LCD Timer

# LT4 series

## INSTRUCTION MANUAL

Thank you for purchasing Hanyoung Nux products. Please read the instruction manual carefully before using this product, and use the product correctly. Also, please keep this manual where you can view it any time.

HANYOUNG NUX

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## Safety information

Please read the safety information carefully before the use, and use the product correctly.The alerts declared in the manual are classified into Danger, Warning and Caution according to their importance

| | |
|---|---|
| ⚠ DANGER | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury |
| ⚠ WARNING | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury |
| ⚠ CAUTION | Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or property damage |

### ⚠ DANGER

- The input/output terminals are subject to electric shock risk. Never let the input/output terminals come in contact with your body or conductive substances.

### ⚠ WARNING

- Any use of the product other than those specified by the manufacturer may result in personal injury or property damage.
- If there is a possibility that a malfunction or abnormality of this product may lead to a serious accident to the system, install an appropriate protection circuit on the outside.
- Since this product is not equipped with a power switch and fuse, install them separately on the outside (fuse rating: 250 V a.c. 0.5 A).
- Please supply the rated power voltage, in order to prevent product breakdowns or malfunctions.
- To prevent electric shocks and malfunctions, do not supply the power until the wiring is completed.
- The product does not have an explosion-proof structure, so avoid using it in places with flammable or explosive gases.
- Never disassemble, modify, process, improve or repair this product, as it may cause abnormal operations, electric shocks or fires.
- Please disassemble the product after turning OFF the power. Failure to do so may result in electric shocks, product abnormal operations or malfunctions.
- Please use this product after installing it to a panel, because there is a risk of electric shock.

### ⚠ CAUTION

- The contents of this manual may be changed without prior notification.
- Please make sure that the product specifications are the same as you ordered.
- Please make sure that there are no damages or product abnormalities occurred during shipment.
- Please use the product in places where corrosive gases (especially harmful gases, ammonia, etc.) and flammable gases are not generated.
- Please use the product in places where vibrations and impacts are not applied directly.
- Please use the product in places without liquids, oils, chemicals, steam, dust, salt, iron, etc.
- Please do not wipe the product with organic solvents such as alcohol, benzene, etc. (use neutral detergents).
- Please avoid places where large inductive interference, static electricity, magnetic noise are generated.
- Please avoid places with heat accumulation caused by direct sunlight, radiations, etc.
- Please use the product in places with elevation below 2000 m.
- When water enters, short circuit or fire may occur, so please inspect the product carefully.
- When there is a lot of noise from the power, we recommend to use insulation transformer and noise filter. Please install the noise filter to a grounded panel or structure etc. and make the wiring of noise filter output and product power supply terminal as short as possible.
- Tightly twisting the power cables is effective against noise.
- Do not wire anything to unused terminals.
- Please wire correctly, after checking the polarity of the terminals.
- When you install this product to a panel, please use switches or circuit breakers compliant with IEC60947-1 or IEC60947-3.
- Please install switches or circuit breakers at close distance for user convenience.
- We recommend regular maintenance for the continuous safe use of this product.
- Some components of this product may have a lifespan or deteriorate over time.
- The warranty period of this product, is 1 year, including its accessories, under normal conditions of use.
- The preparation period of the contact output is required during power supply. If used as a signal to external interlock circuit, etc. please use a delay relay together.

## Suffix code

| Model | Code | Content |
|---|---|---|
| LT4 | □ | LCD timer, 48 (W) X 48 (H) mm |
| Control output | – | time limit 2c, time limit 1c + instantaneous 1c |
| | S | time limit 1c |

## Specification

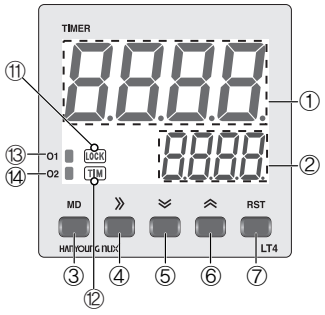
| Model | | LT4 | LT4S |
|---|---|---|---|
| Power voltage | | 24 – 240 V a.c. 50/60 Hz, 24 – 240 V d.c. (dual usage) | |
| Voltage fluctuation rate | | ± 10 % of power voltage | |
| Power Consumption | | 4 VA max. (24-240 V a.c. 50/60 Hz)<br>1.6 W max. (24- 240 V d.c.) | 4.5 VA max. (24-240 V a.c. 50/60 Hz)<br>2 W max. (24-240 V d.c.) |
| Display | | Wide viewing angle negative LCD display | |
| Display mode | | Addition and subtraction | |
| Display digits | | 4 digits | |
| Character height | | PV display: 14mm, SV display: 8.5mm | |
| Return time | | 100 ms max. | |
| External connection | | socket 8 pin | |
| Operating time range | | 0.01 sec ~ 9999 hour | |
| External input | Input signal | – | START, INHIBIT, RESET |
| | Input method | – | non-voltage input, impedance during short circuit : 1 kΩ max.<br>Residual voltage during short circuit : 0.5 V max.<br>impedance during open : 100 kΩ min. |
| Minimum input time | | – | START, INHIBIT,<br>RESET min. input signal width<br>1ms / 20ms selection |
| Operating time error | | Power START : ± 0.01 % ±0.05 sec max.,<br>Signal START : ± 0.005 % ±0.03 sec max. | |
| Control output | Operation mode | POND / PFKF / PFKN / PINT / TWON / TWOF / S-D | SOND / SFKF / SINT / SNFN / SNFF / SOFD / S.OND / S.FKN / S.INT / S.ODR |
| | Contact configuration | time limit 1c | time limit 2c, instantaneous 1c + time limit 1c |
| | Contact capacity | 250 V a.c. 5A resistive load | 250 V a.c. 3A resistive load<br>(N.O.:5A, N.C.:3A) |
| Relay life | | Mechanical life : 10,000,000 times min.,<br>Electrical life : 100,000 times min. (250 V a.c. 5A resistive load) | |
| Insulation resistance | | 100 MΩ min. (500 V d.c. mega standard,<br>conductive part terminal and exposed unfilled metal) | |
| Dielectric strength | | 2,000 V a.c. 60 Hz for 1 minute (conductive part terminal and exposed unfilled metal) | |
| Noise immunity | | ± 2 kV (among operation power terminals,<br>pulse width = 1 us, square-wave noise by noise simulator) | |
| Vibration resistance | | 10 – 55 Hz (for 1 minute) single amplitude 0.5 mm<br>X, Y, Z each direction, 2 h | |
| Shock resistance | | 300 ㎳ (30G) X, Y, Z each direction, 3 times | |
| Ambient temperature | | -10 ~ 55 ℃ (with no icing) | |
| Storage temperature | | -25 ~ 65 ℃ (with no icing) | |
| Ambient humidity | | 35 ~ 85 % R. H. | |

## Time range

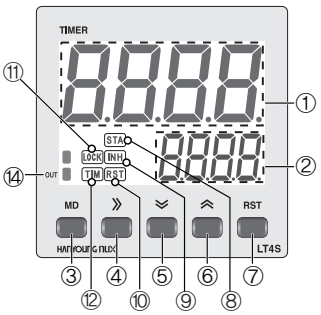
| Parameter | | Time range | |
|---|---|---|---|
| UP | DOWN | Decimal | Sexagesimal |
| U.001 | d.001 | 0.01sec ~ 9.999sec | 0.01sec ~ 9.999sec |
| U.0 15 | d.0 15 | 0.01sec ~ 99.99sec | 0.01sec ~ 59.99sec |
| U. 15 | d. 15 | 0.1sec ~ 999.9sec | 0.1sec ~ 9m 59.9sec |
| U 15 | d 15 | 1sec ~ 9999sec | 1sec ~ 59min 59sec |
| U. 1ñ | d. 1ñ | 0.1min ~ 999.9min | 0.1min ~ 9hour 59.9min |
| U 1ñ | d 1ñ | 1min ~ 9999min | 1min ~ 99hour 59min |
| U. 1H | d. 1H | 0.1hour ~ 999.9hour | 0.1hour ~ 999.9hour |
| U 1H | d 1H | 1hour ~ 9999hour | 1hour ~ 9999hour |

## Part name and functions

■ LT4



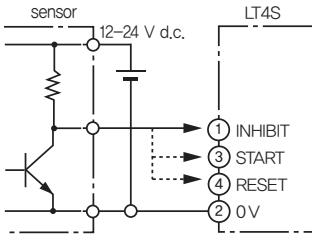

■ LT4S



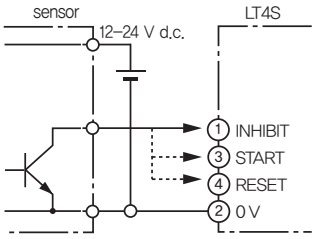

| No | Name | Usage |
|---|---|---|
| ① | PV display | • displays time value in POND / PINT / SOND / SINT / SOFD / S.OND / S.INT/ S.ODR operation modes<br>• displays set value and time value in PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN operation modes<br>• displays setting items in function setting mode |
| ② | SV display | • displays set value in POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR operation modes<br>• displays set value and time value in PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN operation modes |
| ③ | MODE KEY | enters and quits function setting mode<br>(automaticaly saves function set value during termination) |
| ④ | SHIFT KEY | enters set value change mode and shifts the set value digits |
| ⑤ | DOWN KEY | reduces set value in function setting mode and set value change mode |
| ⑥ | UP KEY | increases set value in function setting mode and set value change mode |
| ⑦ | RESET KEY | initializes time value and output status |
| ⑧ | START input indicator | illuminates when external START signal is applied |
| ⑨ | INHIBIT input indicator | illuminates when external INHIBIT signal is applied |
| ⑩ | RESET input indicator | illuminates when external RESET signal is applied |
| ⑪ | LOCK set indicator | illuminates when LOCK is set |
| ⑫ | timer operation indicator | flashes during timing operation |
| ⑬ | O1 output indicator | illuminates during OUT1 output operation |
| ⑭ | O2 output indicator | illuminates during OUT2 output operation<br>In LT4S models, it illuminates during OUT output operation |

### ■ Input connection

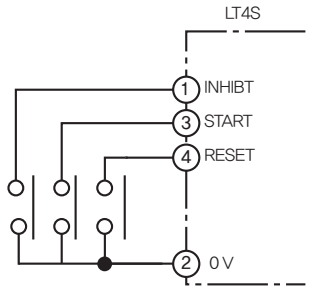
● Contactless input
(when the sensor output is NPN voltage output)




● Contactless input
(when the sensor output is NPN open collector output)




● Contact input

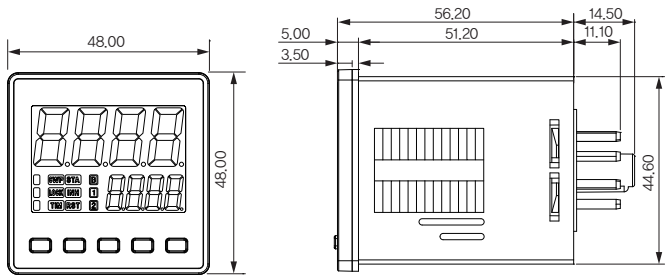



* LT4S model is non-voltage input type (NPN input)
* Each input terminal is not isolated from the power terminal

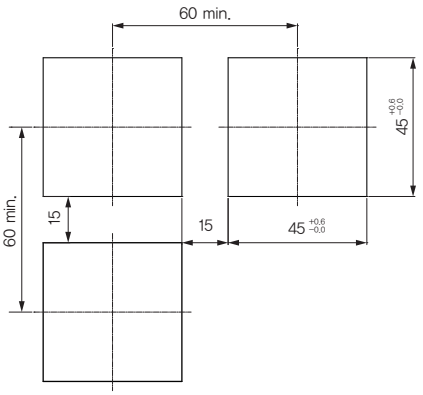
## Dimension and panel cutout

[Unit :㎜]

● Dimension

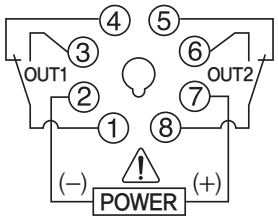



● Panel cutout



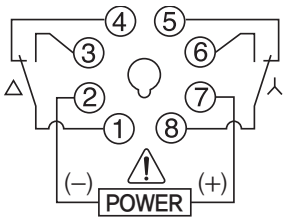

## Connection diagram

●LT4



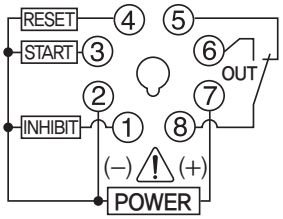

* When you set CONT to 1c in function setting mode, OUT1 operates as instantaneous output.

●LT4 (STAR-DELTA)




* When you set O-MD to S-D in function setting mode, OUT1 operates as △ output, and OUT2 operates as 人 output.

●LT4S



## Operation overview

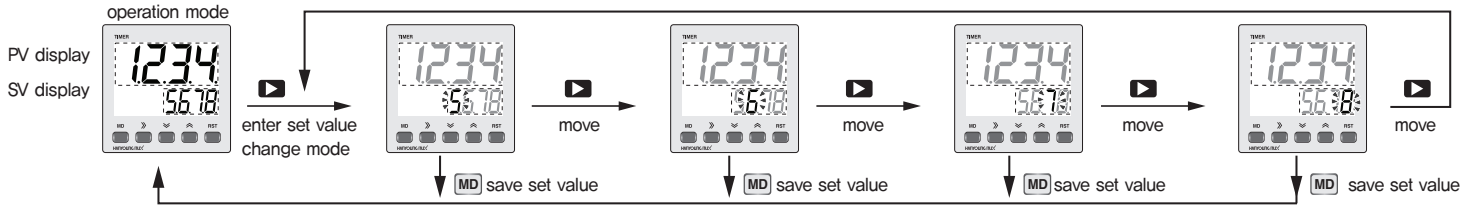
### ■ LT4

| Parameter | Operation description |
|---|---|
| Pond<br>POND | ● POWER ON DELAY<br>● uses 1 set time (set time displayed on SV display)<br>● when power is applied, output turns OFF, timing starts<br>● when displayed time reaches set time, output turns ON, displayed time is held (ONE-SHOT output selectable) |
| PFKF | ● POWER ON FLICKER – OFF START<br>● uses 2 set times, Ton and Toff (Toff set time displayed on PV display, Ton set time displayed on SV display)<br>● when power is applied, OFF timing starts<br>● when displayed time reaches Toff set time, output turns ON, after displayed time initialization ON timing starts<br>● when displayed time reaches Ton set time, output turns OFF, after displayed time initialization OFF timing starts<br>● output repeats ON/OFF operations according to Ton and Toff set times |
| PFKN | ● POWER ON FLICKER – ON START<br>● uses 2 set times, Ton and Toff (Ton set time displayed on PV display, Toff set time displayed on SV display)<br>● when power is applied, output turns ON, ON timing starts<br>● when displayed time reaches Ton set time output turns OFF, after displayed time initialization OFF timing starts<br>● when displayed time reaches Toff set time, output turns ON, after displayed time initialization ON timing starts<br>● output repeats ON/OFF operations according to Ton and Toff set times |
| PINT | ● POWER ON INTERVAL<br>● uses 1 set time (set time displayed on SV display)<br>● when power is applied, output turns ON, timing starts<br>● when displayed time reaches set time, output turns OFF, displayed time is held |
| TWON | ● TWIN – ON START<br>● uses 2 set times, Ton and Toff (Ton set time displayed on PV display, Toff set time displayed on SV display)<br>● when power is applied, OUT1 output turns OFF, OUT2 output turns ON, ON timing starts<br>● when displayed time reaches Ton set time OUT1 output turns ON, OUT2 output turns OFF, after displayed time initialization OFF timing starts<br>● when displayed time reaches Toff set time, OUT1 output turns OFF, holds output and displayed time |
| TWOF | ● TWIN – OFF START<br>● uses 2 set times, Ton and Toff (Toff set time displayed on PV display, Ton set time displayed on SV display)<br>● when power is applied, OUT1 and OUT2 outputs turn OFF, OFF timing starts<br>● when displayed time reaches Toff set time, OUT2 output turns ON, after displayed time initialization ON timing starts<br>● when displayed time reaches Ton set time, OUT1 output turns ON, holds output and displayed time |
| S – D | ● STAR - DELTA<br>● uses 2 set times, Ton and Toff (Ton set time displayed on PV display, Toff set time displayed on SV display)<br>● when power is applied, OUT1 output turns OFF, OUT2 output turns ON, ON timing starts<br>● when displayed time reaches Ton set time, OUT2 output turns OFF, after displayed time initialization OFF timing starts<br>● when displayed time reaches Toff set time, OUT1 output turns ON, holds output and displayed time<br>● OUT1 operates as 'Δ' output, OUT2 operates as 'ㅅ' output.<br>● Toff set time is 'Δ – ㅅ' operation switching time |

### ■ LT4S

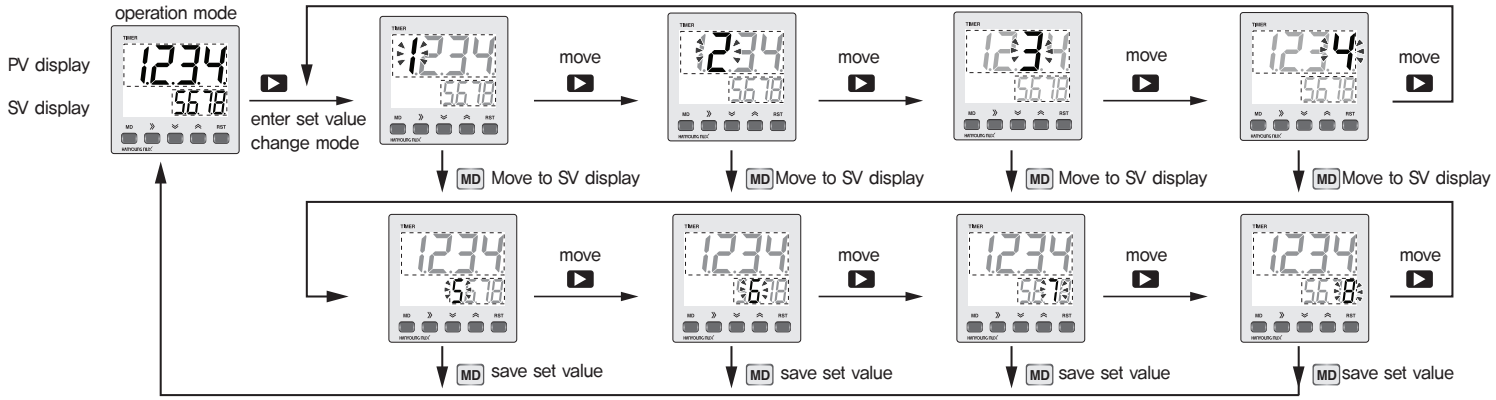
| Parameter | Operation description |
|---|---|
| Sond<br>SOND | ● SIGNAL ON DELAY<br>● uses 1 set time (set time displayed on SV display)<br>● when START signal is applied, timing starts (START signal holds ON status )<br>● when displayed time reaches set time output turns ON, holds output and displayed time (ONE-SHOT output selectable)<br>● When START signal is cancelled, initializes output and displayed time |
| SFKF | ● SIGNAL ON FLICKER – OFF START<br>● uses 2 set times, Ton and Toff (Toff set time displayed on PV display, Ton set time displayed on SV display)<br>● when START signal is applied,OFF timing starts (START signal holds ON status)<br>● when displayed time reaches Toff set time, output turns ON, after displayed time initialization ON timing starts<br>● when displayed time reaches Ton set time output turns OFF, after displayed time initialization OFF timing starts<br>● output repeats ON/OFF operations according to Ton and Toff set times<br>● when START signal is cancelled, initializes output and displayed time |
| SINT | ● SIGNAL ON INTERVAL<br>● uses 1 set time (set time displayed on SV display)<br>● When START signal is applied, output turns ON, timing starts (START signal holds ON status )<br>● when displayed time reaches set time output turns OFF,displayed time is held<br>● When START signal is cancelled, initializes output and displayed time |
| SNFN | ● SIGNAL ON INTERVAL<br>● uses 1 set time (set time displayed on SV display)<br>● When START signal is applied, output turns ON, timing starts (START signal holds ON status )<br>● when displayed time reaches set time, output turns OFF, displayed time is held<br>● when START signal is cancelled, initializes output and displayed time |
| SNFF | ● SIGNAL ON/OFF DELAY – OFF START<br>● uses 2 set times, Ton and Toff (Ton set time displayed on PV display, Toff set time displayed on SV display)<br>● when START signal is applied, ON timing starts<br>● when displayed time reaches Ton set time output turns ON,displayed time is held<br>● When START signal is cancelled, output holds ON output status,OFF timing starts<br>● when displayed time reaches Toff set time output turns OFF, displayed time is held |
| SOFD | ● SIGNAL OFF DELAY<br>● uses 1 set time (set time displayed on SV display)<br>● when START signal is applied, output turns ON (START signal holds ON status )<br>● when START signal is cancelled, holds output and timing starts<br>● when displayed time reaches set time output turns OFF, displayed time is held<br>● when START signal is cancelled, initializes output and displayed time |
| S.OND | ● SIGNAL TRIGGER ON DELAY<br>● uses 1 set time (set time displayed on SV display)<br>● when START signal is applied, timing starts<br>● when displayed time reaches set time output turns ON, holds output and displayed time (ONE-SHOT output selectable)<br>● when START signal is repeatedly applied, only uses the first START signal |
| S.FKN | ● SIGNAL TRIGGER ON FLICKER – ON START<br>● uses 2 set times, Ton and Toff (Toff set time displayed on PV display, Ton set time displayed on SV display)<br>● when START signal is applied, output turns ON, ON timing starts<br>● when displayed time reaches Ton set time output turns OFF, after displayed time initialization OFF timing starts<br>● when displayed time reaches Toff set time, output turns ON, after displayed time initialization ON timing starts<br>● output repeats ON/OFF operations according to Ton and Toff set times<br>● When START signal is repeatedly applied, only uses the first START signal |
| S.INT | ● SIGNAL TRIGGER ON INTERVAL<br>● uses 1 set time (set time displayed on SV display)<br>● when START signal is applied, output turns ON, timing starts<br>● when displayed time reaches set time output turns OFF, displayed time is held<br>● When START signal is repeatedly applied, only uses the first START signal<br>● after reaching set time, when START signal is applied, output turns ON, and after time value initialization timing starts |
| S.ODR | ● SIGNAL TRIGGER ON DELAY - RESET<br>● when START signal is applied, timing starts<br>● when displayed time reaches set time, output turns ON, holds output and displayed time (ONE-SHOT output selectable)<br>● when START signal is re-applied during timing, timing starts after displayed time initialization |

## Change set value in POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR operation modes




- When using POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR operation modes, the time value is displayed on PV display, and the set value is displayed on SV display.
- The operating time timing is performed also during set value change.
- If there is no key input for more than 1 minute, it returns to operation mode without saving the set value.
- If you press ▶ in operation mode, it enters to set value change mode, and the first digit of SV display flashes.
- Use ▶ to move to the position of the digit that you want to change, and use ▼ / ▲ to change the set value.
- After changing the set value, press MD to save the changed set value and return to operation mode.
- If set value is '0', even if you press MD it does not return to operation mode (you can set '0' in POND / SOND / S.OND / S.ODR operation modes)

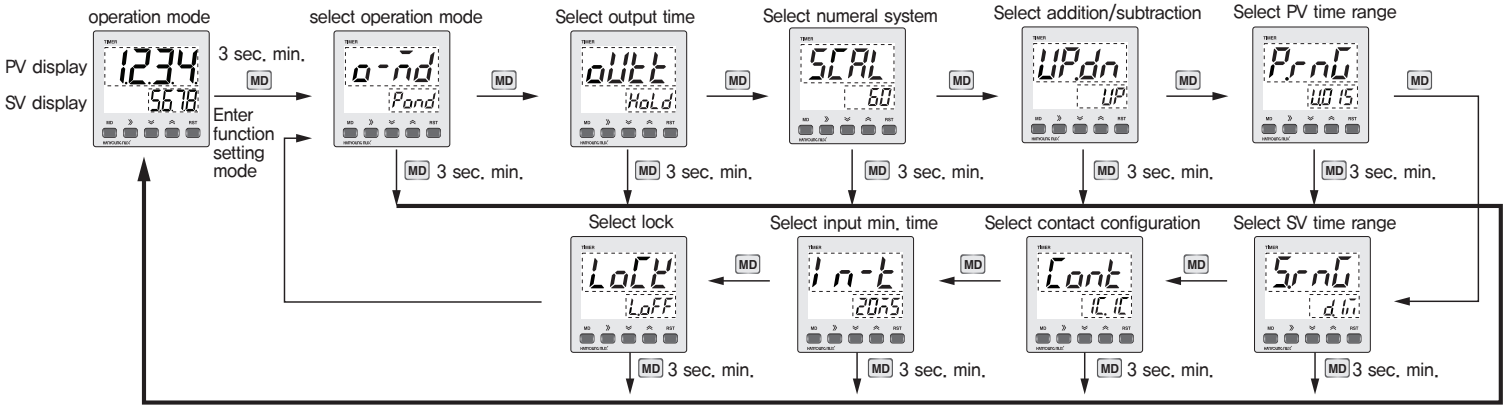
## Change set value in PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN operation modes




- When using PFKF/TWOF/SFKF/SNFF operation modes, OFF time set value is displayed on PV display, and ON time set value is displayed on SV display.
- When using PFKN / TWON / S-D / SNFN / S.FKN operation modes, ON time set value is displayed on PV display, OFF time set value is displayed on SV display.
- The operating time timing is performed also during ON time set value and OFF time set value change.
- If there is no key input for more than 1 minute, it returns to operation mode without saving the set value.
- If you press ▶ in operation mode, it enters to set value change mode, and the first digit of PV display flashes.
- Use ▶ to move to the position of the digit that you want to change, and use ▼ / ▲ to change the set value.
- After changing the set value of PV display, you can change set value of SV display by pressing MD.
- After changing the set value of SV display, press MD to save the changed set value and return to operation mode.
- If ON time set value and OFF time set value are '0', even if you press MD it does not return to operation mode.

| Set value configuration | | | | | |
|---|---|---|---|---|---|
| LT4 | | | LT4S | | |
| Parameter | PV display | SV display | Parameter | PV display | SV display |
| POND | – | t | SOND | – | t |
| PFKF | Toff | Ton | SFKF | Toff | Ton |
| PFKN | Ton | Toff | SINT | – | t |
| PINT | – | t | SNFN | Ton | Toff |
| TWON | Ton | Toff | SNFF | Toff | Ton |
| TWOF | Toff | Ton | SOFD | – | t |
| S-D | Ton | Toff | S.OND | – | t |
| – | – | – | S.FKN | Ton | Toff |
| – | – | – | S.INT | – | t |
| – | – | – | S.ODR | – | t |
| * t : set time, Ton : ON set time, Toff : OFF set time | | | | | |

## Function setting mode




- Press and hold MD for at least 3 sec. in operation mode, to enter function setting mode.
- Press and hold MD for at least 3 sec. in function setting mode to save the changed function mode, and return to operation mode.
- You can switch the function mode with MD .
- The OUTT (output time) function is displayed only when the operation modes are POND, SOND, S.OND, S.ODR.
- The P.RNG (PV time range) function is displayed only when the operation modes are PFKF, PFKN, TWON, TWOF, S-D, SFKF, SNFN, SNFF, S.FKN.
- The CONT (contact configuration) function is only displayed on LT4 models.
- The IN-T (input minimum time) function is only displayed on the LT4S models.

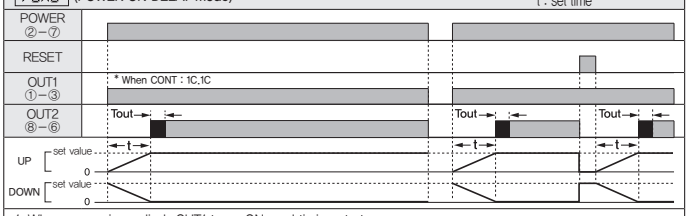
<table>
<tr><th>Setting item</th><th>LCD display</th><th>Settings</th><th>Initial value</th></tr>
<tr><td rowspan="2">Operation mode selection</td><td>o-md<br>Pond</td><td>● selects LT4 operation mode (7 operation modes)<br>Pond → PFKF → PFKN → PINT → tYon<br>S-d ← tYoF ←<br><table><tr><th colspan="2">Parameter</th></tr><tr><td>POND</td><td>POWER ON DELAY</td></tr><tr><td>PFKF</td><td>POWER ON FLICKER – OFF START</td></tr><tr><td>PFKN</td><td>POWER ON FLICKER – ON START</td></tr><tr><td>PINT</td><td>POWER ON INTERVAL</td></tr><tr><td>TWON</td><td>TWIN – ON START</td></tr><tr><td>TWOF</td><td>TWIN – OFF START</td></tr><tr><td>S–D</td><td>STAR – DELTA</td></tr></table></td><td>Pond</td></tr>
<tr><td>o-md<br>Sond</td><td>● selects LT4S operation mode (10 operation modes)<br>Sond → SFKF → SINT → SnFn → SnFF<br>Sodr ← SINT ← SFKn ← Sond ← SoFd ←<br><table><tr><th colspan="2">LT4S Operation mode configuration</th></tr><tr><td>SOND</td><td>SIGNAL ON DELAY</td></tr><tr><td>PFKF</td><td>SIGNAL ON FLICKER – OFF START</td></tr><tr><td>SINT</td><td>SIGNAL ON INTERVAL</td></tr><tr><td>SNFN</td><td>SIGNAL ON/OFF DELAY – ON START</td></tr><tr><td>SNFF</td><td>SIGNAL ON/OFF DELAY – OFF START</td></tr><tr><td>SOFD</td><td>SIGNAL OFF DELAY</td></tr><tr><td>S.OND</td><td>SIGNAL TRIGGER ON DELAY</td></tr><tr><td>S.FKN</td><td>SIGNAL TRIGGER ON FLICKER – ON START</td></tr><tr><td>S.INT</td><td>SIGNAL TRIGGER ON INTERVAL</td></tr><tr><td>S.ODR</td><td>SIGNAL TRIGGER ON DELAY – RESET</td></tr></table></td><td>Sond</td></tr>
<tr><td>Output time setting</td><td>oUtt<br>HoLd</td><td>● sets ONE–SHOT output operation time<br>● only in POND operation mode of LT4 models<br>● only in SOND / S.OND / S.ODR operation modes of LT4S models<br>● ONE–SHOT output time setting range: HOLD ~ 99.99 sec (HOLD: output hold)<br>HoLd → 99.99<br>output hold 99.99 sec</td><td>HoLd</td></tr>
<tr><td>Numeral system selection</td><td>SCAL<br>60</td><td>● selects the numeral system of time range<br>● consists of decimal and sexagesimal systems<br>10 → 60<br>decimal sexagesimal</td><td>60</td></tr>
<tr><td>Addition/ subtraction selection</td><td>UP.dn<br>UP</td><td>● selects the timing method of operating time<br>● consists of "addition timing (UP)", that displays after adding from 0, and "subtraction timing (DOWN)", that displays after subtracting from set value<br>UP → dn<br>addition subtraction</td><td>UP</td></tr>
<tr><td>PV time range selection</td><td>PrnG<br>U0 15</td><td>● selects PV operating time and PV set value time ranges (refer to the time range for each parameter)<br>● for PV time range selection, 2 time set values are used in operation mode (ON set value and OFF set value)<br>● displayed only when the operation modes of LT4 models are PFKF / PFKN / TWON / TWOF / S–D.<br>● displayed only when the operation modes of LT4S models are SFKF / SNFN / SNFF / S.FKN.<br>• UP mode<br>U0 0 1 → U0 15 → U.15 → U 15 → U.1n → U 1n → U.1H → U 1H<br>0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour<br>• DOWN mode<br>d0 0 1 → d0 15 → d.15 → d 15 → d.1n → d 1n → d.1H → d 1H<br>0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</td><td>U0 15</td></tr>
<tr><td>SV time range selection</td><td>SrnG<br>U0 15</td><td>● selects SV operating time and and SV set value time range (see time range of each parameter)<br>• UP mode<br>U0 0 1 → U0 15 → U.15 → U 15 → U.1n → U 1n → U.1H → U 1H<br>0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour<br>• DOWN mode<br>d0 0 1 → d0 15 → d.15 → d 15 → d.1n → d 1n → d.1H → d 1H<br>0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</td><td>U0 15</td></tr>
<tr><td>Contact configuration setting</td><td>Cont<br>1C.1C</td><td>● displayed only on LT4 models<br>● when parameter "1C.1C" is selected, the output contact is configured as "instantaneous 1c + time limit 1c".<br>● when parameter "2C" is selected, the output contact is configured as "time limit 2c".<br>● in operation mode "TWON / TWOF / S–D", it is automatically fixed to "time limit 2c".<br>1C.1C → 2C<br>instantant. 1c + time limit 1c time limit 2c</td><td>1C.1C</td></tr>
<tr><td>Minimum input time selection</td><td>In-t<br>20ms</td><td>● displayed only on LT4S models<br>● selects START / INHIBIT / RESET minimum input time of input signal<br>● minimum input time consists of 1ms and 20ms<br>1ms → 20ms<br>1ms 20ms</td><td>20ms</td></tr>
<tr><td>Lock</td><td>LoCK<br>LoFF</td><td>● used for key lock<br>● unlocks all keys when you select Parameter “L.OFF”.<br>● when you select Parameter “L.ON” , locks RST , , , (except MD).<br>● when you select Parameter “L.SET”, locks only.<br>● when you select Parameter “L.RST”, locks RST only.<br>LoFF → Lon → LSEt → LrSt<br>Lock off Lock on Lock Set Key Lock Reset Key</td><td>LoFF</td></tr>
</table>

# Operation mode

## ■ LT4 Operation mode

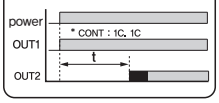
### Pond (POWER ON DELAY mode)

ONE-SHOT output → ■ ← self-hold output  Tout : output operating time  t : set time

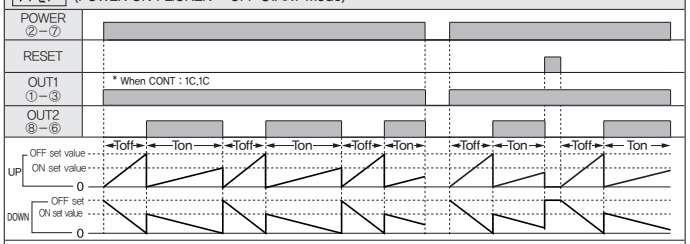



1. When power is applied OUT1 turns ON, and timing starts.
   * When 'CONT' is set as 1C,1C in function setting mode, OUT1 turns ON when power is applied (instantaneous output)
   * When 'CONT' is set as 2C in function setting mode, OUT1 operates in synchronization with OUT2.
2. When the time value reaches the set value OUT2 turns ON, output and time value are held.
3. When RESET–KEY is applied, OUT2 output and time value are initialized.
   * In function mode, when output time 'OUTT' is set as 'HOLD', OUT2 output holds the output status, when output time 'OUTT' is set as '00.01~99.99' sec , OUT2 output is ON only during set time. (ONE–SHOT output)

default operation

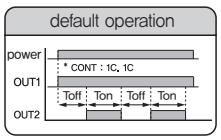



### PFLF (POWER ON FLICKER – OFF START mode)  Toff: OFF set time  Ton: ON set time

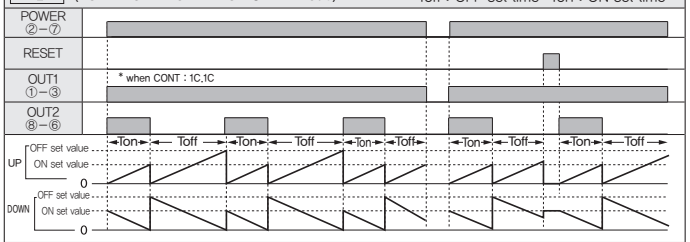



1. When power is applied OUT1 turns ON, OUT2 turns OFF, Toff time timing starts.
   *When 'CONT' is set as 1C,1C in function setting mode, OUT1 turns ON when power is applied (instantaneous output)
   *When 'CONT' is set as 2C in function setting mode, OUT1 operates in synchronization with OUT2.
2. When the time value reaches the OFF set value OUT2 turns ON, and after time value initialization, Ton time timing starts.
3. OUT2 turns OFF when time value reaches ON set value.
4. Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations.
5. When RESET–KEY is applied, OUT2 output and time value are initialized. When RESET is unlocked, It is displayed from Toff time.
* Ton time and Toff time can be set individually.
* In operation mode, Toff time is displayed on the PV display, and Ton time is displayed on SV display.

default operation

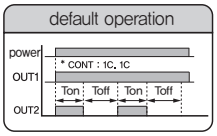



### PFLn (POWER ON FLICKER - ON START mode)  Toff : OFF set time  Ton : ON set time

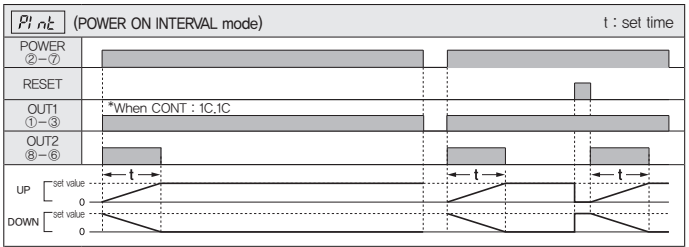



1. When power is applied, OUT1 and OUT2 turn ON, and Ton time timing starts.
   * When 'CONT' is set as 1C,1C in function setting mode, OUT1 turns ON when power is applied (instantaneous output)
   * When 'CONT' is set as 2C in function setting mode, OUT1 operates in synchronization with OUT2.
2. When the time value reaches the ON set value, OUT2 turns OFF and Toff time timing starts after time value initialization,
3. OUT2 turns ON when time value reaches OFF set value.
4. Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations.
5. When RESET–KEY is applied, OUT2 output and time value are initialized. When RESET is unlocked, it is displayed from Ton time.
* Ton time and Toff time can be set individually.
* In operation mode, the Ton time is displayed on the PV display, and the Toff time is displayed on the SV display.

default operation

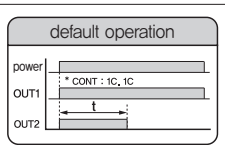



### Pint (POWER ON INTERVAL mode)  t : set time

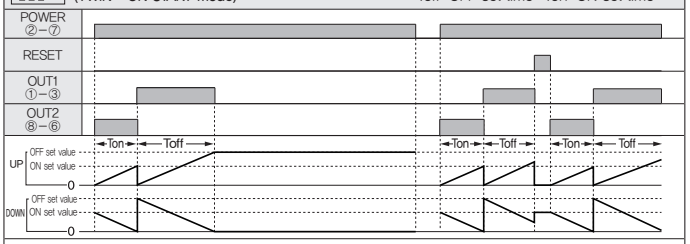



1. When power is applied, OUT1 and OUT2 turn ON, and timing starts.
   * When 'CONT' is set as 1C,1C in function setting mode, OUT1 turns ON, when power is applied (instantaneous output)
   * When 'CONT' is set as 2C in function setting mode, OUT1 operates in synchronization with OUT2.
2. When time value reaches set value, OUT2 turns OFF, time value is held.
3. When RESET–KEY is applied, OUT2 output and time value are initialized.

default operation

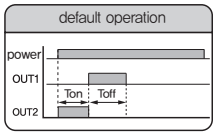



### tYon (TWIN - ON START mode)  Toff: OFF set time  Ton: ON set time

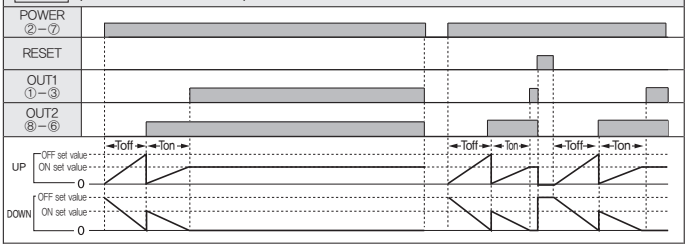



1. When power is applied OUT1 turns OFF, OUT2 turns ON, Ton time timing starts.
2. When the time value reaches the ON set value OUT1 turns ON, OUT2 turns OFF, and Toff time timing starts after time value initialization.
3. When the time value reaches the OFF set value OUT1 turns OFF, output and time value are held.
4. When RESET–KEY is applied, output, time value are initialized. When RESET is unlocked, it is displayed from Ton time.
   * Ton time and Toff time can be set individually.
   * In operation mode, Ton time is displayed on PV display,Toff time is displayed on SV display.
   * In operation modes TWON, TWOF, S–D, the contact configuration CONT is fixed as 'time limit 2c'

default operation

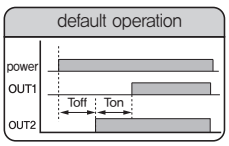



### tYoF (TWIN - OFF START mode)  Toff: OFF set time  Ton: ON set time

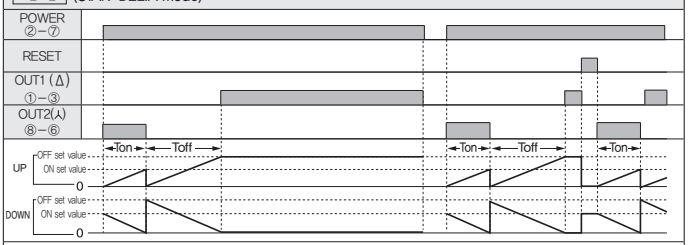



1. When power is applied OUT1 and OUT2 turn OFF , Toff time timing starts.
2. When the time value reaches the OFF set value OUT2 turns ON, and after time value initialization, Ton time timing starts.
3. When the time value reaches the ON set value OUT1 turns ON, output and time value are held.
4. When RESET–KEY is applied,output, time value are initialized. When RESET is unlocked, it is displayed from Toff time.
* Ton time and Toff time can be set individually.
* In operation mode, the Toff time is displayed on the PV display, and the Ton time is displayed on the SV display.
* In operation modes TWON, TWOF, S–D, the contact configuration CONT is fixed as 'time limit 2c'.

default operation

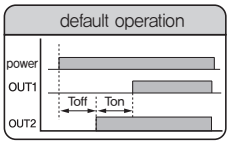



### S-d (STAR–DELTA mode)  Toff: OFF set time  Ton: ON set time



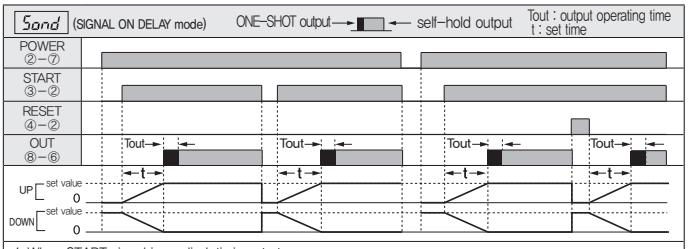

1. When power is applied OUT1 turns OFF, OUT2 turns ON, Ton time timing starts.
2. When the time value reaches the ON set value OUT2 turns OFF, and Toff time timing starts after time value initialization.
3. When the time value reaches the OFF set value OUT1 turns ON , output and time value are held.
4. When RESET–KEY is applied, output and time value are initialized. When RESET is unlocked, it is displayed from Ton time.
   * Ton time and Toff time can be set individually.
   * In operation mode, the Ton time is displayed on the PV display, and the Toff time is displayed in the SV display.
   * In operation modes TWON, TWOF, S–D , the contact configuration CONT is fixed as 'time limit 2c'.
   * OUT1 operates as a 'Δ' output, OUT2 operates as a '人'output.
   * Toff set time is the 'Δ – 人' operation switching time.

default operation



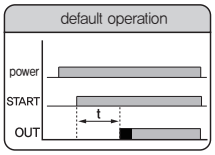

### Sond (SIGNAL ON DELAY mode)

ONE–SHOT output → ■ ← self–hold output  Tout : output operating time  t : set time



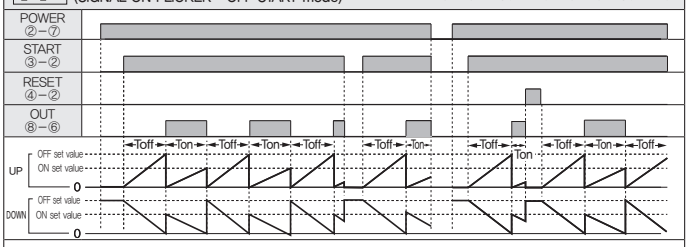

1. When START signal is applied, timing starts. (START signal holds ON status)
2. When the time value reaches the set value OUT turns ON, output and time value are held.
3. When START signal is cancelled, OUT output, time value are initialized.
4. When RESET signal is applied, OUT output, time value are initialized.
5. When RESET signal is cancelled, timing restarts if the START signal is applied.
* In function setting mode, when output time 'OUTT' is set as 'HOLD', OUT output holds output status, when output time 'OUTT' is set as '00.01~99.99' sec, OUT turns ON during set time (ONE–SHOT output).

default operation



## SFLF (SIGNAL ON FLICKER - OFF START mode)

Toff: OFF set time Ton: ON set time

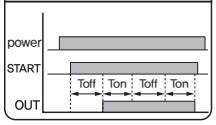



1. When START signal is applied, Toff time timing starts. (START signal holds ON status)
2. When the time value reaches the OFF set value OUT turns ON, and Ton time timing starts after time value initialization.
3. When the time value reaches the ON set value OUT turns OFF.
4. Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations.
5. When START signal is cancelled, OUT output, time value are initialized.
6. When RESET signal is applied, OUT output and time value are initialized.
7. When RESET is unlocked, it is displayed from Toff time if the START signal is applied.

* Ton time and Toff time can be set individually.

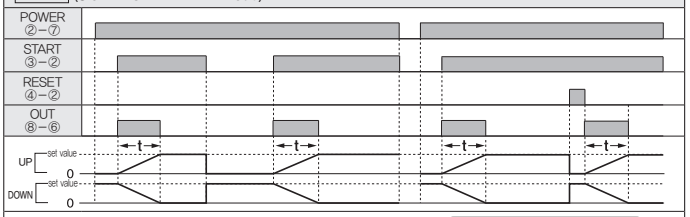
* In operation mode, the Toff time is displayed on the PV display, and the Ton time is displayed on the SV display.

default operation



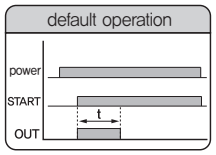

## SI nt (SIGNAL ON INTERVAL mode)

t : set time



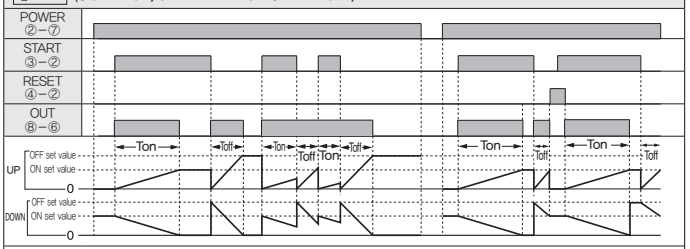

1. When START signal is applied OUT turns ON, and timing starts (START signal holds ON status)
2. When the time value reaches the set value OUT turns OFF, time value is held.
3. When START signal is cancelled, OUT output and time value are initialized.
4. When RESET signal is applied, OUT output and time value are initialized.
5. When RESET signal is cancelled, OUT turns ON and timing restarts if the START signal is applied

default operation




## SnFn (SIGNAL ON/OFF DELAY - ON START mode)

Toff: OFF set time Ton: ON set time

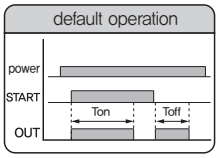



1. When START signal is applied OUT turns ON, Ton time timing starts (OUT is ON during Ton time).
2. When the time value reaches the ON set value OUT turns OFF, the time value is held.
3. When START signal is cancelled, OUT turns ON, Toff time timing starts. (OUT is ON during Toff time)
4. When the time value reaches the OFF set value OUT turns OFF, the time value is held.
5. If START signal is cancelled during ON time timing, OUT holds ON status, time value is initialized, Toff time is displayed.
6. If START signal is applied during OFF time timing,OUT holds ON status,time value is initialized, Ton time is shown.
7. When RESET signal is applied, OUT output and time value are initialized.
8. When RESET is unlocked, OUT turns ON if the START signal is applied it is displayed from Ton time.

* Ton time and Toff time can be set individually.

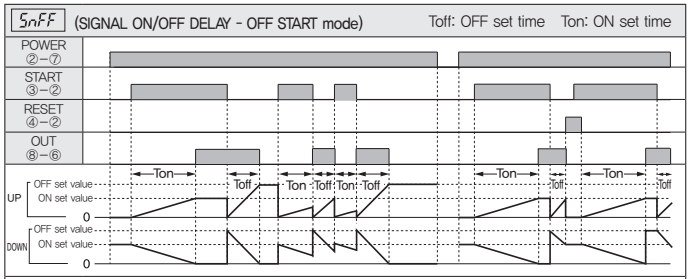
* In operation mode, Ton time is displayed on PV display, Toff time is displayed on SV display.

default operation




## SnFF (SIGNAL ON/OFF DELAY - OFF START mode)

Toff: OFF set time Ton: ON set time

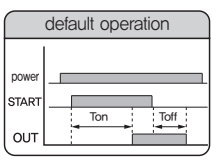



1. When START signal is applied Ton time timing starts.
2. When the time value reaches the ON set value OUT turns ON, time value is held.
3. When START signal is cancelled, OUT holds ON output status, Toff time timing starts.
4. When the time value reaches the OFF set value OUT turns OFF, time value is held.
5. If START signal is cancelled during ON time timing, OUT turns ON, time value is initialized, Toff time is displayed.
6. If START signal is applied suring OFF time timing, OUT turns OFF, time value is initialized, Ton time is displayed.
7. When RESET signal is applied, OUT output and time value are initialized.
8. When RESET is unlocked, it is displayed from Ton time if the START signal is applied,

* Ton time and Toff time can be set individually.

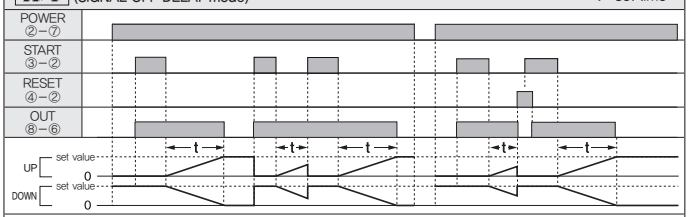
* In operation mode, the Ton time is displayed in the PV display, and the Toff time is displayed in the SV display.

default operation



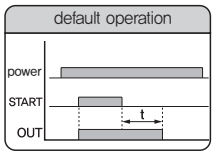

## SoFd (SIGNAL OFF DELAY mode)

t : set time




1. When START signal is applied, OUT turns ON.
2. When START signal is cancelled, OUT output is held, timing starts.
3. When time value reaches set value,OUT turns OFF,time value is held.
4. If START signal is applied during timing, OUT output is held, time value is initialized.
5. When RESET signal is applied, OUT output, time value are initialized.
6. When RESET signal is cancelled, if START signal is applied, OUT turns ON.

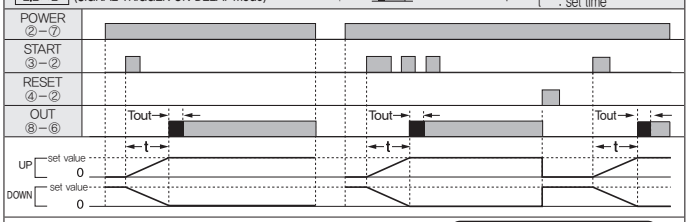
default operation




## Sond (SIGNAL TRIGGER ON DELAY mode)

ONE-SHOT output → ■ ← self-hold output

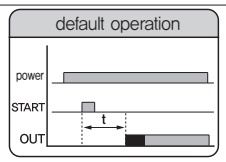
Tout : output operating time
t : set time




1. When START signal is applied, timing starts.
2. When the time value reaches the set value OUT turns ON, output and time value are held.
3. Even if the START signal is applied repeatedly, only the first START signal is used.
4. When RESET signal is applied, OUT output, time value are initialized.

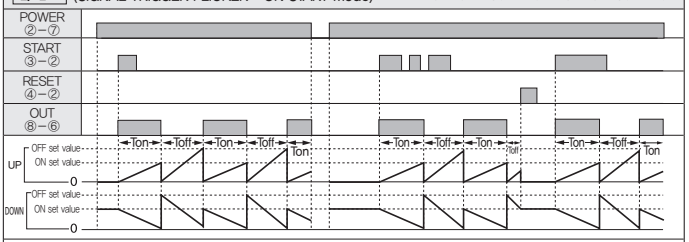
* In function setting mode, when output time 'OUTT' is set as 'HOLD', OUT output holds the output status, when output time 'OUTT' is set as '00.01~99.99' sec, OUT is ON only during set time. (ONE-SHOT output)

default operation




## SFLn (SIGNAL TRIGGER FLICKER - ON START mode)

Toff: OFF set time Ton: ON set time

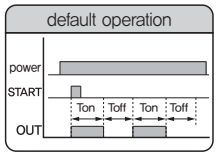



1. When START signal is applied OUT turns ON, Ton time timing starts.
2. When the time value reaches the ON set value OUT turns OFF, and Toff time timing starts after time value initialization,
3. When the time value reaches the OFF set value OUT turns ON.
4. Depending on the Ton set time and Toff set time, the output repeats the ON and OFF operations as above.
5. Even if START signal is applied repeatedly,only uses the first START signal.
6. When RESET signal is applied, OUT output, time value are initialized.

* Ton time and Toff time can be set individually.

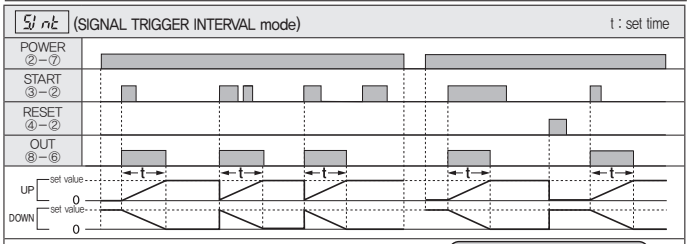
* In operation mode, Ton time is displayed on PV display, andToff time is displayed on SV display.

default operation



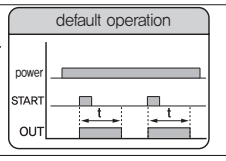

## SI nt (SIGNAL TRIGGER INTERVAL mode)

t : set time




1. When START signal is applied OUT turns ON, and timing starts.
2. When time value reaches set value,OUT turns OFF, holds time value.
3. Even if START signal is applied repeatedly,only uses the first START signal.
4. After reaching the set time, when START signal is applied OUT turns ON and timing starts after time value initialization.
5. When RESET signal is applied, OUT output, time value are initialized.

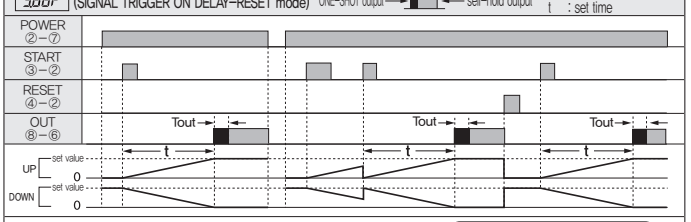
default operation




## Sodr (SIGNAL TRIGGER ON DELAY-RESET mode)

ONE-SHOT output → ■ ← self-hold output

Tout : output operating time
t : set time




1. When START signal is applied, timing starts.
2. When the time value reaches the set value, OUT turns ON, output and time value are held.
3. If START signal is re-applied during timing, timing starts after time value initialization
4. When RESET signal is applied, OUT output and time value are initialized.

* In function setting mode, when output time 'OUTT' is set as 'HOLD', OUT output holds the output status, when output time 'OUTT' is set as 00.01~99.99' sec, OUT is ON only during set time (ONE-SHOT output).

default operation