

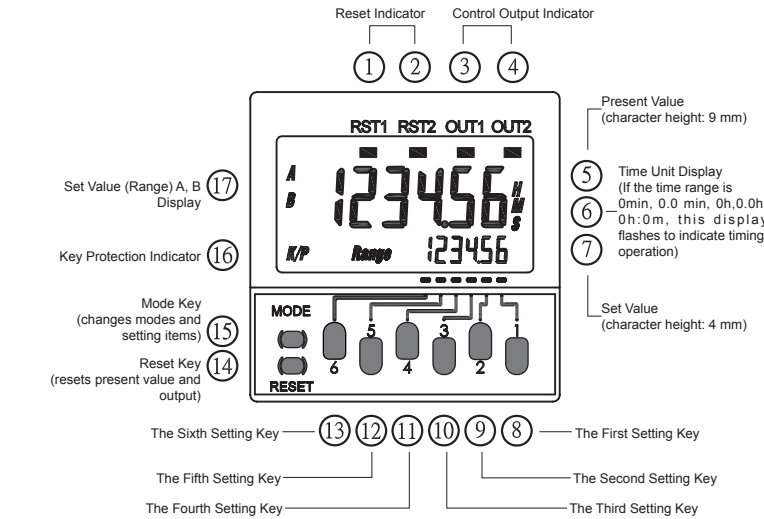
# TC-Pro482

## Timer/Counter/Tachometer operation manual

### 1、Safety Precautions

- Do not use the product where corrosive or volatile gases are present, there may occasionally be a risk of explosion.
- Usable life of output relay is determined by switch condition. According the actual usage, use product within its rated load and electrical life expectancy. If using product beyond its life expectancy, its contacts may become fused or there may be a risk of fire.
- This may occasionally cause electric shock, fire or malfunction. Never disassemble, repair or modify the product.
- This may occasionally cause electric shock, fire or malfunction. Do not allow metal fragments or lead wire scraps to fall inside this product.
- Make sure that the supply voltage and signal connection is correct before power is supplied, otherwise the product may be damaged.
- Do not touch the input terminals or repair the product while power is supplied.This may cause electric shock.

### 2、Nomenclature



### 3、Model Number Legend

TC-Pro482 □ □ □ - D

1 2 3 4

- 1. Communication**  
S: Standard (no communication)  
C: Communication
- 2. Output type**  
R: Contact  
T: Transistor
- 3. Supply voltage**  
A : 100V ~ 240V AC  
D : 24V DC, 24V AC

- 4. Installs the pattern**  
D: Track Mounting  
None: Inserting Mounting

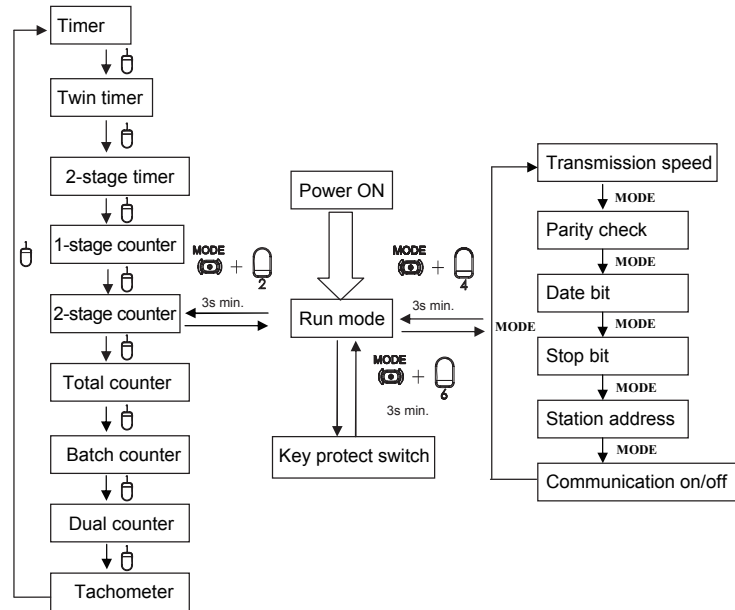
### 4、Electric Specifications

| Parameter name          | Timer   | Counter/Tachometer         |
|-------------------------|---|----------------------------|
| Rated supply voltage    | 100~240VAC(50/60HZ), 24VAC(50/60HZ), 24VDC(permissible ripple: 20%(p-p)max.)  |                            |
| Operating voltage range | 85% to 110% rated supply voltage(24VDC; 90% to 110%)  |                            |
| Power consumption       | Approx. 6.2VA at 264VAC, Approx. 5.1VA at 26.4VAC, Approx. 2.4W at 24VDC  |                            |
| Input signals           | Signal, reset, gate   | CP1, CP2, Reset 1, Reset 2 |
| Input method            | ※ No-voltage input/voltage input (switchable)<br>◆ No-voltage input<br>ON impedance: 1kΩ max.(leakage current: 5~20 mA when 0Ω( ON residual voltage: 3V max.<br>OFF impedance: 100kΩ min.<br>◆ Voltage Input<br>High(logic) level: 4.5 to 30 VDC<br>Low(logic) level: 0 to 2 VDC<br>(Input resistance: approx. 4.7 kΩ)  |                            |
| Reset input             | Minimum input signal width: 1/20 ms(selectable, same for all input)   |                            |
| Sensor waiting time     | 250 ms max.(control output is turned OFF and no input is accepted during sensor waiting time)   |                            |
| Output method           | Relay/transistor output   |                            |
| Control output          | SPDT contact output: 5A at 250 VAC, resistive load(cosΦ=1)<br>Minimum applied load: 10 mA at 5 VDC(failure level: P, reference value)<br>Transistor output: NPN open collector, max. 100mA at 30 VDC<br>Residual voltage: 1.5 VDC max.(approx. 1V)<br>Output category according to EN60947-5-1 for timers with Contact outputs<br>(AC-15; 250V 3A / AC-13; 250V 5A / DC-13; 30V 0.5A)<br>Output category according to EN60947-5-2 for timers with Transistor outputs<br>(DC-13; 30V 100 mA)<br>NEMA B300 Pilot Duty, 1/4 HP 5-A resistive load at 120 VAC, 1/3 HP 5-A resistive load at 240 VAC |                            |

|                       |  |
|-----------------------|--|
| External power supply | 12VDC(15%), 80mA   |
| Memory backup         | EEPROM(overwrites: 100,000 times min.)that can store data for 10 years min.                                  |
| Ambient temperature   | Operating: -10 to 55°C(with no icing or condensation)<br>Storage: -25 to 65°C(with no icing or condensation) |
| Ambient humidity      | 25% to 85%   |

### 5、Function parameter setting

#### Mode setting



#### ★ Timer/ Counter/ Tachometer Selection Mode

| Parameter name   | Parameter | Setting range   | Default value |
|--|-----------|---|---------------|
| Timer/Twin Timer/2-Stage Timer Selection Mode                              | FUNC      | tim / twi / pst                                       | tim           |
| 1-stage/ 2-stage / Total /Batch / Dual counter / Tachometer Selection Mode | FUNC      | 1cnt / 2cnt / 3cnt / 4cnt / 5cnt / 6cnt / 7cnt / 8cnt | 1cnt          |

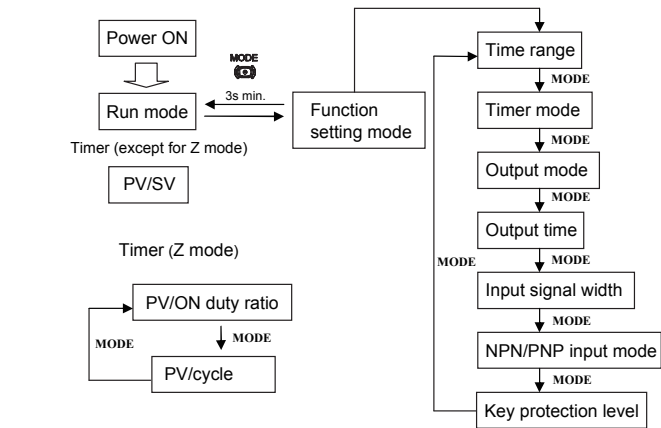
#### ★ Communication Format Function Selection Mode

| Parameter name       | Parameter | Setting range (use  key to select)                           | Default value |
|----------------------|-----------|--|---------------|
| Transmission speed   | BAUD      | 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600bps | 9600          |
| Parity check         | PAR       | NONE/ODD/EVEN  | none          |
| Date bit             | DATE      | 8-bit/7-bit  | 8-bit         |
| Stop bit             | STOP      | 1-bit/2-bit  | 1-bit         |
| Station address      | ADDR      | 01~FF (HEX)  | 01            |
| Communication on/off | COMM      | ON/OFF   | on            |

#### ★ Key Protection Setting Mode

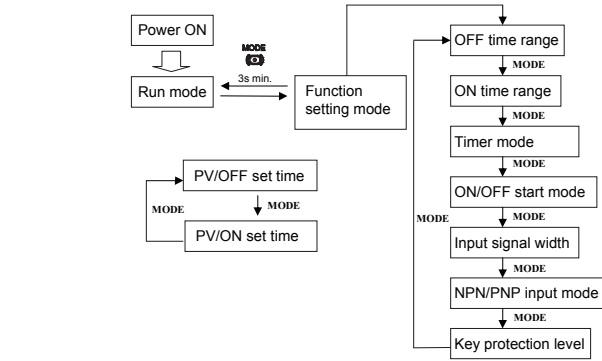
| Parameter name        | Parameter | Setting range (use  key to select) | Default value |
|-----------------------|-----------|------------------------------------|---------------|
| Key protection switch | PP        | off/on                             | off           |

#### Timer parameter setting



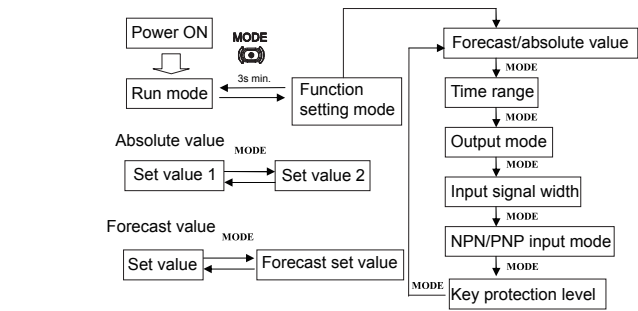
| Parameter name       | Parameter | Setting range (use  key to select)                                  | Default value |
|----------------------|-----------|---|---------------|
| Time range           | tim       | --s/--s/--s/--s/--s/--min/--s/--min/--min/--h/--min/--h/--h/--h/--s | --s           |
| Timer mode           | tim       | up/down   | up            |
| Output mode          | out       | a/a-1/a-2/a-3/b/b-1/d/e/f/z   | a             |
| Output time          | out       | hold/0000.01~9999.99  | hold          |
| Input signal width   | in        | 20ms/1ms  | 20ms          |
| NPN/PNP input mode   | in        | npn/pnp   | npn           |
| Key protection level | pp        | kp-1/kp-2/kp-3/kp-4/kp-5  | kp-1          |

#### Twin Timer parameter setting



| Parameter name       | Parameter | Setting range (use  key to select)                                  | Default value |
|----------------------|-----------|---|---------------|
| OFF time range       | oft       | --s/--s/--s/--s/--s/--min/--s/--min/--min/--h/--min/--h/--h/--h/--s | --s           |
| ON time range        | ont       | --s/--s/--s/--s/--s/--min/--s/--min/--min/--h/--min/--h/--h/--h/--s | --s           |
| Timer mode           | tim       | up/down   | up            |
| ON/OFF start mode    | tot       | toff/ton  | toff          |
| Input signal width   | in        | 20ms/1ms  | 20ms          |
| NPN/PNP input mode   | in        | npn/pnp   | npn           |
| Key protection level | pp        | kp-1/kp-2/kp-3/kp-4/kp-5  | kp-1          |

#### 2-Stage Timer parameter setting



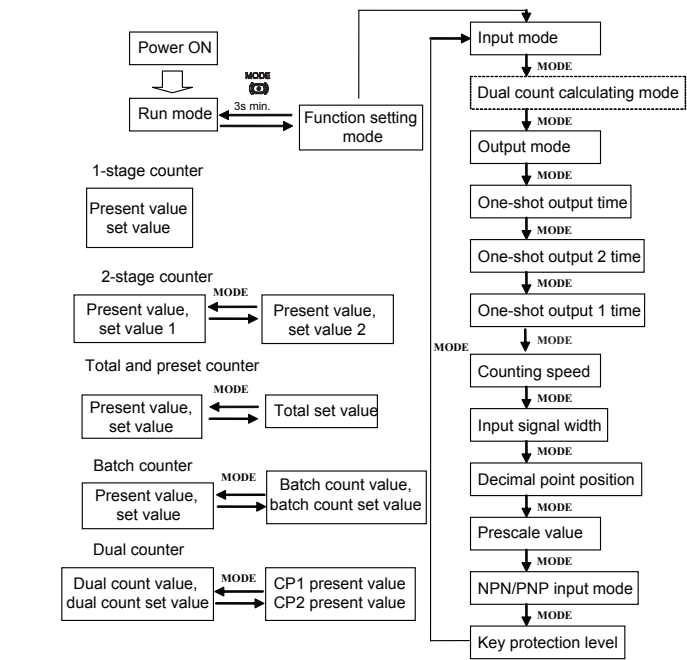
| Parameter name           | Parameter | Setting range (use  key to select )                                 | Default value |
|--------------------------|-----------|---|---------------|
| Forecast/ absolute value | set       | ofst/abs  | ofst          |
| Time range               | tim       | --s/--s/--s/--s/--s/--min/--s/--min/--min/--h/--min/--h/--h/--h/--s | --s           |
| Output mode              | out       | a/f-1   | a             |
| Input signal width       | in        | 20ms/1ms  | 20ms          |
| NPN/PNP input mode       | in        | npn/pnp   | npn           |
| Key protection level     | pp        | kp-1/kp-2/kp-3/kp-4/kp-5  | kp-1          |

#### Time parameter setting

| Setting range                          | Unit  | Default value |
|--|-------|---------------|
| 0000.00~9999.99 (Time range: --s)      | s     | 0000.00       |
| 00000.0 ~ 99999.9 (Time range: --s)    | s     | 00000.0       |
| 000000 ~ 999999 (Time range: --s)      | s     | 000000        |
| 0000:00 ~ 9999:59 (Time range: -min-s) | min:s | 0000:00       |
| 00000.0 ~ 99999.9 (Time range: --min)  | min   | 00000.0       |
| 000000 ~ 999999 (Time range: --min)    | min   | 000000        |

|  |       |         |
|--|-------|---------|
| 0000:00 ~ 9999:59 (Time range: -h-min) | h:min | 0000:00 |
| 00000.0 ~ 99999.9 (Time range: --h)    | h     | 00000.0 |
| 000000 ~ 999999 (Time range: --h)      | h     | 000000  |
| 000.000 ~ 999.999 (Time range: --s)    | s     | 000.000 |

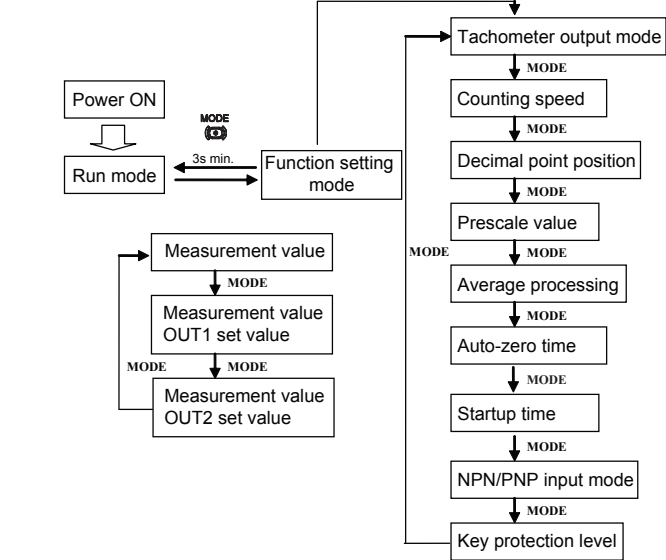
#### Counter parameter setting




| Parameter name              | Parameter | Setting range (use  key to select)        | Default value |
|-----------------------------|-----------|---|---------------|
| Input mode                  | in        | up/down/ud-a/ud-b/ud-c (See note 1.)      | up            |
| Dual count calculating mode | cal       | add/sub (See note 1.)                     | add           |
| Output mode                 | out       | n/f/c/r/k-1/p/q/a/k-2/d/l/h (See note 2.) | n             |
| One-shot output time        | out       | 000.001~999.999                           | 000.500       |
| One-shot output 2 time      | out2      | 000.001~999.999                           | 000.500       |
| One-shot output 1 time      | out1      | hold/000.001~999.99 (See note 3.)         | hold          |
| Counting speed              | cnts      | 30Hz/5KHz                                 | 30hz          |
| Input signal width          | in        | 20ms/1ms                                  | 20ms          |
| Decimal point position      | dp        | ----/--/--/--/--                          | ----          |
| Prescale value              | pscl      | 000.001~999.999                           | 001.000       |
| NPN/PNP Input mode          | in        | NPN/PNP                                   | NPN           |
| Key protection level        | pp        | kp-1/kp-2/kp-3/kp-4/kp-5                  | kp-1          |

- Note: 1.The setting range varies with the output mode.  
2.The setting range varies with the model and the input mode.  
3.HOLD can not be set when the output mode is K-2.

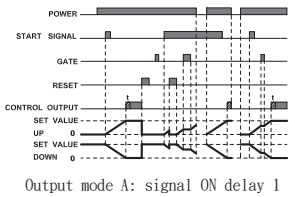
#### Tachometer parameter setting



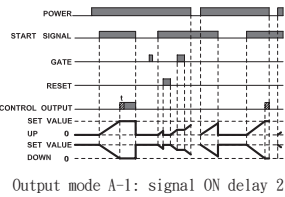
| Parameter name         | Parameter    | Setting range (use  key to select) | Default value |
|------------------------|--------------|---|---------------|
| Tachometer output mode | <b>tōtā</b>  | hilo/area/hihi/lolo   | hilo          |
| Counting speed         | <b>Count</b> | 30Hz/10KHz  | 30Hz          |
| Decimal point position | <b>dP</b>    | ---/-/--/-/-/---  | ---           |
| Prescale value         | <b>PSCL</b>  | 000.001-999.999   | 001.000       |
| Average processing     | <b>Avg</b>   | off/2/4/8   | off           |
| Auto-zero time         | <b>AutE</b>  | 00.01-99.99   | 99.99         |
| Startup time           | <b>StAr</b>  | 00.01-99.99   | 00.00         |
| NPN/PNP Input time     | <b>Input</b> | NPN/PNP   | NPN           |
| Key protect level      | <b>keyP</b>  | kp-1/kp-2/kp-3/kp-4/kp-5  | kp-1          |

## 6、Sequence Charts

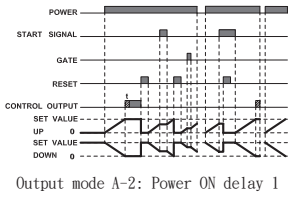
### ★ Timer Operation



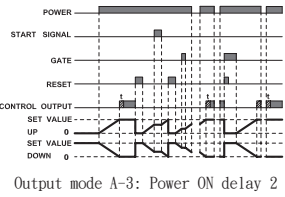
Output mode A: signal ON delay 1



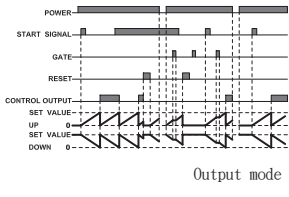
Output mode A-1: signal ON delay 2



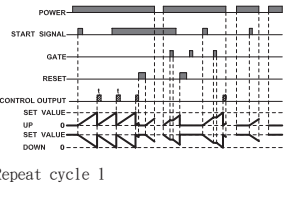
Output mode A-2: Power ON delay 1



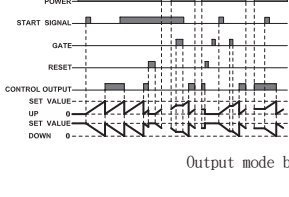
Output mode A-3: Power ON delay 2



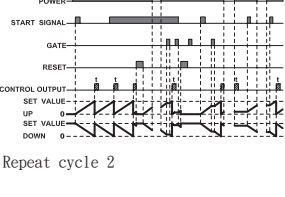
Output mode b: Repeat cycle 1



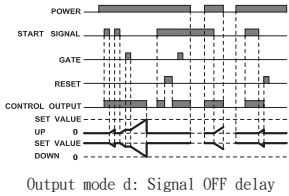
Output mode b-1: Repeat cycle 2



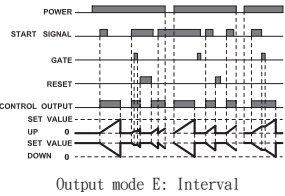
Output mode d: Signal OFF delay



Output mode E: Interval

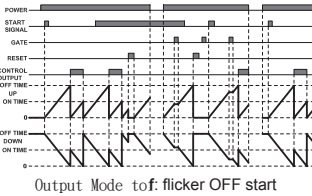


Output mode F: Cumulative

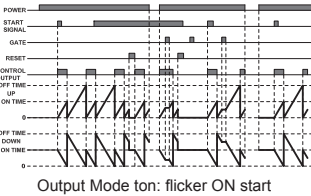


Z mode : ON/OFF -duty adjustable flicker

### ★ Twin Timer Operation

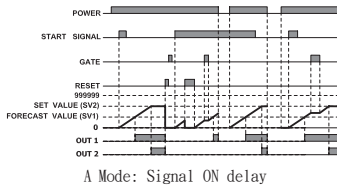


Output Mode tof: flicker OFF start

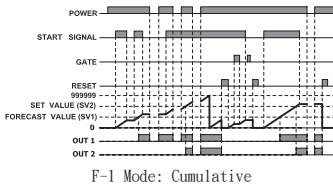


Output Mode ton: flicker ON start

### ★ 2-Stage Timer Operation

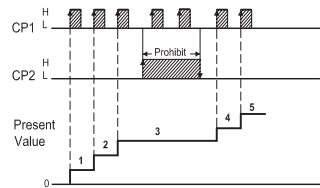


A Mode: Signal ON delay



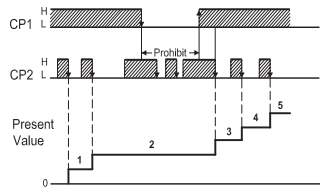
F-1 Mode: Cumulative

### ★ Counter Input Modes and Present Value



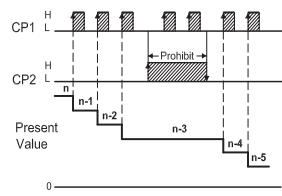
Note: Input CP2 while CP1 is "L"

UP (increment) mode  
CP1: count input  
CP2: prohibit(gate)input



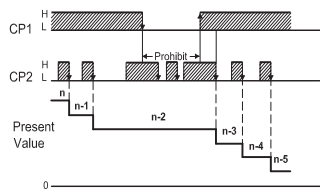
Note: Input CP1 while CP2 is "H"

DOWN(decrement) mode  
CP1: prohibit(gate)input  
CP2: count input



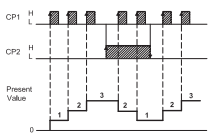
Note: Input CP2 while CP1 is "L"

DOWN(decrement) mode  
CP1: count input  
CP2: prohibit(gate)input

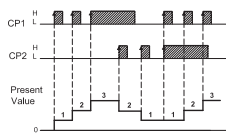


Note: Input CP1 while CP2 is "H"

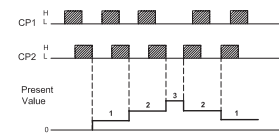
DOWN(decrement) mode  
CP1: prohibit(gate)input  
CP2: count input



UP / DOWN A  
command input mode



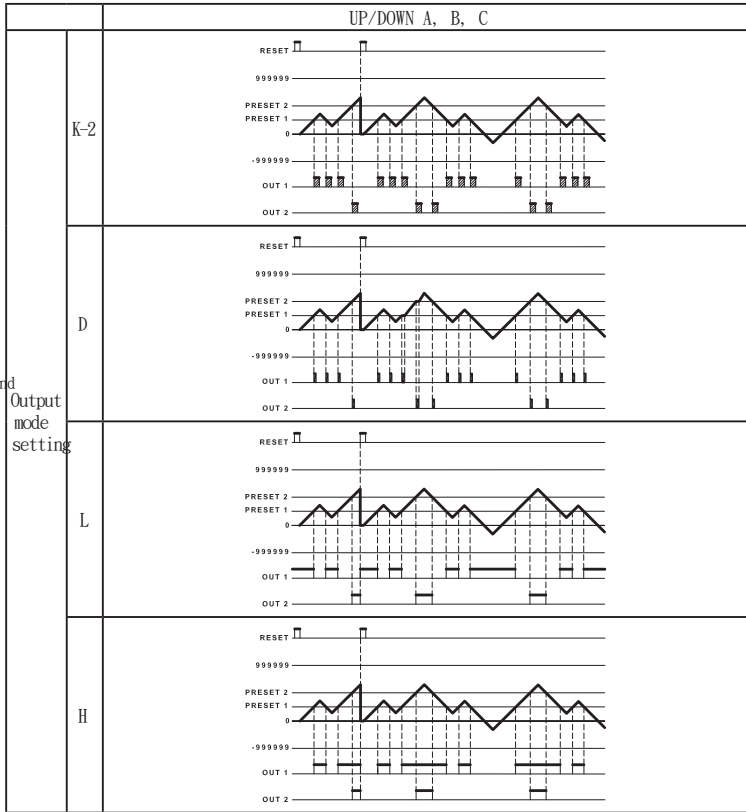
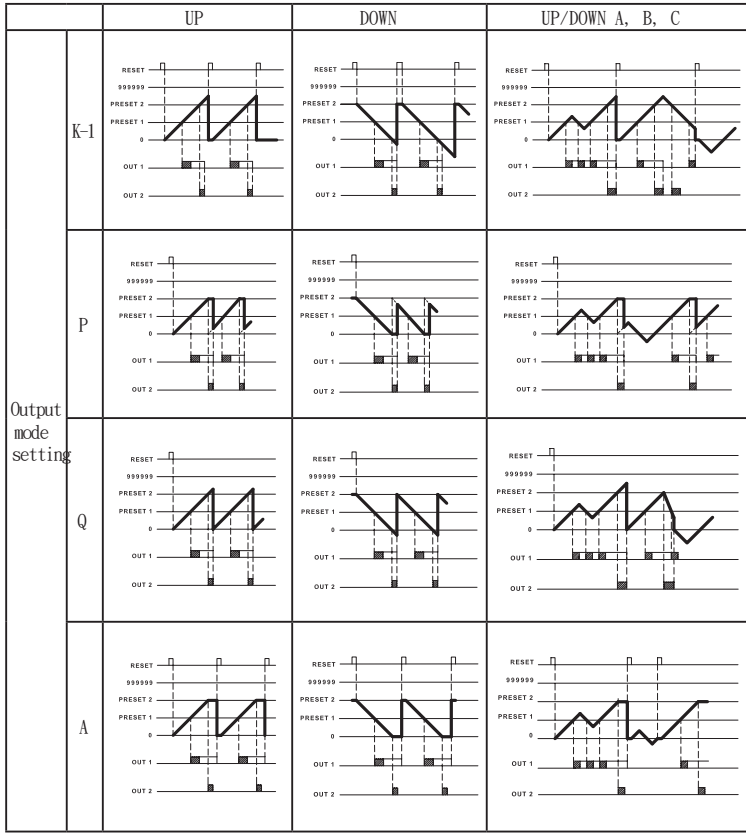
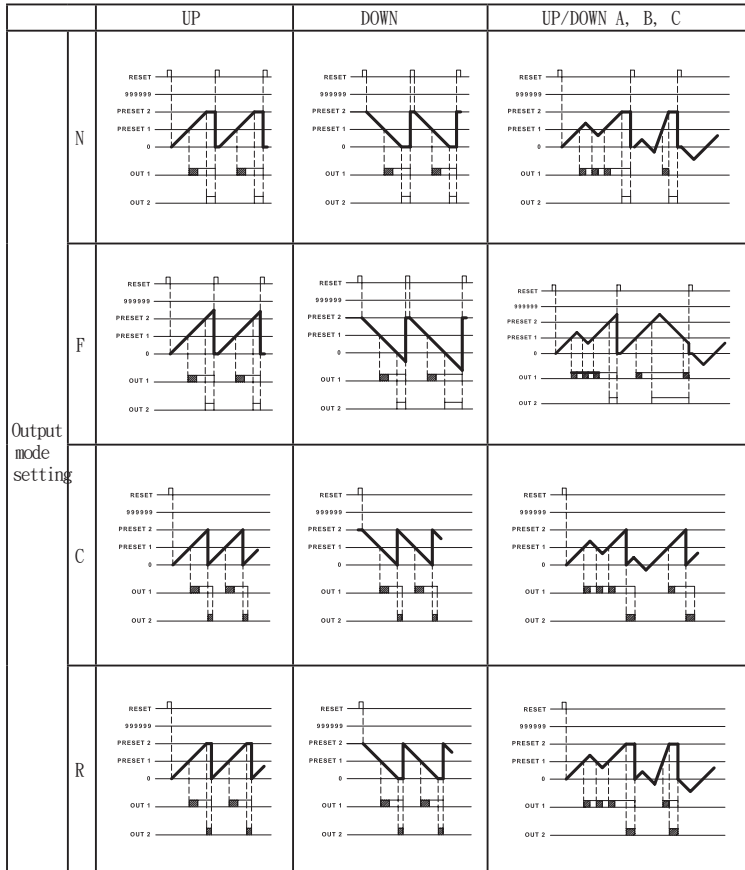
UP / DOWN B  
individual input mode



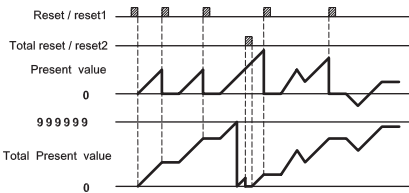
UP / DOWN C  
quadrature input mode

### ★ Counter Output Mode Setting

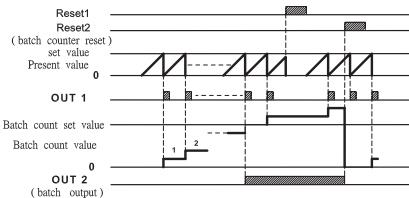
Operation for 1-stage models is the same as that for OUT2.  
When using a 2-stage model as a 1-stage counter, or dual counter, total and preset counter, OUT1 and OUT2 turn ON and OFF.



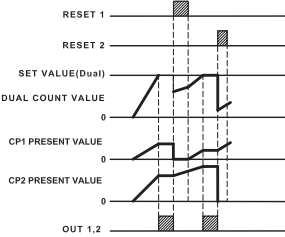
### ★ Total and Preset Counter Operation



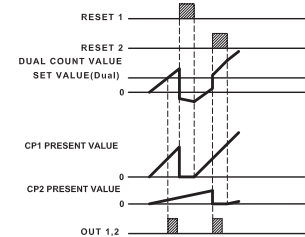
### ★ Batch Counter Operation



### ★ Dual Counter Operation

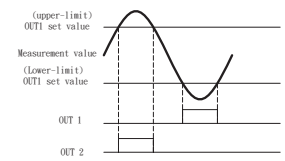


Dual Count Calculating Mode = ADD  
Dual count value = CP1 PV + CP2 PV

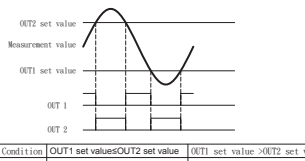


Dual Count Calculating Mode = SUB  
Dual count value = CP1 PV - CP2 PV

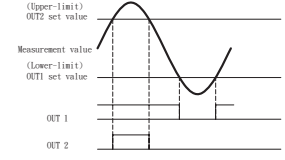
### ★ Tachometer Output Mode Settings



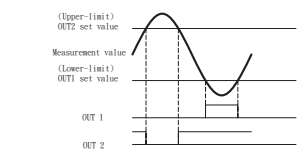
ON condition for OUT1: measurement values>OUT1 set value  
ON condition for OUT2: measurement values>OUT2 set value



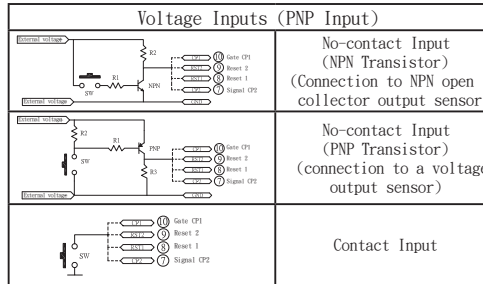
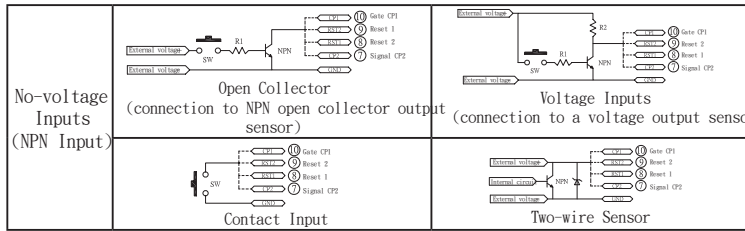
Condition  
OUT1 ON: OUT1 set value<Measurement value, OUT2 set value<Measurement value  
OUT2 ON: Measurement value>OUT1 set value, Measurement value>OUT2 set value



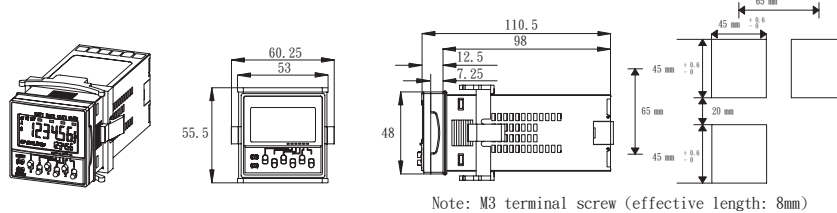
ON condition for OUT1: measurement values>OUT1 set value  
ON condition for OUT2: measurement values>OUT2 set value



## 7、Input Connections



## 8、Dimensions and Panel Cutouts



Note: M3 terminal screw (effective length: 8mm)

