TMCON®

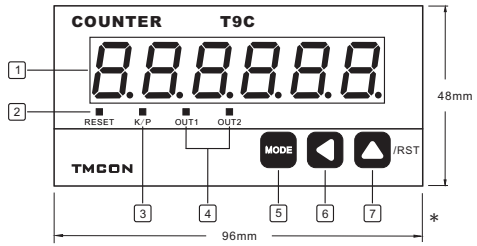
T9C Intelligent Counter (DIN 48×96)

- Using 0.52 inches high brightness LED digital display.
- User-friendly interface, easy to operate.
- Powerful counter function and length meter function.
- Compatible with a wide variety of inputs, such as NPN/PNP niversal input and DC 2-wire Sensors.
- RS485 digital communication function, uses the international general Modbus communication protocol.

■ Ratings

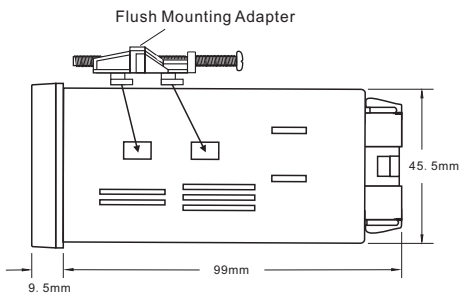
Model	T9C-N	T9C-1P	T9C-2P
communication	T9C-NS	T9C-1PS	T9C-2PS
Category	Indicator	single preset	double preset
supply voltage	1：AC100～240V 50/60HZ　2：AC/DC12～24V(voltage range:85～110%)		
Power consumption	Approx. 5 VA at 264 VAC, Approx. 3.2 W at 12 VDC		
Display	7-segment, LED digital display　Display range：-99999~999999		
Input modes	UP,UP/DOWN-A、B、C	UP,DOWN,UP/DOWN-A、B、C	
Output modes	———	N、F、C、R、L、K、D	N、F、C、R、L、K、D、H
Prescaling function	0. 0001～99. 9999		
Decimal point adjustment	Rightmost 4 digits		
Max. counting speed	5Hz,30Hz ,1kHz,5kHz (selectable, ON/OFF ratio 1:1)		
Reset system	External, manual	External, manual, and automatic reset (internal according to C, R, and K mode operation)	
Input signals	CP1、CP2、RESET		
Input method	No-voltage input/voltage input (switchable) No-voltage input. ON impedance: 1 kΩ max. (Leakage current: 5 to 20 mA at 0 Ω) ON residual voltage: 3 V max.OFF impedance: 100 kΩ min. Voltage input High (logic) level: 4.5 to 30 VDC Low (logic) level: 0 to 2 VDC (Input resistance: approx. 4.7 kΩ)		
Control output	———	3 A at 250 VAC/30 VDC, resistive load (cosϕ=1)	
External power supply	12VDC ±10%　100mA Max		
Memory backup	EEPROM (overwrites: 100,000 times min.) that can store data for 10 years min.		
Dielectric strength	AC2000V 50/60Hz 1min		
Ambient temperature	Operating: −10 to 55°C (with no icing or condensation) Storage: −25 to 65°C (with no icing or condensation)		

■ The panel and the size

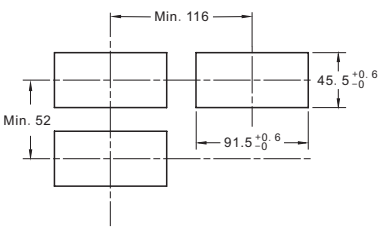


1. Present Value/Set Value
2. Reset Indicator
3. Key Protection Indicator
4. Control Output Indicator
5. Mode Key(Used to switch mode and setting items.)
6. Data shift key
7. Up Keys or Reset Keys

* /RST　Under normal measurement mode: As RESET Reset key.
Under the parameter setting state: As UP key.

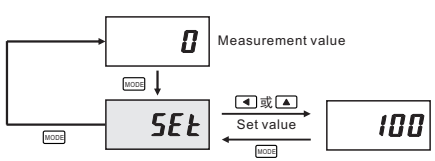


Panel Cutouts(mm)：

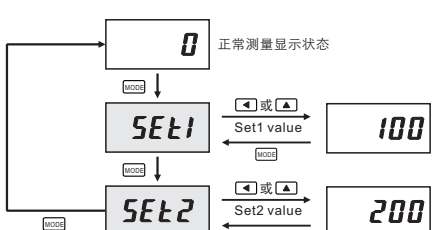


■ Preset count value (T9C-N doesn't have this set)

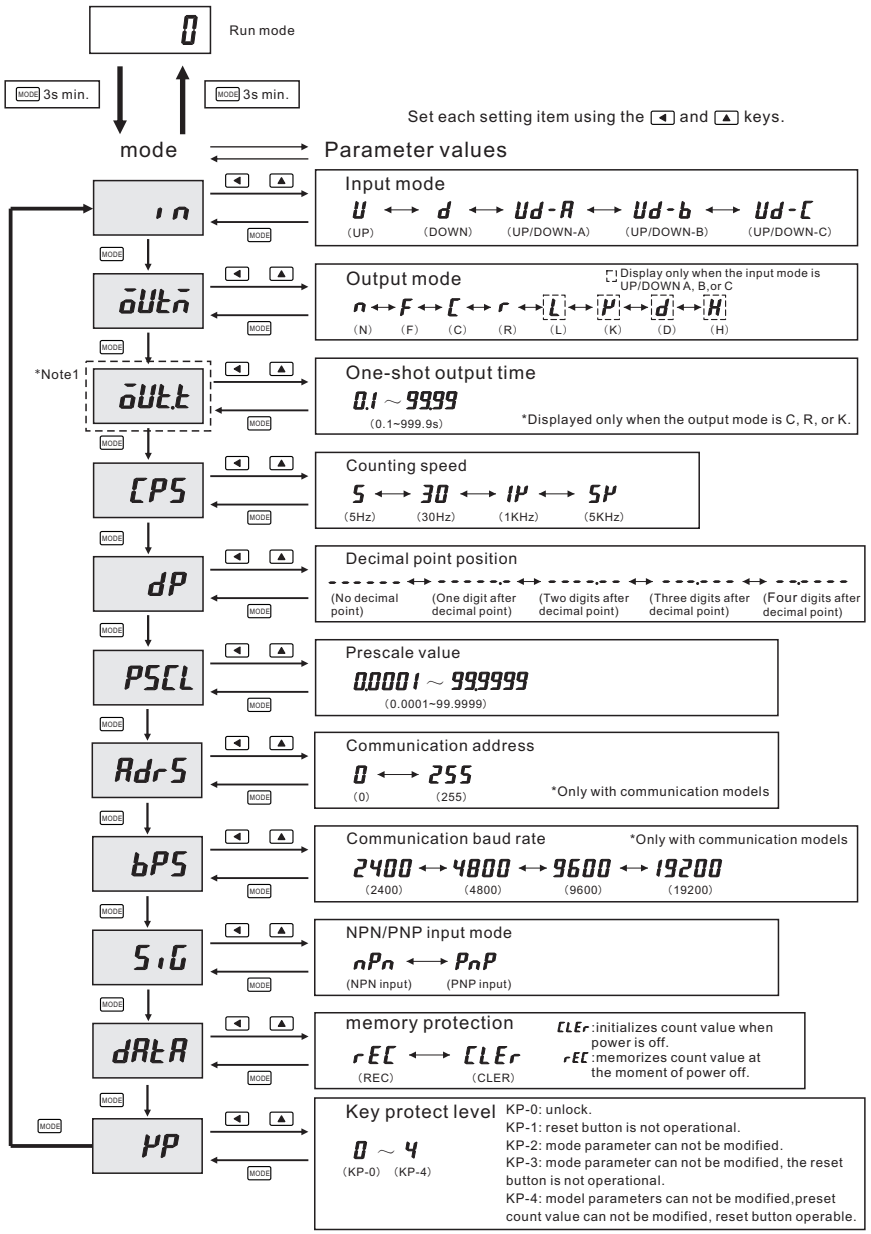
- T9C-1P single preset



- T9C-2P ouble preset

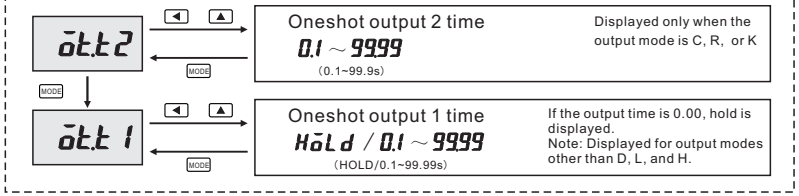


■ T9C-1P/T9C-2P Settings for All Functions

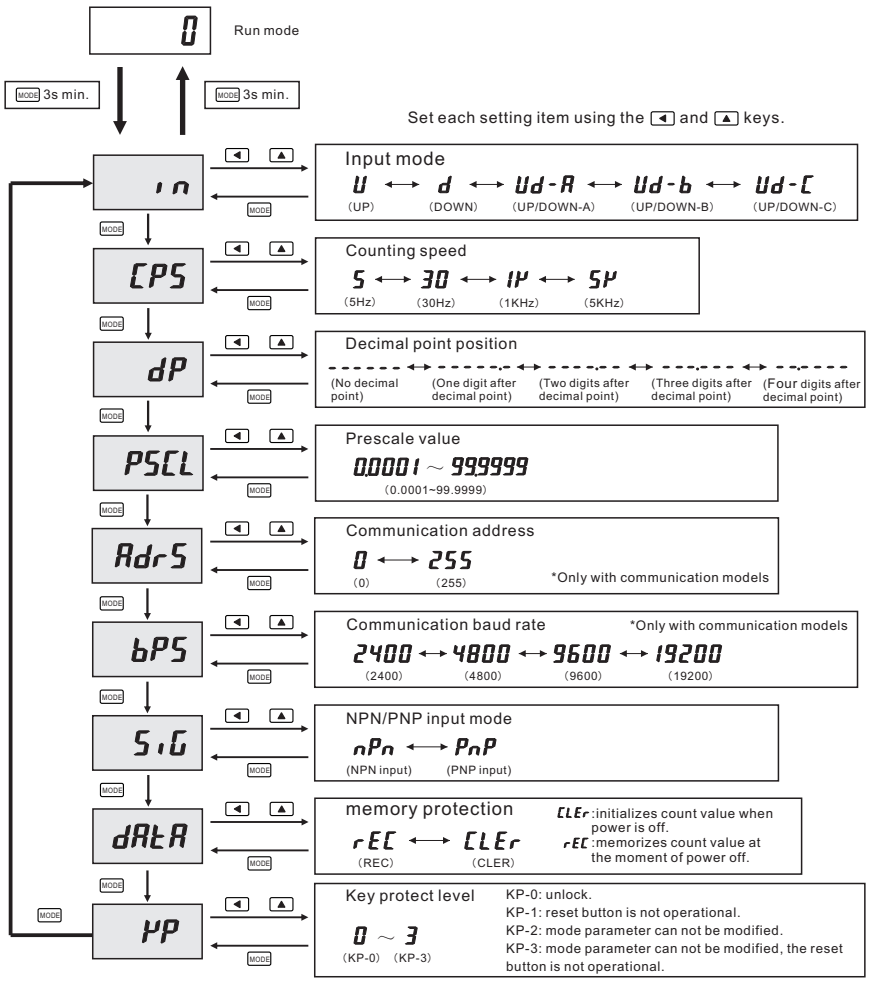


*Note1

● When using as a 2-stage counter(T9C-2P):



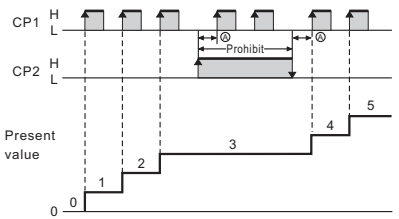
■ T9C-N Settings for All Functions



■ Input Modes and Present Value

UP (Increment) Mode

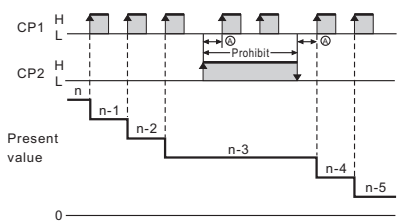
CP1: Count input; CP2: Prohibit (gate) input



Ⓐ must be greater than the minimum signal width. (See note 2.)

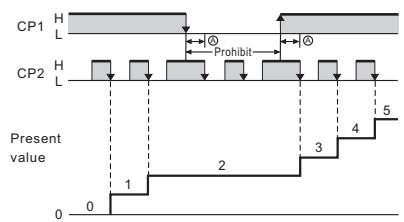
DOWN (Decrement) Mode

CP1: Count input; CP2: Prohibit (gate) input



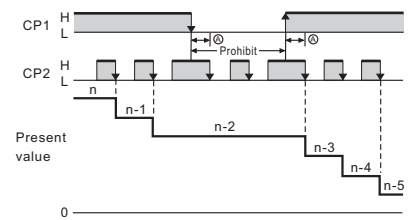
Ⓐ must be greater than the minimum signal width. (See note 2.)

CP1: Prohibit (gate) input; CP2: Count input



Ⓐ must be greater than the minimum signal width. (See note 2.)

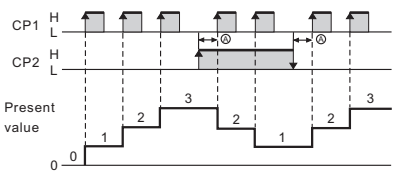
CP1: Prohibit (gate) input; CP2: Present value



Ⓐ must be greater than the minimum signal width. (See note 2.)

UP/DOWN A Command Input Mode

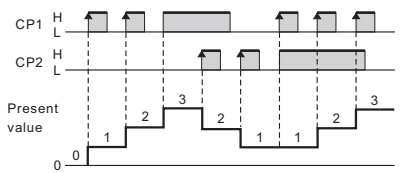
CP2 did not enter CP1 plus count, the CP2 input is valid CP1 count down



Ⓐ must be greater than the minimum signal width. (See note 2.)

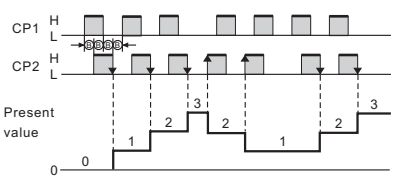
UP/DOWN B Individual Input Mode

input CP1 UP count, input CP2 count down



UP/DOWN C Quadrature Input Mode

Automatically determine the forward or reverse



Ⓑ must be at least 1/2 the minimum signal width. (See note 2.)

Note: 1. If the configuration selection is set to dual counter, CP1 and CP2 input will operate in the same way as the count input(CP1) of UP (increment) mode.

2. Ⓐ must be greater than the minimum signal width and Ⓑ must be at least ½ the minimum signal width. If they areless, a count error of ±1 may occur.

Minimum signal width: 100 ms (when maximum countingspeed = 5 Hz)
16.7 ms (when maximum countingspeed = 30 Hz)
500μs (when maximum countingspeed = 1KHz)
100 μs (when maximum countingspeed = 5 kHz)

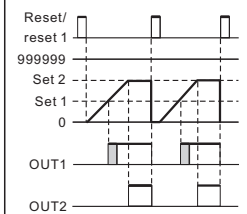
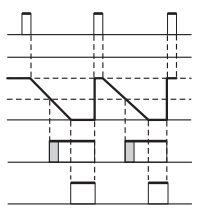
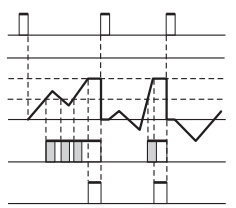
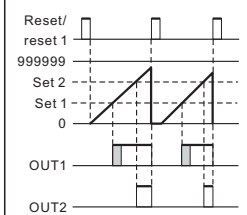
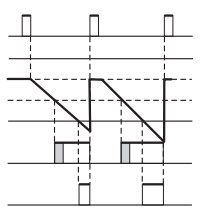
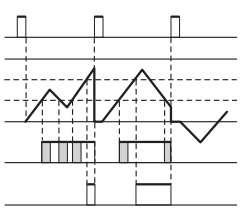
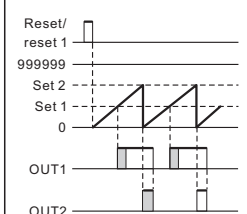
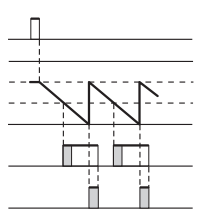
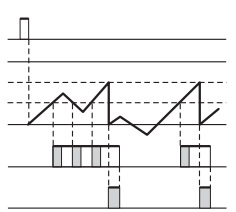
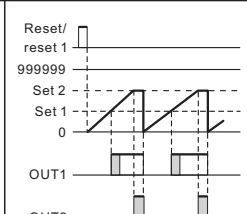
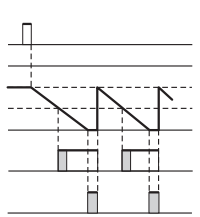
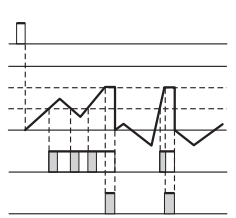
3. Counting starts when the CP1 is turned ON after turning ON the power.

4. The meaning of the H and L symbols in the tables is explained below.

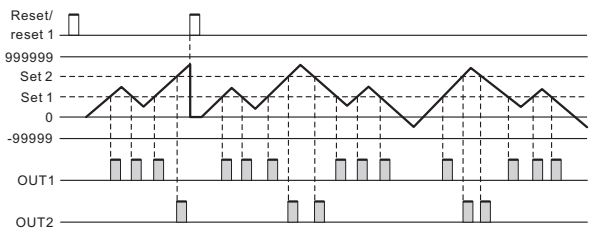
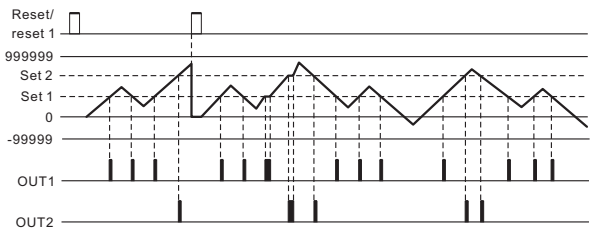
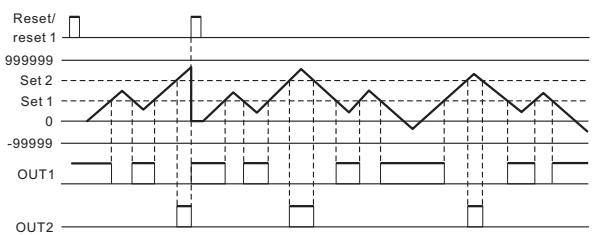
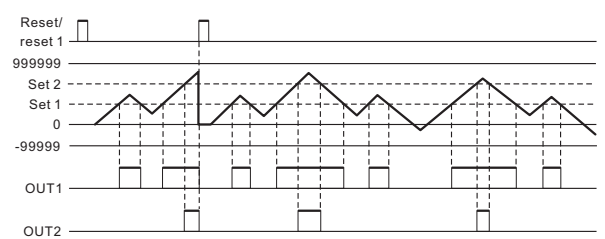
Input method Symbol	No-voltage input (NPN input)	Voltage input (PNP input)
H	Short-circuit	DC4.5~30V
L	Open	DC0~2V

■ Input/Output Mode Settings

Operation for 1-stage models is the same as that for OUT2.
When using a 2-stage model as a 1-stage counter, total and preset counter, or dual counter, OUT1 and OUT2 turn ON and OFF simultaneously.

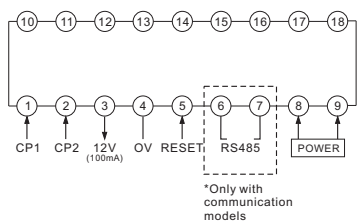
Output mode	Input mode: UP	Input mode: DOWN	Input mode: U/D-A、B、C	Operation after count completion
N				The outputs and present value display are held until reset/ reset 1 is input.
F				The present value display continues to increase/decrease. The outputs are held until reset/reset 1 is input.
C				As soon as the count reaches SV, the present value display returns to the reset start status. The present value display does not show the present value upon count-up. The outputs repeat one-shot operation.OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 oneshot output time is independent of OUT2.
R				The present value display returns to the reset start status after the one-shot output time.The outputs repeat one-shot operation. OUT1 self-holding output turns OFF after the OUT2 one-shot output time.The OUT1 oneshot output time is independent of OUT2.

Self-holding output　　Instantaneous(equals) output　　One-shot output　　(The one-shot output time can be set in the range 0.01 to 99.99s.)

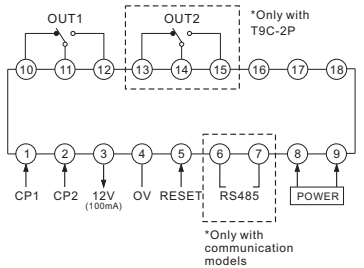
Output mode	Input mode U/D-A、B、C	Operation after count completion
K		The display continues to increase /decrease until the overflow or underflow value is reached. One-shot output only.
D		The display continues to increase /decrease until the overflow or underflow value is reached. The outputs are ON while the count is equal.
L		The display continues to increase /decrease until the overflow or underflow value is reached. OUT1 is held while the present value is less than or equal to set value 1. OUT2 is held while the present value is greater than or equal to set value 2.
H		The display continues to increase /decrease until the overflow or underflow value is reached. OUT1 is held while the present value is greater than or equal to set value 1. OUT2 is held while the present value is greater than or equal to set value 2. Note: H mode is available only when using a 6-digit model as a 2-stage counter.

■ Wiring diagram

● T9C-N

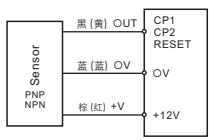


● T9C-1P/T9C-2P



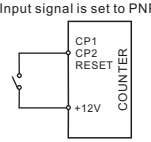
■ Signal input connection diagram

Sensor input:



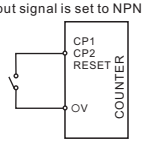
Contact Input:

Input signal is set to PNP



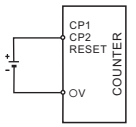
Contact Input:

Input signal is set to NPN

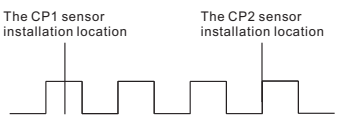


DC voltage pulse signal input:

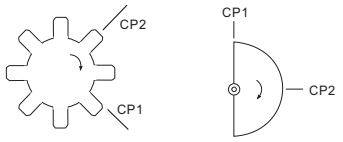
1:Active-high internal set PNP
2:Active-Low internal set NPN



The UP / DOWN-C output mode of the sensor installation method:



*CP1 and CP2 ready position by 90 °



*The UP / DOWN-C mode can automatically determine the forward reverse movement, Forward will be added to UP count, the reverse will count down.

■ Before the use of attention

1: before use, make sure that the voltage and connection, to avoid lead to instrument damage due to incorrect wiring.

2: Avoid the instrument used in high temperature, flammable, explosive, corrosive, dust, severe shock, humidity, static electricity, oil and other occasions.

3: Twist of the instrument signal lines and power lines may cause interference

Please try to stay away from these strong electric wires, to conduct an independent wiring, and signal lines as far as possible to shorten the wiring distance.

4: Contact signal input, the CPS count rate should be set for low-speed 30Hz, can Prevent switch bounce error count. Reasonable speed settings, you can make the count more accurate.

5: Output relay, please do not exceed the switching capacity, according to the rated load, otherwise it would contact burned, such as an external high current relay or contactor exceeds its capacity.

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