Autonics

COUNTER/TIMER
CT SERIES
M A N U A L

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

▣ Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;

⚠ **Warning** Serious injury may result if instructions are not followed.

⚠ **Caution** Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.
⚠caution:Injury or danger may occur under special conditions.

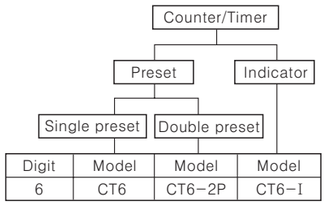
⚠ Warning

1. **In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information required.**
   It may result in fatal damage, fire or human injury
2. **This unit must be mounted on Panel.**
   It may give an electric shock.
3. **Do not connect terminals when it is power on.**
   It may give an electric shock.
4. **Do not disassemble and modify this unit, when it requires. If needs, please contact us.**
   It may give an electric shock and cause a fire.

⚠ Caution

1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
2. **When wire connection, No.20AWG(0.50mm²) should be used and screw bolt on terminal block with 0.74N • m to 0.90N • m strength.**
   It may result in malfunction or fire due to contact failure.
3. **Please observe specification rating.**
   It might shorten the life cycle of the product and cause a fire.
4. **Do not use the load beyond rated switching capacity of Relay contact.**
   It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
5. **In cleaning the unit, do not use water or an organic solvents.**
   It might cause an electric shock or fire that will result in damage to the product.
6. **Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray of the sun, radiant heat, vibration, impact etc.**
   It may cause explosion.
7. **Do not inflow dust or wire dregs into inside of this unit.**
   It may cause a fire or mechanical trouble.

▣ Ordering information



Digit	Model	Model	Model
6	CT6	CT6-2P	CT6-I

CT 6 ☐ – 2P

I	Indicator
	Single preset
2P	Double preset
	DIN size W72×H72mm
6	999999(Digit)
CT	Counter/Timer

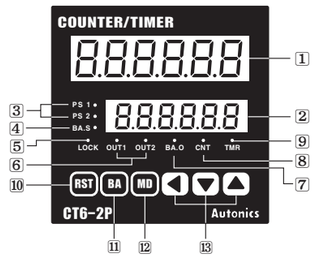
※When use CT6-2P as Timer, unable to use it as double preset.

※The above specifications are changeable at anytime without notice.

▣ Specifications

Series			CT	
Digit			6	
Model	Single preset		CT6	
	Double preset		CT6-2P	
	Indicator		CT6-I	
Power supply	AC power		100-240VAC 50/60Hz	
	AC/DC power		24-60VDC, 24VAC 50/60Hz	
Allowable voltage range			90 to 110% of rated voltage(AC power type)	
Power consumption	AC power		Indicator:Approx. 9VA, Single preset & Double preset:Approx. 10VA(240VAC 50/60Hz)	
	AC/DC power		Indicator & Single preset:Approx. 5W, Double preset:Approx. 6W(24VDC) Indicator:Approx. 9VA, Single preset & Double preset:Approx. 10VA(24VAC 50/60Hz)	
CPS of INA, INB			Selectable 1cps, 30cps, 1kcps, 5kcps, 10kcps	
Min. input signal width	Counter		Reset input:Selectable 1ms or 20ms	
	Timer		INA, INB, INHIBIT, RESET, BATCH RESET(except CT6-I):Selectable 1ms or 20ms	
Input			Selectable voltage input or No-voltage input [Voltage input]Input impedance is 5.4kΩ, "H" level : 5-30VDC, "L" level : 0-2VDC [No-voltage input]Short-circuit impedance : Max. 1kΩ, Residual voltage : Max. 2VDC, Open-circuit impedance : Min. 100kΩ	
One-shot output		Counter	10 / 50 / 100 / 200 / 500 / 1000ms	
		Timer	10 / 50 / 100 / 200 / 500 / 1000 / 2000 / 5000ms	
Control output	Con-tact	Type	Single preset type : SPDT(1c), Double preset type : SPST(1a) for first output, SPDT(1c) for second output	
		Capacity	NO:250VAC 3A resistive load, NC:250VAC 2A resistive load	
	Solid-state	Type	Single preset type : 2 NPN open collector(OUT, BATCH) Double preset type : 3 NPN open collector(OUT1, OUT2, BATCH) Solid state output is consist of photo-coupler and insulated with inner circuit	
		Capacity	Max. 30VDC, Max. 100mA	
Memory retention			10 years	
External sensor power			12VDC ±10%, 100mA Max.	
Ambient temperature			-10 to 55℃(at non-freezing status)	
Storage temperature			-25 to 65℃(at non-freezing status)	
Ambient humidity			35 to 85%RH	
Timer	Repeat error		Power ON start : ±0.01% ±0.05sec Signal start : ±0.01% ±0.03sec	
	Set error			
	Voltage error			
	Temperature error			
Insulation resistance			Min. 100MΩ(at 500VDC)	
Dielectric strength			2000VAC 50/60Hz for 1 minute	
Noise strength(AC power)			±2kV the square wave noise(pulse width:1㎲) by the noise simulator	
Vibration	Mechanical		0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour	
	Malfunction		0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes	
Shock	Mechanical		300m/s² (Approx. 30G) 3 times at X, Y, Z direction	
	Malfunction		100m/s² (Approx. 10G) 3 times at X, Y, Z direction	
Relay life cycle	Mechanical		Min.10,000,000 times	
	Electrical		Min.100,000 times(NO:250VAC 3A resistive load, NC:250VAC 2A resistive load)	
			IP65(Front panel only)	
Weight	AC power		CT6:Approx. 264g	CT6-2P:Approx. 271g / CT6-I:Approx. 244g
	AC/DC power		CT6:Approx. 263g	CT6-2P:Approx. 270g / CT6-I:Approx. 243g
Approval			cULus, CE	

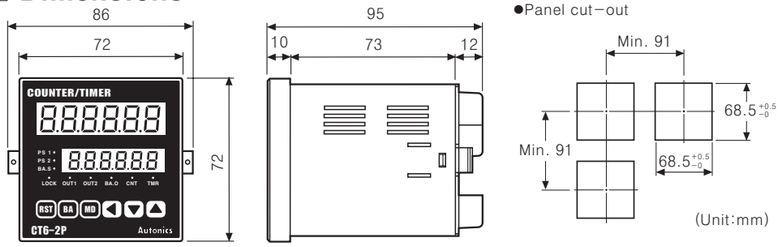
▣ Front panel identification



1. Display for processing value(Red LED)
   Counting value(Counter) / Processing time(Timer) / Setting symbols [LED height:13mm]
2. Preset value display(Yellow-Green LED)
   Preset value(Counter) / Preset time(Timer) and setting symbols [LED height:9mm]
3. PS1, PS2 : Check preset value(Single & Double) and display change of it
4. BA.S : Check preset value and display change of it
5. LOCK : Key lock display
6. OUT1, OUT2 : Preset the operation of output(Single & Double)
7. BA.O : Indication the operation of BATCH output
8. CNT : Indication the operation of counter
9. TMR : Indication the operation of timer
   -LED flickers when the timer is operating
   -LED turns off when the operating time stops
10. RST : Reset Key
11. BA : Batch Key
12. MD : Mode Key
13. ◀, ▼, ▲ : Set Key

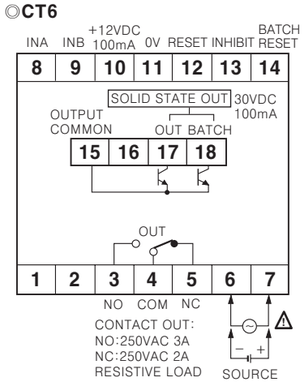
※PS2 will be changed to PS and OUT2 to OUT, there is no PS1, OUT1 LED in CT6.
※There is no PS1, PS2, BA.S, OUT1, OUT2, BA.0 LED in CT6-I.
※There is no BA key in CT6-I.

▣ Dimensions

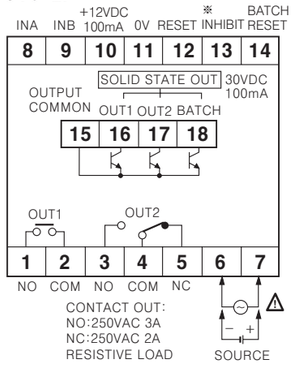


▣ Connections

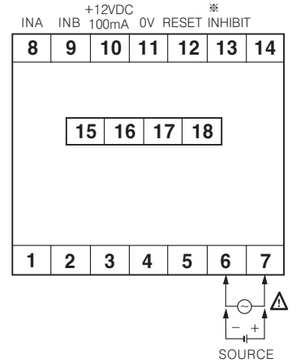
◎**CT6**



◎**CT6-2P**

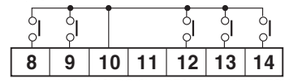


◎**CT6-I**

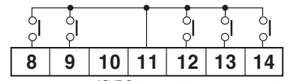


※INHIBIT signal
(1)When INHIBIT signal is applied at Counter operation : Skip counting input
(2)When INHIBIT signal is applied at Timer operation : Processing time stops

●Connection of contact input in state of selected voltage input(PNP):CT6



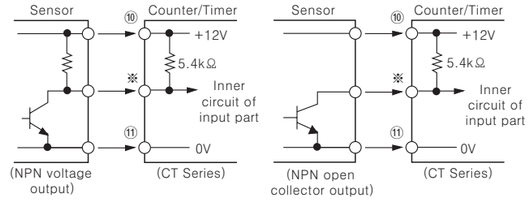
●Connection of contact input in state of selected No-voltage input(NPN):CT6



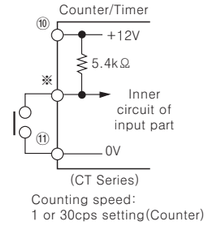
▣ Input connection

◎**Input logic : No-voltage input(NPN)**

●Solid state input
Standard sensor:NPN output type sensor



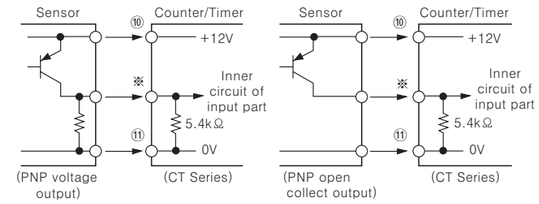
●Contact input



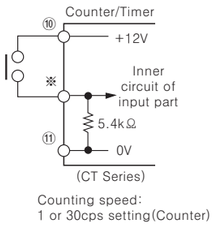
Counting speed:
1 or 30cps setting(Counter)

◎**Input logic : Voltage input(PNP)**

●Solid state input
Standard sensor:PNP output type sensor



●Contact input

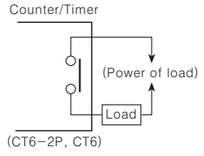


Counting speed:
1 or 30cps setting(Counter)

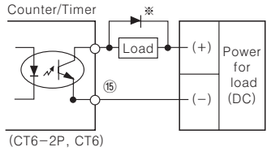
※INA(⑧), INB(⑨), RESET(⑫), INHIBIT(⑬), BATCH RESET(⑭) input part

▣ Output connection

◎**Contact output**



◎**Solid state output**



◎**Solid state output connection**

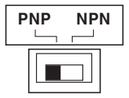
- Use proper load and power for load not to excess ON/OFF capacity(30VDC Max. 100mA max.) of solid state output.
- Be sure not apply reverse polarity of power.

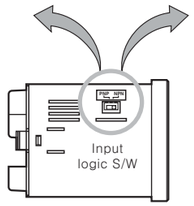
※When use inductive load(Relay etc), surge absorber(Diode, Varistor etc) must be connected between both side of the load.

▣ Input logic selection

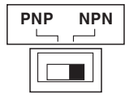
It is easy to change input logic by S/W for input logic conversion.

●Select PNP(Voltage input)





●Select NPN(No-Voltage input)



▣ Change of preset value in Counter operation

◎Change the preset value in the single preset type(CT6)

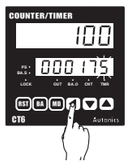
RUN mode → ◀ → Change preset value → MD

◎Change the preset value in the double preset type(CT6-2P)

RUN mode → ◀ → Change single preset value → MD → Change double preset value → MD

※If the input signal in while changing preset value, it controls the output and thecounting function.
In state of changing preset value, if no key is touched for 60 sec., the counter will return to RUN mode.
After change the preset value as "0", there is RST Key input or RESET input at RUN mode, the output will be maintained as OFF. (But in state of the output mode is "T", if change single preset value as "0", the single output will be maintained as ON.)

◎How to change in the single preset type:To change the preset value from 175 to 180

1 

Press ◀ key to enter in state of changing preset value, the prior preset value is indicated and the first digit "5" flashes.

2 

Change "5" to "0" by pressing ▼ key 5 times, and shift the flickering("7" is flickering digit to the second digit by pressing ◀ key once.

*Whenever ◀ key is pressed in the state of changing preset value, the flickering digit shifts from the right to the left.

3 

Change "7" to "8" by pressing ▲ key once.

4 

It will be completed to preset value and return to RUN mode by pressing MD key.

▣ Change of preset value in Timer operation

◎To change preset time in case of the output is not FLK

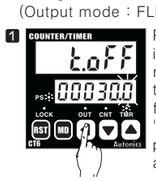
RUN mode → ◀ → Change preset time → MD

◎To change preset time in case of the output is FLK

RUN mode → ◀ → t.oFF change preset time → MD → t.on change preset time → MD

◎Change of setting time in case of the output is FLK(CT6)

Change t.oFF time from 30sec. to 50sec., t.on setting from 40sec. to 20sec.
(Output mode : FLK, Time range : 9999.9)

1 

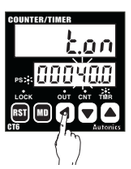
Pressing ◀ key, it enters to change mode of setting time. Shift the flickering digit to "3" position by pressing ◀ key as twice.

2 

Change "3" to "5" by pressing ▲ twice.

3 

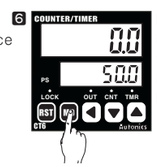
Pressing MD key to complete t.oFF time then enter into the state of changing t.on time.

4 

Pressing ◀ key twice to move to the "4" position.

5 

Pressing ▼ key twice to change "4" to "2".

6 

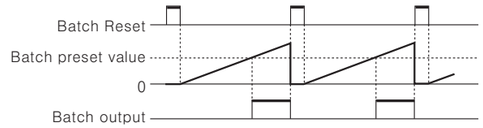
Pressing MD key to complete the setting time then return to RUN mode. (PS LED OFF)

※When entering into the status of changing setting time, the time will progress continuously.
※When changing setting value, if no key is touched for 60 sec., the counter will return to RUN mode.
Please cautious not to press MD key, the output is not operated. After entering changing mode, the same result is occurred when power is applied again after cut off the power. (It is only for OND.2, FLK.2 output operation mode.)
※Whenever ◀ key is pressed in the status of changing setting value, the flickering digit shifts from the right to the left.

※When use CT6-2P as Timer, unable to use it as double preset.

▣ Batch count and Batch preset value(CT6, CT6-2P)

◎Operation of Batch count



●Counting operation
Batch counting value is increasing until BATCH RESET signal applied.
Batch counting value will be circulated when it is over 999999.
Batch counting value is not affected by RST key input in front and external reset signal.
1)Batch counting operation in Counter operation
When the value calculated from times of reaching to preset value is equal to Batch preset value, the batch output will be ON.
When the control output of Batch is used, the time interval of count-up shall be over 10ms.
2)Batch counting operation in Timer operation
When the value calculated from times of reaching to preset value is equal to Batch preset value, the batch output will be ON.
In case of FLK output mode, counting value of Batch counter is increasing when Toff and Ton set time passed.
●Output operation of Batch counter
If the Batch output is ON, it will remain ON state until Batch reset signal is applied.
When the power is cut off then supplied again in state of batch output is ON, Batch ouput keeps ON state until batch reset signal is applied.
Batch output is not affected by RST key in front and external reset signal.

◎Change of Batch preset value

RUN mode → BA → Change of batch preset value → MD

●If press BA key at RUN mode, it will move to the state of batch preset value changes.
After changing the batch preset value same as the method of Counter preset value changes by ◀, ▼, ▲ keys, it will move to RUN mode by pressing MD key.
When it moves to the state of batch preset value, the previous batch counting value will be displayed.
●If change the batch preset value equal or smaller than the batch counting value in state of batch preset value is larger than batch counting value, batch output will be ON.
●If batch preset value is "0"(ZERO), Batch output will be OFF state.
●If no key is touched for 60second after moved to state of batch preset value changes, it will return to RUN mode.

▣ How to set Lock key

Be sure to set the lock mode in order to protect malfunction by unauthorized key touched.

LoFF (LOCK OFF) : Cancellation of the lock mode

Lo[.1 (LOCK LEVEL 1) : Lock RST key

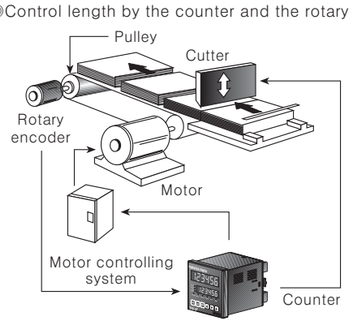
Lo[.2 (LOCK LEVEL 2) : Lock ◀ & ▼ & ▲ key

Lo[.3 (LOCK LEVEL 3) : Lock RST & ◀ & ▼ & ▲ key

▣ Prescale function

This function is to set and indicate calculated unit for actual length, liquid measure, position etc. it is called "Prescale value" for measured length, measured liquid, measured position, etc per 1 pulse.
For example)Pulse number P is number of pulses per 1 revolution of rotary encoder. L is the desired length to be measured. Prescale value is desired length L/pulse number P generated by the rotary encoder. It is the length measured per 1 pulse.

◎Control length by the counter and the rotary encoder



[Diameter of the Pulley connected with the encoder is 22mm, pulse number of encoder per 1revolution:1000]

$$*\text{Prescale value} = \frac{\pi \times \text{Diameter of the Pulley(D)}}{\text{Pulse numbers per 1 revolution of the encoder}}$$

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

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

It is possible to control conveyor as 0.1mm unit to set 0.069 for Prescale value by pressing setting key in state of prescale value setting in function setting mode. Decimal point should be set the first decimal place in function setting mode.

▣ Error code display

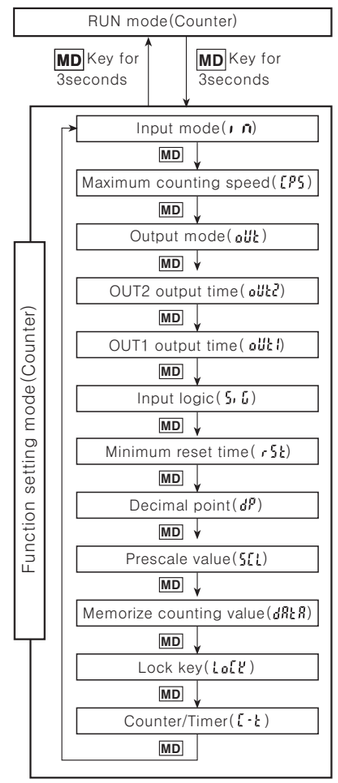
Error display	Errors	Output status	How to return
Err1	CPU error	Double preset type:OUT1, OUT2 are OFF Single preset type:OUT is OFF	RST key, RESET input

▣ Factory specification

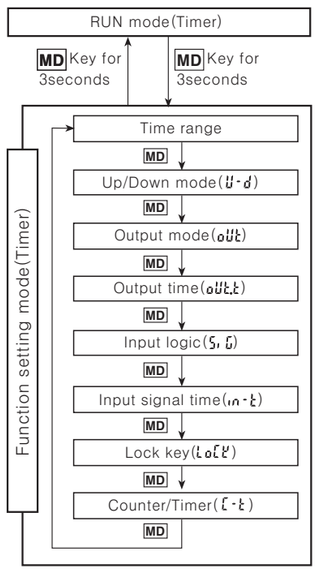
Set item \ Model		Double preset model (CT6-2P)	Single preset model (CT6)	Indicator model (CT6-I)
COUNTER	Input mode	Up/Down-C(U/D-C)		
	Output mode	F		———
	OUT1	100ms	———	
	OUT2(OUT)	Hold		———
	CPS	30cps		
	Min. reset time	20ms		
	Decimal point	Non decimal point		
	Prescale value	1.000		
	Counting memory	CLEr(Power reset)		
TIMER	Time range	0.01s-9999.99s		
	Up/Down mode	U(UP)		
	Output mode	OND(ON Delay)		———
	Output time	Hold		———
	Input signal mode	20ms		
Input method		No-voltage input(NPN)		
Lock key		L.oFF(Lock OFF)		
Counter/Timer		Counter		

▣ Change of operation mode(Counter/Timer)

◎Operation mode in Counter



◎Operation mode in Timer



※After selecting Timer in Counter/Timer of Counter function setting mode, if press MD for more than 3sec., it will move to Timer RUN mode.
After select Counter in Counter/Timer of Timer function setting mode, if press MD for more than 3sec., it will move to Counter RUN mode.
※If press MD for more than 3sec. in RUN mode, it will move to function setting mode.
If press MD for more than 3sec. in function setting mode, it will move to RUN mode.
If no key touched more than 60sec., it will move to RUN mode.

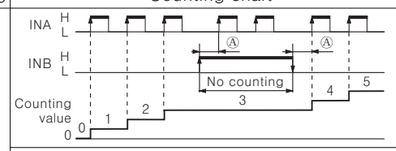
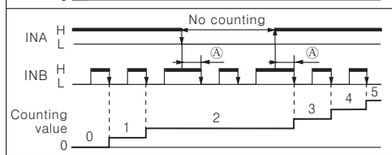
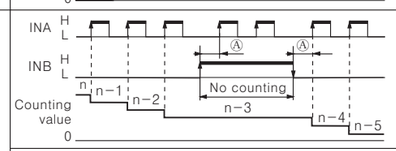
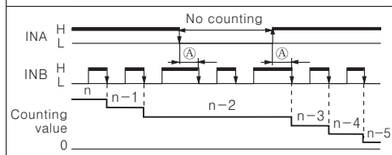
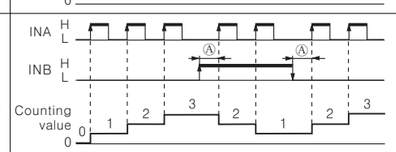
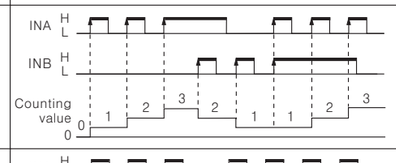
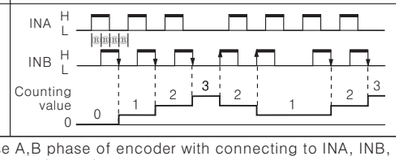
▣ Setting of counter function modes

Setting mode	How to set(▲, ▼)
Input mode (in)	U → d → Ud-A → Ud-b → Ud-C Ud-A, B, C will be fixed in the input mode, if output mode is S, T, D.
Maximum counting speed (CPS)	1 → 30 → 1K → 5K → 10K Counting speed is that of one by one(1:1) duty ratio of INA or INB input signal, and it is applied in INA or INB at the same time. In case of setting D in output mode, 5kcps and 10kcps are not indicated in the display.
Output mode (oUt)	*Up or Down input mode F → n → C → r → K → P → 9 → A *Up/Down-A, B, C input mode F → n → C → r → K → P → 9 → A → S → t → d
OUT2 output time(oUt2)	10→50→100→200→500→1000→2000→5000 Unit:ms
OUT1 output time(oUt1)	10→50→100→200→500→1000→2000→5000→HoLd Unit:ms
Input logic (SiG)	It indicates according to position, and it can't set by ▲ & ▼ key. Voltage input : PnP No-voltage input : nPn
Min. reset time (rSt)	1 ⇄ 20 Min. external RESET signal width(Unit:ms)
Decimal point (dP)	----- → ----- → ----- → ----- ※ ※ ※
Prescale value (SCL)	◀ Key : Shift the flickering digit ▲, ▼ Key : Change the prescale value Set range of prescale value : 0.001 to 99.999 Prescale value : It is actual value of length and position, liquid measure from counting input of 1pulse
Memorize counting value (dAtA)	CLEr ⇄ rEC CLEr : Power reset for counting value. (Reset counting value when power off) rEC : Memorize counting value (Memorize counting value when power off)
Lock key (LoCK)	L.oFF → LoC.1 → LoC.2 → LoC.3
Counter/Timer (C-t)	CoUn ⇄ tiME CoUn : Counter tiME : Timer

※There is no "OUT1 output time" in single preset model(CT6), "OUT2 output time" will be replaced as "OUT output time(oUt.t)".
※In case of setting output mode as "F, N", if counting value reach at preset value, output will be held. So there is no "OUT2 output time" in function setting mode.
※If set "S, T, D" as the output mode, input will fixed one from Ud-A, Ud-B, Ud-C. If change input mode to Up/Down, it needs to change an other mode, not "S, T, D"
※When it is in function setting mode, no external input signal will be accepted and the output will stay in the OFF state.
※When selecting the "D" output mode and if 1kcps is used, the output may not operate normally because of respond time of the contact. Therefore, in this case be sure to use the solid state output.
※In state of maximum counting speed is 5kcps or 10kcps, if change output mode to "D", the maximum counting speed will be changed to 1cps.
※It will maintain OFF status to ignore output in function setting mode.
※There are no output mode and output time setting mode of function setting mode in CT6-I series.

▣ Input operation mode for counter

※Ⓐ:Over Min. signal width, Ⓑ:Over 1/2 of Min. signal width

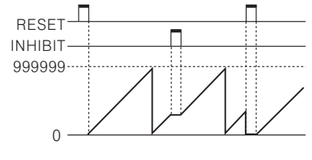
Input mode	Counting chart	Notice
U (Up)		INA : Counting input INB : No counting input (Limit counting input of INA) *When INA is L, please set no counting (INA:H → L) or turn off no counting (INB:L → H)
		INA : No counting input (Limit counting input of INB) INB : Counting input
d (Down)		When INB is H, please set no counting (INA:H → L) or turn off no counting (INB:L → H)
		INA : Counting value input INB : No counting input (Limit counting input of INA) n=Preset value When INA is L, please set no counting (INA:L → H) or turn off no counting (INB:H → L)
Ud-A (Up/Down-A) Command input		INA : No counting input (Limit counting input of INB) INB : Counting input N=preset value When INA is L, please set no counting (INA:H → L) or turn off no counting (INB:L → H)
Ud-b (Up/Down-B) Individual input		INA : Counting value input INB : Up/Down counting command input When INB is L, counting Up When INB is H, counting Down
Ud-C (Up/Down-C) Phase difference input		INA : Counting Up input INB : Counting Down input When INA and INB applied L → H, it will remain previous counting value.

※When use A,B phase of encoder with connecting to INA, INB, please set counter input mode as phase different input(Ud-C).

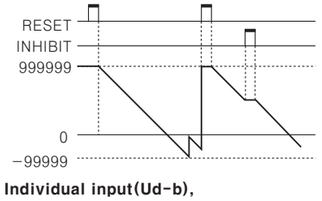
Symbol \ Input type	Voltage input(PNP)	Contact input(NPN)
H	5-30VDC	Short circuit
L	0-2VDC	Open

▣ Counter operation of CT6-I(Indication only)

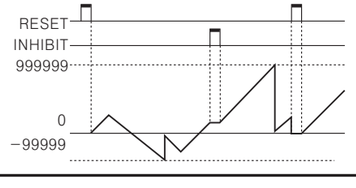
●**In case of input mode is Up**



●**In case of input mode is Down**

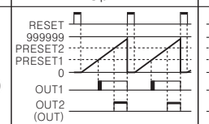
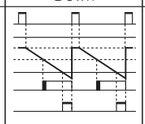
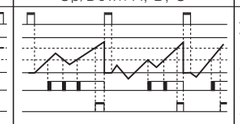
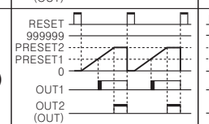
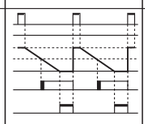
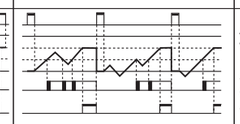
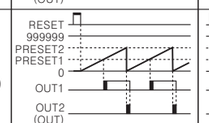
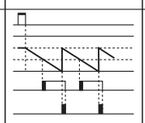
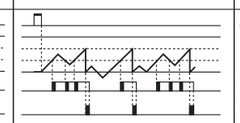
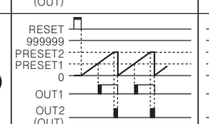
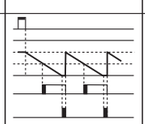
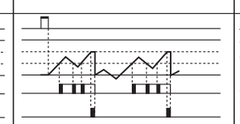
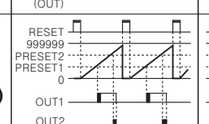
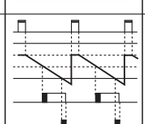
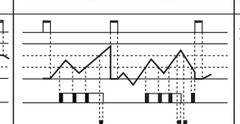
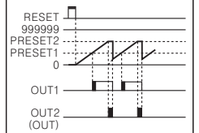
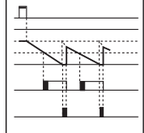
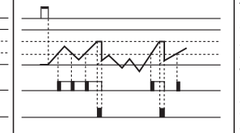
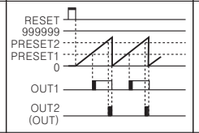
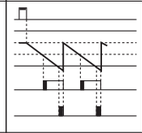
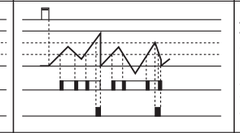
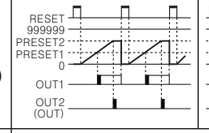
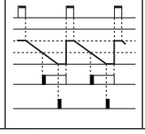
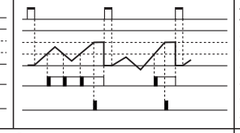
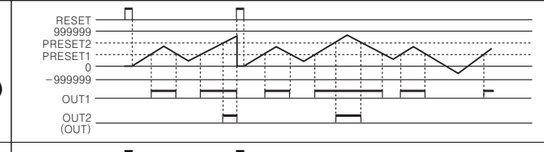
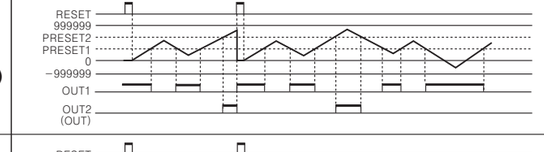
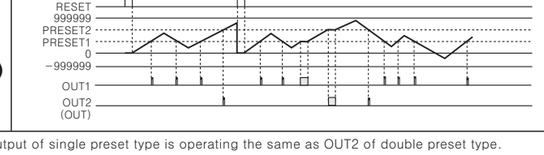


●**In case of the input mode is command input(Ud-A), Individual input(Ud-b), Phase difference input(Ud-C)**



▣ Output operation mode for counter

One-shot output(OUT1 output) / Hold output — One-shot output (OUT2 output) — Hold output — Coincidence output

Output mode	Input mode: Up	Input mode: Down	Input mode: Up/Down A, B, C	Operation
F (F)				After counting up, the display value increases or decreases until the reset signal is applied, and hold outputs will be held. One-shot output of OUT1 operates regardless to OUT2.
n (N)				After counting up, display value and hold output will be held until reset signal is applied. One-shot output of OUT1 operates regardless to OUT2.
C (C)				The display value resets at the same time counting up. Hold output of OUT1 turns off after One-shot time of OUT2. One-shot output of OUT1 operates regardless to OUT2.
r (R)				After one shot time of OUT2, display value will be reset and counting operation starts again. Hold output of OUT1 turns off after One-shot time of OUT2. One-shot output of OUT1 operates regardless to OUT2.
K (K)				After counting up, the display value increases or decreases until the reset signal is applied. Hold output of OUT1 turns off after One-shot time of OUT2. One-shot output of OUT1 operates regardless to OUT2.
P (P)				After counting up, display value is held for One-shot time of OUT2, Counter operation start again at the same time of OUT2 output is ON and count value will be reset. Hold output of OUT1 turns off after One-shot time of OUT2. One-shot output of OUT1 operates regardless to OUT2.
q (Q)				After counting up, display value increases or decreases for One-shot time of OUT2. Hold output of OUT1 turns off after One-shot time of OUT2. One-shot output of OUT1 operates regardless to OUT2.
A (A)				After counting up, display value and Hold output of OUT1 is held until applying the reset signal. One-shot output of OUT1 operates regardless to OUT2. OUT2 returns automatically after one shot time.
	Up/Down - A, B, C			
S (S)				OUT1 and OUT2 keeps ON state in following condition; Display value ≧ Preset 1 Display value ≧ Preset 2
t (T)				OUT1 keeps OFF state when display value is smaller than Preset 1 value, but if Preset 2 is "0", OUT1 keeps ON state. OUT2 keeps ON state when display value is equal or larger than Preset 2.
d (D)				When display value is equal to set value(Preset 1 or Preset 2) only, OUT1 ot OUT2 output keeps ON state. When set 1kcps for counting speed, solid state contact output should be used.

※Output of single preset type is operating the same as OUT2 of double preset type.

■ Setting of timer function modes

Set menu	How to set(▲, ▼)
Time range	SEC 999999 → SEC 99999.9 → SEC 999999 → mS 99m59s → mS 999s59 → Hm 999h59 → Hm 99h59s → m 999999 → m 99999.9
UP/DOWN mode (U-d)	U ⟷ d (Up) (Down) — Up : Time proceeds from 0(zero) to the set value; Down : Time proceeds from the set value to 0(zero)
Output mode (oUt)	ond → ond.1 → ond.2 → FLY → FLY.1 → oFd → int.1 → int → FLY.2
Output time (oUt.t)	10 → 50 → 100 → 200 → 500 → 1000 → Hold → 5000 → 2000 (Unit:ms) — It is operation time of control output according to output mode.
Input logic (S.G)	It indicates according to position, and it can't set by ▲& ▼key. Voltage input : PnP No-voltage input : nPn
Input signal time (in-t)	1 ⟷ 20 (Unit:ms) — Selection of Min. signal width of INA, INHIBIT, RESET, BATCH RESET signal
Lock key(Lock) (LoCK)	→ LoFF → LoC.1 → LoC.2 → LoC.3
COUNTER/TIMER (C-t)	CoUn ⟷ tiME — CoUn : COUNTER, tiME : TIMER

When setting the function mode, no external input signal will be accepted and the output will stay in the OFF state.
※In case of output mode is FKL, INT, INT1, OFD, there is no output time setting in the function setting mode.
※In the indicator type(CT6-I), there are no the output mode and the output time in the function setting mode (OUT1, OUT2).
※Control output operates as OUT2 in the double preset type(CT6-2P), and OUT1 always keeps "OFF" status.
※When in the function setting mode, if no key is touched for 60 sec. the timer will return to RUN mode.

■ Time range(CT6-2P, CT6, CT6-I)

Time range	Function setting mode: Counting display	Function setting mode: Preset display
0.01s – 9999.99s	SEC	9999.99
0.1s – 99999.9s	SEC	99999.9
1s – 999999s	SEC	999999
0.01s – 99m59.99s	mS	99m59.99
0.1s – 999m59.9s	mS	999m59.9
0.1m – 99999.9m	m	99999.9
1m – 999999m	m	999999
1s – 99h59m59s	Hm	99h59m59s
1m – 9999h59m	Hm	9999h59m

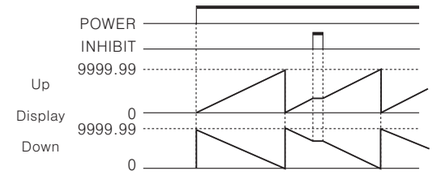
■ Output operation mode(Timer)

t: One-shot output / Hold output; t=One-shot output time — Hold output

Output mode	Time chart	Operation
ond (OND)	SIGNAL ON DELAY(POWER RESET)	1)Time starts when INA signal turns on, if INA signal turns off, time resets. 2)Time starts when power turns on and when reset turns off during INA signal on. 3)Control output operates as hold or One-shot time.
ond.1 (OND.1)	SIGNAL ON DELAY 1(POWER RESET)	1)Time starts when INA signal turns on, if INA signal is applied repeatedly, only initial signal is applied. 2)Time starts when power turns on and when reset turns off during INA signal on. 3)Control output operates as hold or One-shot time.
ond.2 (OND.2)	POWER ON DELAY(POWER HOLD)	1)Time starts when power turns on. (There is no INA function) 2)Time resets when reset turns on. Time starts when reset turns off. 3)Control output operates as hold output or One-shot output. 4)It memories display value when power turns off.
FLK (FLK)	FLICKER(POWER RESET)	1)Time starts when INA signal turns on, if INA signal is applied repeatedly, only initial signal is applied. 2)Time starts when power turns on and when reset turns off during INA signal on. 3)Control output operates as hold output, output turns on for the Toff time and turns on for the Ton time repeatedly. (There is no One-shot output) 4)Each the Ton time and the Toff time must be set individually. 5)In case of using the contact output, Min. setting time must be set over 100ms.
FLK.1 (FLK.1)	FLICKER 1(POWER RESET):Hold output	1)Time starts when INA signal turns on, if INA signal is applied, reaptedly only initial signal is applied. 2)Time starts when power turns on and when reset turns off during INA signal turns on. 3)Control output operates as hold output, in case of using the contact output Min. setting time must be set over 100ms.
	FLICKER 1(POWER RESET):One-shot output	1)Time starts when INA signal turns on, if INA signal is applied repeatedly, only initial signal is applied. 2)Time starts when power turns on and when reset turns off during INA signal on. 3)Control output operates as One-shot, in case of using the contact output, Min. setting time must be set over 100ms.
FLK.2 (FLK.2)	FLICKER 2(POWER HOLD):Hold output	1)Time starts when INA signal turns on, if INA signal is applied repeatedly, only initial signal is applied. 2)Control output operates as hold output when reaches to the set time. 3)Time starts when power turns on and when reat turns off during INA signal turns on. 4)In case of using the contact output, Min. setting time must be set over 100ms.
	FLICKER 2(POWER HOLD):One-shot output	1)Time starts when INA signal turns on, if INA signal is applied, only initial signal is applied. 2)Control output operates as One-shot output when reaches to the set time. 3)Time starts when power turns on and when reat turns off during INA signal turns on. 4)In case of using the contact signal, Min. setting time must be set over 100ms.
int (INT)	INTERVAL(POWER/SIGNAL RESET)	1)When INA is ON, time starts. 2)When INA is OFF, time resets. 3)Time starts when power turns on and when reset turns off during INA signal turns on. 4)When time reaches to set value, display value and control output will be reset automatically. 5)Control output turns ON, during time processes.
int.1 (INT.1)	INTERVAL 1(POWER RESET)	1)Control output turns on and time starts when INA signal turns on. 2)If INA signal is applied repeatedly, only initial signal is applied. 3)When reaches to set value, display value and control output is reset automatically. 4)Time starts when power turns on and when reset turns off during INA signal turns on. 5)Time processes normally while INA signal keeps ON status.
oFd (OFD)	SIGNAL OFF DELAY(POWER RESET)	1)If power is on and reset is off, control output keeps on state during INA signal is ON. 2)When time reaches to set value, display value and control output will be reset automatically.

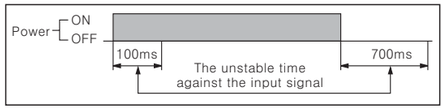
※POWER RESET : There is no memory retention. (Initialize the indicating value)
※POWER HOLD : There is memoizes retention. (It memorize the indicating value when power cut off and displays the value as initial value)

■ Timer operation of CT6-I(Indication only)



■ Caution for using

1. The power ON/OFF
   ①Power voltage rises for 100ms after power on and falls for 700ms after power off. Therefore be sure to apply input signal after 100ms and power turns on again after 700ms when power turns off.
   ②When apply the power into CT series, please apply the power in an instant by using Switch or Relay.



2. Input signal line
   ①Use as short a cable from the sensor to this unit as possible.
   ②Use shielded cable for long input line.
   ③Wire as separating input line from the power line.
3. Contact count input(When it is used as Counter)
   If apply contact input at high speed mode(1k, 5k, 10k), it may miscount by chattering.
   Therefore set low speed mode(1 or 30cps) at contact input.
4. When test dielectric voltage and insulation resistance of the control panel with this unit installed.
   ①Please isolate this unit from the circuit of control panel.
   ②Please make all terminals of this unit short-circuited.
5. Do not use below places.
   ①Place where there are severe vibration or impact
   ②Place where strong alkalis or acids are used.
   ③Place where there are direct ray of the sun
   ④Place where strong magnetic field or electric noise are generated.
6. Installation environment
   ①It shall be used indoor
   ②Altitude Max. 2000m
   ③Pollution Degree 2
   ④Installation Category Ⅱ

※It may cause malfunction if above instructions are not followed.

■ Major products

■ PROXIMITY SENSOR ■ PHOTOELECTRIC SENSOR
■ AREA SENSOR ■ FIBER OPTIC SENSOR
■ DOOR/DOOR SIDE SENSOR ■ PRESSURE SENSOR
■ ROTARY ENCODER ■ SENSOR CONTROLLER
■ SWITCHING POWER SUPPLY
■ TEMPERATURE CONTROLLER
■ TEMPERATURE/HUMIDITY TRANSDUCER
■ POWER CONTROLLER ■ RECORDER
■ TACHOMETER/PULSE(RATE) METER
■ PANEL METER ■ INDICATOR
■ SIGNAL CONVERTER ■ COUNTER
■ TIMER ■ DISPLAY UNIT
■ GRAPHIC PANEL
■ STEPPING MOTOR & DRIVER & MOTION CONTROLLER

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