NEFTIM
APPLIED AUTOMATION TECHNOLOGIES

Operation Manual

NC7X Digital Counters

DIN 48×48mm, 4 digits counter

- Bright, easy to read color LCD display, showing a new standard in the future!
- POWER SUPPLY VOLTAGE：AC/DC100V~240V or AC/DC12V~24V.
- Each digit has its plus and minus buttons, simple.
- Terminals with protective cover to prevent electric shock.
- NC7X-P With the prescale value function, capable of measuring length.
- A variety of input or output mode, it also has power and memory function.
- Enhanced anti-jamming design, count accurate and reliable.
- NPN / PNP input signal can be switched.

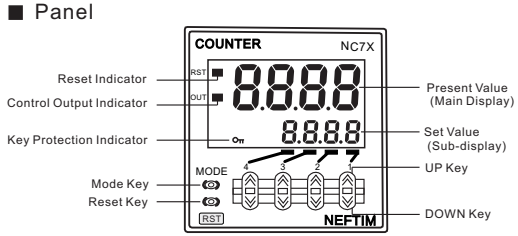
⚠ Please refer to the manual, to ensure the safe and proper use of the product

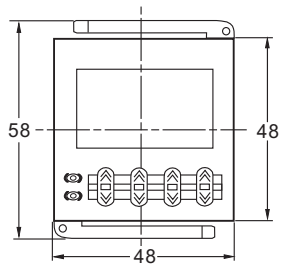
■ Ratings

Model	NC7X-C	NC7X-P
Category	Standard counter	Prescaling function (meter counter)
voltage	1: AC100~240V 50/60HZ 2: AC/DC12~24V (Allowable voltage range: 85 ~ 110%)	
Power consumption	Approx.5VA (AC240V), Approx.3. 2VA (DC24V)	
Display	LCD digital display Display range: -999~9999	
Input modes	UP、DOWN、UP/DOWN-A、UP/DOWN-B、UP/DOWN-C	
Output modes	N, F, C, R, L	
Prescaling function	NO	Yes (0.001 to 9.999)
Decimal point	NO	Yes (rightmost 3 digits)
counting speed	5Hz 、30Hz 、1KHz 、5KHz (selectable, ON/OFF ratio 1:1)	
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)	
Reset input	Minimum reset input signal width: 20 ms	
Reset system	External, manual, and automatic reset (When the output mode for C, R)	
One-shot output time	0.01 to 99.99 s	

Control output	Contact output: 3 A at 250 VAC/30 VDC, resistive load (cosϕ=1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) Transistor output: NPN open collector, 100 mA at 30 VDC Residual voltage: 1.5 VDC max. (approx. 1 V)
External power supply	12 VDC (±10%), 50 mA Max
Sensor waiting time	250 ms max. (Control output is turned OFF and no input is accepted during sensor waiting time.)
Memory backup	EEPROM (overwrites: 100,000 times min.) that can store data for 10 years min.
Ambient	Operating temperature: −10 to 55°C (−10 to 50°C if counters are mounted side by side) (with no icing or condensation) Storage temperature: −25 to 65°C (with no icing or condensation) Ambient humidity:25% to 85%
Gross weight	Approx. 179 g

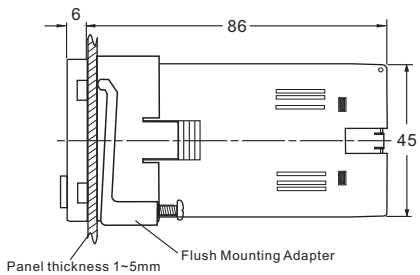
■ Panel



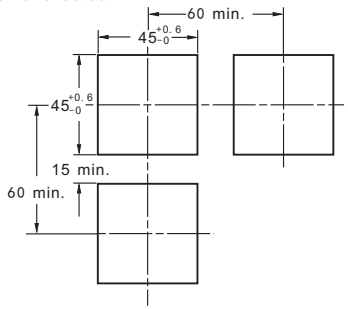


■ Size(mm)

● Outline dimensions

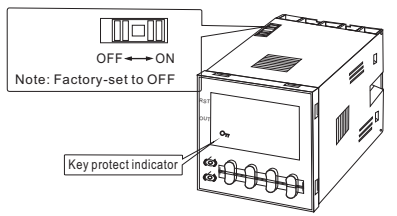


● Panel Cutout

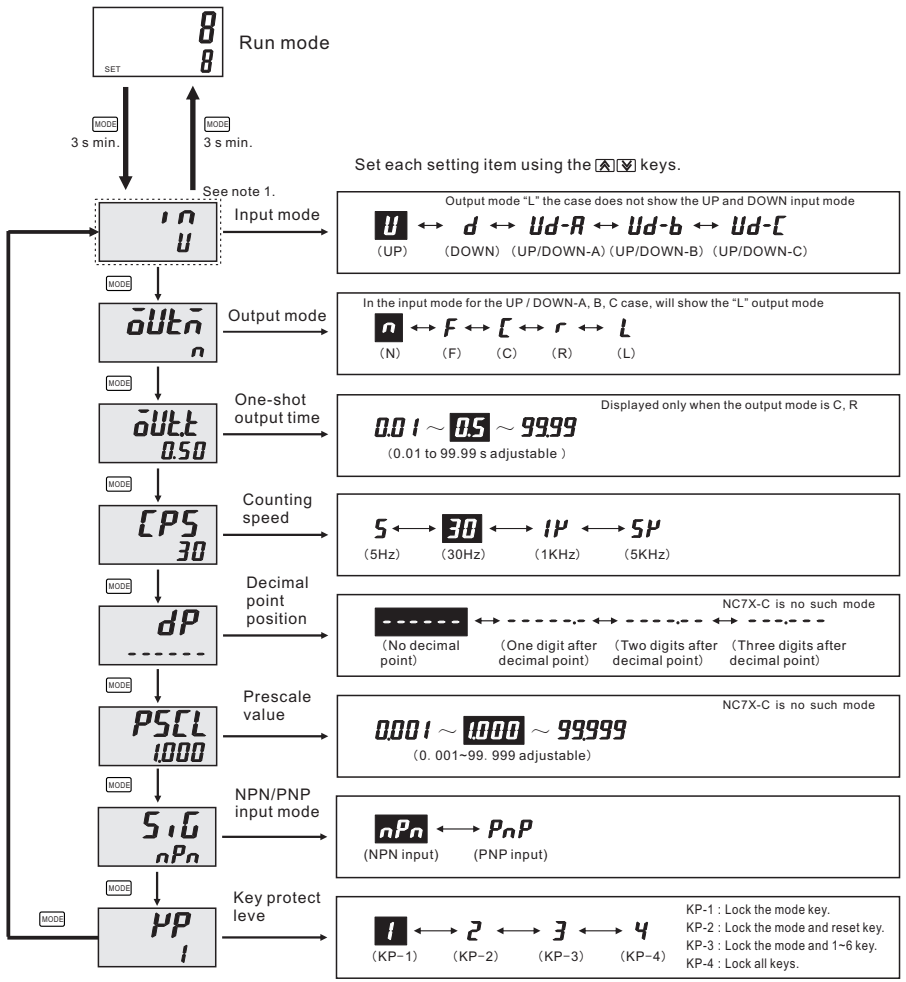


■ Key protection switch

Set the key protect level.
When the key-protect switch is set to ON, it is possible to prevent setting errors by prohibiting the use of certain operation keys by specifying the key protect level (KP-1 to KP-4). The key protect indicator is lit while the key-protect switch is set to ON. Confirm the ON/OFF status of the keyprotectswitch after the TMC7X is mounted to the panel.



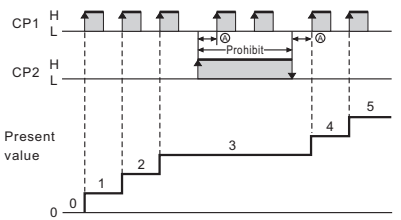
■ Settings for All Functions



■ Input Modes and Present Value

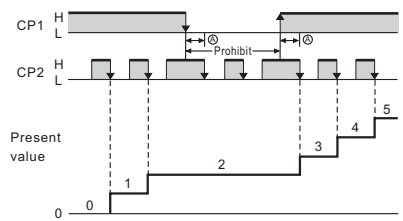
UP (Increment) Mode

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



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

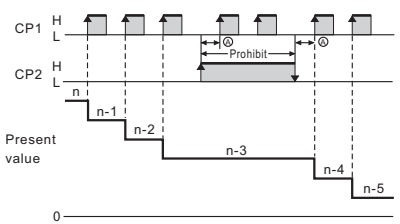
CP1: Prohibit (gate) input; CP2: Count input



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

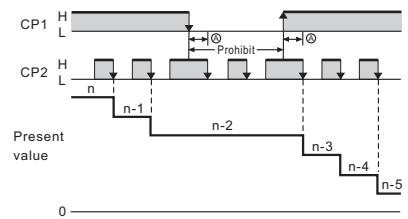
DOWN (Decrement) Mode

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



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

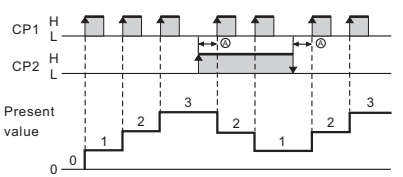
CP1: Prohibit (gate) input; CP2: Present value



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

UP/DOWN A Command Input Mode

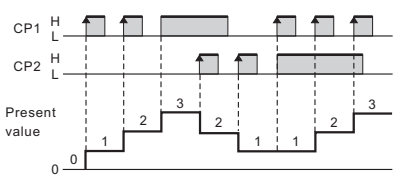
CP2 did not enter CP1 plus count, the CP2 input is valid CP1 count down



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

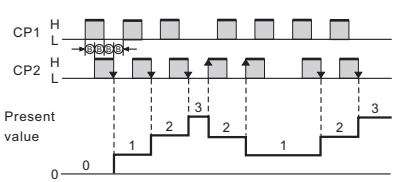
UP/DOWN B Individual Input Mode

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)

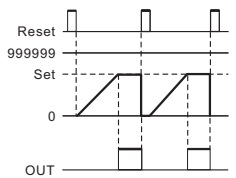
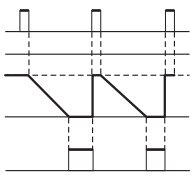
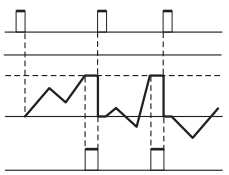
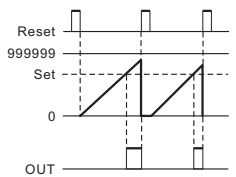
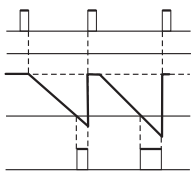
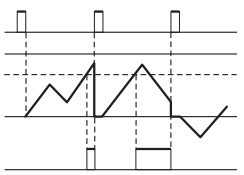
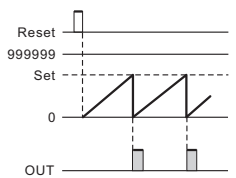
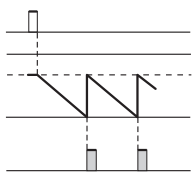
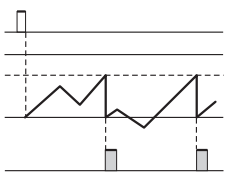
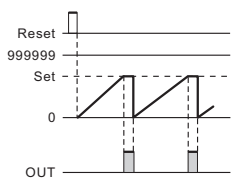
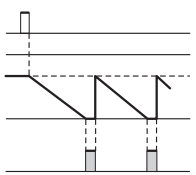
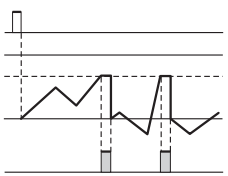
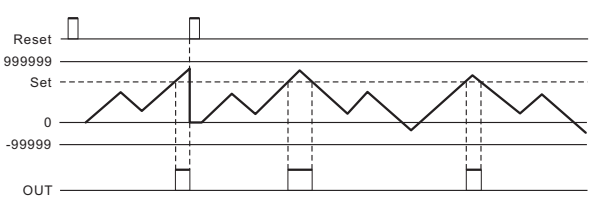
3. Counting starts when the CP1 is turned ON after turning ON the power.

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

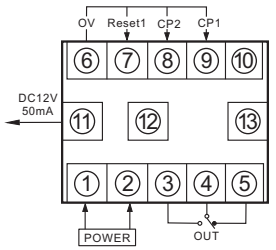
Input method / Symbol	No-voltage input (NPN input)	Voltage input (PNP input)
H	Short-circuit	DC4.5~30V
L	Open	DC0~2V

■ Input/Output Mode Settings

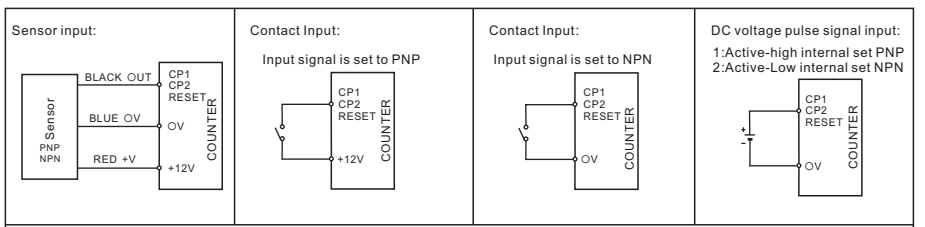
Output Hold　　One-shot output (The one-shot output time 0.01to 99.99s.)

Output mode	Input mode			Operation after count completion
	UP	DOWN	U/D-A、B、C	
N				The outputs and present value display are held until reset is input.
F				The present value display continues to increase/decrease. The outputs are held until reset 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.
R				The present value display returns to the reset start status after the one-shot output time. The outputs repeat one-shot operation.
L				The display continues to increase /decrease until the overflow or underflow value is reached. OUT is held while the present value is greater than or equal to set value .

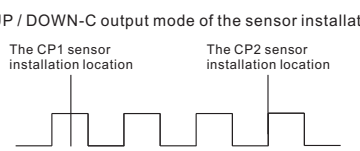
■ Wiring diagram



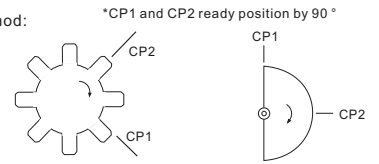
■ Signal input connection diagram



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.

■ Note

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.