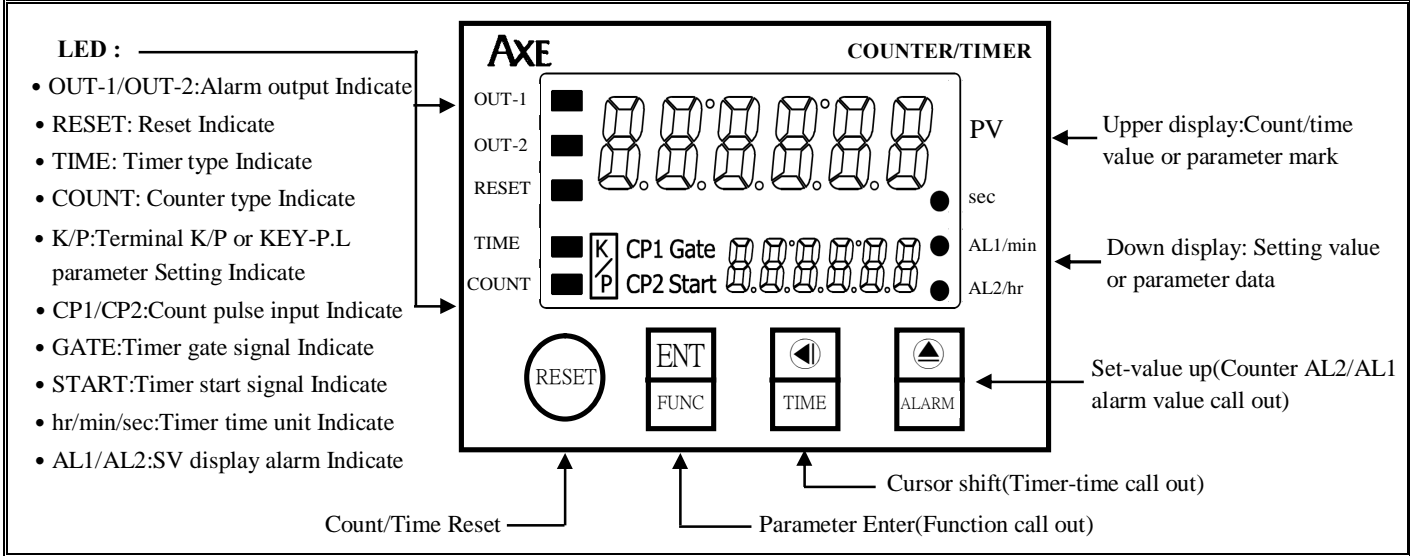


■ Features

- ⊙ PV display auto switched between red, green, and orange when out-2 status changed
 - ⊙ Counter or timer type can be selective
 - ⊙ Pulse input type NPN/PNP can be modified
 - ✧ Counting range : -199999~999999 digit
 - ✧ Accept input rates 50 cps or 10K cps can be modified
 - ✧ Five counting input modes: Front/after edge Up, Down, Up/Down, direct-Up/Down and Quadrature-Up/Down can be modified
 - ✧ Input scaling multiplied(0.00001~9.99999) can be modified
 - ✧ Quadrature sensing up to 4 times resolution
 - ✧ Reset by panel or connect terminal and Overflow auto zero
 - ✧ Ten alarm output mode (N/F/R/Q/C/P/K/A/L/H) can be modified
 - Twelve time range(999.999 sec. to 999999 hr.) can be modified
 - Eleven output mode(A/A1/A2/A3/B/B1/B2/C/D/E/F) can be modified
 - ⊙ EEPROM Saving, data safekeeping about 10 years
- Note: ⊙: Both counter and timer function
 ✧: Counter function
 □: Timer function

■ Name of Parts



■ Key Introduce

⊕ Key Function	1. In normal display, The key function is call out setting item 2. In parameter setting page, The key function is data Enter , and go to next page
◀ Key Function	1. In normal display, The key function is call out Timer-time setting page, Can be modify Timer-time value with ◀ & ▲ key 2. Into parameter setting page, Can be modify parameter data with ◀ & ▲ key
▲ Key Function	1. In normal display, The key function is call out Counter alarm setting page, Can be modify alarm value with ◀ & ▲ key 2. Into parameter setting page, Can be modify parameter data with ◀ & ▲ key
◀ & ▲ Key Function	1. In any setting page, Press ◀ & ▲ key return normal display, and save the modify parameter data
RESET Key Function	1. In any Count/Time status, Press RESET key will be reset count/time status
No Key in anything	1. In any page no key in anything about 2 minutes, return normal display, and the modify parameter data will be lost

■ Counter/Timer inside parameter data Setting Procedure

Step	Parameter mark description	Parameter mark	Operation manual
1	Normal display	1 2 3 4 5 6	1. Press ⊕/FUNC key into TYPE setting page
2	TYPE(Type) Default = COUNT	TYPE	1. Decide Type with ▲ key (COUNT/TIME)
		COUNT	2. Press ⊕ key enter data and into PV.COLR setting page
3	PV.COLR(PV Display Color) Default = red	P u . C O L R	1. Decide PV Display Color with ▲ key (red/green/orange/red--g/g--red/red--o/o--red/g--org/org--g)
		r e d	2. Press ⊕ key enter data and into P-I-T setting page Note: When out-2 changed, red/green/orange=fixed color, other: switch to setting color
4	P-I-T(Pulse Input Type) Default = NPN	P - I - T	1. Decide Pulse Input Type with ▲ key (NPN/PNP)
		n p n	2. Press ⊕ key enter data and into COUNT or TIME setting procedure TYPE=COUNT into step 5-1 DP setting page TYPE=TIME into step 7-1 T-RANG setting page

■ Counter inside parameter data Setting Procedure

Step	Parameter mark description	Parameter mark	Operation manual
5-1	DP(Decimal Point) Default = 0	d p	1. Decide Decimal Point with ▲ key(0~5)
		0.	2. Press ⊕ key enter data and into I-MODE setting page
5-2	I-MODE(Input Mode) Default = 1U2G	i - m o d e	1. Decide Input Mode with ▲ key(1U2G/1D2G/1U2D/1P2D/1A2B)
		1 U 2 G	2. Press ⊕ key enter data and into C-R-S setting page
5-3	C-R-S(Count Rates Select) Default = 10KHZ	c - r - s	1. Decide Count Rates Select with ▲ key (50HZ/10KHZ)
		1 0 K H Z	2. Press ⊕ key enter data and into SCALE setting page
5-4	SCALE(Input Pulse Scale) Default = 1.00000	S C A L E	1. Decide Input Pulse Scale with ◀ & ▲ key (0.00001~9.99999)
		1.00000	2. Press ⊕ key enter data and into RST-T setting page Note: Display value = Input pulse*SCALE
5-5	RST-T(Reset Time) Default = 20mS	r s t - t	1. Decide Reset Time with ▲ key (1mS/20mS)
		2 0 m S	2. Press ⊕ key enter data and into P-OFF.M setting page

5-6	P-OFF.M(Power Off Mode) Default = Reset	P - o f f . n r e s e t	1.Decide Power Off Mode with ▲ key (Reset/Memory) 2.Press Ⓜ key enter data and into OP.MODE setting page Note:Reset:Reset after power off Memory:Keep save after power off
5-7	OP.MODE(Output Mode) Default = N	o p . n o d e n	1.Decide Output Mode with ▲ key (N/F/R/Q/C/P/K/A/L/H) 2.Press Ⓜ key enter data and into ACT2-T setting page
5-8	ACT2-T(Active 2 Time) Default = 0	A c t 2 - t 0 0 . 0 0	1.Decide Active 2 Time with ◀&▲ key (0.00~99.99 sec.) 2.Press Ⓜ key enter data and into ACT1-T setting page Note 1:ACT2-T=0 sec. denote self-holding output 2 ACT2-T=0.01~99.99 sec. denote one-shot output 2 Note 2:OP.MODE=N,ACT2-T must setting zero(self-holding output) OP.MODE=R/Q/C/P/K/A,ACT2-T must setting 0.01~99.99(one-shot output) OP.MODE=L/H,The output mode is unconcerned with ACT2-T
5-9	ACT1-T(Active 1 Time) Default = 0	A c t 1 - t 0 0 . 0 0	1.Decide Active 1 Time with ◀&▲ key (0.00~99.99 sec.) 2.Press Ⓜ key enter data and into KEY-P.L. setting page Note 1:ACT1-T=0 sec. denote self-holding output 1 ACT1-T=0.01~99.99 sec. denote one-shot output 1 Note 2:OP.MODE=L/H,The output mode is unconcerned with ACT1-T
5-10	KEY-P.L.(Key Protection Level) Default = P-not	k e y - p . l . p - n o t	1.Decide Key Protection Level with ▲ key (P-not/P-rst.k/P-s.u.-k/P-all.k) 2.Press Ⓜ key enter data and return normal display Note: P-not: Non-Lock any key P-rst.k:Lock RESET key P-s.u.-k: Lock ◀&▲ key P-all.k: Lock whole key

■ Timer inside parameter data Setting Procedure

Step	Parameter mark description	Parameter mark	Operation manual
7-1	T-RANG(Time Range) Default = 999.999 sec.	t - r a n g 9 9 9 . 9 9 9	1.Decide Time Range with ▲ key(999.999sec/9999.99sec/99999.9sec/999999sec/ 99min59.99sec/999min59.9sec/99999.9min/999999min/99hr59min59sec/ 9999hr59min/99999.9hr/999999hr) 2. Press Ⓜ key enter data and into T-D-S setting page
7-2	T-D-S(Time Direction Select) Default = Up	t - d - s u p	1.Decide Time Direction Select with ▲ key (Up/Down) 2.Press Ⓜ key enter data and into I-S-T setting page Note:Up:PV display the elapsed time, Down:PV display the remaining time
7-3	I-S-T(Input Signal Time) Default = 20mS	i - s - t 2 0 m s	1.Decide Input Signal Time with ▲ key (1mS/20mS) 2.Press Ⓜ key enter data and into OP.MODE setting page
7-4	OP.MODE(Output Mode) Default = A mode	o p . n o d e a	1.Decide Output Mode with ▲ key (A/A1/A2/A3/B/B1/B2/C/D/E/F) 2.Press Ⓜ key enter data and into OP.TIME setting page
7-5	OP.TIME(Output Time) Default = 0	o p . t i m e 0 0 . 0	1.Decide Output Time with ◀&▲ key (00.0~99.9 sec.) 2.Press Ⓜ key enter data and into OP-C-T setting page Note:OP.TIME=0 denote self-holding output,OP.TIME=0.1~99.9 is one-shot output Note:OP.MODE=C,D,E mode is unconcerned with OP.TIME
7-6	OP-C-T(Output Contact type) Default = 2t	o p - c - t 2 t	1.Decide Output Contact type with ▲ key (2t/1c2t) 2.Press Ⓜ key enter data and into KEY-P.L. setting page Note:2t:out-1 & out-2=time-limit,1c2t:out-2=time-limit,out-1=instantaneous contact
7-7	KEY-P.L.(Key Protection Level) Default = P-not	k e y - p . l . p - n o t	1.Decide Key Protection Level with ▲ key (P-not/P-rst.k/P-s.u.-k/P-all.k) 2.Press Ⓜ key enter data and return normal display Note: P-not: Non-Lock any key P-rst.k:Lock RESET key P-s.u.-k: Lock ◀&▲ key P-all.k: Lock whole key

■ Counter outside parameter Setting Procedure

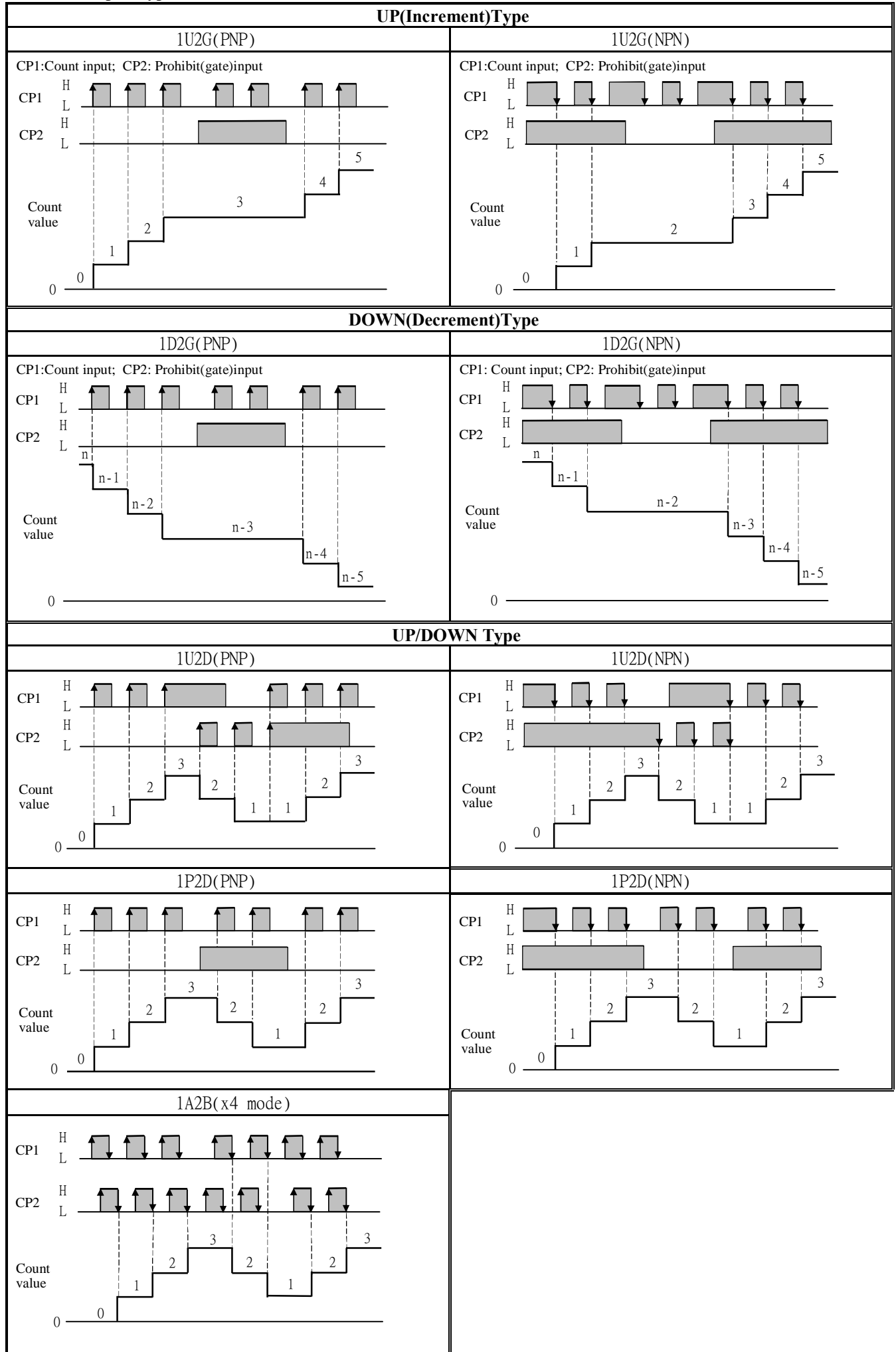
6	Normal display	1 2 3 4 5 6	1.Press ▲/ALARM key about 3 sec, into AL2 setting page (AL2 LED on) Note:When TYPE=TIME,the Procedure is disable
6-1	AL2 (Alarm 2) Default = 0	a l 2 0 0 0 0 0 0	1.Decide Alarm 2 with ◀&▲ key (0~999999) 2.Press Ⓜ key enter data and into AL1 setting page (AL1 LED on)
6-2	AL1 (Alarm 1) Default = 0	a l 1 0 0 0 0 0 0	1.Decide Alarm 1 with ◀&▲ key (0~999999) 2.Press Ⓜ key enter data and into AL-D-S setting page
6-3	AL-D-S(Alarm Display select) Default = AL2	a l - d - s a l 2	1.Decide Alarm Display Select with ▲ key (AL1/AL2) 2.Press Ⓜ key enter data and return normal display Note:Mode 8A/8B/8M/11M/BM/10M only setting AL2 and auto Display AL2 value

■ Timer outside parameter Setting Procedure

8	Normal display	1 2 3 4 5 6	1.Press ◀/TIME key about 3 sec, into TIME-T setting page Note: When TYPE=COUNT,the Procedure is disable
8-1	TIME-T(Timer-Time) Default = 0	t i m e - t 0 0 0 . 0 0 0	1.Decide Timer-Time with ◀&▲ key (0~999999) 2.Press Ⓜ key enter data and return normal display

Appendix	Error Mark Description	Error Mark	Analyze & Description
1	EPPROM error detect	e - 0 0 n o y e s	1.External interference when EPPROM read/write 2.EPPROM write over 100000 times(guarantee 10 years) Please power reset, if still display E-00, doing following step: 1.E-00 & No display for inquire reset EPPROM 2.Decide Yes with ▲ key, press Ⓜ key return normal display EPPROM has reset, Please follow step 1~8 setting again

Counter Input Type and Count Value

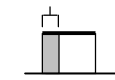


Counter Alarm Output Mode

		Input Mode			Operation Description
		UP	DOWN	UP/DOWN	
Counter Alarm Output Mode setting	N				The display value continues to increase/decrease. The OUT-2 output are held until Reset is input.
	F				As soon as OUT-2 has active, the display value are held until Reset is input. The OUT-1 output time is independent of OUT-2.
	R				The display value continues to increase/decrease during the OUT-2 one-shot output time but return to the reset start status after the OUT-2 one-shot output time has elapsed. The output repeat OUT-2 one-shot operation. OUT-1 self-holding output turns OFF after the OUT-2 one-shot output time. The OUT-1 one-shot output time is independent of OUT-2.
	Q				The display value return to the reset start status after the OUT-2 one-shot output time. The output repeat OUT-2 one-shot operation. OUT-1 self-holding output turns OFF after the OUT-2 one-shot output time. The OUT-1 one-shot output time is independent of OUT-2.
	C				As soon as the count reaches AL2, the display value return to the reset start status. The output repeat OUT-2 one-shot operation. OUT-1 self-holding output turns OFF after the OUT-2 one-shot output time. The OUT-1 one-shot output time is independent of OUT-2.

Note : 1. Self-holding output , One-shot output , Self-holding output or One-shot output 

One-shot output



Self-holding output

		Input Mode			Operation Description
		UP	DOWN	UP/DOWN	
Counter Alarm Output Mode setting	P				The display value dose not change during the OUT-2 one-shot output time.but the actual count return to the reset start status. The output repeat OUT-2 one-shot operation. OUT-1 self-holding output turns OFF after the OUT-2 one-shot output time.The OUT-1 one-shot output time is independent of OUT1.
	K				The display value continues to increase/decrease. OUT-1 self-holding output turns OFF after the OUT-2 one-shot output time. The OUT-1 one-shot output time is independent of OUT-2.
	A				As soon as OUT-2 has active,the display value are held until Reset is input. The OUT-1 output time is independent of OUT-2.
	L				The display continues to increase/decrease until the overflow or underflow value is reached. OUT-1 is held while the present value is less than or equal to AL1. At the UP or UP/DOWN mode,OUT-2 is held while the present value is greater than or equal to AL2. At the DOWN mode, OUT-2 is held while the present value is less than or equal to zero.
	H				The display continues to increase/decrease until the overflow or underflow value is reached. OUT-1 is held while the present value is greater than or equal to AL1. At the UP or UP/DOWN mode,OUT-2 is held while the present value is greater than or equal to AL2. At the DOWN mode, OUT-2 is held while the present value is less than or equal to zero.

Note: 2.Counting cannot be performed during Reset input.

3.When count value reaches 99999,it return to 0,Count value below -19999,Down mode return to AL1,Up/Down mode return to 0

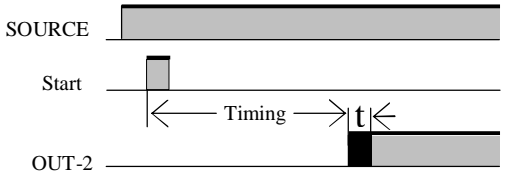
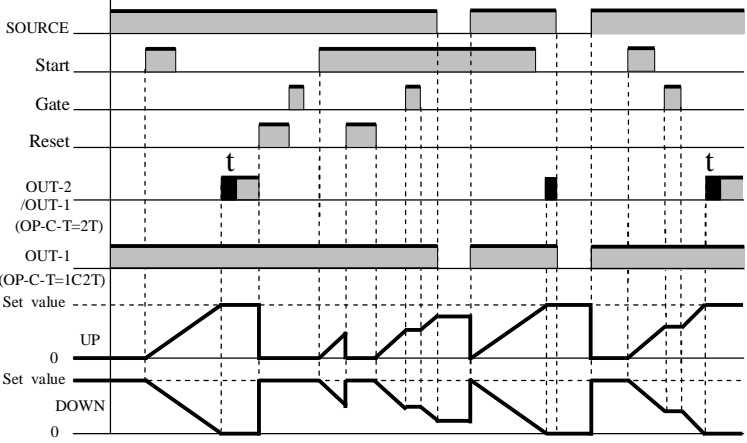
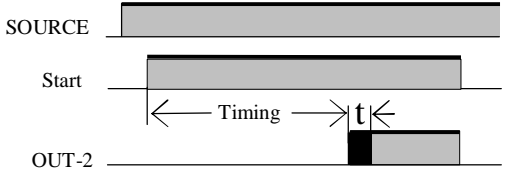
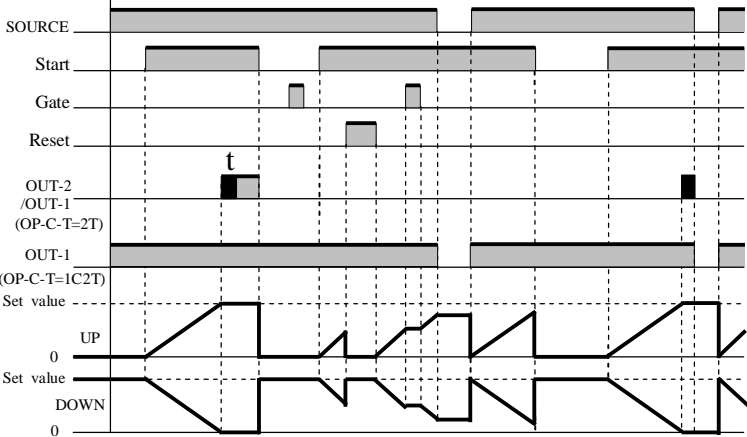
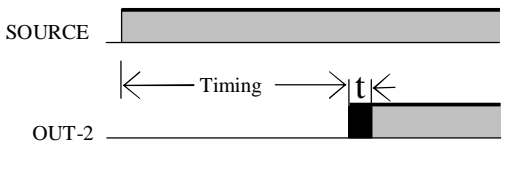
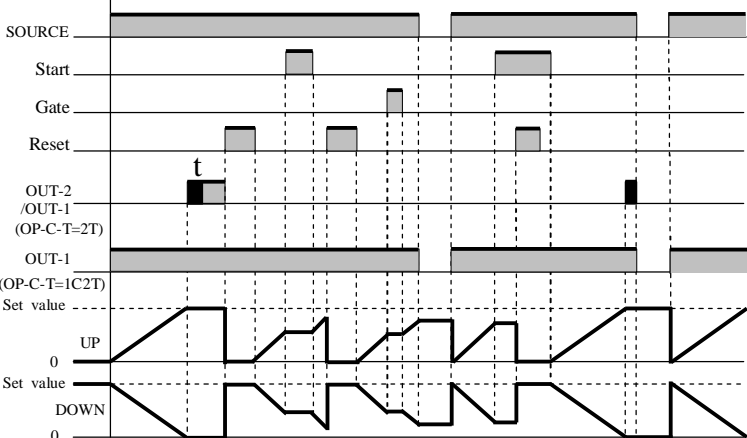
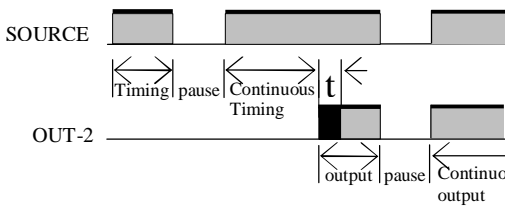
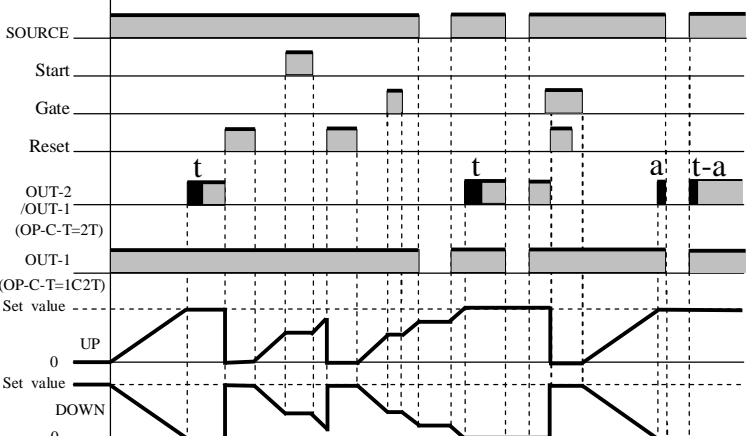
4.If Reset is input while one-shot output is ON, one-shot output turns OFF.

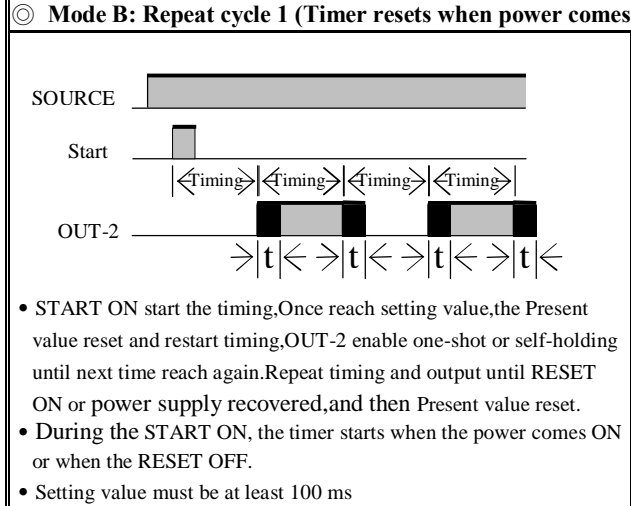
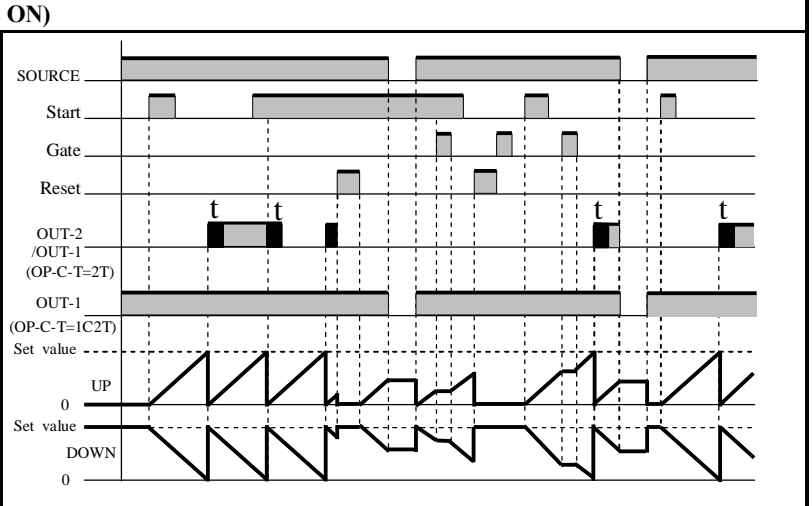
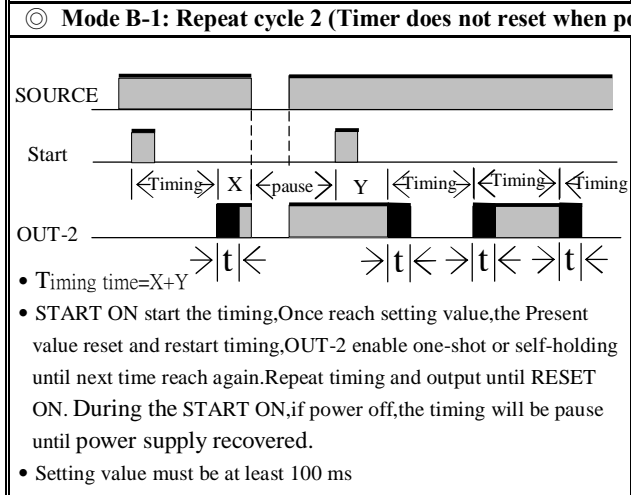
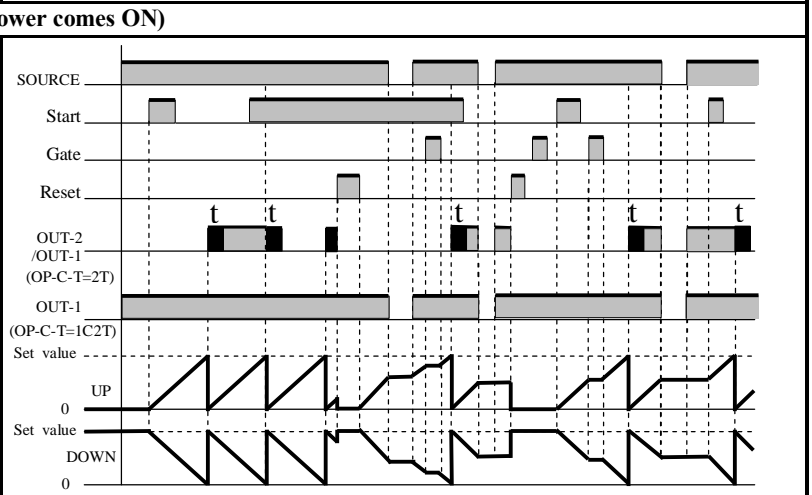
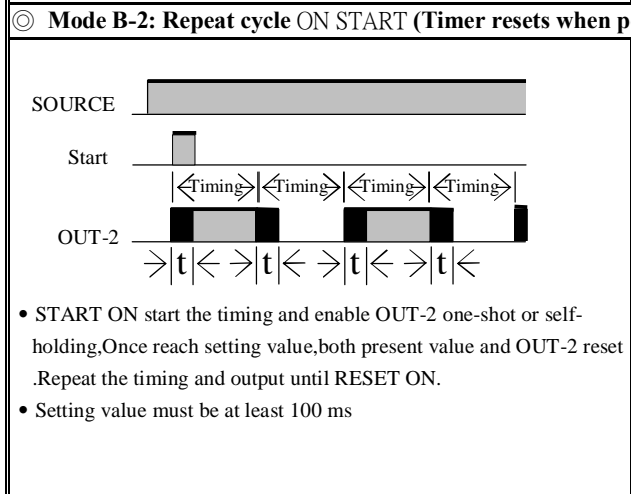
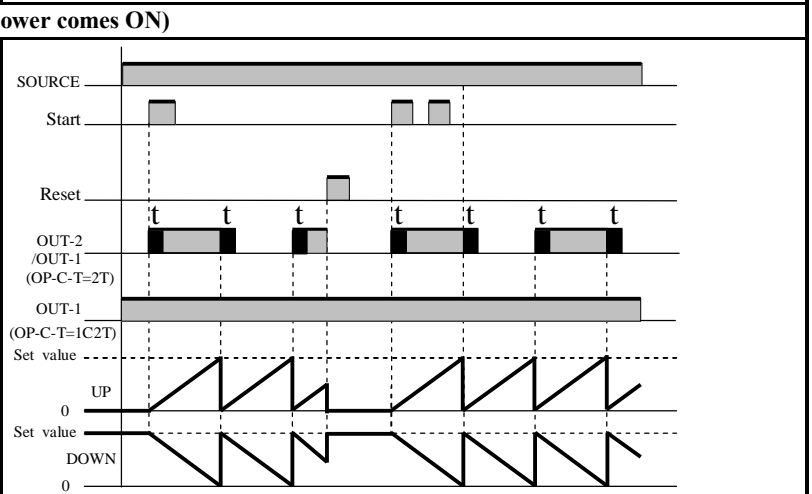
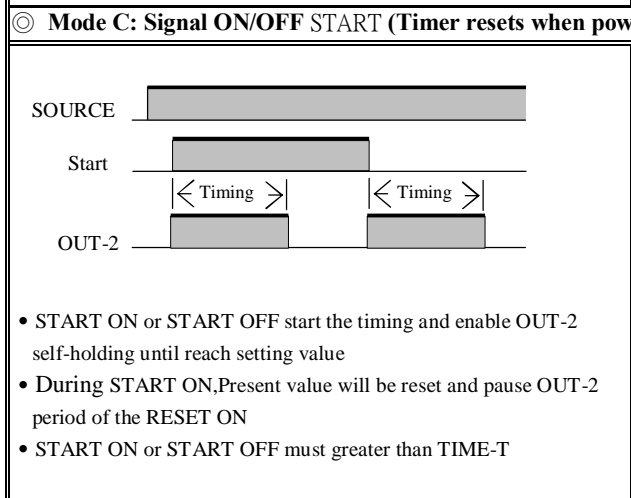
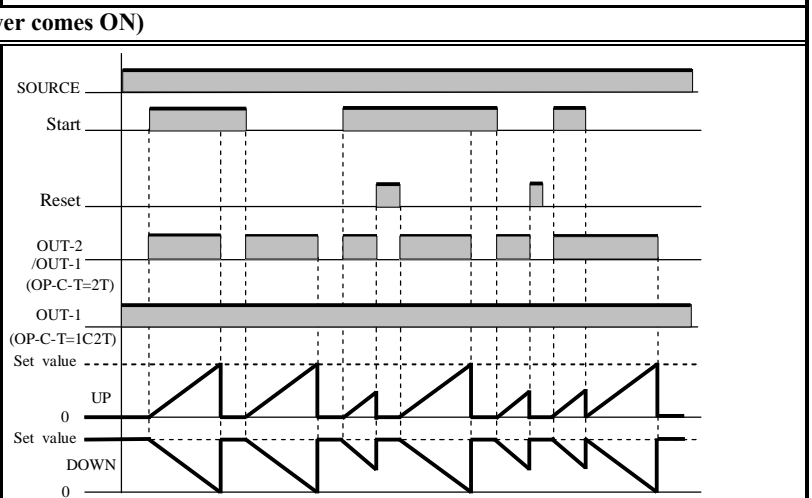
5.If power failure while output is ON,output will turn ON again(P.OFF.M=1)or Reset(P.OFF.M=0) when the power supply has recovered.

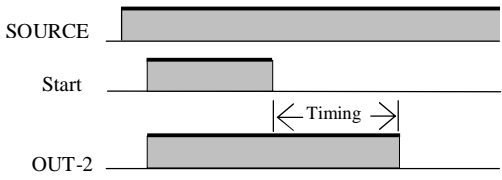
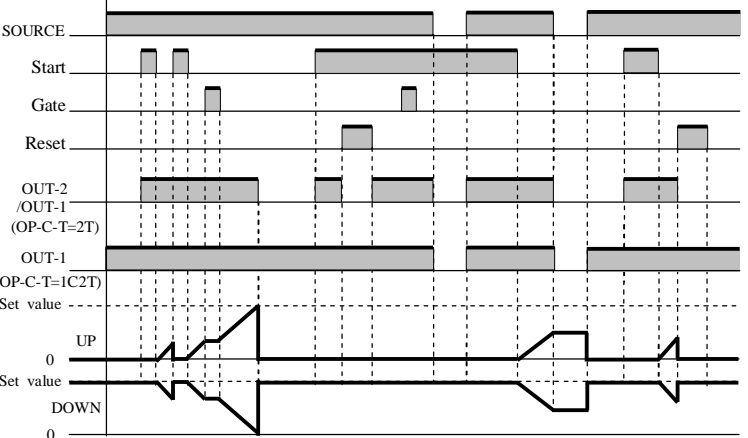
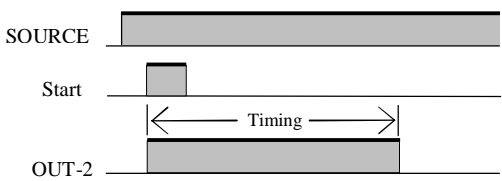
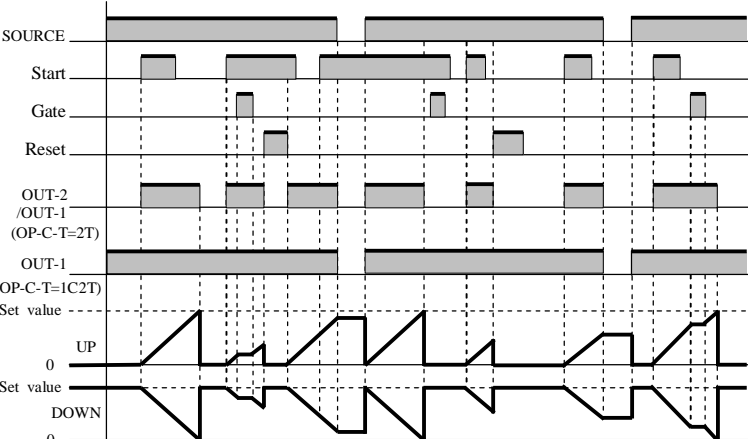
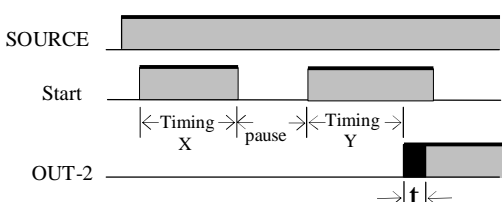
6.When count value reaches to alarm again during the One-shot output, the One-shot output time will be restart.

7.Ten alarm output mode is according to AL2 setting value.

■ Timer Output Mode

Basic Operation Description	Detailed operation Description
<p>◎ Mode A: Signal ON delay 1 (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON start the timing, Once reach setting value, OUT-2 enable self-holding or one-shot, Present value will be hold until RESET ON or power supply recovered, and then Present value reset. During the START ON, the timer starts when the power comes ON or when the RESET OFF. Start signal input is disabled during timing. Once START ON, OUT-2 is instantaneous when setting value is 0. 	
<p>◎ Mode A-1: Signal ON delay 2 (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON start the timing, Once reach setting value, OUT-2 enable self-holding or one-shot, Present value will be hold until START OFF or RESET ON or power supply recovered, and then Present value reset. During the START ON, the timer starts when the power comes ON or when the RESET OFF. Once START ON, OUT-2 is instantaneous when setting value is 0. 	
<p>◎ Mode A-2: Power ON delay 1 (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> Both power on and RESET OFF start the timing, Once reach setting value, OUT-2 enable self-holding or one-shot, Present value will be hold until RESET ON or power supply recovered, and then Present value reset. The start signal disables the timing function as the gate input. During the power on, the timer starts when the RESET OFF Once power on, OUT-2 is instantaneous when setting value is 0. 	
<p>◎ Mode A-3: Power ON delay 2 (Timer does not reset when power comes ON)</p>  <ul style="list-style-type: none"> Both power on and RESET OFF start the timing, If power off, the timing and OUT-2 will be pause until power supply recovered. Once reach setting value, OUT-2 enable self-holding or one-shot. Present value will be hold until RESET ON. The start signal disables the timing function as the gate input. Once power on, OUT-2 is instantaneous when setting value is 0. 	

Basic Operation Description	Detailed operation Description
<p>⊙ Mode B: Repeat cycle 1 (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON start the timing, Once reach setting value, the Present value reset and restart timing, OUT-2 enable one-shot or self-holding until next time reach again. Repeat timing and output until RESET ON or power supply recovered, and then Present value reset. During the START ON, the timer starts when the power comes ON or when the RESET OFF. Setting value must be at least 100 ms 	
<p>⊙ Mode B-1: Repeat cycle 2 (Timer does not reset when power comes ON)</p>  <ul style="list-style-type: none"> Timing time=X+Y START ON start the timing, Once reach setting value, the Present value reset and restart timing, OUT-2 enable one-shot or self-holding until next time reach again. Repeat timing and output until RESET ON. During the START ON, if power off, the timing will be pause until power supply recovered. Setting value must be at least 100 ms 	
<p>⊙ Mode B-2: Repeat cycle ON START (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON start the timing and enable OUT-2 one-shot or self-holding, Once reach setting value, both present value and OUT-2 reset. Repeat the timing and output until RESET ON. Setting value must be at least 100 ms 	
<p>⊙ Mode C: Signal ON/OFF START (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON or START OFF start the timing and enable OUT-2 self-holding until reach setting value During START ON, Present value will be reset and pause OUT-2 period of the RESET ON START ON or START OFF must greater than TIME-T 	

Basic Operation Description	Detailed operation Description
<p>◎ Mode D: Signal OFF DELAY (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START OFF start the timing, Once reach setting value or RESET ON or START ON or power supply recovered, the present value will be reset. The OUT-2 is ON during START ON (except when the power is OFF or RESET ON) When setting value is 0, the OUT-2 only ON during the START ON 	
<p>◎ Mode E: Interval (Timer resets when power comes ON)</p>  <ul style="list-style-type: none"> START ON start the timing, Once reach setting value or RESET ON or power supply recovered, the present value will be reset. START ON start the timing, the OUT-2 is ON until reach setting value or RESET ON or power supply recovered. OUT-2 is disabled when the setting value is 0. 	
<p>◎ Mode F: Cumulative (Timer does not reset when power comes ON)</p>  <ul style="list-style-type: none"> Setting value = Timing X + Timing Y START ON start the timing, Once reach setting value, OUT-2 enable self-holding or one-shot, Present value and OUT-2 will be hold until the RESET ON. During power off, the present value is hold, and OUT-2 pause. Once START ON, OUT-2 is instantaneous when setting value is 0. When the power start, there will be a timer error (exceeding 100 ms each time). Use the signal start if timer accuracy is required. 	