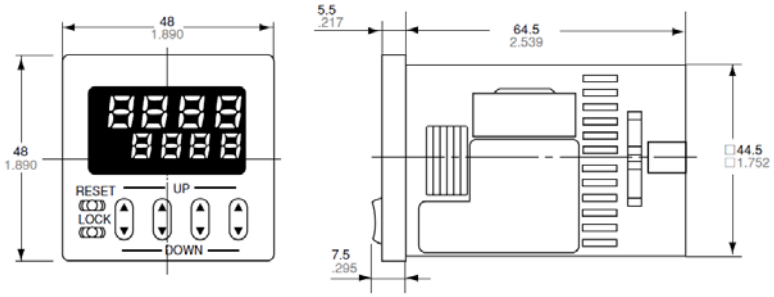
manual

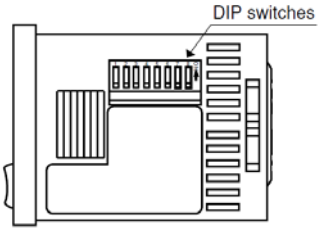
pulse counter CI030110

1. dimensional drawings



2. operating elements (control elements)

With the side-mounted DIP-switches 1-8 the input and output modes are set (down = off, up = on).
The DIP-switches are located behind a flap.



To activate the new settings the operating voltage has to be switched off and then switched on again.

	Item	DIP switch	
		OFF	ON
1	Operation mode	Refer to table 1	
2			
3			
4	Minimum reset input signal width	20 ms	1 ms
5	Maximum counter setting	30 Hz	5 kHz
6	Input mode	Refer to table 2	
7			
8			

DIP switch No.			Output mode
1	2	3	
ON	ON	ON	SHOT-A
OFF	OFF	OFF	SHOT-B
ON	OFF	OFF	SHOT-C
OFF	ON	OFF	SHOT-D
ON	ON	OFF	HOLD-A
OFF	OFF	ON	HOLD-B
ON	OFF	ON	HOLD-C
OFF	ON	ON	—

DIP switch No.			Input mode
6	7	8	
ON	ON	ON	Addition input
OFF	OFF	OFF	Subtraction input
ON	OFF	OFF	Directive input
OFF	ON	OFF	Independent input
ON	ON	OFF	Phase input
OFF	OFF	ON	—
ON	OFF	ON	—
OFF	ON	ON	—

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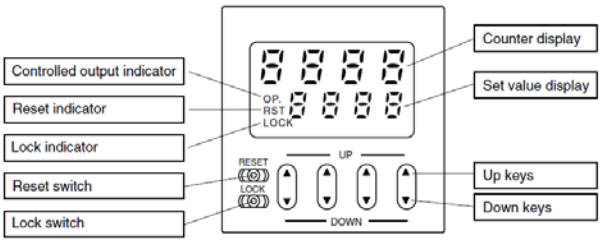
Functions of the front keys:

- With the „up-down“ keys you change the respective digit of the preset value
- With „reset“ the current value is set to ‚0‘ in the additive modue and set to the preset value in in the subtractive mode. During the operation, the reset indicator lights up on the display.
- With the locking switch „Lock“ the front keys are locked. If the keyboard lock is activated the lock indicator lights up on the display. Unlocking is caused by a further keystroke.

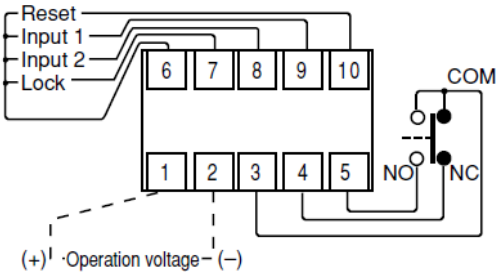


The preset value can also be changed during a count process. If the new value is changed to less than the current value, the counting will continue until it reaches 9999 with counting set to the additive direction. After an automatic zero crossing the counter reaches the new set value. If the the new value is changed to a value above the current value, counting set to the additive direction will continue until the new set value will be reached. If counting is set to the subtractive direction, counting will continue until -999 regardless of the new set value. Then the display will change to - - - -, a RESET must be carried out.

3. electrical connection

Operating voltage: 12 ... 24V DC
Output relay: voltage-free change-over contact
max. 250V AC, 5A

Counter inputs, reset input and interlock input will be active by closing of a potential-free contact between the respective terminal (7...10) and teminal 6. Please use metal contacts with short bounce times. Set the DIP-switches 4 and 5 to „OFF“ to avoid miscounts!



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Alternatively there is the possibility to control the inputs through an NPN-transistor (open collector) or a proximity switch with NPN-output.
In parallel to the operating voltage of the counter the connection of a proximity switch with NPN-output can be carried out (brown to 1, blue to 2). It is also possible to operate the proximity switch with an external supply (24V DC). In this case, a connection between terminal 6 to neutral of the external power supply has to be made. The black wire of the proximity switch is to connect to the appropriate terminal (7...10).

If the interlock input is activated via the connection terminals, all front keys are locked. The lock can't be released by pressing the key „Lock".

4. self-diagnosis function

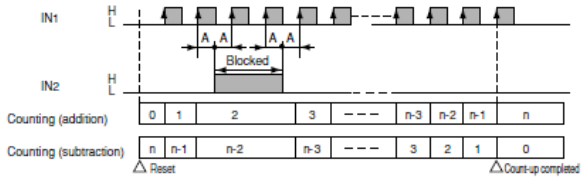
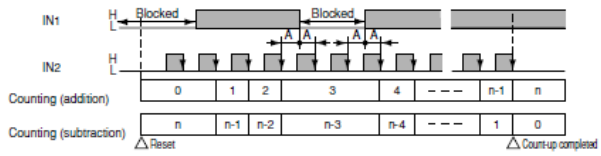
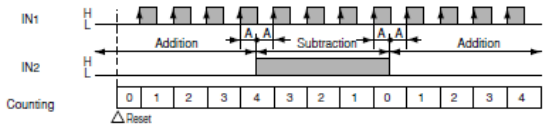
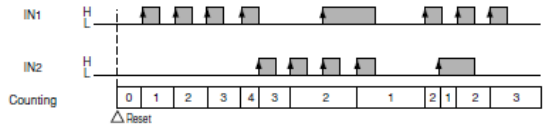
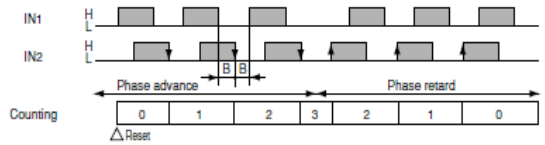
If a malfunction occurs, one of the following displays will appear.

Display	Contents	Output condition	Restoration procedure	Preset values after restoration
- - - - or - - - - - -	Minimum value went below –999 or –99999. See note 1.	No change	Enter reset or RESET key.	No change
d IPEH	Incorrect DIP switch setting.		Restart unit (correct DIP switch settings)	
EH-00	Malfunctioning CPU.	OFF	Enter reset, RESET key, or restart unit.	The values at start-up before the CPU malfunction occurred.
EH-01	Malfunctioning memory. See note 2.			0

Note 1: When the counter value goes below the minimum value during any of the subtraction, directive, independent, or phase input modes.
Note 2: Includes the possibility that the EEPROM's life has expired.

input modes

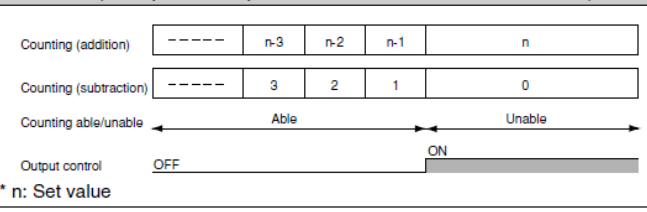
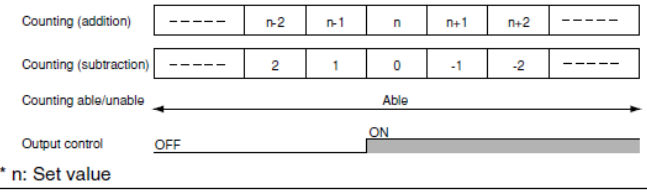
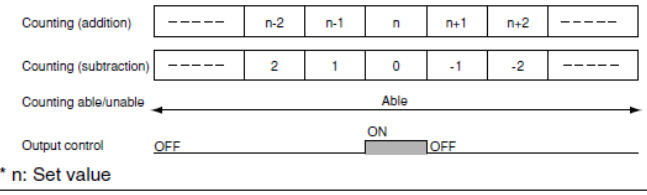
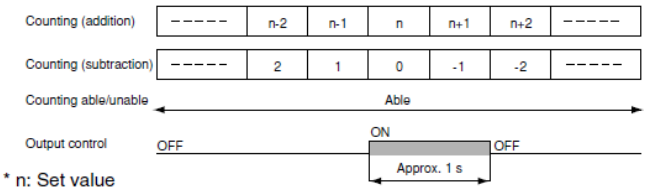
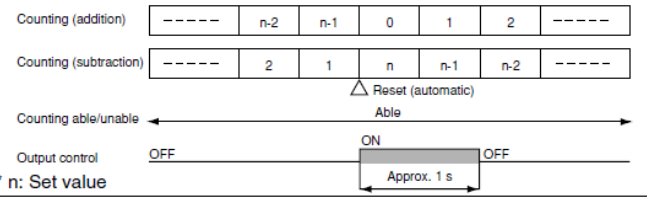
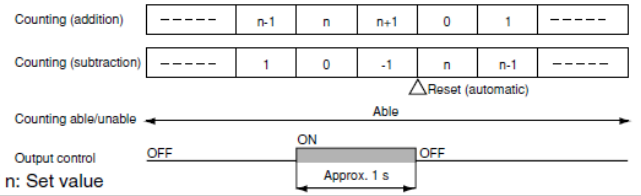
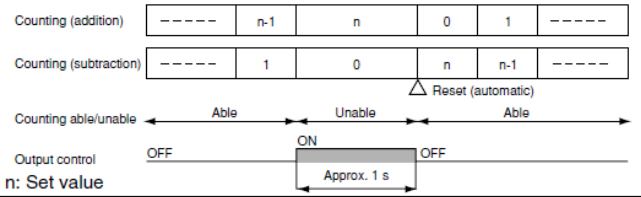
The input modes are set via the DIP-switches 6, 7 and 8.
According to the graphic representation, IN 1 corresponds to input 1 and IN 2 to input 2.

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 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.
Directive DIR	IN1 is the count 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.
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.

Note: The input mode “Phase” is used when connecting an incremental encoder. As the encoders of this series are not scalable, it is also not possible to set the display for a certain length.

output modes

The output modes will be set via the DIP-switches 1, 2 and 3.

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
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
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
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
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
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
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

<u>Warning:</u> Never use these devices in applications where the safety of a person depends on their functionality.

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