Panasonic
ideas for life

DIN 48 SIZE
LCD ELECTRONIC COUNTER

LC4H-W Counters

UL File No.: E122222
C-UL File No.: E122222

mm inch

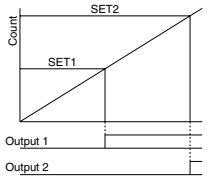
11-pin type

Screw terminal type

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

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. The easy-to-read screen in any location makes checking and setting procedures a cinch.

3. Simple Operation
Seesaw buttons make operating the unit even easier than before.

4. Short Body of only 64.5 mm 2.539 inch (screw type) or 70.1 mm 2.760 inch (pin type)
With a short body, it easily installs in even narrow 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 Options
The two terminal types are standard options to support either front panel installation or embedded installation.

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

8. Compliant with UL, c-UL and CE.

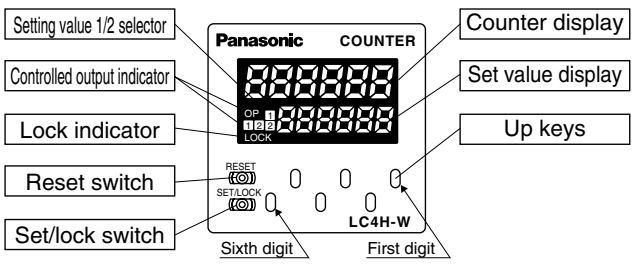
9. Low Price
All this at an affordable price to provide you with unmatched cost performance.

Product types

Digit	Count speed	Output mode		Output	Operating voltage	Power down insurance	Terminal type	Part number
		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 (8 modes)	Relay (1a+1a)	100 to 240 V AC	Available	11 pins	LC4H-W-R6-AC240V
							Screw terminal	LC4H-W-R6-AC240VS
					24V AC		11 pins	LC4H-W-R6-AC24V
							Screw terminal	LC4H-W-R6-AC24VS
					12 to 24 V DC		11 pins	LC4H-W-R6-DC24V
							Screw terminal	LC4H-W-R6-DC24VS
				Transistor (1a+1a)	100 to 240 V AC		11 pins	LC4H-W-T6-AC240V
							Screw terminal	LC4H-W-T6-AC240VS
					24V AC		11 pins	LC4H-W-T6-AC24V
							Screw terminal	LC4H-W-T6-AC24VS
					12 to 24 V DC		11 pins	LC4H-W-T6-DC24V
							Screw terminal	LC4H-W-T6-DC24VS

* A rubber gasket (ATC18002) and a mounting frame (AT8-DA4) are included.

Part names



UP keys	: Used to set the corresponding digits for the count-up mode.
RESET key	: Used to reset counting 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			Ralay 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	—
	Rated power consumption		Max. 10 V A	Max. 3 W	Max. 10 V A	Max. 3 W
	Rated control capacity		3 A, 250 V AC (resistive load)		100 mA, 30 V DC	
	Input mode		Addition (UP)/Subtraction (DOWN)/Direction (DIR)/Individuality (IND)/Phase (PHASE) (5 modes selectable by DIP switch)			
	Counting speed		30 Hz(cps)/5 KHz(cps) (selectable by DIP switch)			
	Counting input (Input 1, 2)		Min. input signal width: 16.7 ms at 30 Hz(cps)/0.1 ms at 5 KHz(cps) ON time: OFF time = 1:1			
	Reset input		Min. input signal width: 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		EEP-ROM (Overwriting times: 10^5 ope. or more)			
Contact	Contact arrangement		1 Form A + 1 Form A		1 Form A + 1 Form A (Open collector)	
	Contact resistance (Intial value)		100 mΩ (at 1 A 6 V DC)		—	
	Contact material		Ag alloy/Au flush		—	
Life	Mechanical (contact)		Min. 2×10^7 ope.		—	
	Electrical (contact)		Min. 10^5 ope. (At rated control voltage)		Min. 10^7 ope. (At rated control voltage)	
Electrical	Allowable operating voltage range		85 to 110 % of rated operating voltage			
	Break down voltage (Initial value)		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	
	Insulation resistance (At 500 V DC) (Initial value)		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 (10 min on 3 axes)			
		Destructive	10 to 55 Hz (1 cycle/min), single amplitude: 0.75 mm (1 h on 3 axes)			
	Shock resistance	Functional	Min. 98 m/s² (4 times on 3 axes)			
		Destructive	Min. 294 m/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 (non-condensing)			
	Air pressure		860 to 1,060 h Pa			
	Ripple rate		—	20 % or less	—	20 % or less
Connection			11-pin/screw terminal			
Protective construction			IP66 (front panel with a rubber gasket)			

Applicable standard

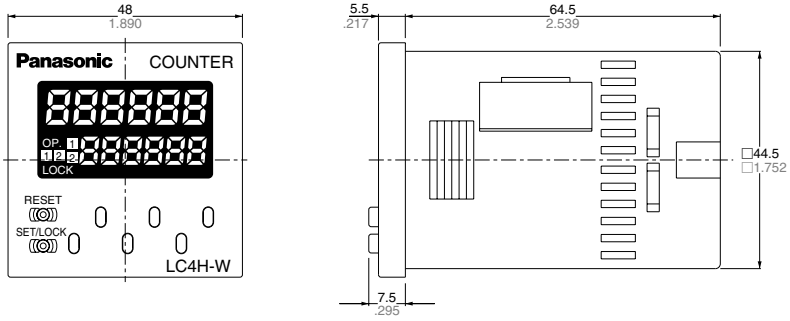
Safety standard	EN61812-1	Pollution Degree 2/Overvoltage Category II
EMC	(EMI)EN61000-6-4 Radiation interference electric field strength Noise terminal voltage (EMS)EN61000-6-2 Static discharge immunity RF electromagnetic field immunity EFT/B immunity Surge immunity Conductivity noise immunity Power frequency magnetic field immunity Voltage dip/Instantaneous stop/Voltage fluctuation immunity	 EN55011 Group1 ClassA EN55011 Group1 ClassA EN61000-4-2 4 kV contact 8 kV air EN61000-4-3 10 V/m AM modulation (80 MHz to 1 GHz) 10 V/m pulse modulation (895 MHz to 905 MHz) EN61000-4-4 2 kV (power supply line) 1 kV (signal line) EN61000-4-5 1 kV (power line) EN61000-4-6 10 V/m AM modulation (0.15 MHz to 80 MHz) EN61000-4-8 30 A/m (50 Hz) EN61000-4-11 10 ms, 30% (rated voltage) 100 ms, 60% (rated voltage) 1,000 ms, 60% (rated voltage) 5,000 ms, 95% (rated voltage)

Dimensions

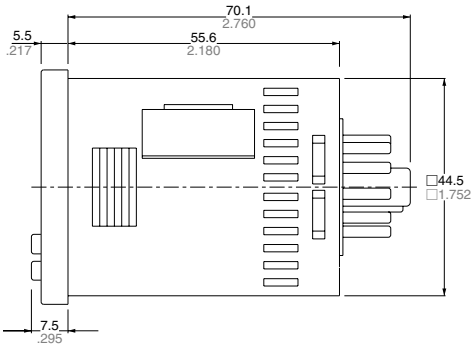
mm inch
General tolerance: ±1.0 ±.039

• LC4H-W electrical counter

Screw terminal type
(Flush mount): M3.5

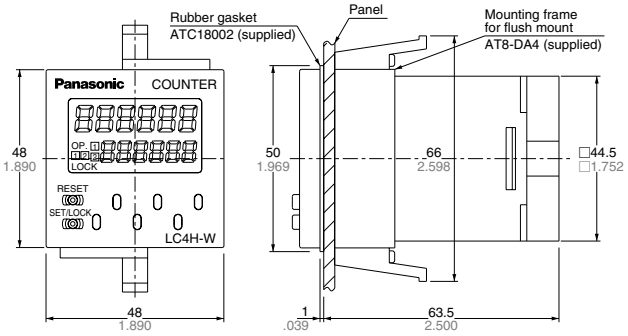


Pin type
(Flush mount/Surface mount)

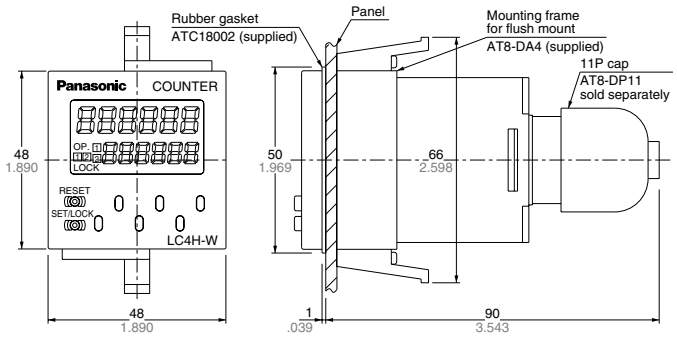


• Dimensions for flush mounting (with adapter installed)

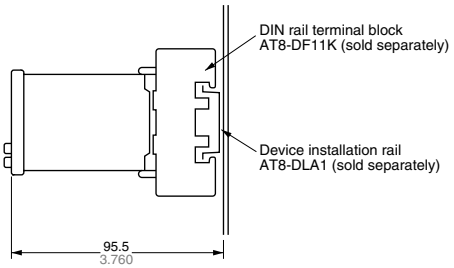
Screw terminal type



Pin type

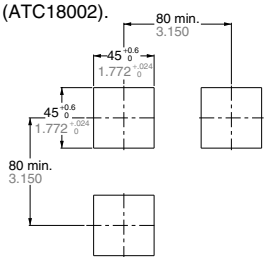


• Dimensions for front panel installations

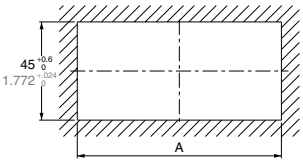


• Installation panel cut-out dimensions

The standard panel cut-out dimensions are shown below. Use the mounting frame (AT8-DA4) and rubber gasket (ATC18002).



• For connected installations



When n units are attached in a continuous series, the dimension of (A) is:

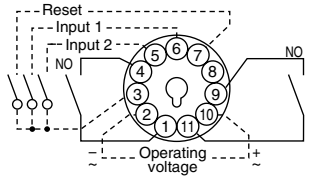
$A = (48 \times n - 2.5)^{+0.6}_{0}$

Note 1): The installation panel thickness should be between 1 and 5 mm .039 and .197 inch.
2): For connected installations, the waterproofing ability between the unit and installation panel is lost.

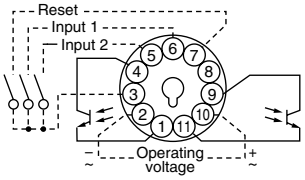
Terminal layouts and Wiring diagrams

• Pin type

Relay output type

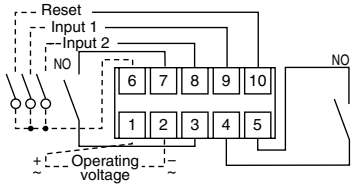


Transistor output type

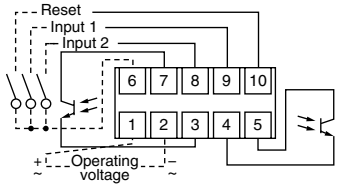


• Screw terminal type

Relay output type



Transistor output type



Note) For connecting the output leads of the transistor output type, refer to 5) Transistor output on page 141.

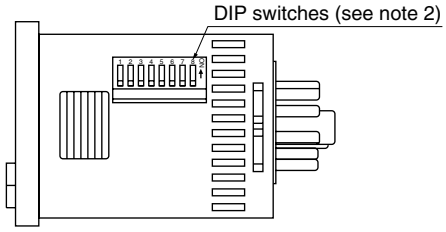
Setting the operation mode and counter

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

Set the output 1 and output 2 with the DIP switches on the side of the counter.
The minimum input signal width and maximum counting speed for the reset are set at the same time.

DIP switches

	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			



(Same for screw terminal type)

Table 1

DIP swith No.			Output mode (Output 1)
1	2	3	
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.			Output mode (Output 2)
6	7	8	
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

Notes:1) The counter and set value displays will display DIP Err.
2) Set the DIP switches before installing the counter on the panel.
3) When the DIP SW setting is changed, turn off the power once.
4) The DIP switches are set as ON before shipping.

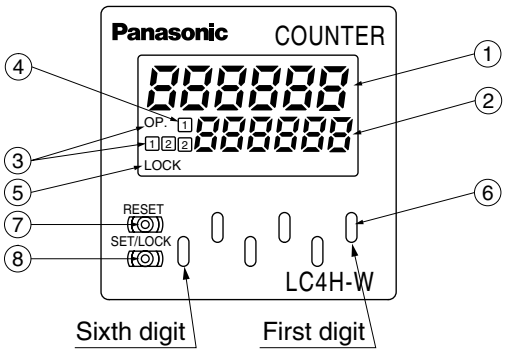
Setting procedure 2) Setting the set value

Set the set value with the UP keys on the front of the counter.

Front display section

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

*Note:
Pressing the [SET/LOCK] key switches the display between the set value 1 and 2 displays.
Display either set value [1] or [2], and set the value.



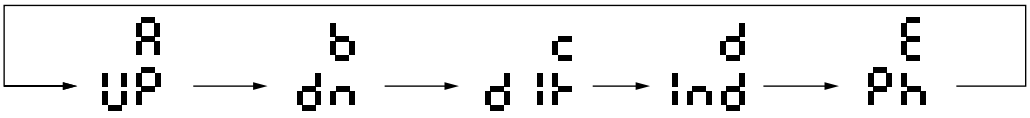
⑥ UP keys
[Changes the corresponding digit of the set value in the addition direction (upwards)]
⑦ RESET switch
Resets the counting value and the output
⑧ SET/LOCK switch
Used to select between the Setting 1 display and Setting 2 display, to set and confirm the input mode, and to lock the keys (UP and RESET keys not responsive to touch).

Procedure 3) Setting the input mode

Set the input mode using the key and 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 position changes counterclockwise.

Example)
Input mode displayed
(UP: addition 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-up value is smaller than the displayed count value. 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-up 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".

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.

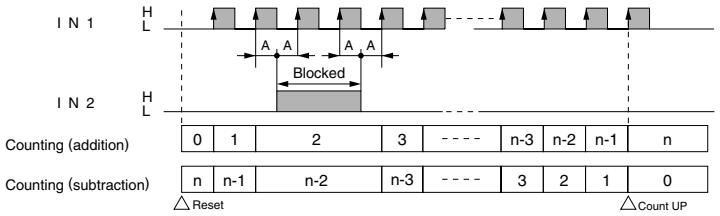
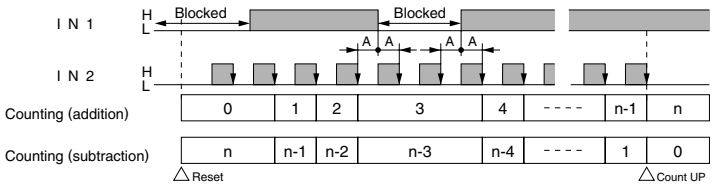
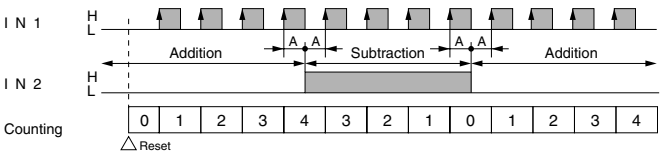
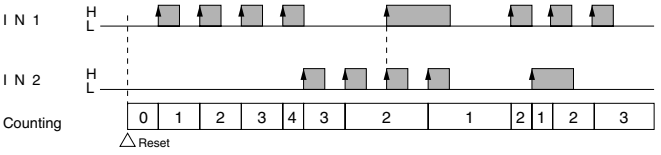
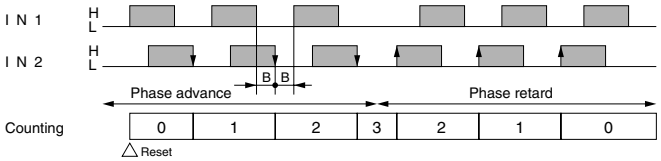
Operation modes

1. Input mode

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

- Addition UP
- Subtraction DOWN
- Directive 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 30 Hz: 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 counting input and IN2 is the input block (gate). 
Subtraction DOWN		• Example where IN2 is the counting input and IN1 is the input block (gate).  * "A" must be more than the minimum input signal width. *n: Set value 2
Directive DIR	IN1 is the counting input and IN2 is the addition or subtraction directive input. IN2 adds at L level and subtracts at H level.	 * "A" must be more than the minimum input signal width. *n: Set value 2
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

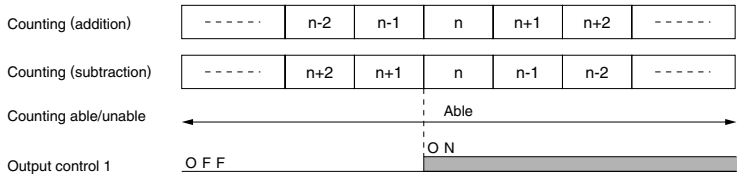
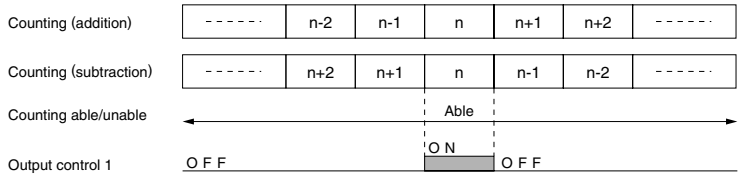
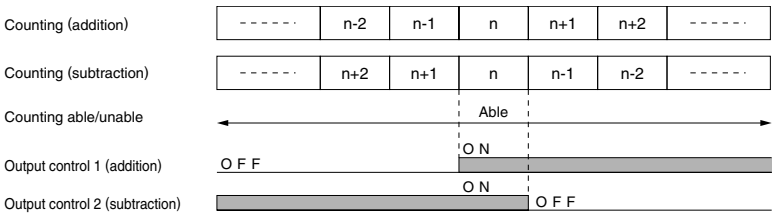
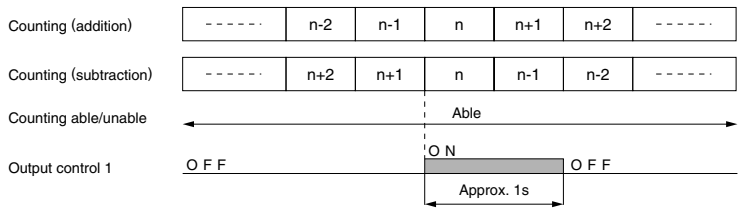
For the set value 1, you can choose one of the following four modes.

- 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

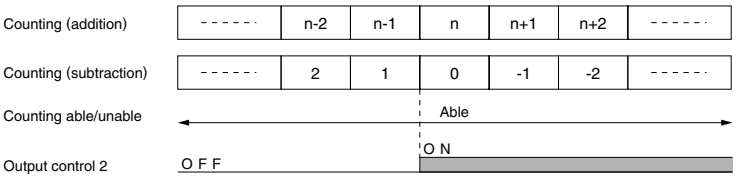
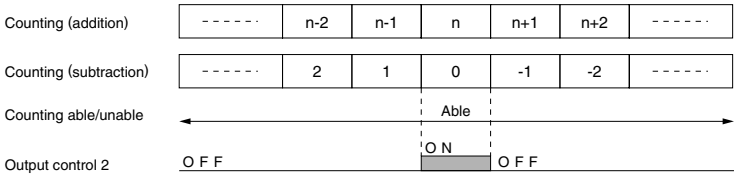
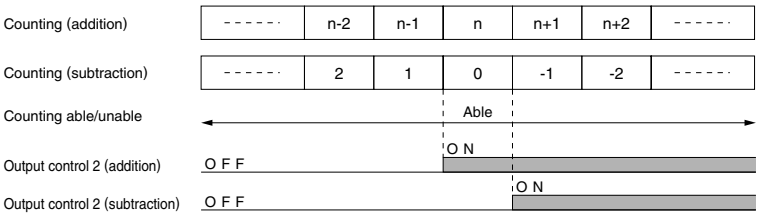
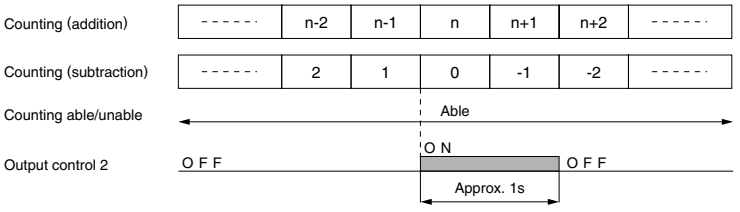
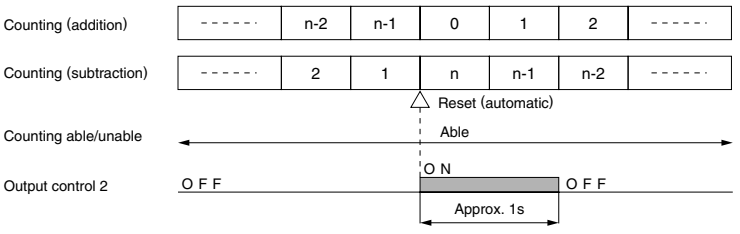
For the set value 2, you can choose one of the following eight modes.

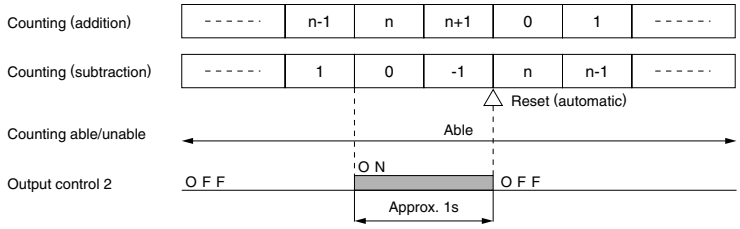
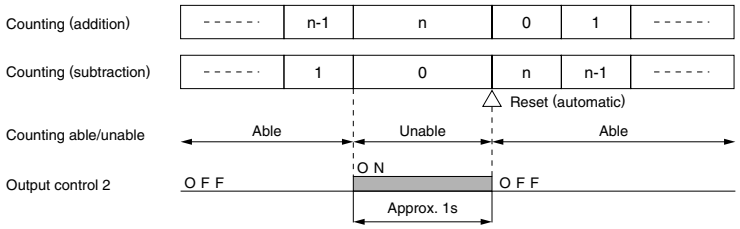
- Maintain output/hold count HOLD-A
- Maintain output/over count I HOLD-B
- Maintain output/over count II HOLD-C
- Maintain output/over count III HOLD-D
- One shot/over count SHOT-A
- One shot/recount I SHOT-B
- One shot/recount II SHOT-C
- One shot/hold count SHOT-D

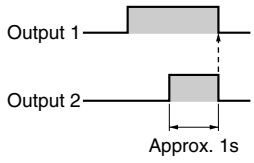
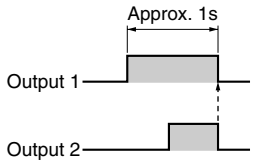
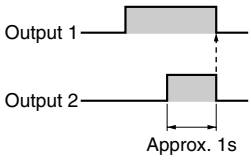
• Output mode for set value 1

Output mode	Operation	(Example when input mode is either addition or subtraction)
Maintain output 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.	 * n: Set value 1
Maintain output Over count II HOLD-C	Output control is maintained after count-up completion and until the next signal enters. However, counting is possible despite completion of count-up.	 * 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. The count operation is possible anyway.	 * n: Set value 1
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.	 * n: Set value 1

• Output mode for set value 2

Output mode	Operation	(Example when input mode is either addition or subtraction)
Maintain output 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.	 * n: Set value 2
Maintain output 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.	 * n: Set value 2
Maintain output Over count II HOLD-C	Output control is maintained after count-up completion and until the next signal enters. However, counting is possible despite completion of count-up.	 * 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. The count operation is possible anyway.	 * n: Set value 2
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.	 * n: Set value 2
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.	 * n: Set value 2

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

		Output mode for set value 1		
		HOLD-C HOLD-D	HOLD-B	SHOT-A
Output 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.

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