LC series

Display type counter/timer

- Wide viewing angle LCD and white backlight
- Pre-scale setting range expanded (from 0.00001 to 999999)
- Modbus communication function (RS485)
- Offset function for counter and timer

Specification

Model			LC3	LC4	LC6	LC7
Power voltage			100 - 240 V a.c. 50/60 Hz, 24 - 48 V a.c. 50/60 Hz or 24 - 48 V d.c. (Voltage fluctuation rate: ±10%)			
Power consumption		AC	▪2-stage setting type: max. 12 VA ▪1-stage setting type: max. 11 VA			
		DC	▪2-stage setting type: max. 6 W ▪1-stage setting type: max. 5 W			
Character height			Counting unit (14.5 mm), Setting unit (10 mm)	▪6 Digit : Counting unit (10.8 mm), Setting unit (8 mm) ▪4 Digit : Counting unit (14 mm), Setting unit (8.5 mm)	Counting unit (10.5 mm), Setting unit (6.7 mm)	Counting unit (17.2 mm), Setting unit (12.5 mm)
Max counting speed			1 cps / 30 cps / 1 kcps / 10 kcps			
Power outage compensation			10 years (using non-volatile memory)			
Input			▪Selection of input method by external switch (voltage input / non-voltage input) ▪Counter: composed of CP1, CP2, RESET, BATCH -RESET ▪Timer: composed of START, INHIBIT, RESET ▪Voltage input: HIGH level (5 - 30 V d.c.), LOW level (0 - 2 V d.c.), input resistance (about 4.5 KΩ) ▪Non-voltage input: impedance during short-circuit (max. 1 KΩ), residual voltage during short-circuit (max. 2 V d.c.)			
Minimum input signal time			1 ms / 20 ms (START, INHIBIT, RESET inputs)			
External power supply			12 V d.c. 100 mA max			
ONE SHOT output			0.01 ~ 99.99 sec			
Control output	contact output	1-stage	OUT (SPDT, 1c)		OUT (SPST, 1a)	OUT (SPDT, 1c)
		2-stage	OUT1 (SPST, 1a), OUT2 (SPDT, 1c) * OUT2 of LC6-P62C: SPST configuration			
		capacity	▪SPDT : NC (250 V a.c. 2 A), NO (250 V a.c. 5 A), resistive load ▪SPST : 250 V a.c. 5 A, resistive load			
	contactless output	1-stage	NPN 2 circuits (OUT, BAT.O), * LC4-P61C / P41C models NPN 1 circuit configuration			
		2-stage	NPN 2 circuits (OUT1, OUT2)	-		NPN 2 circuits (OUT1, OUT2)
		capacity	Open collector, max. 30 V d.c. 100 mA			
Timer operation error			▪Power start : max. ±0.01 % ±0.05 sec ▪Reset start : max. ±0.01 % ±0.03 sec			
Communication	protocol		Modbus RTU			
	method		RS485 (2-wire half-duplex)			
	synchronism		Asynchronous			
	speed		2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps			
	effective distance		Max. within 800 m			
	max. connections		31 (address : 1 ~ 127)			
	response waiting time		5 ~ 99 ms			
	START BIT		1 bit (fixed)			
	STOP BIT		1 bit (fixed)			
	DATA BIT		8 bit			
	PARITY BIT		None / Odd / Even			
Insulation resistance			Min. 100 MΩ (500 V d.c.) conductive part terminal - unfilled metal			
Dielectric strength			2000 V a.c. 60 Hz for 1 minute (different live part terminals)			
Noise immunity			Square-wave noise by noise simulator ±2000 V (pulse width 1 μs)			
Shock resistance			300 m/s^2 (30G), 3 times each in X, Y and Z direction			
Vibration durability			10 - 55 Hz, single amplitude 0.5 mm, 3-axis each direction, 2 h			
Relay life		electrical	Min. 50,000 times			
		mechanical	Min. 10,000,000 times			
Degree of protection			IP66 (product front)			

Storage temperature	-25 ~ 65 °C (without condensation)			
Ambient temperature & humidity	-10 ~ 55 °C, 35 ~ 85% RH (without condensation)			
Weight	196 g	140 g	143 g	222 g

Suffix code

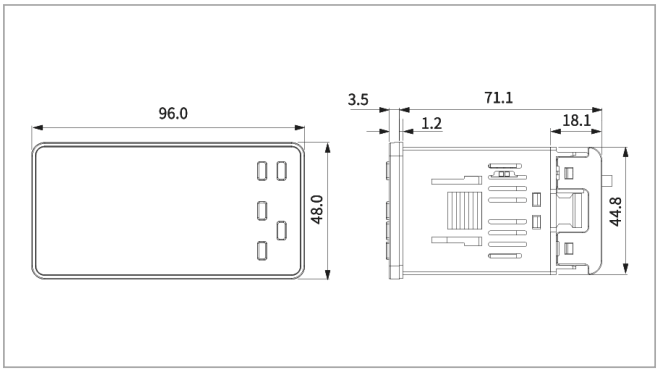
Model	Code						Content
LC	□-	□	□	□	□	□	LCD Counter / Timer
Dimensions	3						96(W) x 48(H) mm
	4						48(W) x 48(H) mm
	6						72(W) x 36(H) mm
	7						72(W) X 72(H) mm
Settings		P					Preset Counter / Timer
Display digits			4				4 digits (9999) ※LC4 only
			6				6 digits (999999)
Control output				1			1-stage output
				2			2-stage output
Sub output					N		No sub output
					C		RS485 (MODBUS-RTU)
Power voltage						A	100 - 240 V a.c. 50/60 Hz
						D	24 - 48 V a.c. 50/60 Hz or 24 - 48 V d.c.

Dimension and panel cutout

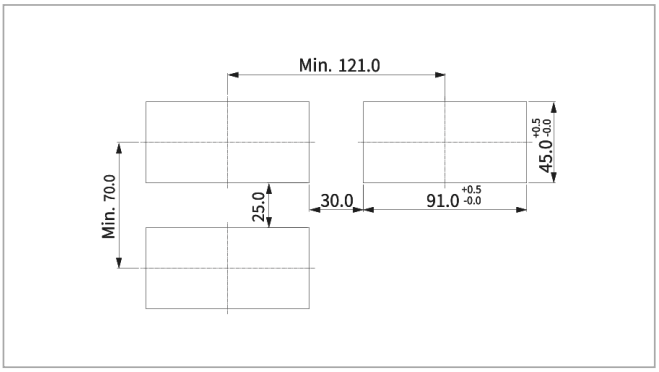
[Unit : mm]

▪ LC3

■ **Dimensions**

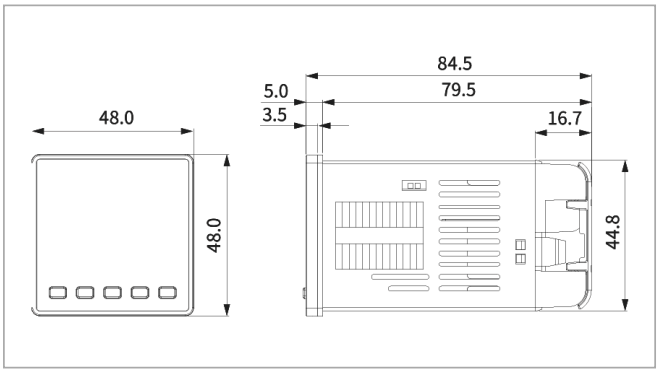


■ **Panel cutout**

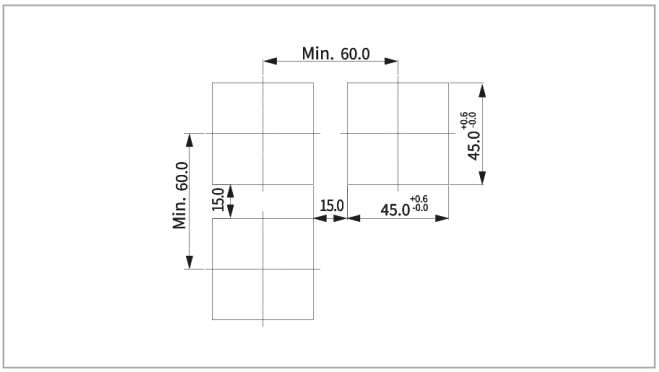


▪ LC4

■ **Dimensions**



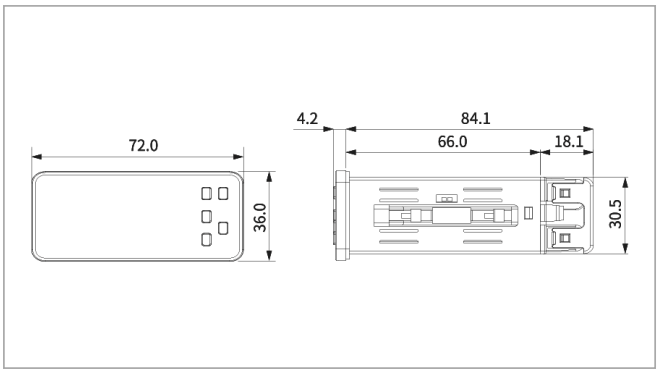
■ **Panel cutout**

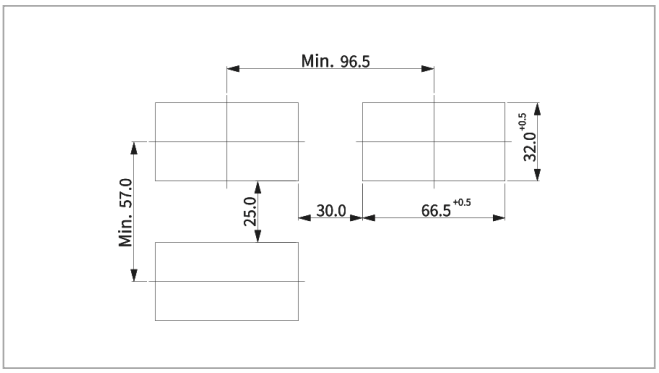


▪ LC6

■ **Dimensions**

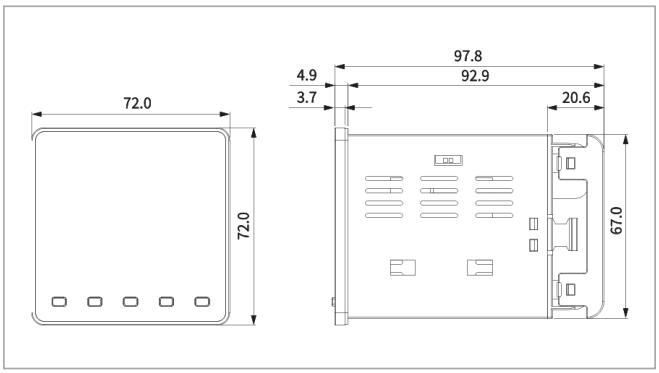
■ **Panel cutout**



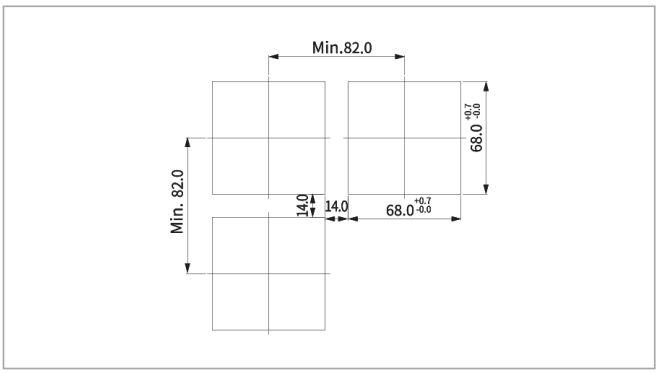


▪ LC7

■ Dimensions

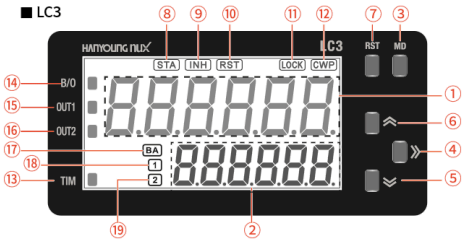


■ Panel cutout

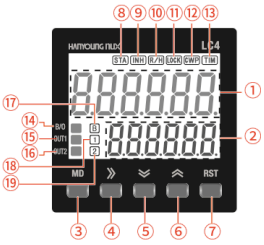


Part names and functions

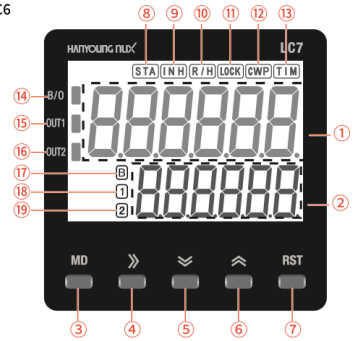
■ LC3



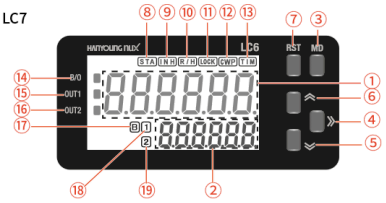
■ LC4



■ LC6



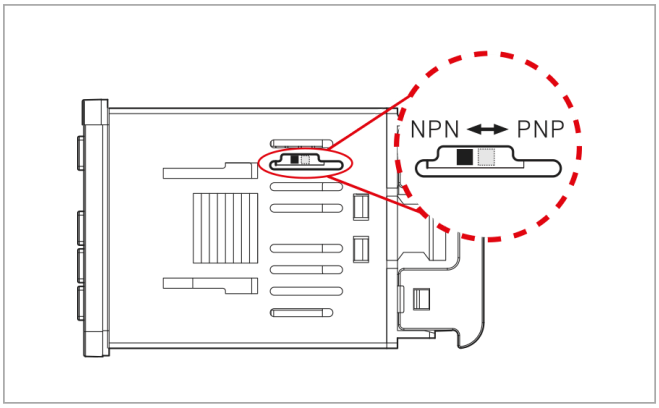
■ LC7



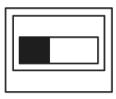
① PV display	displays count value, time value, batch count value, setting item
② SV display	displays counter / timer / batch set value
③ MODE KEY	enters and quits function mode (auto save function set value during termination) used to switch the SV display in operation mode (1-stage/2-stage set values/batch set value)
④ SHIFT KEY	enters set value change mode and shifts the set value digits enters communication setting mode in function mode
⑤ DOWN KEY	reduces set value in function mode and set value change mode
⑥ UP KEY	increases set value in function mode and set value change mode
⑦ RESET KEY	resets count value, time value and output status
⑧ START input indicator	illuminates when external START signal is applied in timer operation mode
⑨ INHIBIT input indicator	illuminates when external INHIBIT signal is applied in timer operation mode
⑩ RESET input indicator	illuminates when external RESET signal is applied
⑪ LOCK set indicator	illuminates when LOCK is set
⑫ Communication write inhibit indicator	illuminates when communication write inhibit is set
⑬ Timer setting indicator	illuminates when TIM/TTIM/BTIM operation mode is set, flashes during timing operation
⑭ BATCH output indicator	illuminates during BATCH output operation
⑮ OUT1 output indicator	illuminates during OUT1 output operation
⑯ OUT2 output indicator	illuminates during OUT2 output operation
⑰ BATCH setting indicator	illuminates when switching SV display to BATCH set value
⑱ SV1 setting indicator	illuminates when switching SV display to 1-stage set value
⑲ SV2 setting indicator	illuminates when switching SV display to 2-stage set value

Input/output connection

▪ Input logic selection (voltage / non-voltage)



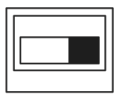
▪ Non-voltage input (NPN)



NPN PNP

(Shipping specifications)

▪ Voltage input (PNP)



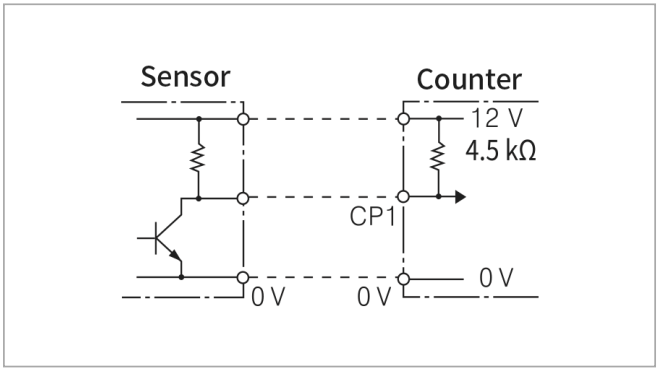
NPN PNP

1. After turning off the power, check the NPN / PNP display on case top and operate the transfer switch.

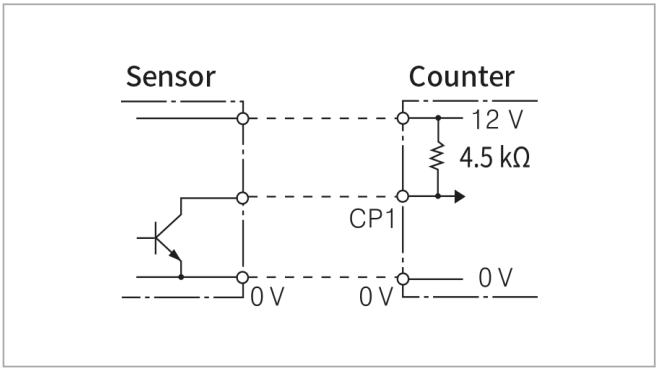
2. You can check the input logic setting status in the function setting mode.

▪ Input connection

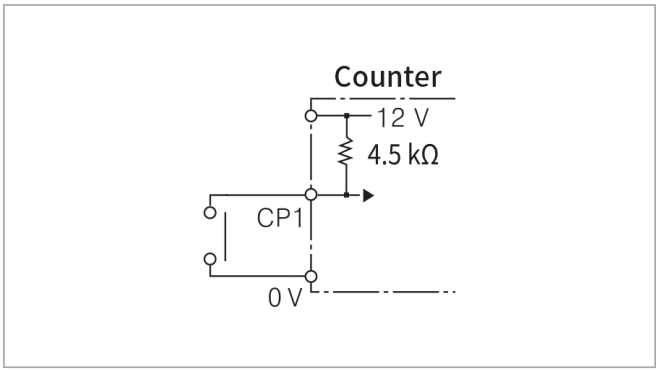
■ When non-voltage input (NPN) is selected



[NPN voltage input]

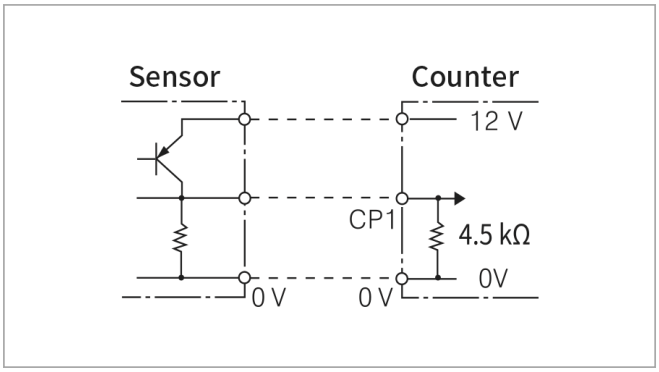


[NPN open collector input]

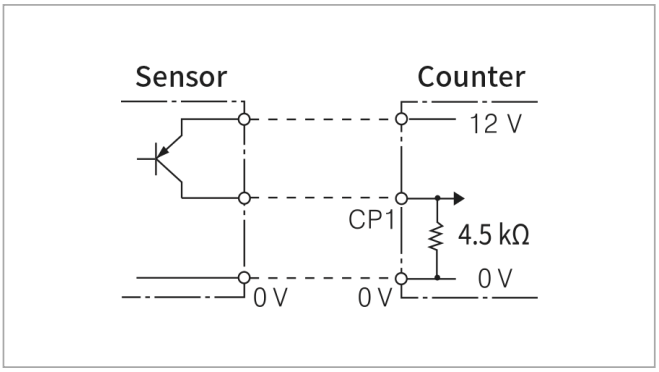


[Contact input]

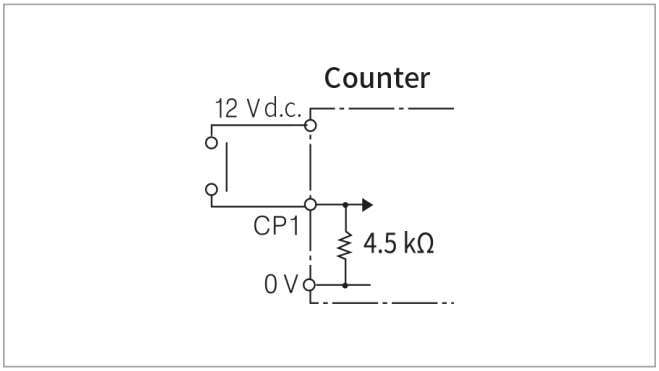
■ When voltage input (PNP) is selected



[PNP voltage input]

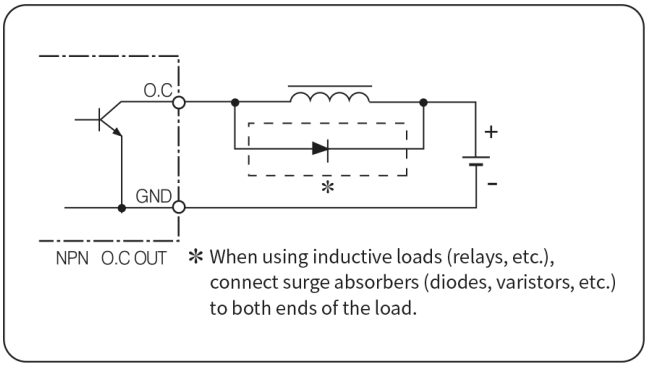


[PNP open collector input]



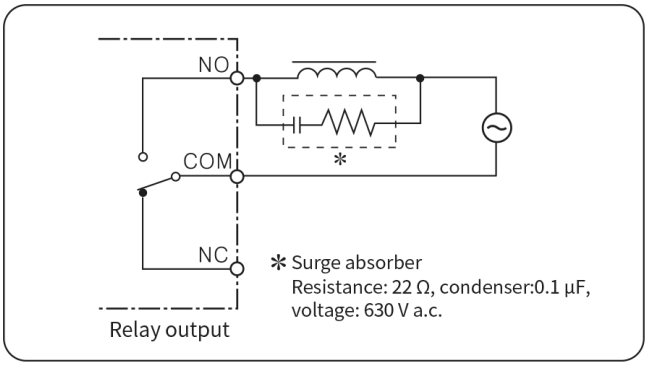
[Contact input]

▪ Output connection



■ **Example of contactless (transistor) output**

Since internal circuit and contactless output are isolated, please use same as GND. For the contactless output, select the power supply for the load and the load, in order not to exceed the maximum of 30 V 100 mA.



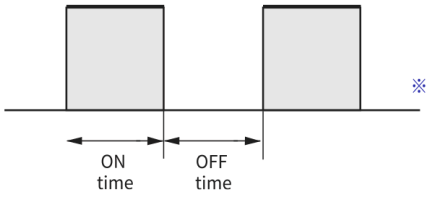
■ **Example of contact output**

Because the contact capacity is 250 V a.c. NO 5 A, NC 2 A (load resistance) make sure that the transient current does not flow at the contact. The wiring follows the normal wiring method.

Maximum counting speed

■ The maximum counting speed is the maximum response speed when you input the duty ratio (ON / OFF ratio) of the count input signal as 1: 1.
① Even when the input signal is below the maximum counting speed, it may not be counted if the ON and OFF times are less than the specified minimum signal width.
② Minimum signal time.

Counting speed	Minimum signal time
1 cps	500 ms
30 cps	16.7 ms
1 Kcps	0.5 ms
10 Kcps	0.05 ms



※ The minimum signal time refers to ON and OFF times.

Operation modes

Display	Operation mode	Description
CnT	Preset counter	Count the pulses applied to external input CP1/CP2 by adding, subtracting, adding/subtracting according to the input mode. When the count value reaches the 1- and 2-stage set values, the OUT1 and OUT2 are operated according to the selected output mode.
bCnT	Batch counter	Batch output activated when batch count span value reaches the batch set value, after counting the count-ups of the counter
tIM	Timer	When a signal is applied to external input START / INHIBIT / RESET, operation time is displayed according to time range. OUT1 and OUT2 outputs operated according to selected output mode when the time value reaches the 1- and 2- stage set values
ttIM	Twin timer	OUT1 and OUT2 outputs are turned ON / OFF according to ON and OFF set times (OUT output is operated in 1-stage model, OUT1 and OUT2 outputs are operated in 2-stage model simultaneously).
btIM	Batch timer	Batch output activated when the batch count value reaches batch set value, after counting the time-ups of the timer

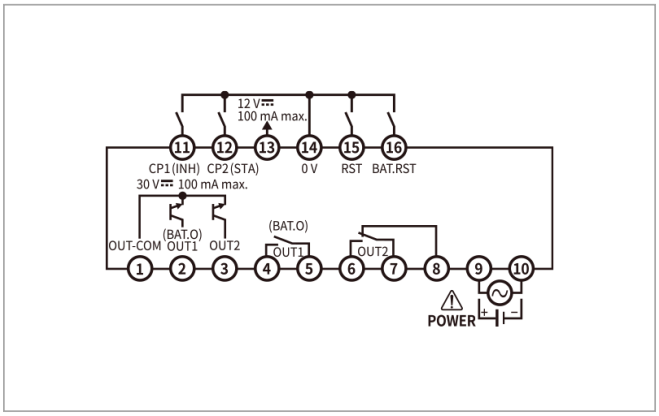
- The batch count value can be initialized by pressing front reset button in batch count value display mode or by applying a signal to batch reset terminal.

Time range

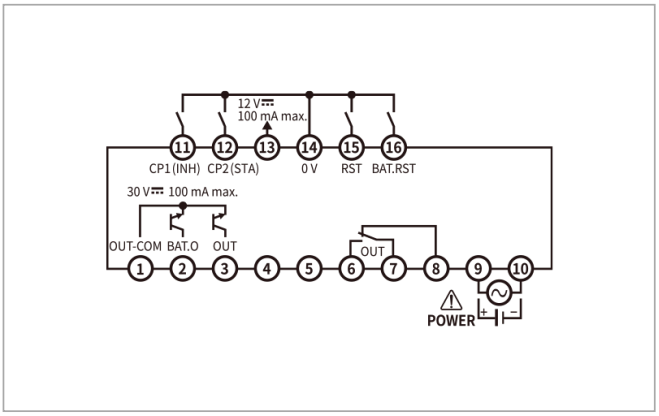
Range selection display		4-digit time range		6-digit time range	
UP	DOWN	Decimal notation	Sexa gesimal notation	Decimal notation	Sexa gesimal notation
U.0 15	d.0 15	99.99 s	59.99 s	9999.99 s	59 m 59.99 s
U. 15	d. 15	999.9 s	9 m 59.9 s	99999.9 s	9 h 59 m 59.9 s
U 15	d 15	9999 s	59 m 59 s	999999 s	99 h 59 m 59 s
U Hn	d Hn	9999 m	99 h 59 m	999999 m	9999 h 59 m
U HX	d HX	9999 h	99 d 23 h	999999 h	9999 d 23 h

Connection diagram

▪ LC3-P62N

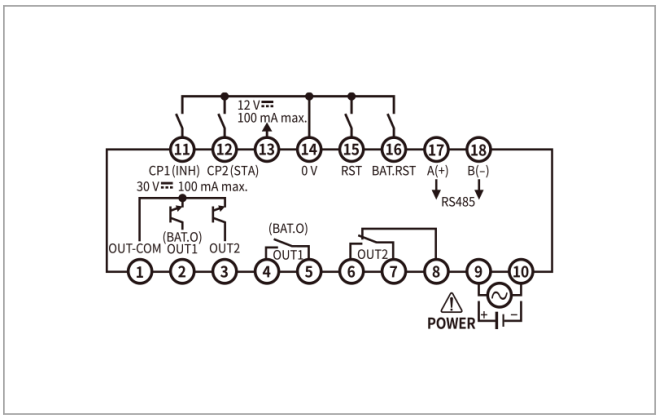


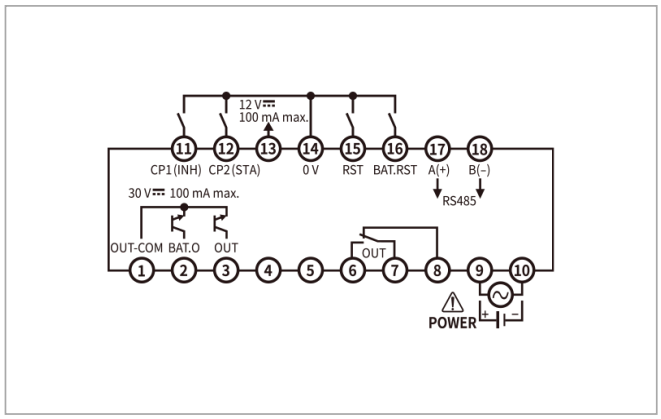
▪ LC3-P61N



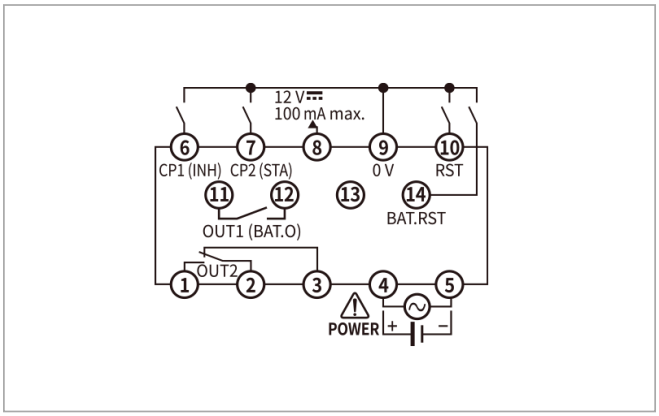
▪ LC3-P62C

▪ LC3-P61C

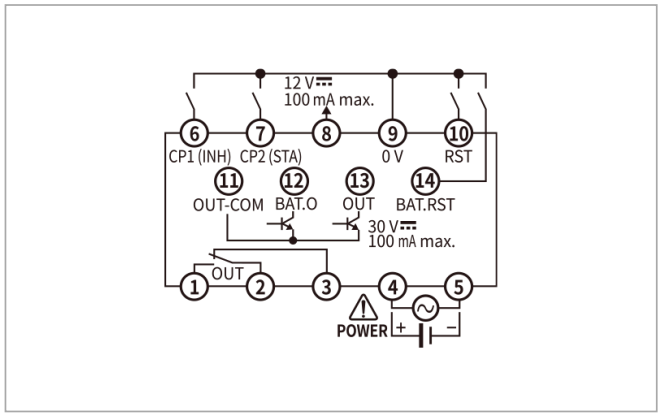




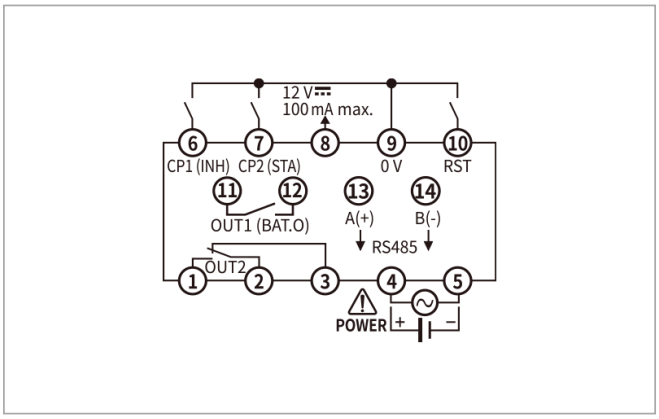
- **LC4-P62N/P42N**



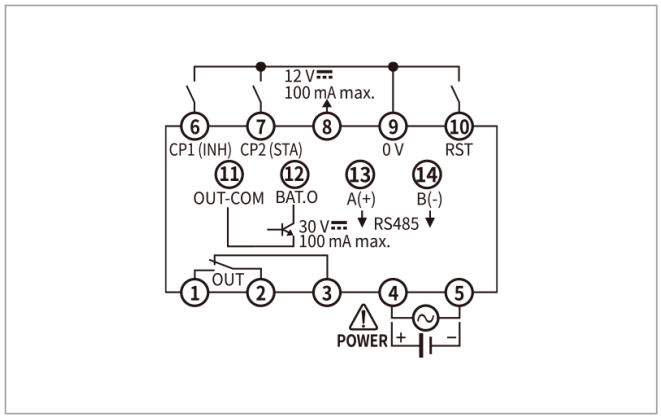
- **LC4-P61N/P41N**



- **LC4-P62C/P42C**

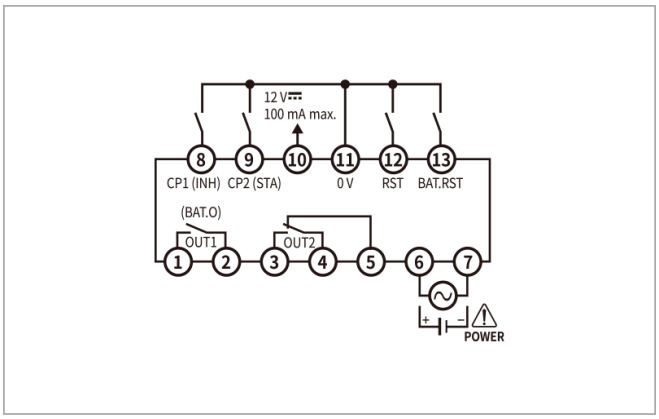


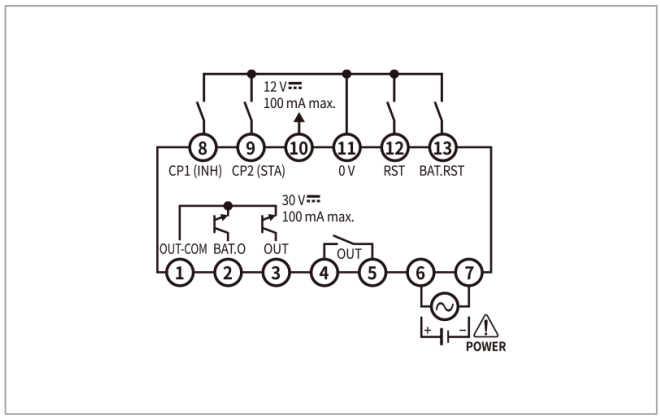
- **LC4-P61C/P41C**



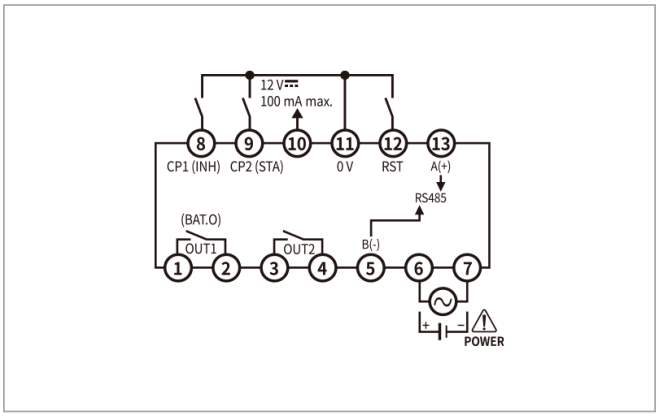
- **LC6-P62N**

- **LC6-P61N**

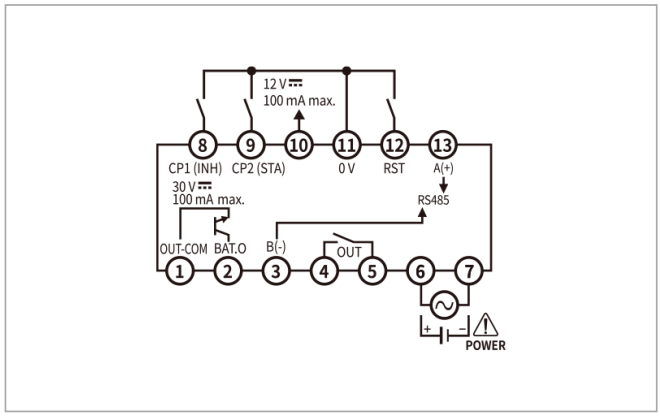




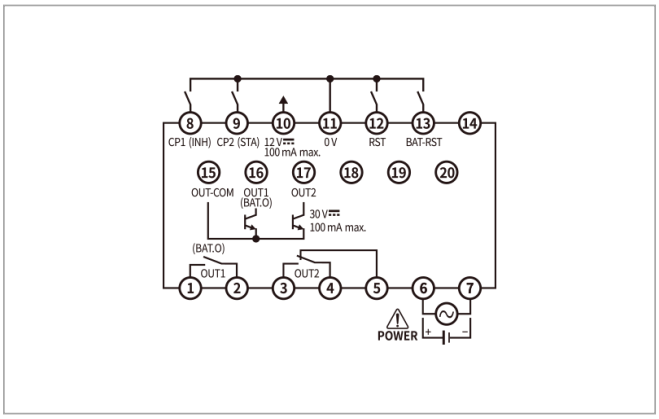
- **LC6-P62C**



- **LC6-P61C**



- **LC7-P62N**



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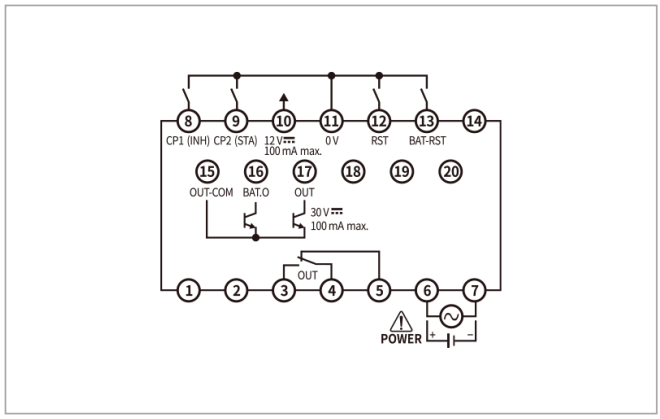

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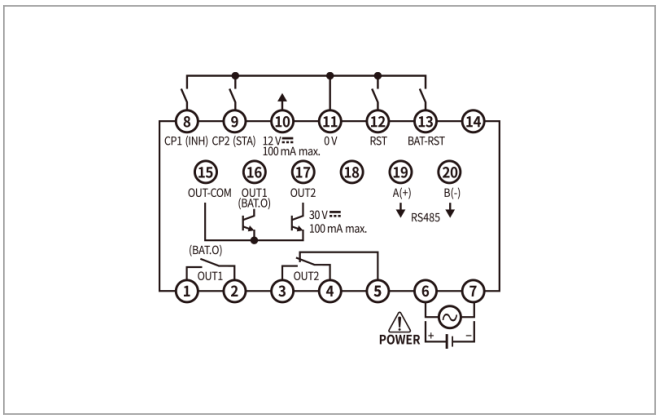
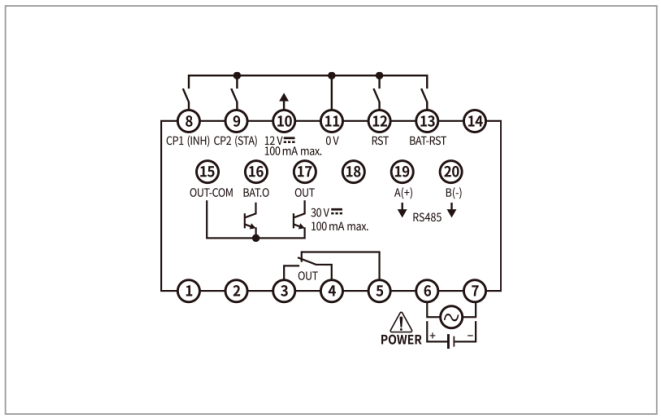
- **LC7-P61C**





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