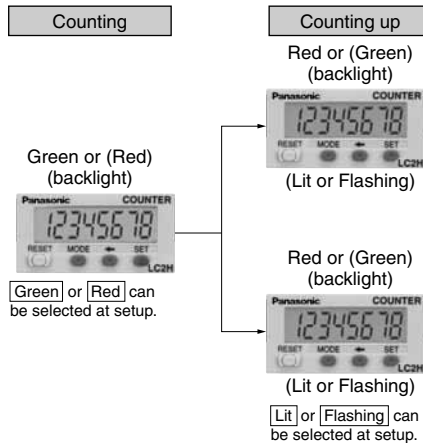




### Features



1. Preset function equipped in half size (24 × 48 mm 0.945 × 1.890 inch).
2. Display has backlight for instant recognition.



3. 8.7 mm 0.343 inch Character Height (previously 7 mm 0.276 inch)  
Easy-to read character height increased from 7 mm to 8.7 mm 0.276 inch to 0.343 inch.



4. Plenty of Digits



5. Counting Speed Switchable between 30 Hz and 5 kHz
6. Conforms to IP66 Protective Construction (Front panel surface)  
Weatherproofing supported by using optional mounting frame and rubber gasket
7. Includes reassuring lock mode and lock switch to prevent erroneous operation.
8. Screw terminals are constructed to protect fingers to ensure safety.
9. Compliant with UL, c-UL and CE.

RoHS Directive compatibility information  
<http://www.nais-e.com/>

### Product types

No. digits	Counting speed	Output mode	Output	Operating voltage	Part No.
8 digits	30 Hz/5 kHz switchable	<ul style="list-style-type: none"> <li>• Maintain output/hold count</li> <li>• Maintain output/over count</li> <li>• One shot/over count</li> <li>• One shot/recount</li> </ul>	Transistor (1a)	24 V DC	LC2HP-FEW-B-DC24V
Options		Mounting frame	Use for waterproofing (front panel surface)		ATH3803
		Rubber gasket			ATH3804

Note: Mounting frame and rubber gasket are not included.

## Specifications

Item		Descriptions
Rating	Rated operating voltage	24 V DC
	Rated power consumption	Max. 1.5 W
	Rated control capacity	100 mA 30 V DC
	Input mode	Addition/Subtraction (selectable by front switch)
	Max. counting speed	30 Hz/5 kHz (selectable by slide switch on side)
	Counting input	Min. input signal width: 16.7 ms at 30 Hz/0.1 ms at 5 kHz, ON time : OFF time = 1 : 1
	Reset input	Min. input signal width: Min. 30 ms
	Input signal	<ul style="list-style-type: none"> <li>• Non-voltage input using contacts or open-collector connection</li> <li>• Input impedance; when shorted: Max. 1 k<math>\Omega</math>, when open: Min. 100 k<math>\Omega</math></li> <li>• Residual voltage: Max. 2 V</li> </ul>
	Output mode	<ul style="list-style-type: none"> <li>• Maintain output/hold count</li> <li>• One shot/over count</li> <li>• Maintain output/over count</li> <li>• One shot/recount</li> </ul> (Selectable by front switch)
	Display method	7-segment LCD (Switch between red and green for backlight, and between lit and flashing for count up.)
	Digit	–9999999 to 99999999 (–7 digits to +8 digits) (0 to 99999999 for preset value)
Memory	EEP-ROM (Overwriting times: 10 <sup>5</sup> operations or more)	
Contact arrangement		1 Form A (Open collector)
Electrical life (contact)		10 <sup>7</sup> operations (at rated control voltage)
Electrical	Allowable operating voltage range	85 to 110% of rated operating voltage
	Break down voltage (Initial value)	Between input and output: 1,500 V AC, for 1 min.
	Insulation resistance (Initial value)	Between input and output: 100 M $\Omega$ (at 500 V DC)
Mechanical	Functional vibration resistance	10 to 55 Hz (1 cycle/min), Single amplitude: 0.15 mm (10 min. on 3 axes)
	Destructive vibration resistance	10 to 55 Hz (1 cycle/min), Single amplitude: 0.375 mm (1 hr. on 3 axes)
	Functional shock resistance	Min. 98 m/s <sup>2</sup> (4 times on 3 axes)
	Destructive shock resistance	Min. 294 m/s <sup>2</sup> (5 times on 3 axes)
Operating conditions	Operation temperature	–10 to 55°C +14 to +131°F (without frost or dew)
	Storage temperature	–25 to +65°C –13 to +149°F (without frost or dew)
	Ambient humidity	30 to 85% RH (at 25°C 77°F, non-condensing)
Protective construction		IP66 (front panel with mounting bracket and rubber gasket)

\* The factory default preset value is set to 1000000.

## Applicable standard

EMC	(EMI)EN61000-6-4 Radiation interference electric field strength	EN55011 Group1 ClassA
	Noise terminal voltage	EN55011 Group1 ClassA
	(EMS)EN61000-6-2 Static discharge immunity	EN61000-4-2 4 kV contact 8 kV air
	RF electromagnetic field immunity	EN61000-4-3 10 V/m AM modulation (80 MHz to 1 GHz) 10 V/m pulse modulation (895 MHz to 905 MHz)
	EFT/B immunity	EN61000-4-4 2 kV (power supply line) 1 kV (signal line)
	Conductivity noise immunity	EN61000-4-6 10 V/m AM modulation (0.15 MHz to 80 MHz)
	Power frequency magnetic field immunity	EN61000-4-8 30 A/m (50 Hz)

# LC2H

## Part names

### 1. Front reset key

This key resets the count value. It does not work when the lock switch is ON.

### 2. Mode key

Use to switch between each mode.

### 3. Setting key

Used to set digits of preset values or set each mode.

### 4. Set key

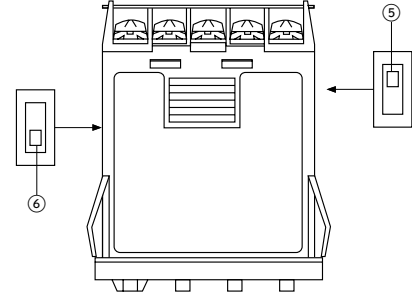
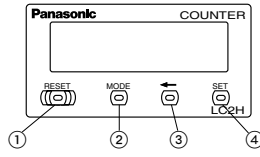
Use to set preset values or to switch between modes.

### 5. Lock switch



Disable the operation of the front panel reset key and the mode key. With the lock switch on, Lock is displayed for about two seconds when the reset key or mode switch is operated.

### 6. Count speed switch

Use this switch to switch the count speed between 30 Hz and 5 kHz.



※: Default setting when shipped.

⑤	Lock switch (unit display 1)	(Terminal block side) ↑ (LCD side) ↓	 OFF※ ↑ ↓ ON
⑥	Count speed switch (unit display 2)	(Terminal block side) ↑ (LCD side) ↓	 5kHz ↑ ↓ 30Hz※

Notes: 1. Make the switch setting before installing to panel.

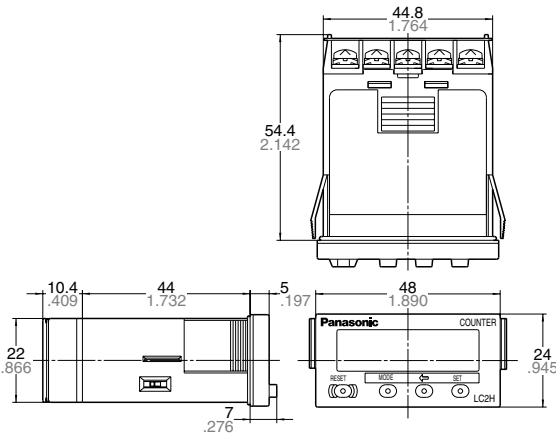
2. Please turn the power off if you change the setting of the count speed switch when the power is on. The setting will become valid when the power is turned back on.

## Dimensions

mm inch

General tolerance:  $\pm 1.0 \pm 0.039$

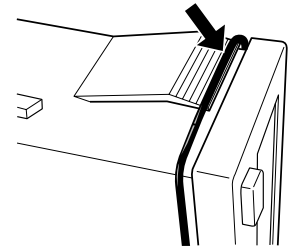
### • External dimensions



When installing the one-touch installation type model, make sure that the installation spring does not pinch the rubber gasket.

To prevent the installation spring from pinching the rubber gasket:

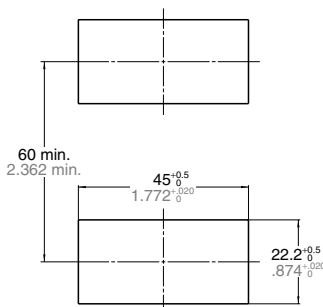
1. Set the rubber gasket on both ends of the installation spring (left and right).
2. Confirm that the installation spring is not pinching the rubber gasket, and then insert and fix the installation spring in place from the rear of the timer unit.



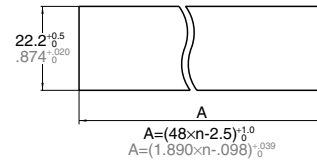
### • Panel cut out dimensions

The standard panel cut out is shown below.

Use the mounting bracket (ATH3803) and the rubber gasket (ATH3804). (Only installation frame type)



### • When installing repeatedly (sealed installation) (Only installation frame type)



- Notes: 1. Suitable installation panel thickness is 1 to 4.5 mm 0.039 to 0.177 inch.  
2. Waterproofing will be lost when installing repeatedly (sealed installation).

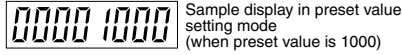
# How to set

## 1. Preset value setting mode

This is the mode for setting preset values.



1) Pressing the MODE key takes you to the preset value setting mode.



2) Pressing the setting key moves the flashing digit left by one. Following the highest digit it returns to the lowest digit and each time the digit setting key is pressed it moves one to the left.

3) Pressing the set key increases the value by one. (After 9 it returns to 0 and then changes to 1, 2, 3, etc.)

4) Pressing the front panel reset key sets the displayed preset value and returns you to the regular operation mode.

5) In the preset value setting mode if you do not operate the digit setting key or the set key for ten seconds or more you will be returned to regular operation. In this case the preset value will not change.

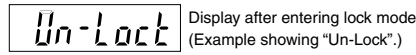
## 2. Lock mode

This mode prohibits everything except the preset value setting mode.

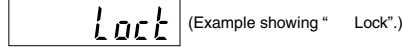


1) Pressing the set key while holding down the mode key takes you to the lock mode.

2) The display reads “Un-Lock” after entering the lock mode (initial setting).



3) Pressing the setting key changes the display between “ Lock” and “Un-lock”.



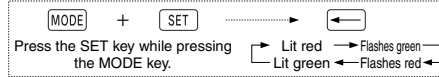
4) Pressing the front panel reset key sets the content displayed and returns you to regular operation mode.

Note: You will not be returned to regular operation mode if you do not press the front panel reset key.

5) When the lock mode display reads “ Lock”, you will not be able to move to the backlight setting mode, the input setting mode, or the output setting mode.

## 3. Backlight setting mode

This is the mode for setting the backlight during count up.



1) Pressing the SET key two times while holding down the MODE key takes you to the backlight setting mode.

2) The display in the backlight setting mode reads “ LEd”



3) The LED backlight will be red (initial setting).

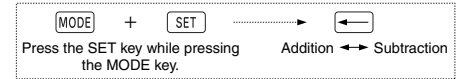
4) The backlight changes from flashing green to flashing red to lit green and to lit red with each press of the setting key.

5) Pressing the front panel reset key sets the current backlight color and returns you to regular operation mode.

Note: You will not be returned to regular operation mode if you do not press the front panel reset key.

## 4. Input setting mode

This is the mode for setting addition or subtraction.

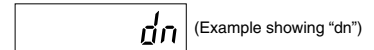


1) Pressing the SET key three times while holding down the MODE key takes you to the input setting mode.

2) The display after entering the input setting mode reads “ UP” (initial setting).



3) Pressing the setting key changes the display to “dn” (subtraction) and pressing it again changes it to “UP” (addition). The display alternates between “dn” and “UP”.



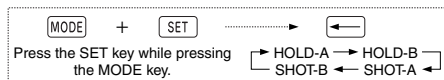
4) Pressing the front panel reset key sets the content displayed and returns you to regular operation mode.

Note: You will not be returned to regular operation mode if you do not press the front panel reset key.

# LC2H

## 5. Output setting mode

This sets the operation mode.



1) Pressing the SET key four times while holding down the MODE key takes you to the output setting mode.

2) The display reads "HoLd-A" (initial setting) after entering the output setting mode.

Hold-A

3) Pressing the setting key causes the display to change as follows:

HOLD-B (Output maintain/over count I)

Hold-b

SHOT-A (One shot/over count)

Shot-A

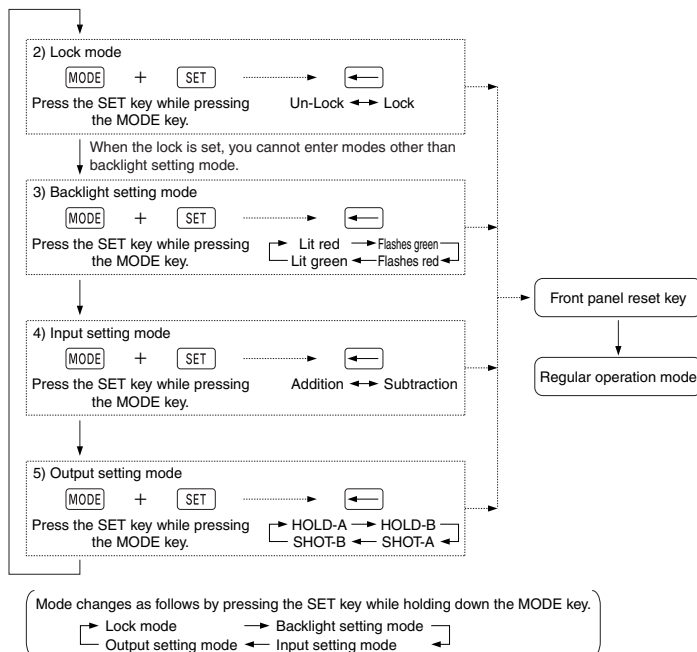
SHOT-B (One shot/recount I)

Shot-b

HOLD-A (Output maintain/hold count)

4) Pressing the front panel reset key sets the display content and returns you to regular operation mode.

Note: You will not be returned to regular operation mode if you do not press the front panel reset key.



Please be aware that after doing a front panel reset key and returning to regular operation mode, the preset values, count value and output will be as shown in this table.

	Preset value	Count value	Output change
Lock mode	×	×	×
Backlight setting mode	×	×	×
Input setting mode	×	Addition: "0" Subtraction: "Preset value"	ON→OFF
Output setting mode	×	Addition: "0" Subtraction: "Preset value"	ON→OFF

Note: "x" sign: No change

## Changing the preset value

1. It is possible to change the preset value even during counting. However, be aware of the following points.

1) If the preset value is changed to less than the count value with counting set to the addition direction, counting will continue until it reaches full scale, returns to zero, and then reaches the new preset value. If the preset value is changed to a value above the count value, counting will continue until the count value reaches the new preset value.

2) Suppose that the counter is preset to count down. Whether a preset count down value is smaller or larger than the count value, the counter counts down to "0 (zero)".

2. If the preset value is changed to "0", the counter will not complete count-up. It starts counting up when the counting value comes to "0 (zero)" again.

1) Addition (up-count) input when counting is set to the addition direction, counting will continue until full scale is reached, return to zero, and then complete count-up.

2) Subtraction (down-count) input when counting is set to the subtraction direction, counting will continue until full scale "-9999999" is reached, and then the display will change to " - - - - - ".

## Compliance with the CE marking

• EMC Directive (89/336/EEC)

The LC2H Preset Counter conforms to the EMC Directive as a simple counter.

Applicable standards: EN61000-6-4, EN61000-6-2

# Operation mode

Output mode	Operation	Example when input mode is either addition or Subject:ubtraction
Output maintain/ hold count HOLD-A	Output control is maintained after count-up completion and until resetting. During that time, the count display does not change from that at count-up completion.	<p>Output: OFF → ON</p> <p>Counting able/unable: ← Able → Unable</p> <p>Addition: 0   1   2   3   4   ..   n-1   n</p> <p>Subtraction: n   n-1   n-2   n-3   n-4   ..   1   0</p> <p>n: Preset value</p>
Output maintain/ over count I HOLD-B	Output control is maintained after count-up completion and until resetting. However, counting is possible despite completion of count-up.	<p>Output: OFF → ON</p> <p>Counting able/unable: ← Able →</p> <p>Addition: 0   1   2   3   ..   n-2   n-1   n   n+1   n+2   n+3</p> <p>Subtraction: n   n-1   n-2   n-3   ..   2   1   0   -1   -2   -3</p> <p>n: Preset value</p>
One shot/ over count SHOT-A	Output control is maintained after count-up completion for a fixed time (approx. 1 sec.). Counting is possible despite completion of count-up.	<p>Output: OFF → ON (One shot pulse width: approx. 1 sec.)</p> <p>Counting able/unable: ← Able →</p> <p>Addition: 0   1   2   3   ..   n-2   n-1   n   n+1   n+2   n+3</p> <p>Subtraction: n   n-1   n-2   n-3   ..   2   1   0   -1   -2   -3</p> <p>n: Preset value</p>
One shot/ recount I SHOT-B	Output control is maintained after count-up completion for a fixed time (approx. 1 sec.). Counting is possible despite completion of count-up. However, reset occurs simultaneous with completion of count-up. While output is being maintained, restarting of the count is not possible.	<p>Output: OFF → ON (One shot pulse width: approx. 1 sec.)</p> <p>Counting able/unable: ← Able →</p> <p>Addition: 0   1   2   3   ..   n-1   0   1   2   3   4</p> <p>Subtraction: n   n-1   n-2   n-3   ..   1   n   n-1   n-2   n-3   n-4</p> <p>n: Preset value</p>

