DIN 48 SIZE
LCD ELECTRONIC COUNTER

LC4H-W Counters

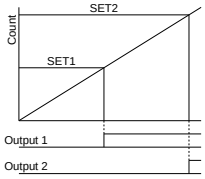
UL File No.: E122222
CSA File No.: LR39291

11-pin type

Screw terminal type

Features

1. Two-stage presetting (upper and lower limits)



2. Bright and Easy-to-Read Display
A brand new bright 2-color backlight LCD display is easy-to-read in any location. Checking and setting is a cinch.

3. Simple Operation
Front panel buttons make digit setting quick and easy.

4. Short Body of only 64.5 mm 2.54 inch (screw type) or 70.1 mm 2.76 inch (pin type)
With a short body, it easily installs in shallow control panels.

5. Conforms to IP66's Weather Resistant Standards
The water-proof panel keeps out water and dirt for reliable operation even in poor environments.

6. Screw terminal and Pin Type are Both Standard Configurations
The two terminal types are standard to support either front panel installation or embedded terminal block installation.

7. Changeable Panel Cover
Also offered with a black panel cover to meet your design considerations.

8. Conforms With EMC and Low Voltage Directives
Conforms with EMC directives (EN50081-2/EN50082-2) and low-voltage directives (VDE0435/Part 2021) for CE certification vital for use in Europe.

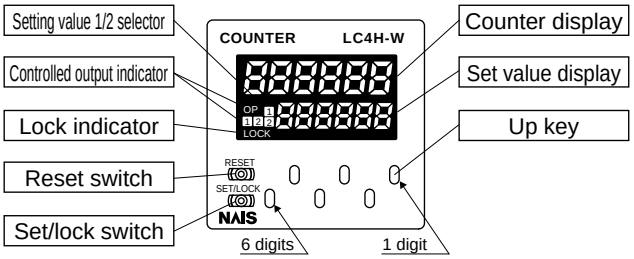
9. Power Failure Memory Retention
The set value and displayed counts are retained in memory so no data is lost during a power failure.

PRODUCT TYPES

Digit	Count speed	Operation mode		Output	Operation voltage	Terminal	Part No.
		Output 1	Output 2				
6	30 Hz (cps)/ 5 KHz (Kcps) switchable	• Maintain output/over count I • Maintain output/over count II • Maintain output/over count III • One shot/over count (4 modes)	• Maintain output/hold count • Maintain output/over count I • Maintain output/over count II • Maintain output/over count III • One shot/over count • One shot/recount I • One shot/recount II • One shot/hold count	Relay (1a+1a)	100 to 240 V AC	11 pin	LC4HW-R6-AC240V
						Screw	LC4HW-R6-AC240VS
					24V AC	11 pin	LC4HW-R6-AC24V
						Screw	LC4HW-R6-AC24VS
					12-24 V DC	11 pin	LC4HW-R6-DC24V
						Screw	LC4HW-R6-DC24VS
				Transistor (1a+1a)	100 to 240 V AC	11 pin	LC4HW-T6-AC240V
						Screw	LC4HW-T6-AC240VS
					24V AC	11 pin	LC4HW-T6-AC24V
						Screw	LC4HW-T6-AC24VS
					12-24 V DC	11 pin	LC4HW-T6-DC24V
						Screw	LC4HW-T6-DC24VS

* A rubber packing (ATC18002) and a mounting frame (ATA4811) are included.

PART NAMES



UP keys : Used to set the value of the corresponding digit of the set value display.

RESET key : Used to reset counter and its output.

SET/LOCK key : Used to select between the Setting 1 display and Setting 2 display and to lock the keys (UP and RESET keys not responsive to touch). Used also to set and confirm the input mode.

SPECIFICATIONS

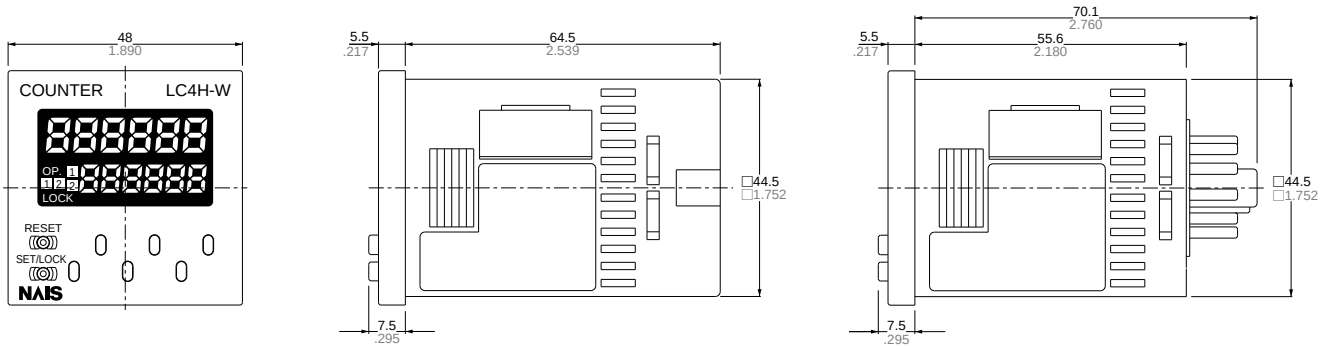
Item			Relay output type		Transistor output type	
			AC type	DC type	AC type	DC type
Rating	Rated operating voltage		100 to 240 V AC 24 V AC	12 to 24 V DC	100 to 240 V AC 24 V AC	12 to 24 V DC
	Rated frequency		50/60 Hz common	—	50/60 Hz common	—
	Power consumption		Max. 10 V A	Max. 3 W	Max. 10 V A	Max. 3 W
	Control output		1 Form C: 5 A, 250 V AC (resistive)		1 Form A: 100 mA, 30 V DC Open collector output (Max.)	
	Input mode		Addition (UP)/Subtraction (DOWN)/Direction (DIR)/Independent (IND)/Phase (PHASE) 5 modes selectable by DIP switch			
	Counting speed		30 Hz(cps)/5 KHz(cps) (selectable by DIP switch)			
	Min. counting input time		16.7 ms at 30 Hz(cps)/0.1 ms at 5 KHz(cps) ON time: OFF time = 1:1			
	Reset input method		Signal reset/Push-key switch, Min. input time 1 ms, 20 ms (selected by DIP switch)			
	Input signal		Contact or Open collector input/Input impedance: 1 kΩ or less, Input residual voltage: 2 V or less, Open impedance: 100 kΩ or more, Max. energized voltage: 40 V DC			
	Output mode		Output 1. HOLD-B, C, D SHOT-A (4 modes) Output 2. HOLD-A, B, C SHOT-A, B, C, D (8 modes) (selectable by DIP switch)			
	One shot output time		Approx. 1 s			
	Indication		7-segment LCD, Counter value (backlight red LED), Setting value (backlight yellow LED)			
	Digit		–99999 to 999999 (–5 digits to 6 digits) (0 to 999999 for setting)			
	Memory		EE-PROM (Overwriting times: 10^5 ops. or more)			
Contact	Contact arrangement		1a+1a		1a+1a (Open collector)	
	Initial contact resistance		100 mΩ (at 1 A 6 V DC)		—	
	Contact material		Ag alloy/Au flush		—	
Life	Mechanical		Min. 2.0×10^7 ops.		—	
	Electrical		Min. 1.0×10^5 ops. (At rated control voltage)		Min. 1.0×10^7 ops. (At rated control voltage)	
Electrical	Operating voltage range		85 to 110 % of rated operating voltage			
	Initial withstand voltage		Between live and dead metal parts: 2,000 Vrms for 1 min (pin type) Between input and output: 2,000 Vrms for 1 min Between open contacts: 1,000 Vrms for 1 min		Between live and dead metal parts: 2,000 Vrms for 1 min Between input and output: 2,000 V AC for 1 min	
	Initial insulation resistance (At 500 V DC)		Between live and dead metal parts: Min. 100 MΩ (pin type) Between input and output: Min. 100 MΩ Between open contact: Min. 100 MΩ		Between live and dead metal parts: Min. 100 MΩ (pin type) Between input and output: Min. 100 MΩ	
	Temperature rise		Max. 65°C (under the flow of nominal operating current at nominal voltage)		—	
Mechanical	Vibration resistance	Functional	10 to 55 Hz (1 cycle/min), single amplitude: 0.35 mm .014 inch (10 min on 3 axes)			
		Destructive	10 to 55 Hz (1 cycle/min), single amplitude: 0.75 mm .030 inch (1 h on 3 axes)			
	Shock resistance	Functional	Min. 98 m 321.522 ft./s² (4 times on 3 axes)			
		Destructive	Min. 294 m 964.567 ft./s² (5 times on 3 axes)			
Operating conditions	Ambient temperature		–10°C to 55°C +14°F to +131°F			
	Ambient humidity		Max. 85 % RH			
	Air pressure		860 to 1,060 h Pa			
	Ripple rate		—	20 % or less	—	20 % or less
Connection			8-pin/11-pin/screw terminal			
Protective construction			IP66 (front panel with a rubber gasket)			

DIMENSIONS (units: mm inch) General tolerance: ±1.0 ±.039

• LC4H-W electronic counter

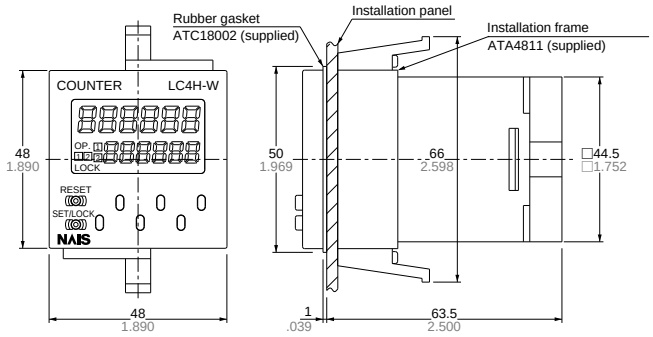
Screw-down terminal type (through-panel installation)

Pin type (embedded terminal block installation/through-panel installation)

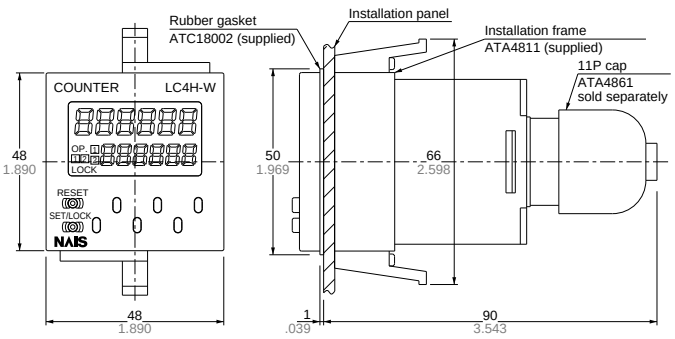


• Dimensions for through-panel installation (with adapter installed)

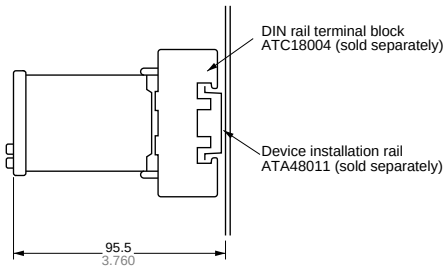
Screw-down terminal type



Pin type

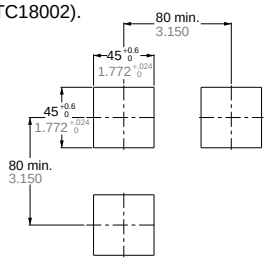


• Dimensions for terminal block installations

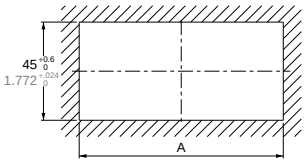


• Installation panel cut-out dimensions

The standard panel cut-out dimensions are shown below. Use the installation frame (ATA4811) and rubber gasket (ATC18002).



• For connected installations



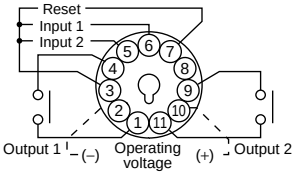
Note 1: The installation panel thickness should be between 1 and 5 mm .039 and .197 inch.

Note 2: For connected installations, the waterproofing ability between the unit and installation panel is lost.

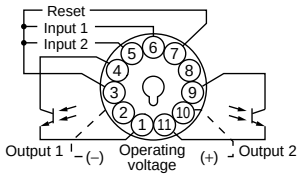
TERMINAL LAYOUT AND WIRING

• Pin type

Relay output type

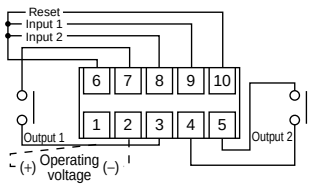


Transistor output type

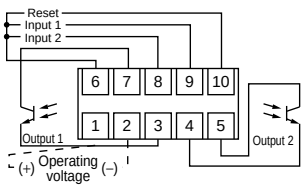


• Screw-down terminal type

Relay output type



Transistor output type



Note) For connecting the output leads of the transistor output type, refer to 5) TRANSISTOR OUTPUT.

SETTING THE OPERATION MODE AND COUNT SPEED

Setting procedure 1) Output mode (output 1, 2)

Set the input 1, 2 modes with the DIP switches on the side of the unit.

DIP switches

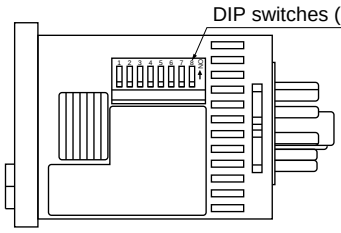
NO.	Item	OFF	ON
1	Output mode Output 1	Refer to table 1	
2			
3			
4	Minimum reset input signal width	20ms	1ms
5	Maximum counter setting	30Hz	5kHz
6	Output mode Output 2	Refer to table 2	
7			
8			

Table 1

DIP swith No. 1	2	3	Output mode (Output 1)	
ON	ON	ON	—	See note 1
OFF	OFF	OFF	HOLD–B	
ON	OFF	OFF	HOLD–C	
OFF	ON	OFF	HOLD–D	
ON	ON	OFF	SHOT–A	
OFF	OFF	ON	—	See note 1
ON	OFF	ON	—	See note 1
OFF	ON	ON	—	See note 1

Table 2

DIP swith No. 6	7	8	Output mode (Output 2)
ON	ON	ON	HOLD–A
OFF	OFF	OFF	HOLD–B
ON	OFF	OFF	HOLD–C
OFF	ON	OFF	HOLD–D
ON	ON	OFF	SHOT–A
OFF	OFF	ON	SHOT–B
ON	OFF	ON	SHOT–C
OFF	ON	ON	SHOT–D



(Same for screw terminal type)

Note 1: The counter and set value displays will indicate DIP Err.

Note 2: Set the DIP switches before installing the unit.

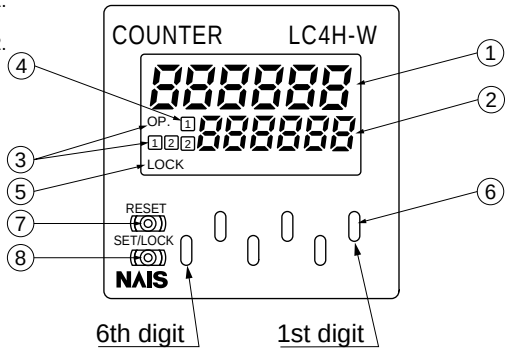
Setting procedure 2) Set value

Set the set value with the keys on the front of the unit.

(1) Hold down the SET/LOCK key and press the UP key for the sixth digit. The LOCK indicator will turn OFF. Release the SET/LOCK key.
(2) Use the UP keys to set the desired value for Setting 1.
(3) Press the SET/LOCK key to select Setting 2.
(4) Use the UP keys to set the desired value for Setting 2.
(5) Repeat step 1 to re-lock the set values. The LOCK indicator will turn ON.

Front display section

① Counter display
② Set value display
③ Controlled output indicator
④ Setting 1/2 selection display
⑤ Lock indicator



⑥ UP keys
Increases the value of the corresponding digit of the set value display

⑦ RESET switch
Resets the set value and the output

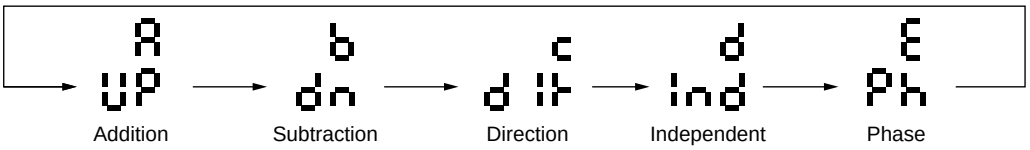
⑧ SET/LOCK switch
Used to select between the Setting 1 display and Setting 2 display, to set and confirm the input mode, and to lock the keys (UP and RESET keys not responsive to touch).

Procedure 3) Setting the input mode

Set the input mode using the key switch in the front display section on the counter front.

(1) Hold down the SET/LOCK key and press the UP key for the first digit. The setting mode is accessed.
(2) Now release the SET/LOCK key.
(3) Press the UP key for the first digit and the input mode changes as shown below.

Example)
Setting mode displayed
(UP mode)



(4) Press the RESET key and the input mode being displayed is set. The display then goes back to normal.

• Checking the input mode

Hold down the SET/LOCK key and press the UP key for the second digit. The input mode is displayed for about 2 seconds and then the display goes back to normal. (During these 2 seconds, all operations other than the display are being performed.)

• Locking the keys

Hold down the SET/LOCK key and press the UP key for the sixth digit. The keys will lock. This means that the UP and RESET keys do not respond to touch. To unlock the keys,hold down the SET/LOCK key and press the UP key for the sixth digit again.

* The input mode, maximum counting speed and minimum reset signal width cannot be preset independently for Setting 1 and Setting 2.

• Selecting the Setting 1 or Setting 2 display

Press the SET/LOCK key and the display changes between Setting 1 and Setting 2. (This operation does not affect overall operation.)

• Changing the setting

1. While the counter is working, the UP key can be used to change the setting. Keep the following points in mind, however.

1) Suppose that a preset count value is smaller than the displayed count value in UP mode. The counter counts up to the full scale mark (999999), goes back to "0", and counts up again to the preset number. When the preset count value is larger than the displayed count value, the counter counts up to the 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".

3) Resetting the counter will immediately return the display to the Setting 2 set value (down mode), or zero in all other modes.

2. When the preset value is "0", the counter does not start in the count-up mode. It starts counting up when the count value comes to "0" again.

1) Up-count input
The counter counts up to the full scale mark (999999), goes back to "0" and starts counting up again.

2) Down-count input
The counter counts down to the full scale mark (–99999) and the display reads ⁃ ⁃ ⁃ ⁃ ⁃ ⁃. The count value does not become "0" and so the counter does not count up.

3) Direction input, individual input, and phase input
The preset value is counted up or down to any number other than "0" once. When it comes to "0" again, the counter starts counting up.

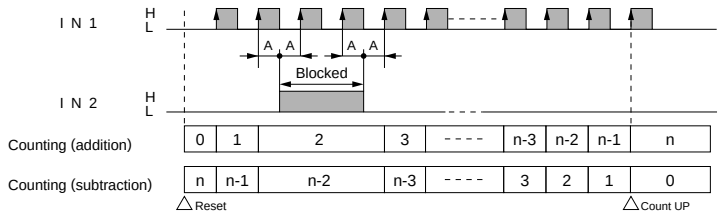
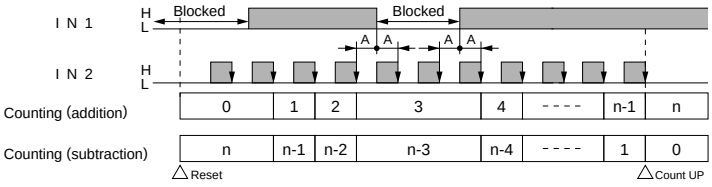
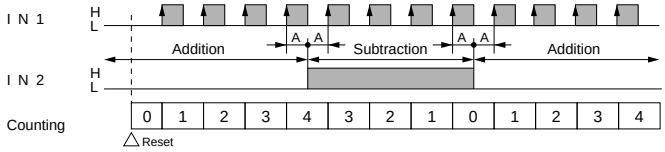
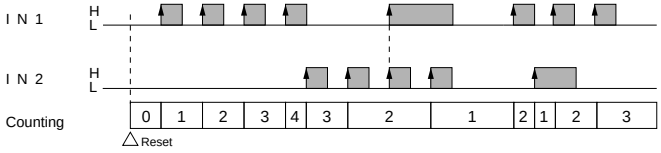
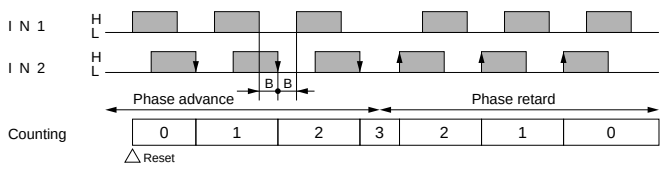
OPERATION MODE

1. Input mode

① For the input mode, you can choose one of the following five modes.

- Addition UP
- Subtraction DOWN
- Direction DIR
- Independent IND
- Phase PHASE

② After the counter has been reset, Setting 2 is displayed in the count-down mode. "0" appears instead in all other modes.

Input mode	Operation	*Minimum input signal width: 16.7 ms; 5 kHz: 0.1 ms
Addition UP	IN1 or IN2 works as an input block (gate) for the other input.	• Example where IN1 is the count input and IN2 is the input block (gate). 
Subtraction DOWN		• Example where IN2 is the count input and IN1 is the input block (gate).  * "A" must be more than the minimum input signal width.
Direction DIR	IN1 is the count input and IN2 is the addition or subtraction direction input. IN2 adds at L level and subtracts at H level.	 * "A" must be more than the minimum input signal width.
Independent IND	IN1 is addition input and IN2 is subtraction input.	 * IN1 and IN2 are completely independent, so there is no restriction on signal timing.
Phase PHASE	Addition when the IN1 phase advances beyond IN2, and subtraction when the IN2 phase advances beyond IN1.	 * "B" must be more than the minimum input signal width.

2. Output mode

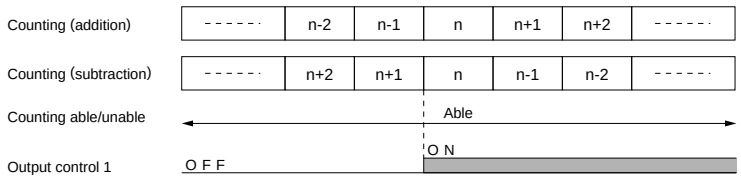
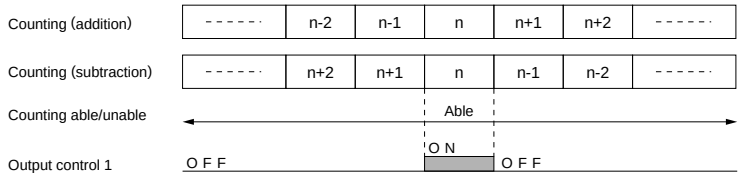
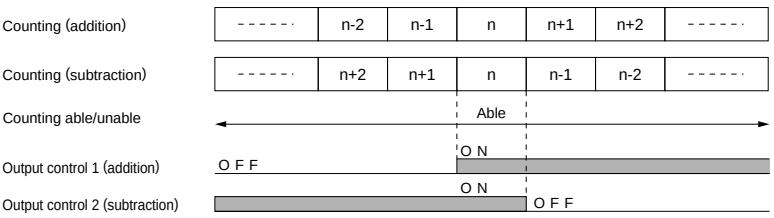
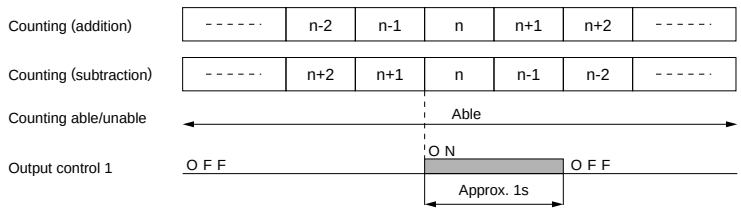
For the set value 1, you can choose one of the following four modes.

- Maintain output/over count I HOLD-B
- Maintain output/over count II HOLD-C
- Maintain output/over count III HOLD-D
- One shot/over count SHOT-A

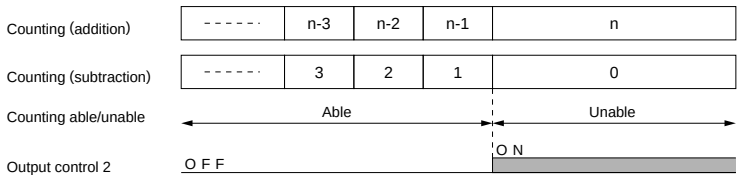
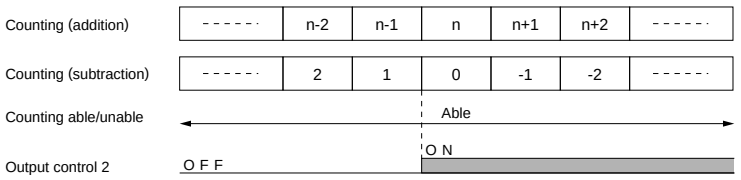
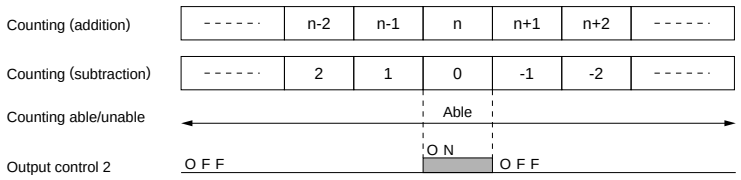
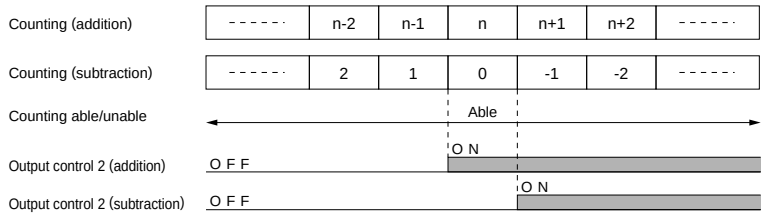
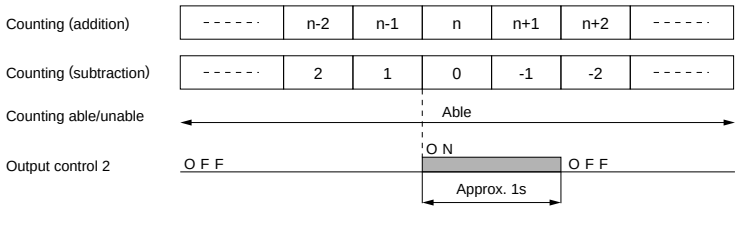
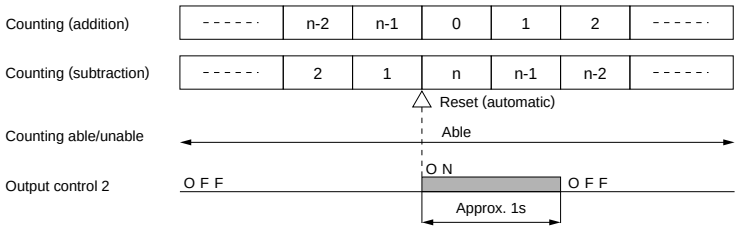
For the set value 2, you can choose one of the following eight modes.

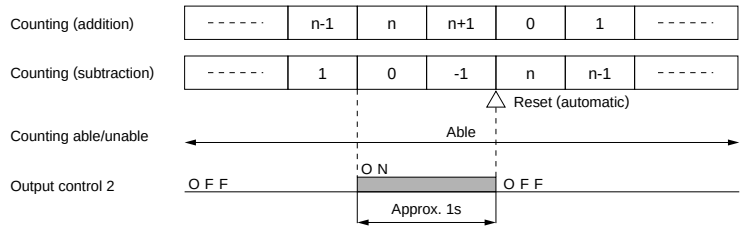
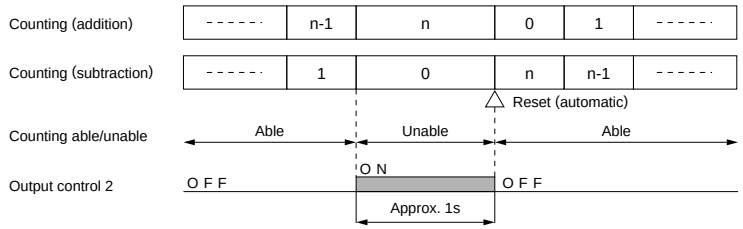
- Maintain output/hold count HOLD-A
- Maintain output/over count I HOLD-B
- Maintain output/over count II HOLD-C
- Maintain output/over count III HOLD-D
- One shot/over count SHOT-A
- One shot/recount I SHOT-B
- One shot/recount II SHOT-C
- One shot/hold count SHOT-D

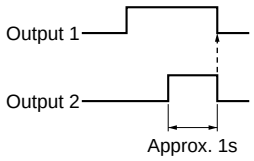
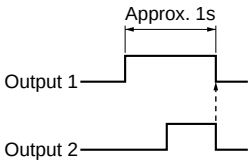
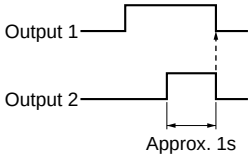
• Operation mode for set value 1

Operation mode	Operation	(Example when input mode is either addition or subtraction)
Maintain output Over count I HOLD-B	Output control is maintained after count completion and until reset. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 1
Maintain output Over count II HOLD-C	Output control transfers and is maintained for one count period after count completion. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 1
Maintain output Over count III HOLD-D	If the count value is greater than or equal to the preset value when counting up, the control output is held. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 1
One shot Over count SHOT-A	Output control transfers and is maintained after count completion for a fixed time (approx. 1 sec). Counting continues with additional inputs.	 * n: Set value 1

• Operation mode for set value 2

Operation mode	Operation	(Example when input mode is either addition or subtraction)
Maintain output Hold count HOLD-A	Output control is maintained after count completion and until reset. During that time, the count display remains at the completed value. Additional inputs are ignored.	 * n: Set value 2
Maintain output Over count I HOLD-B	Output control is maintained after count completion and until reset. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 2
Maintain output Over count II HOLD-C	Output control transfers and is maintained for one count period after count completion. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 2
Maintain output Over count III HOLD-D	If the count value is greater than or equal to the preset value when counting up, the counter starts counting up again. However, the count display will continue to increase/decrease with additional inputs.	 * n: Set value 2
One shot Over count SHOT-A	Output control transfers and is maintained after count completion for a fixed time (approx. 1 sec). Counting continues with additional inputs.	 * n: Set value 2
One shot Recount I SHOT-B	Output control transfers and is maintained after count completion for a fixed time (approx. 1 sec). Counting continues with additional inputs. However, reset occurs simultaneous with completion of count. While output is being maintained, another count completion is not possible.	 * n: Set value 2

Operation mode	Operation	(Example when input mode is either addition or subtraction)
One shot Recount II SHOT-C	Output control transfers and is maintained after count completion for a fixed time (approx. 1 sec). Counting continues with additional inputs. However, reset occurs simultaneous with output OFF.	 * n: Set value 2
One shot Hold count SHOT-D	Output control transfers and is maintained after count completion for a fixed time (approx. 1 sec). During output ON, the count display does not change from that at count completion. Reset occurs simultaneous with output OFF.	 * n: Set value 2

		Operation mode for set value 1		
		HOLD-C HOLD-D	HOLD-B	SHOT-A
Operation mode for set value 2	SHOT-A	As usual (this combination unchanged)	As usual (this combination unchanged)	
	SHOT-B			
	SHOT-C SHOT-D			

Note) When control output 1 is on, the output mode of Setting 2 (SHOT-A, B, C, D) is also on and output 1 changes as shown in the above table.

3. Count-up

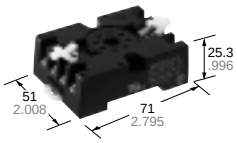
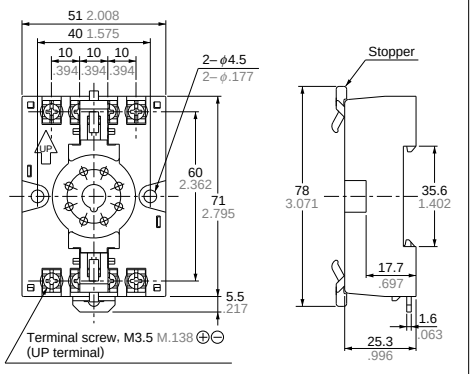
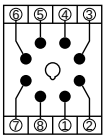
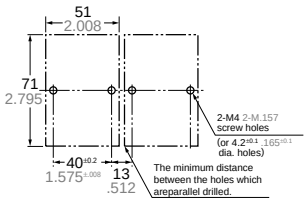
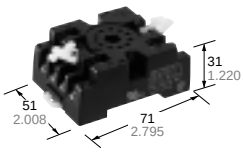
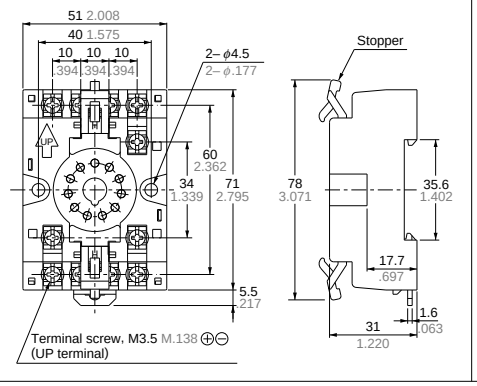
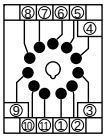
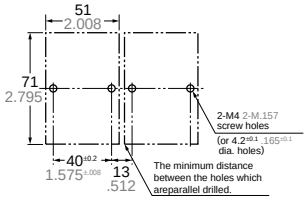
(1) In control output 1, when the count value is equal to the preset value 1, it is counted. (However, if the output mode of the preset value 1 is HOLD-D, it is counted when the count value is greater than or equal to the preset value 1, regardless of the input mode.)

(2) In control output 2, when the count value is equal to 0 in the count-down input mode, it is counted. In the other modes, when the count value is equal to the preset value 2, it is counted. (However, if the output mode of the preset value 2 is HOLD-D, it is counted when the count value is greater than or equal to the preset value 2, regardless of the input mode.)

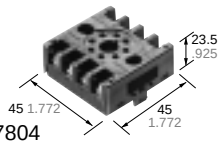
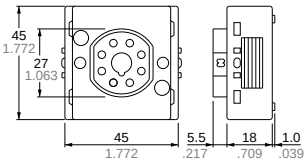
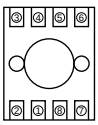
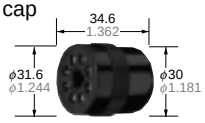
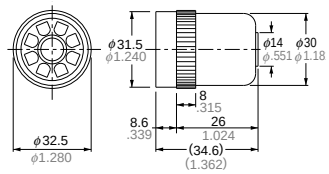
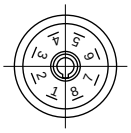
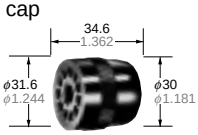
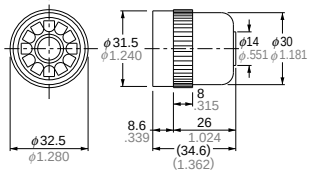
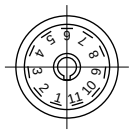
(3) It is not counted even when the counting conditions are satisfied right after resetting. It can be counted from when the count value changes.

DIN SIZE COUNTERS COMMON OPTIONS

TERMINAL SOCKETS (Unit: mm inch, Tolerance: ±1 ±.039)

Type	Appearance	Dimensions	Terminal wiring (Top view)	Mounting hole dimensions
LC4H (8-pin type)	• DIN rail socket (8-pin)  ATC18003		 Note: Terminal No. on the main body are identifical to those on the terminal socket.	
LC4H LC4H-W (11-pin type)	• DIN rail socket (11-pin)  ATC18004		 Note: Terminal No. on the main body are identifical to those on the terminal socket.	

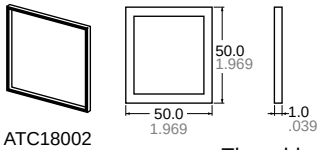
SOCKETS (Unit: mm inch, Tolerance: ±1 ±.039)

Type	Appearance	Dimensions	Terminal wiring (Top view)	Mounting hole dimensions
LC4H (8-pin type)	• Rear terminal socket  AT7804			—
	• 8P cap  AD8013			—
LC4H LC4H-W (11-pin type)	• 11P cap  ATA4861			—

Note: Terminal No. on the main body are identifical to those on the terminal socket.

MOUNTING PARTS

• Rubber gasket

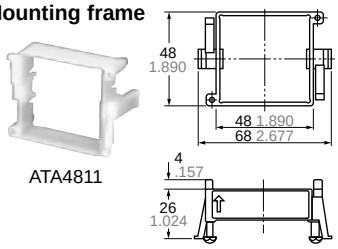


ATC18002

Applicable for PM4H and LT4H series

The rubber gasket is enclosed in the PM4H (screw terminal type) and the LT4H series.

• Mounting frame



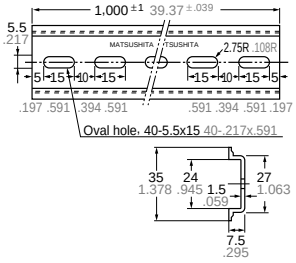
ATA4811

Applicable for PM4H and LT4H series

The rubber gasket is enclosed in the PM4H (screw terminal type) and the LT4H series.

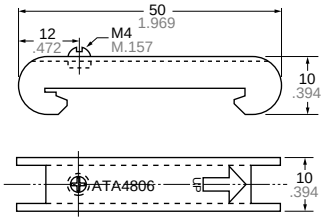
• Mounting rails (Applicable for DIN and IEC standards)

ATA48011
Length: 1 m
aluminum



• Fastening plate

ATA4806



For holding DIN rails

ACCESSORIES

• Panel cover (Black)

LC4H Panel cover (4 digits)	LC4H Panel cover (6 digits)	LC4H-W Panel cover
		
AEL58011	AEL58012	AEL68011

The black panel cover is also available so that you can change the appearance of the panel by changing the panel cover. The color of the standard panel cover is ash gray.