior	1	DIN Size : 48 (W) X 24 (H)
Input method	[Not shown]	Dry contact input
	F	Voltage input (universal voltage)

Specifications

LT1

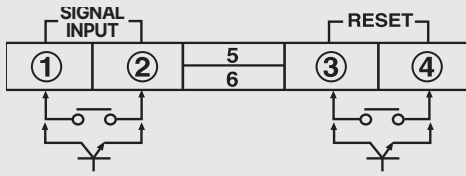
Model		LT1	LT1-F
Input method		Dry contact input	Voltage input (universal voltage)
Power		Powerless (built-in battery, swappable)	
Operation method		Addition only	
Time range		9999 h 59 m 59 s / 99999 h 59.9 m / 999999 h 59 m / 9999999.9 h	
Time error		± 0.01%	
Input conditions		<ul style="list-style-type: none"> Residual voltage when short-circuited : 0.7 V or lower Maximum impedance when short-circuited : 10 kΩ or lower Minimum impedance when open : 1 MΩ or higher 	<ul style="list-style-type: none"> HIGH : 24 - 240 V a.c. / 6 - 240 V d.c. LOW : 0 - 2 V a.c. / 0 - 2.4 V d.c.
Reset	Input method	Dry contact input	
	Minimum signal width	20 ms or wider	
Battery life		7 years or longer (approximately 25°C)	
External configuration switch		<ul style="list-style-type: none"> SW1 : internal battery ON/OFF, Select whether to use the reset key on the front SW2 : Select time range 	
External connection		Terminal block (4-pin)	
Display method		LCD 7-segment reflective, character height 8.7 mm Black	
Number of rows displayed		8 rows	
Insulation resistance		100 MΩ or higher (500 V d.c. in megaohms, between the conductive terminal and exposed uncharged metal section)	
Dielectric strength		2,000 V a.c. (50/60 Hz for 1 minute, between conductive terminal and exposed uncharged metal section)	
Vibration	Vibration resistance	10 - 55 Hz, double amplitude of 0.75 mm, 2 hours in each direction X-Y-Z	
	Malfunction	10 - 55 Hz, double amplitude of 0.5 mm, 10 minutes in each direction X-Y-Z	
Shock	Shock resistance	300 m/s ² (Approximately 30G), 3 times in each direction X-Y-Z	
	Malfunction	100 m/s ² (Approximately 10G), 3 times in each direction X-Y-Z	
Ambient temperature		-10 to 55 °C (but there should be no condensation or icing)	
Storage temperature		-25 to 65 °C (but there should be no condensation or icing)	
Ambient humidity		35 to 85% RH	
Protective structure		IP66 (front)	
Certification			
Weight		58 g	

LC1

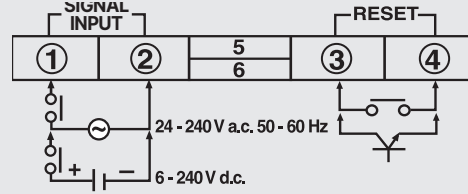
Model		LC1	LC1-F
Input method		Dry contact input	Voltage input (universal voltage)
Power voltage		Powerless (built-in battery, swappable)	
Input action		Addition (Up Count)	
Counting speed		1 / 30 / 100 / 1 K cps	20 cps
Input conditions		<ul style="list-style-type: none"> Residual voltage when short-circuited : 0.7 V Maximum impedance when short-circuited : 10 kΩ or lower Minimum impedance when open : 1 MΩ or higher 	<ul style="list-style-type: none"> HIGH : 24 - 240 V a.c. / 6 - 240 V d.c. LOW : 0 - 2 V a.c. / d.c.
Reset	Input method	Dry contact input	
	Minimum signal width	20 ms or wider	
Battery life		7 years or longer (approximately 25°C)	
External configuration switch		<ul style="list-style-type: none"> SW1: Internal battery ON/OFF, front reset key enabled/disabled SW2: Select counting speed 	<ul style="list-style-type: none"> SW1: Internal battery ON/OFF, front reset key enabled/disabled
External connection		Terminal block (4-pin)	
Display method		7-segment LCD (character height: 8.7 mm)	
Number of rows displayed		8 rows	
Insulation resistance		100MΩ or more (500 V d.c.), Conductive terminal - uncharged metal	
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute (Conductive terminal-uncharged metal)	
Vibration resistance		10 - 55 Hz, double amplitude of 0.75 mm, 2 hours in each direction of 3 axes	
Shock resistance		300m/s ² , 3 times in each direction of 3 axes	
Ambient temperature/humidity		-10 to 55 °C / 35 to 85% R.H. (however, there should be no condensation)	
Storage temperature		-25 to 65 °C	
Protective structure		IP66 (IEC 60529) (front)	
Certification			
Weight		58 g	

h Connection diagram

Dry contact input (LT1/LC1)

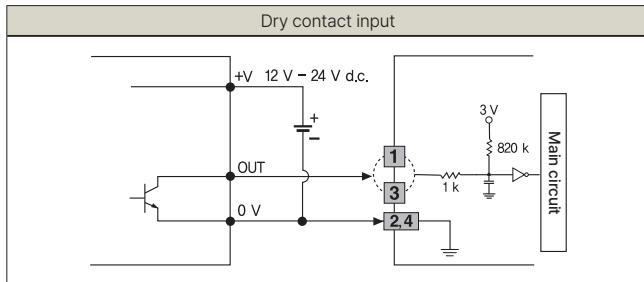


Universal voltage input (LT1-F / LC1-F)

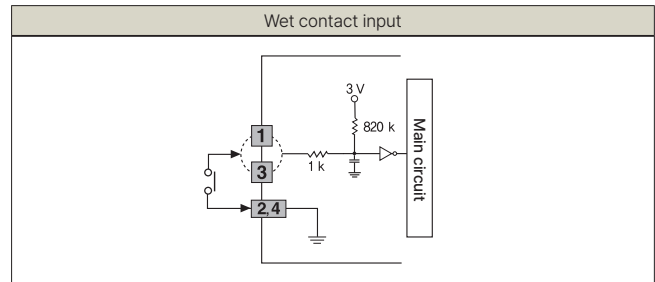


h Wiring inputs

Dry contact input

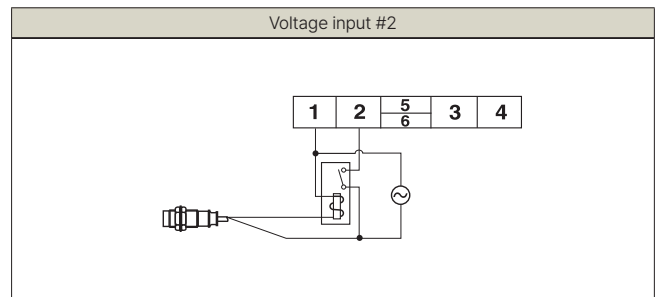
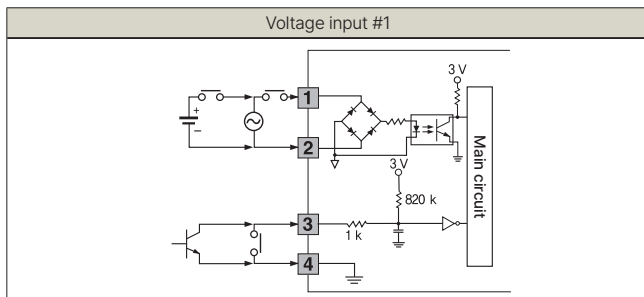


Make sure to use an NPN open collector output type for the sensor, and supply power externally. Do not apply voltage to terminals 1 and 3. Doing so may cause malfunction or damage.



The voltage for the wet contact input (relay, switch) should be 3 V DC, capable of passing 5 uA. Terminals 2 and 4 are internally connected as GND terminals.

Voltage input



Inputs 1 and 2 must use voltage inputs (24 - 240 V a.c.), 50 - 60 Hz, 6 - 240 V d.c.) and inputs 3 and 4 must use dry contact inputs (NPN transistors) or wet contact inputs (relay, switch).

Terminals 1 and 2 and terminals 3 and 4 are internally isolated.

The voltage for the wet contact input (relay, switch) should be 3 V DC, capable of passing 5 uA.

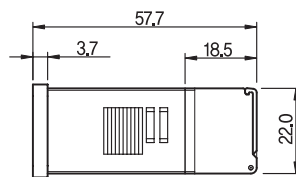
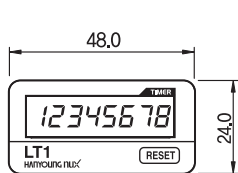
Do not connect AC 2-wire proximity sensors directly.

When using an AC proximity sensor, counting may not be properly conducted due to leakage current.

To enable counting, operate a relay in the middle, such as voltage input #2.

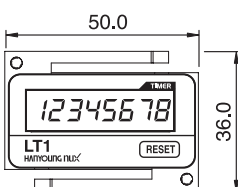
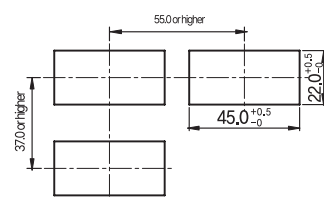
h External dimensions and panel cutout dimensions

LT1



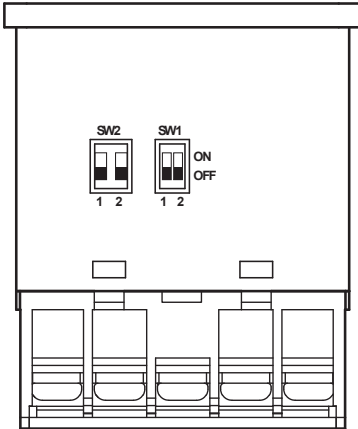
Panel cutout dimensions

[Unit: mm]



Configuration specifications

Internal battery and front reset key settings



SW1		ON	Internal battery
		OFF	
SW1		ON	Reset key
		OFF	

1. Internal battery ON/OFF

Setting switch 1 of SW1 to the ON position will turn on the internal power (battery).
 Setting switch 1 of SW1 to the OFF position will turn off the internal power (battery).
 If the product is not going to be used for an extended period, we recommend you turn it off to prevent the internal battery from discharging.

2. Enable/Disable the front reset key

Setting switch 2 of SW1 to the ON position will enable the front reset key.
 Setting switch 2 of SW1 to the OFF position will disable the front reset key.
 If the front reset key is 'disabled', pressing the switch will not reset the function.

Time range settings (timer)

Time range		
SW2		9999 h 59 m 59 s
		99999 h 59.9 m
		99999 h 59 m
		999999.9 h

Select the time range you wish to use and configure it using the switch.

* After changing the time range and counting speed, press the RESET input on the front or the terminal block to authorize.

Counting speed settings (counter)

Time range		
SW2		1 cps
		30 cps
		100 cps
		1K cps

Select the counting speed you wish to use and configure it using the switch.
 The LC1-F model has a fixed counting speed of 20 cps.

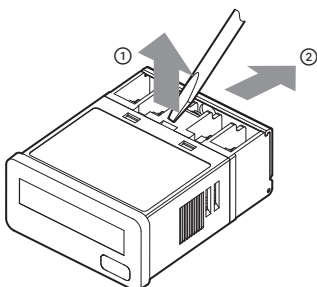
Precautions for counting speed settings

Counting speed	1 cps / 20 cps / 30 cps	100 cps / 1K cps
Input method		
Wet contact	If direct inputs such as relays or switches cause bouncing (chattering),	wet contacts cannot be used as they operate against the bouncing (chattering).
Dry contact	when inputting with transistors	when inputting with transistors

Factory default settings

Switch	Model	LT1 / LT1-F (Timer)	LC1 (Counter)	LC1-F (Counter)
		Internal battery OFF Front reset key disabled	Internal battery OFF Front reset key disabled	Internal battery OFF Front reset key disabled
		9999 h 59 m 59 s (Time range)	1 cps (Counting speed)	Fixed at 20 cps (counting speed) No switch

Precautions when changing batteries



When replacing the battery, please disconnect the wiring. There's a risk of electric shock when touching areas with high voltage.
 Ensure that there's no static electricity on your body when replacing the battery.
 Do not use batteries other than those specified (CR2477 3V).

How to change batteries

- ① Use tools to separate the top and bottom LOCK parts of the case.
- ② Pull the main unit out of the case.
- ③ After removing the case, replace the new battery, paying attention to the polarity.