CI Series Multi-function Counter User Manual

Features:
- ⊙Counting Speed can reach 10KCPS
- ⊙Free Setting Ratio 0.00001～999999
- ⊙Universal Input, Choose NPN or PNP input through Software
- ⊙Up to two Counting / Length Counting alarm output
- ⊙Applicable to Light Industries, Machinery, Packing, Food industries, etc. for control of Length and counting etc

For your safty, please read following content carefully before you are using our Meter!

▣ Safe Caution

※ Please read the manual carefully before you use the temperature controller.
※ Please comply with the below important points. ⚠ Warning An accident may happen if the operation does not comply with the instruction. ⚠ Notice An operation that does not comply with the instruction may lead to product damage.
※ The instruction of the symbol in the manual is as below. ⚠ An accident danger may happen in a special condition.

⚠ Warning

1. A safty protection equipment must be installed or please contact with us for the relative information if the product is used under the circumstance such as nuclear control, medical treatment equipment, automobile, train, airplane, aviation and equipment etc. Otherwise, it may cause serious loss, fire or person injury.
2. A panel must be installed, otherwise it may cause creepage (leakage).
3. Do not touch wire connectors when the power is on, otherwise you may get an electric shock.
4. Do not dismantle or modify the product. If you have to do so, please contact with us first. Otherwise it may cause electric shock and fire.
5. Please check the connection number while you connect the power supply wire or input signal, otherwise it may cause fire.

⚠ Caution

1. This product cannot be used outdoors. Otherwise the working life of the product will become shorter, or an electric shock accident may happen.
2. When you connect wire to the power input connectors or signal input connectors, the moment of the No.20 AWG (0.50 mm2) screw tweaked to the connector is 0.74n.m - 0.9n.m. Otherwise the connectors may be damaged or get fire.
3. Please comply with the rated specification. Otherwise it may cause electric shock or fire, and damage the product.
4. Do not use water or oil base cleaner to clean the product. Otherwise it may cause electric shock or fire and damage the product.
5. This product should be avoid working under the circumstance that is flammable, explosive, moist, under sunshine, heat radiation and vibration. Otherwise it may cause explosion.
6. In this unit it must not have dust or deposit, otherwise it may cause fire or mechanical malfunction.
7. Do not use gasoline, chemical solvent to clean the cover of the product because such solvent can damage it. Please use some soft cloth with water or alcohol to clean the plastic cover.

1. Model Illustration

CI□□-R C□0
- 0: Without Communication 8: With RS485 Communication
- Display Digit: 6: 6 digit
- Alarm Output: C: Two Alarm
- Control Ouput: R: Relay Output
- Power Supply: Blank: 100-240V AC/DC F: 24V DC
- Dimension(mm): 4: 48H x 48W x 94.5L 7: 72H x 72W x 94.5L
- CI Series Multi-function Counter

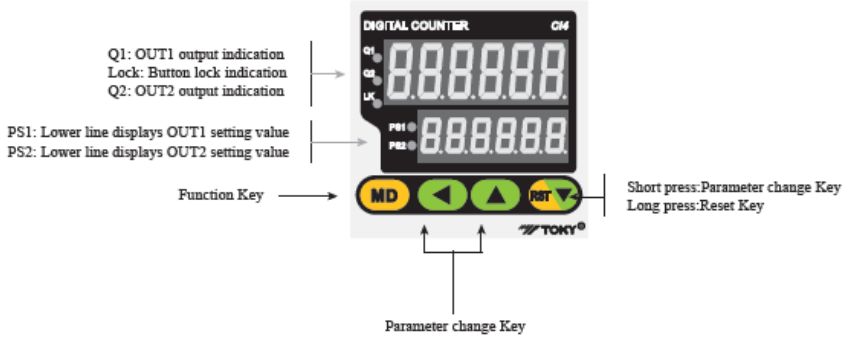
2. Model Type

No.	Model	Size (mm)	Output	Display Digit	Alarm Output	Communication
1	CI7-RC60	72Hx72W	Relay Output	6	2	NO
2	CI7-RC68	72Hx72W	Relay Output	6	2	RS485
3	CI4-RC60	48Hx48W	Relay Output	6	2	NO
4	CI4-RC68	48Hx48W	Relay Output	6	2	RS485

3. Technical Specification

Series		CI
Display		Dual Line 6 digit
Power Supply		100-240V AC/DC
Fluctuation range of Allowed Voltage		90～110% of Rated Voltage (AC Power)
Input Frequency of INA, INB		1Hz、30Hz、1KHz、5KHz、10KHz can be choosed
Width of Input Pulse		INA,INHIBIT,RESET,BATCH RESET,can choose 1ms or 20ms
Input		Voltage Input: input impedance 5.4KΩ,"H"：5～30VDC "L":0～2VDC No-voltage Input: for Short-circuit impedance is 1KΩ, Residual Voltage: Max 2V DC, Open-circuit impedance Max 100KΩ
One-shot Output		10/50/100/200/500/1000/2000/5000ms
Control Output	Contact Capacity	NO:250VAC 3A Impedance NC：250VAC 2A Impedance
	SSR Capacity	Max: 30VDC， Max: 100mA
Data Saving Time		10 Years
Power of External Sensor		12VDC±10% Less than 100mA
Ambient Temperature		-10℃～50℃ Unfreezing State
Storage Temperature		-25℃～65℃ Unfreezing State
Ambient Humidity		35-85%RH
Dielectric Strength		Min: 100MΩ (at500VDC)
Dielectric		2000V AC 50/60Hz one minute
Interferance (AC Power)		±2kV Square-wave generator interference (width of pulse: 1us)
Vibrate	Mechnical	Amplitude:0.75mm Frequency: 10-55Hz X,Y,Z each direction for one hour
	Fault	Amplitude:0.5mm Frequency: 10-55Hz X,Y,Z each direction for ten minutes
Impact	Mechnical	300/S² (about 30G) X,Y,Z each direction for three times
	Fault	100/S² (about 10G) X,Y,Z each direction for three times
Using Life	Mechnical	more than 10,000,000 times
	Electrical	more than 100,000 times (NO: 250V AC 3A Load NC: 250V AC 2A Load)

4. Panel Indication



5. Operation Instruction

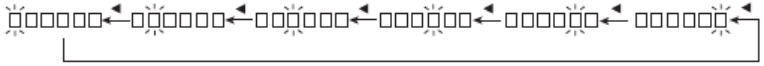
1. How to change counter setting value (Example: change the setting calue from 175 to 180)

(1) 

Under Measuring Status, press ◀ Key to enter into Setting Value modify status, Press ◀ Key again m choose digit 5 and let it flickers

(2) 

Press ▲ Key or ▼ Key 5 times, change the digit from "5" to "0"



Under Measuring Status, press ◀ Key to enter into Setting Value Modify Status, the flicking digit is from right to left circularly

(3) 

Press ◀ Key again, choose digit "7" and let it flicker

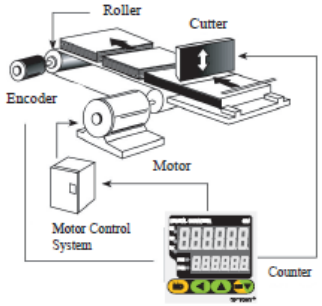
(4) 

Press ▲ Key for one time, change Digit "7" to "8", Press MD Key for confirmation and return back to measuring status

6. Application of Prescale Function

E.g.:Pulse number P is a number of pulse created by rotary encoder,L is the measured length,,
Prescale value is equal to L divides P.

◎ To use counter and rotary encoder to control length



The diameter of the roller connected to the rotary encoder is 22mm,
The PPR of the encoder is 1000

$$\text{Prescale Value} = \frac{\pi \times \text{Diameter of the Roller(D)}}{\text{PPR}}$$

$$= \frac{3.1416 \times 22}{1000}$$

$$= 0.069\text{mm/pulse}$$

Set 0.069 of prescale value at prescale value set mode

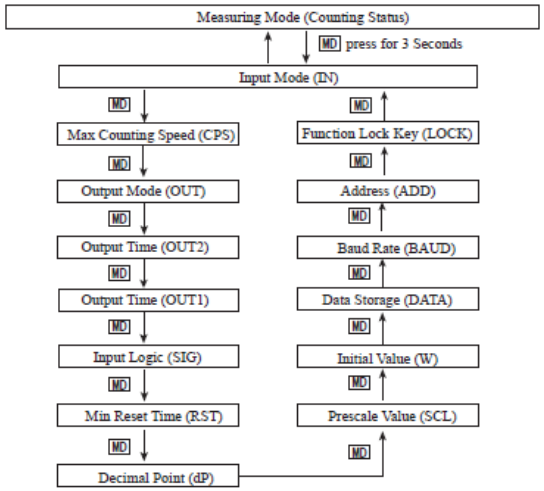
7. Lock Key Setting

Lock Key be used for avoiding mis-operation
LoFF (LOCK OFF) : Cancel Lock Key Function.
LoC.1 (LOCK LEVEL1) : Lock RST Key
LoC.2 (LOCK LEVEL2) : Lock◀ and▲ and▼ Key
LoC.3 (LOCK LEVEL3) : Lock RST and Lock ◀and ▲and ▼ Key

8.Setting of Counter Function Modes

Setting Mode	Select setting (▼ 、▲)
Input Type (In)	U→d→U d-A→Ud-b→Ud-C If the output Mode is S, T and D, then input mode just can choose Ud-A, B, C
Max Counting Speed (CPS)	1→30→1K→5K→10K Counting Speed means the highest frequency of INA and INB allowed input, if the setting value is 5K, the error will be existed if the input signal over than 5K.
Output Mode (oUt)	※Up Or Down Input Mode F→n→C→r→H→P→9→A ※Up/Down - A、B、C Input Mode F→n→C→r→H→P→9→A→S→L→d
OUT2 Output Time (oUt2)	10→50→100→200→500→1000→2000→5000 Units: ms
OUT1 Output Time (oUt1)	10→50→100→200→500→1000→2000→5000→HoLd Units: ms
Input Logic (SIG)	▲ or ▼ : Choose NPN or PNP input type
Min Reset Time (rSt)	1 ⇄ 20 Min Signal width of RESET (mm)
Decimal Point (dP)	→ ------ → ------ → ------ → ------ * * *
Prescale Value (SCL)	◀ Key: Shift the flickering digit RST Key: Modify prescale value decimal point ▼、▲ Key: Change the Prescale value Setting range of prescale value is 0.00001--999999
Initial Value (C)	◀ Key: Shift the flickering digit ▼、▲ Key: Change the Initial value Initial value range: -99999---999999 Initial Value: display value after Manual or Auto Reset
Memory Retention (mREA)	CLrE ⇄ rEC CLrE: Power OFF Counting Value Reset rEC: Power OFF Counting Value Save
Baud Rate (bAUd)	4800 ⇄ 9600 Communication Baud is 4800 and 9600 can be choosed
Address (Add)	Communication Address: Can be setting freely between 1-247
Lock Key (LoCK)	LoFF→LoC.1→LoC.2→LoC.3

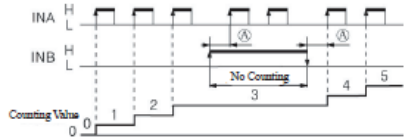
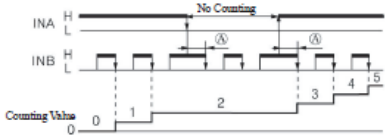
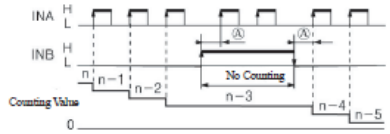
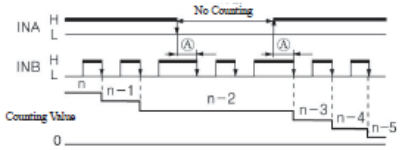
9. Active Model Exchange

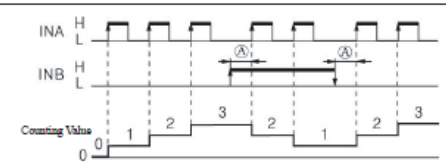
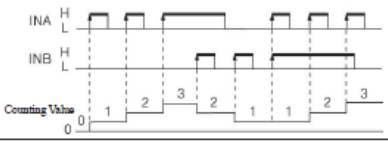
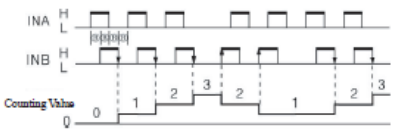


1. Under Function Setting Mode. if there is no any operation within 60 seconds, the counter will return back to normal measuring status
2. If you choose F or N output mode,, when the counting value reached setting value,the output will be keeped, there is no "OUT2 output time" menu in function setting mode.
3. If the output Mode is S, T and D, then input mode just can choose Ud-A, B, C. If the input mode want to choose UP/DOWN, then output mode just can chosoe other modes except S,T,D.
4. If the output mode choose D, when counting frequency over than 1Kcps, please choose SSR output.
5. When the Max counting speed is 5Kcps or 10Kcps, if change output mode to D, counting speed will automatically choose 1Kcps.
6. In the mode of function setting,the external input signal can be accepted, after exit, display value and output will be reset automatically.
7. Initial Value over than OUT1 and OUT2 setting value, OUT1 and OUT2 no output

10. Counter Meter Input Active Mode

※ A: More than Mim Signal Width B: More than half Mim Signal Width

Input Type	Illustration	Note
U (Add)		INA: Counting Input INB: Control Input INB=L; INA pulse input add count INB=H; INA forbid to count
		INA: Control Input INB: Counting Input INA=H; INB pulse input add count INA=L; INB forbid to count
D (Minus)		INA: Counting Input INB: Control Input INB=L; INA pulse input minus count INB=H; INA forbid to count
		INA: Control Input INB: Counting Input INA=H; INB pulse input minus count INA=L; INB forbid to count

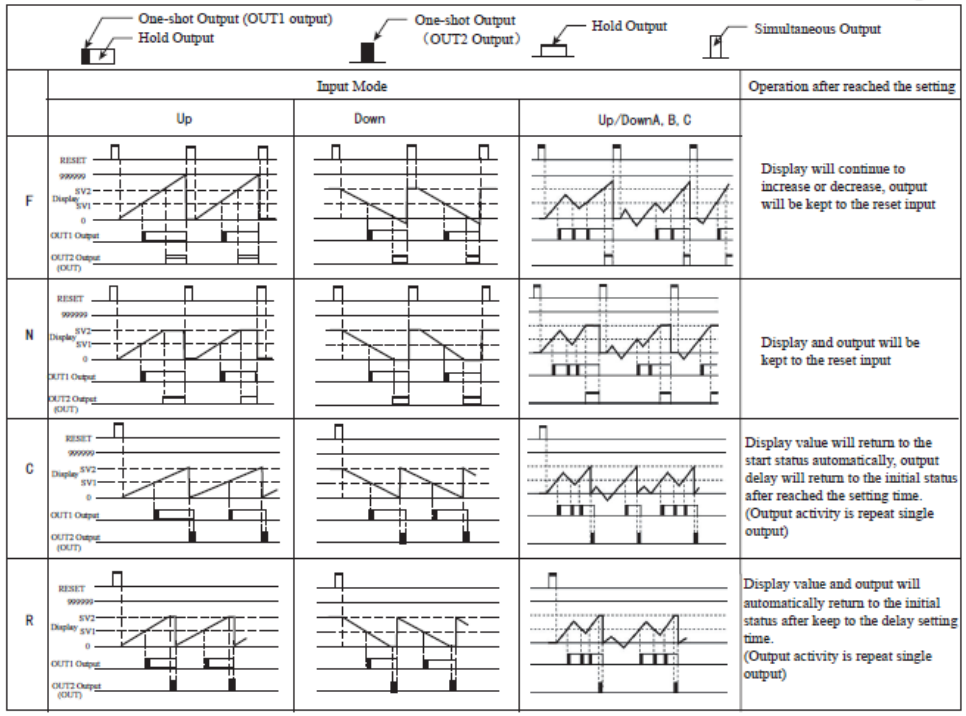
Input Type	Illustration	Note
Ud-a (Add/ Minus-A) Order Input		INA: Counting Input INB: Control Input INB=L; INA pulse input add count INB=H; INA input pulse minus count
Ud-b (Add/Minus-B) Sole Input		INA input pulse, add count INB input pulse, minus count
Ud-c Phase Difference Input		INA before, INB add count INA delay, INB minus count Phase difference input (for rotary encoder)

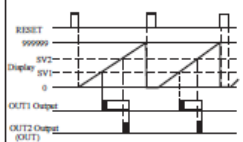
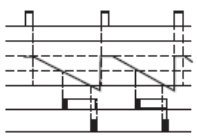
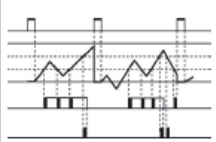
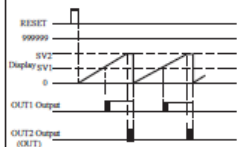
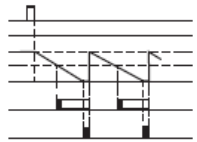
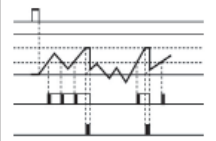
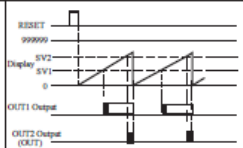
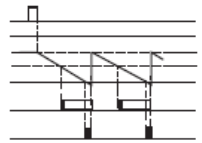
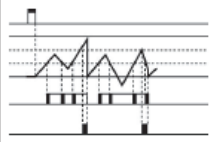
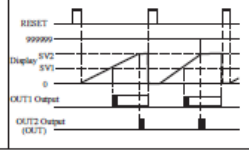
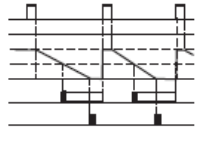
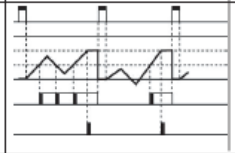
When using rotary encoder's A, B ohase output, please connect meter's INA, INB input terminal, and turn the input mode to Ud-C.

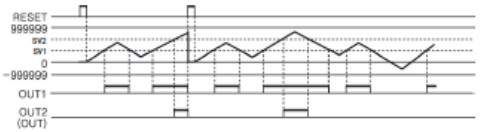
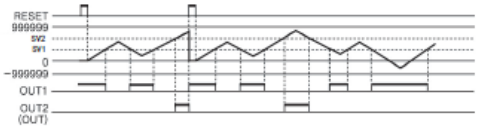
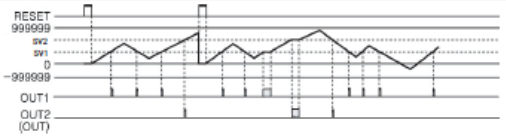
Symbol \ Input Type	Voltage Input (PNP)	Terminal Input (NPN)
H	5~30VDC	Short Circuit
L	0~2VDC	Open Circuit

11. Output Operation Mode For Counter

※ Initial Value ⏝ =0

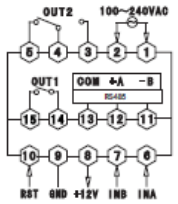


	Input Mode			Operation after reached the setting
	Up	Down	Up/DownA, B, C	
K				Display value will continus to increase or decrease until reset input, output delay will return to the initial status after reached the setting time. (Output activity is repeat single output)
P				Display value kept to the delay time, will display the next cycle. (In the delay time, the next cycle counting and timing from initical status) (Output activity is repeat single output)
Q				Display value will continus to increase or decrease within output delay time, display value and output will return to the initial status after output delay reached the setting time. (Output activity is repeat single output)
A				Display value and OUT1 output will be kept to the reset input, OUT2 output will return to the initial statusafter reaching the setting time. (Output activity is repeat single output)

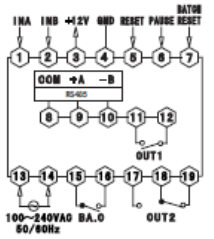
	Up/DownA, B, C	Operation
S		OUT1 and OUT2 meet following conditions,will keep ON status: Display Value≥Setting Value 1 Display Value≥Setting Value 2
T		When display value is smaller than the preset value "1", OUT1 keeps ON stataus When display value is smaller than the preset value "2", OUT2 keeps OFF stataus
D		When display value = setting value OUT1 and OUT2 keeps ON status When the speed of counter meter setting to 1kcps, should use SSR output

12.Connection Drawing

CI4



CI7



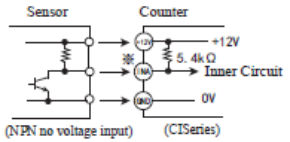
Note: If there is any change, please subject to the drawing on the meter!

13. Input Connection

1. Input logic: without voltage input (NPN)

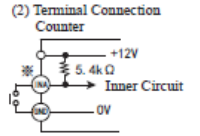
(1). SSR input

Standard sensor: NPN output



(NPN no voltage input) (CISeries)

(2) Terminal Connection



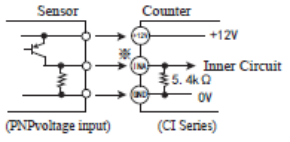
(CI Series)

Counting Speed: 1 or 30 cps setting (Counter)

2. Input logic : voltage input (PNP)

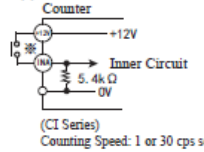
(1). SSR input

Standard sensor: NPN output



(PNPvoltage input) (CI Series)

(2) Terminal Connection

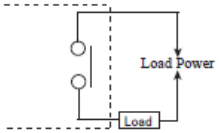


(CI Series)

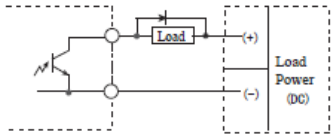
Counting Speed: 1 or 30 cps setting (Counter)

14. Output Connection

Relay Output
Timer/Counter



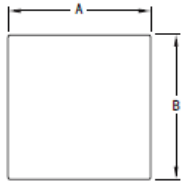
SSR Output
Timer/Counter



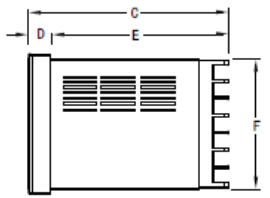
SSR Output:
1. Please use adaptable load and power, SSR output can not over then ON/OFF, capacity (30VDC, less than100mA)
2. Making sure that the power connected in the right way,
3. When using Inductive load(Relay, etc), Filter circuit(Diode, etc) must connect to the load ends

15. Dimension

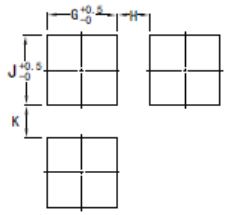
Panel Size



Side Face Size



Mounting Size



Model	A	B	C	D	E	F	G	H(Min)	J	K(Min)
CI4:(48*48)	48	48	97.5	3	94.5	45	45.5	25	45.5	25
CI7:(72*72)	72	72	97.5	3	94.5	67	67.5	25	67.5	25