# CX Series Intelligent Counter/Timer

Feature :

◆ Compact size,designed for easy operation

◆ Easy-to-read LED displays,choose 4 digits (CX2) or 6 digits (CX3,CX8)

◆ Reversible counting:square wave or sine wave signal input

◆ 1 stage preset,optional output mode:R,N,C,F

◆ Transistor output (CX2C,CX3C,CX8C) or relay output (CX3,CX8)

◆ Counting rate range: 0.001-9999;decimal point setting:0-3 digits

◆ With power fail memory function,the information can keep 10 years

◆ Reset by press key or outer terminal;with pause function used as timer

◆ Four timer range optional:S/M.S/H.M.S/H.M

◆ Timer with double delay function,counter can increase/decrease count

◆ High anti-interference

Ⅰ、MODEL AND SPECIFICATION

```
CX □□ - □□□□ A ─ Code
                 1:1 stage preset
                 Display: 4:4 digts   6:6 digits
                 S:Rate setting
                 P:Preset function
                 Power supply: AC:90-256V   C:DC5V or DC10-30V
                 Dimension: 2:24Hx48Wx58L   3:36Hx72Wx58L   8:48Hx96Wx58L
                 CX series
```
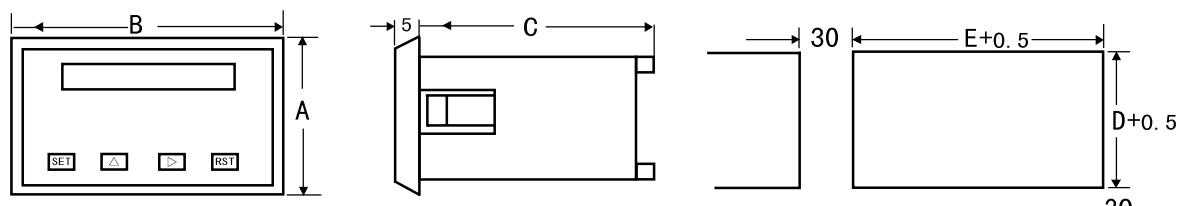
| MODEL	POWER SUPPLY	DIGITS	OUTPUT	AUXILIARY POWER	TIMER RANGE	COUNTER RANGE
CX2C-PS41A	DC5V OR DC10-30V	4	TRANSISTOR	NONE	0.01S~9999H	-1999~9999
CX3C-PS61A	DC5V OR DC10-30V	6	TRANSISTOR	NONE	0.01S~9999H.59M	-199999~999999
CX3-PS61A	AC 90-256V	6	RELAY	12 V	0.01S~9999H.59M	-199999~999999
CX8C-PS61A	DC5V OR DC10-30V	6	TRANSISTOR	NONE	0.01S~9999H.59M	-199999~999999
CX8-PS61A	AC 90-256V	6	RELAY	12 V	0.01S~9999H.59M	-199999~999999
REMARK	For the model with DC5V / 10-30VAC/DC power supply, users can choose one of the power supply modes.					

Ⅱ、TECHNICAL PARAMETER

Input Signal	Sine wave, square wave 5-30V
Input impedance	≥10K Ω
Max. count speed	10cps/100cps/1000cps/3000cps selectable
Data maintain period	≥ 10 years
Transistor output capacity	DC 24V/30mA Max.
Relay output capacity	AC 250V/3A
Delay time	0.01-99.99S
Count rate (P) setting range	0.001-9999

Ⅲ、DIMENSION AND CUT-OUT
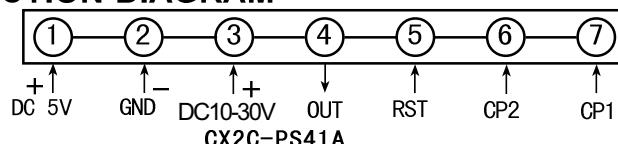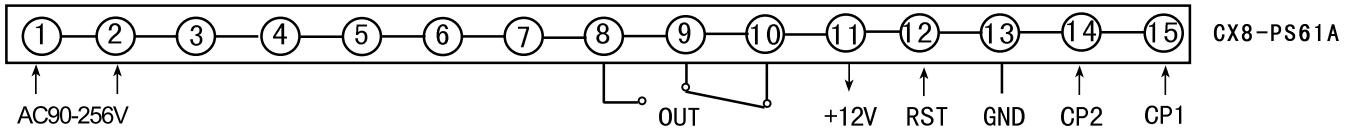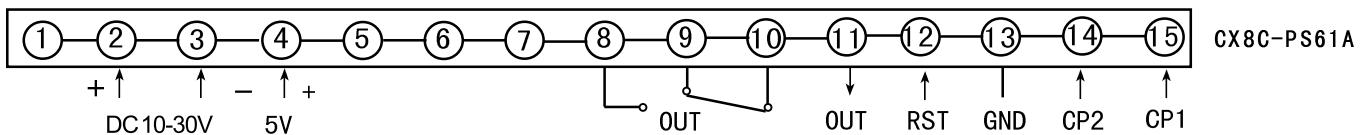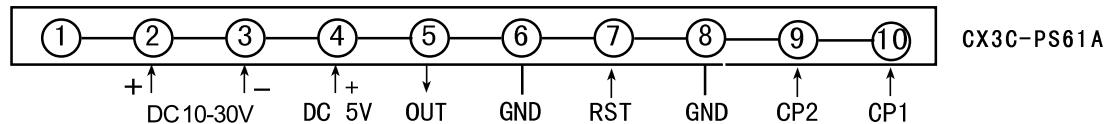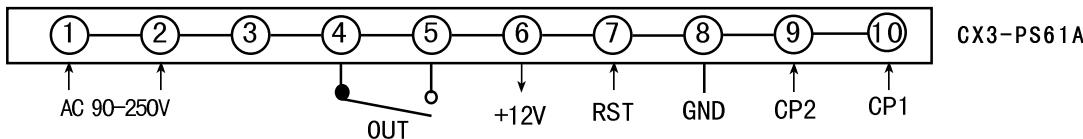
Outside Dimenstion

Panel Cut-out

CX2	A=24	B=48	C=58	D=22.5	E=46
CX3	A=36	B=72	C=58	D=33	E=69
CX8	A=48	B=96	C=58	D=45	E=92.5

Ⅳ、CONNECTION DIAGRAM

① — ② — ③ — ④ — ⑤ — ⑥ — ⑦

```
+↑      ↑-    ↑+       ↓     ↑    ↑    ↑
DC 5V   GND   DC10-30V OUT   RST  CP2  CP1
        CX2C-PS41A
```

CX3-PS61A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

AC 90-250V   OUT   +12V   RST   GND   CP2   CP1

CX3C-PS61A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

+ − +
DC 10-30V   DC 5V   OUT   GND   RST   GND   CP2   CP1

CX8C-PS61A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

+ − +
DC 10-30V   5V   OUT   OUT   RST   GND   CP2   CP1

CX8-PS61A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

AC90-256V   OUT   +12V   RST   GND   CP2   CP1
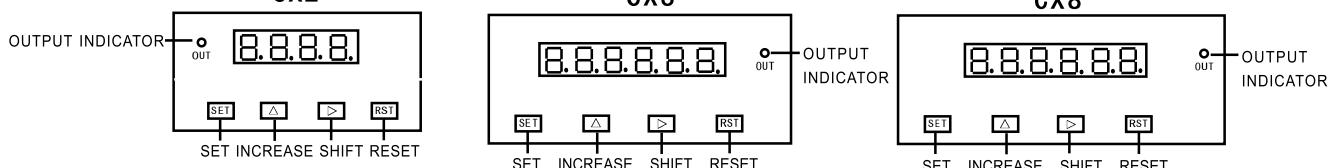
NOTE: Please refer to the connection diagram sticked on the enclosure if there is any difference.

V、 OUTSIDE PANEL

CX2

OUTPUT INDICATOR

OUT

[8.8.8.8.]

SET △ ▷ RST

SET INCREASE SHIFT RESET

CX3

[8.8.8.8.8.8.]

OUT — OUTPUT INDICATOR

SET △ ▷ RST

SET INCREASE SHIFT RESET

CX8

[8.8.8.8.8.8.]

OUT — OUTPUT INDICATOR

SET △ ▷ RST

SET INCREASE SHIFT RESET

VI、 OPERATION INSTRUCTION
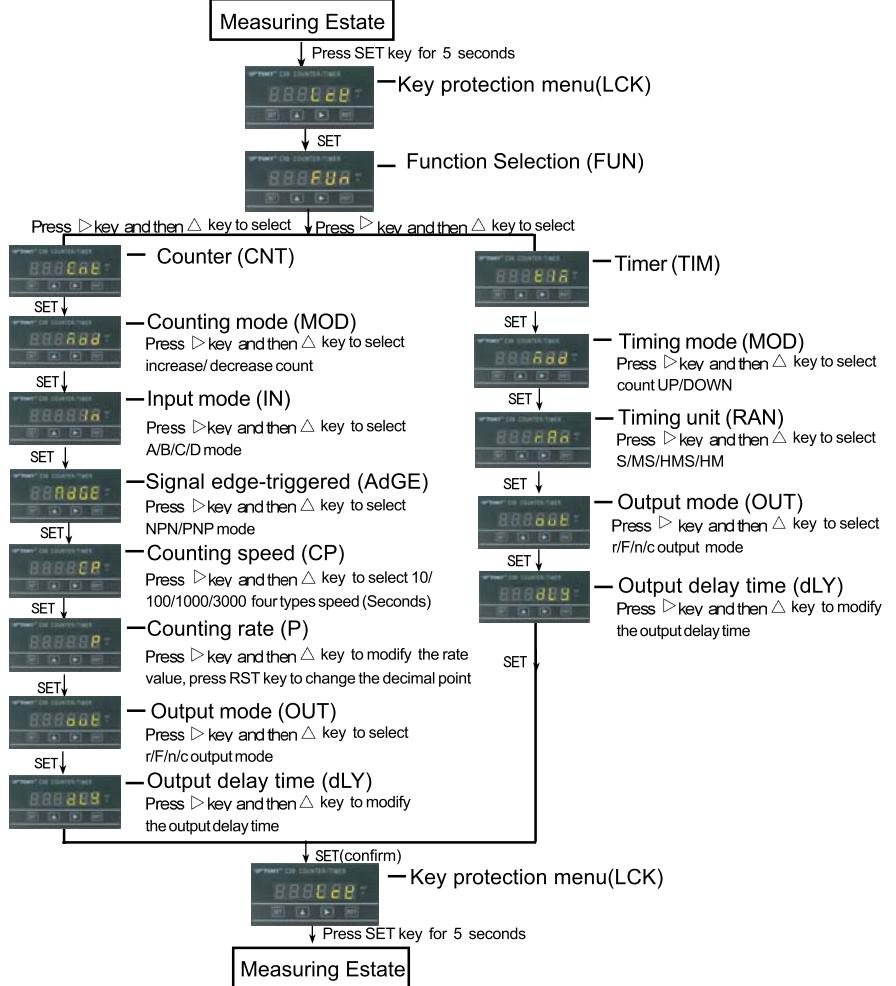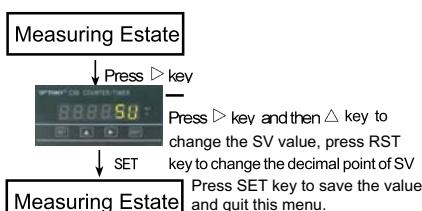
6.1 Operation key

SET key: set and confirm key, press this key to confirm the setting parameter

△ key: press this key to increase the value   ▷ key: press this key to shift the flash digit

RST key: press this key to reset

6.2 Operation process

Measuring Estate

↓ Press ▷ key

Press ▷ key and then △ key to change the SV value, press RST key to change the decimal point of SV Press SET key to save the value and quit this menu.

↓ SET

Measuring Estate

Measuring Estate

↓ Press SET key for 5 seconds

— Key protection menu(LCK)

↓ SET

— Function Selection (FUN)

Press ▷ key and then △ key to select   Press ▷ key and then △ key to select

— Counter (CNT)

↓ SET

— Counting mode (MOD)
Press ▷ key and then △ key to select increase/ decrease count

↓ SET

— Input mode (IN)
Press ▷ key and then △ key to select A/B/C/D mode

↓ SET

— Signal edge-triggered (AdGE)
Press ▷ key and then △ key to select NPN/PNP mode

↓ SET

— Counting speed (CP)
Press ▷ key and then △ key to select 10/ 100/1000/3000 four types speed (Seconds)

↓ SET

— Counting rate (P)
Press ▷ key and then △ key to modify the rate value, press RST key to change the decimal point

↓ SET

— Output mode (OUT)
Press ▷ key and then △ key to select r/F/n/c output mode

↓ SET

— Output delay time (dLY)
Press ▷ key and then △ key to modify the output delay time

— Timer (TIM)

↓ SET

— Timing mode (MOD)
Press ▷ key and then △ key to select count UP/DOWN

↓ SET

— Timing unit (RAN)
Press ▷ key and then △ key to select S/MS/HMS/HM

↓ SET

— Output mode (OUT)
Press ▷ key and then △ key to select r/F/n/c output mode

↓ SET

— Output delay time (dLY)
Press ▷ key and then △ key to modify the output delay time

↓ SET

↓ SET(confirm)

— Key protection menu(LCK)

↓ Press SET key for 5 seconds

Measuring Estate

VII、 OPERATION INSTRUCTION

7.1 When used as timer, the outside termianal is with the pause function. When input high voltage (5-30V), the timing will stop and the output value will be hold

7.2 The width of the input reset signal and pause signal should not less than 20ms

7.3 In case the meter display "Erro", please check the SV and P value to check if "SV ≥ P>0"

7.4 Input wire should be shield. And the meter can not work in the environment of Humidity >90RH% or high acidity and alkalescence

7.5 When the output mode set as C, if output delay value is larger than the next timer circle, the meter will be enable to automatic reset

7.6 Parameter illustration

| MODE	CODE	MEANING	SETTING RANGE	SPECIFICATION	REMARK
1	FUn	Function Selection	Cnt tin	Press △ and ▷ key to select the function of measuring Cnt :counter tin :timer	
2	nod	Counting / timing mode		Press △ key to select U or d U : increase count or count up d : decrease count or count down	
3	In	Input mode	A b c d	Press △ and ▷ key to select input mode A mode:CP2 low voltage, CP1 increase counting CP2 high voltage, CP1 doesn't count b mode:CP2 low voltage, CP1 increase counting CP2 high voltage, CP1 decrease counting c mode:CP1 increase counting,CP2 decrease counting display value=CP1-CP2 d mode: CP2 lag behind CP1, CP2 increase counting CP1 go beyond CP1, CP2 decrease counting	Refer to Digram 2
4	AdGE	Signal edge triggered	PnP nPn	PnP:Up edge nPn:Down edge	
5	CP	Counting speed	10,100, 1000,3000	Select the counting speed according to the input signal frequence.For example,if the counting speed is 100CPS, then the Max. frequence of the input signal is 1000Hz. Press△key to select	
6	P	Counting rate	0.001 - 9999	Press▷and △ key to modify the counting rate For example,set P=10.00, when input 1 impulse the meter will display 10; input 2 impulse the meter will display 20	For counter only
7	rAn	Timing unit	S (S) n S (M) (S) H n S (H / M / S) H n (H) (M)	Press▷ and △ key to modify the counting rate S : timing range 0.01S-999999S (6 digits display) n S : timing range 1S-9999M.59S (6 digits display) H n S: timing range 1S-99H.59M.59S (6 digits display) H n : timing range 1M-9999H.59M (6 digits display)	For timer only
8	OUt	Output mode	n r c F	Press▷and △ key to select the output mode Refer to digram 1: output mode (N/ R/ C/ F)	Refer to Digram 1
9	dLY	Output delay time	0.01S - 99.99S	Press▷and △ key to modify output delay time	N/ F mode don't have this parameter
10	LCK	Key protection fuction		LCK=0001, can not modify the SV value; LCK=0010, can not enter the menu LCK=0100, press SET +△ key to recover the factory default value;LCK=1000, lock the reset key and outside reset terminal	
11	SU	Setting value	0.01-99.99 (4 digit) 0.01-9999.99 (6 digit) 0.001-9999 (4 digit) 0.001-999999 (6 digit)	On measuring estate,press ▷key to enter SV modify estate, then press △ and ▷key to modify the value, press SET key to confirm and return. Press RST key to change the decimal point of SV value, but when used as timer the changing only available for the timing unit is "S"	4 digits 6 digits (Set by the front press key)

Diagram 1: output mode
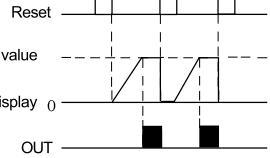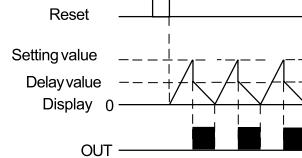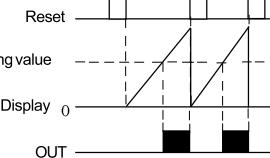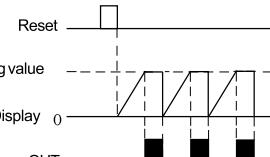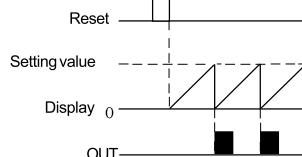
	N（Counter、Timer）	R（Timer）	F（Counter、Timer）
The relationship between output mode and process value.			
Specification	Display value and output will hold until input the reset signal	(Double delay time) the output will return to start estate,when delay time count down	Display value continue, output maintains until reset input.
The relationship between output mode and process value.	R（Counter）	C（Counter、Timer）	
Specification	Display value and output remain until delay time is up, then re-start counting.	Display returns to zero automatically when it reaches setting value. Output remains until delay time is up. (If delay time is not shorter than next counting/timing time, the output can't be reset automatically.)	

Diagram 2: diagram for input mode A/B/C/D
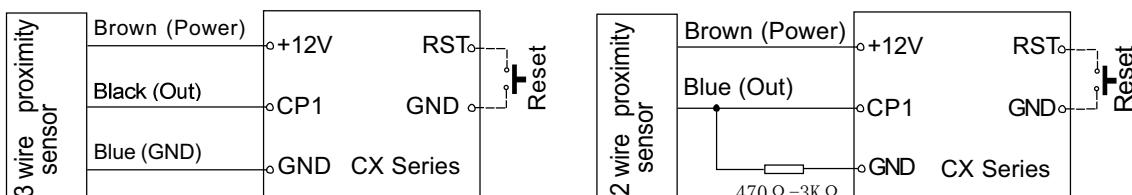
Mode	UP	down	Specification
A	CP1, CP2 waveforms (↑A)	CP1, CP2 waveforms (↑A)	CP2 low voltage allow CP1 count CP2 high voltage don't allow CP1 count
B	CP1, CP2 waveforms (↑A)	CP1, CP2 waveforms (↑A)	Up: CP2 low voltage, CP1 increase count CP2 high voltage, CP1 decrease count Down: CP2 low voltage, CP1 decrease count CP2 high voltage, CP1 increase count
C	CP1, CP2 waveforms	CP1, CP2 waveforms	Up: CP1 increase / CP2 decrease Display value=CP1-CP2 Down: CP1 decrease / CP2 increase Display value=CP2-CP1
D	CP1, CP2 waveforms	CP1, CP2 waveforms	UP: CP2 lag behind CP1, CP2 increase counting CP1 go beyond CP1, CP2 decrease counting UP: CP2 lag behind CP1, CP2 decrease counting CP1 go beyond CP1, CP2 increase counting

Rate P illustration:

This parameter can translate the counter value into intuitionistic engineering value such as length, flow, weight and capacitance. For example, to measuring length, when the input pulse is N, setting a value for P according to the length, made length=N X P.
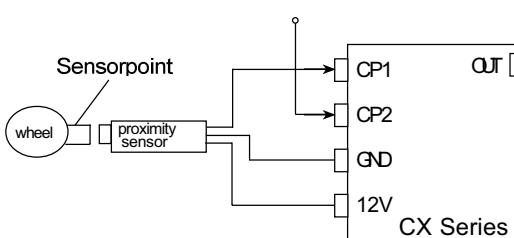
## VIII、 CONNECTION EXAMPLE

8.1 Connect with the proximity sensor

3 wire proximity sensor:
- Brown (Power) — +12V
- Black (Out) — CP1
- Blue (GND) — GND   CX Series
- RST — Reset
- GND

2 wire proximity sensor:
- Brown (Power) — +12V
- Blue (Out) — CP1
- $470\,\Omega - 3K\,\Omega$
- GND   CX Series
- RST — Reset
- GND

8.2 Application example

Eg 1: Control voltage input (A/B input mode)

Sensorpoint — wheel — proximity sensor — CP1, CP2, GND, 12V — OUT   CX Series
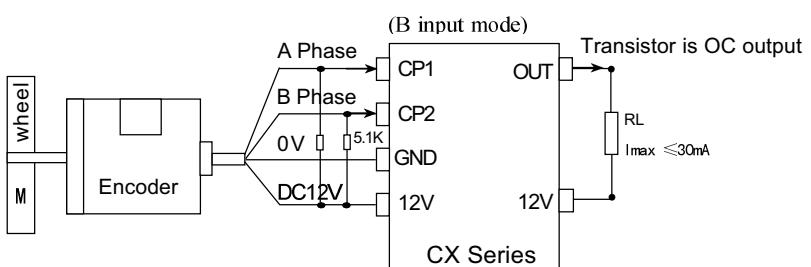
Input mode:B (UP OR DOWN)
CP2 is low voltage,CP1 increase count
CP2 is high voltage.CP1 decrease count
(In case you have no high voltage,please short CP2 to terminal +12V or connect CP2 to terminal +5V).

Eg 2: (D input mode)

(B input mode)

wheel — M — Encoder:
- A Phase — CP1
- B Phase — CP2
- 0V — GND   (5.1K)
- DC12V — 12V   CX Series
- OUT — Transistor is OC output — RL, Imax ≤30mA
- 12V

NOTE:If phase A and phaes B is OC output, please add a resistance to the CP1 and CP2 output,the range of the resistance is depend on the parameter of encoder,the stadard value is 5.1K Ω.