

■LT4 동작모드 (Power on start)

PF_{ON} (POWER ON FLICKER - ON START 모드) Toff : OFF 설정시간 Ton : ON 설정시간

전원 (2~7)

RESET

OUT1 (1~3)

OUT2 (4~6)

* CONT : 1C.1C일때

UP

DOWN

OFF 설정값
ON 설정값
0

OFF 설정값
ON 설정값
0

Ton Toff Ton Toff Ton Toff Ton Toff Ton Toff

- 전원이 인가되면 OUT1 과 OUT2 가 ON 되며, Ton 시간의 계시가 시작됩니다.
* 기능설정모드에서 'CONT' 가 1C.1C 로 설정되어 있을 때, 전원인가 시, OUT1 은 ON 됩니다. (순시출력)
* 기능설정모드에서 'CONT' 가 2C 로 설정되어 있을 때, OUT1 은 OUT2 에 동기되어 동작합니다.
- 계시시간이 ON 설정값에 도달하면 OUT2 가 OFF 되며, 계시값 초기화 후, Toff 시간의 계시가 시작됩니다.
- 계시시간이 OFF 설정값에 도달하면 OUT2 가 ON 됩니다.
- Ton 설정시간 및 Toff 설정시간에 따라, 출력은 상기와 같은 ON 동작 및 OFF 동작을 반복합니다.
- RESET-KEY 인가 시, OUT2 출력 및 계시값은 초기화되며, RESET 해제 시, Ton 시간부터 계시됩니다.
* Ton 시간 및 Toff 시간은 개별 설정 가능합니다.
* 동작모드에서 Ton 시간은 PV 표시부에 표시되며, Toff 시간은 SV 표시부에 표시됩니다.

기본 동작

전원

OUT1

OUT2

* CONT : 1C, 1C

Ton Toff Ton Toff

5-d (STAR-DELTA 모드) TOff: OFF설정시간 Ton: ON설정시간

The diagram illustrates the timing for the STAR-DELTA mode. It shows three cycles of operation. In each cycle, OUT1 is ON and OUT2 is OFF for a duration of Ton (ON setting time), followed by a ramp down. Then, OUT1 is OFF and OUT2 is ON for a duration of TOff (OFF setting time), followed by a ramp up. The ramps are linear and meet at the zero level. The diagram is divided into two sections: UP (top) and DOWN (bottom). The UP section shows OUT1 going from 0 to 1 and OUT2 going from 1 to 0. The DOWN section shows OUT1 going from 1 to 0 and OUT2 going from 0 to 1. The Ton and TOff times are indicated by arrows on the timing lines.

Stand (SIGNAL ON DELAY 모드) 원샷 출력 → ← 차기유지출력 Ttout: 출력동작시간 t: 설정시간

전원 (2)~(7)
START (3)~(2)
RESET (4)~(2)
OUT (8)~(6)
UP
DOWN

설정값 0
설정값 0

1. START 신호가 인가되면 계시가 시작됩니다. (START 신호는 ON 상태 유지)
2. 계시값이 설정값에 도달하면 OUT 가 ON 되며, 출력 및 계시값은 유지됩니다.
3. START 신호 해제 시, OUT 출력 및 계시값은 초기화됩니다.
4. RESET 신호 인가 시, OUT 출력 및 계시값은 초기화됩니다.
5. RESET 신호 해제 시, START 신호가 인가되어 있으면 계시를 다시 시작합니다.

* 기능설정도에서 출력시간 'OUTT' 를 'HOLD' 로 설정 시,
OUT 출력은 출력상태를 유지하게 되며, 출력시간
'OUTT' 를 '00.01~99.99' sec 로 설정 시,
OUT 는 설정시간 동안만 출력이 됩니다. (ONE-SHOT 출력)

기본동작

전원
START
OUT

5nFn (SIGNAL ON/OFF DELAY - ON START 모드) Toff: OFF설정시간 Ton: ON설정시간

The diagram illustrates the timing of the 5nFn signal. The input signal (START) is shown as a series of pulses. The output signal (OUT) is shown as a series of pulses that start with a delay (Ton) and end with a delay (Toff). The diagram is divided into two sections: 'UP' (ON) and 'DOWN' (OFF). The timing parameters are defined as follows:

- Ton:** ON 설정시간 (ON setting time)
- Toff:** OFF 설정시간 (OFF setting time)

The diagram shows the following sequence of events:

- START 신호 인가되면 OUT 가 ON 되며, Ton 시간의 계시가 시작됩니다. (Ton 시간동안 OUT 는 ON 됩니다.)
- 계시값이 ON 설정값에 도달하면 OUT 가 OFF 되며, 계시값 은 유지됩니다.
- START 신호 해제되면 OUT 가 ON 되며, Toff 시간의 계시가 시작됩니다. (Toff 시간 동안 OUT 는 ON 됩니다.)
- 계시값이 OFF 설정값에 도달하면 OUT 가 OFF 되며, 계시값 은 유지됩니다.
- ON 시간 계시중에 START 신호 가 해제되면, OUT 는 ON 상태를 유지하고 계시값은 초기화되며, Toff 시간을 계시합니다.
- OFF 시간 계시중에 START 신호 가 인가되면, OUT 는 ON 상태를 유지하고 계시값은 초기화되며, Ton 시간을 계시합니다.
- RESET 신호 인가 시, OUT 출력 및 계시값은 초기화 됩니다.
- RESET 해제 시, START 신호 가 인가되어 있으면 OUT 가 ON 되며, Ton 시간부터 계시됩니다.
 - * Ton 시간 및 Toff 시간은 개별 설정 가능합니다.
 - * 동작모드에서 Ton 시간은 PV 표시부에 표시되며, Toff 시간은 SV 표시부에 표시됩니다.

[illegible]

5EN (SIGNAL TRIGGER FLICKER - ON START 모드) Toff: OFF 설정시간 Ton: ON 설정시간

전원 (2)~(7)
START (3)~(2)
RESET (4)~(2)
OUT (8)~(6)

UP: OFF 설정값, ON 설정값, 0

DOWN: OFF 설정값, ON 설정값, 0

TON: Ton, Toff, Ton, Toff, Ton

TOFF: Toff, Toff, Toff, Toff, Toff

5. InT (SIGNAL TRIGGER INTERVAL 모드) t: 설정시간

전원 (2~7)
START (3~2)
RESET (4~2)
OUT (8~6)
UP

설정값 0
0
설정값 0
0

DOWN

1. START 신호가 인가되면 OUT 가 ON 되며, 계시가 시작됩니다.
2. 계시기가 설정값에 도달하면 OUT 가 OFF 되며, 계시값은 유지됩니다.
3. START 신호가 반복하여 인가되어도, 첫번째 START 신호만 사용됩니다.
4. 설정시간 도달 후, START 신호가 인가되면 OUT 가 ON 되며 계시값은 초기화 후 계시가 시작됩니다.
5. RESET 신호 인가 시, OUT 출력 및 계시값은 초기화됩니다.

기본동작

전원
START
OUT

설정값
0
0
0

Sadr (SIGNAL TRIGGER ON DELAY - RESET 모드) 원샷 출력 → 자기유지출력 Tout : 출력동작시간 t : 설정시간

전원 (2)~(7)
START (3)~(2)
RESET (4)~(2)
OUT (8)~(6)
UP 설정값 0
DOWN 설정값 0

1. START 신호가 인가되면 계시가 시작됩니다.
2. 계시기이 설정값에 도달하면 OUT 가 ON 되며, 출력 및 계시값은 유지됩니다.
3. 계시중에 START 신호가 재인가되면, 계시기 초기화 후 계시가 시작됩니다.
4. RESET 신호 인가 시, OUT 출력 및 계시값은 초기화됩니다.
※ 기능설정모드에서 출력시간 'OUTT' 를 'HOLD' 로 설정 시, OUT 출력은 출력상태를 유지하게 되며, 출력시간 'OUTT' 를 '00.01~99.99' sec 로 설정 시, OUT 는 설정시간 동안만 출력이 ON 됩니다. (ONE-SHOT 출력)

기본동작

전원
START
OUT

※상세한 설명은 당사 홈페이지(www.hanyoungnux.co.kr)
자료실에 있는 사용설명서를 참고하여 주시기 바랍니다.

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 instruction manual where you can view it any time.

MD1101KE231222

HANYOUNG NUX

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http://www.hanyoungnux.com

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 VAC 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 to the product body.
• 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

Specifications

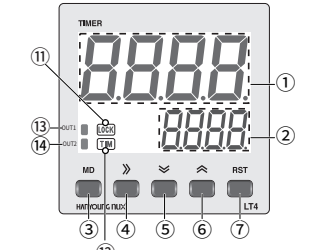
Model		LT4	LT4S
Power voltage		24 ~ 240 V a.c. 50/60 Hz or 24 ~ 240 V d.c. (dual usage)	
Voltage fluctuation rate		± 10 % of power voltage	
Power consumption		Max. 4 VA (24 ~ 240 V a.c. 50/60 Hz) Max. 1.6 W (24 ~ 240 V d.c.)	Max. 4.5 VA (24 ~ 240 V a.c. 50/60 Hz) Max. 2 W (24 ~ 240 V d.c.)
Display		Wide viewing angle negative LCD display	
Display mode		Addition and subtraction	
Display digits		4 digits	
Character height		PV display : 14 mm, SV display : 8.5 mm	
Return time		Max. 100 ms	
External connection		Socket 8 pin	
Operating time range		0.01 sec ~ 9999 hour	
External input	Input signal	Power on start	
	Input method	-	
Minimum input time			START, INHIBIT, RESET
			Non-voltage input, impedance at short circuit: max. 1 kΩ Residual voltage at short circuit: max. 0.5 V Impedance at open: min. 100 kΩ.
Operating time error		Power START : max. ± 0.01 % ± 0.05 sec., Signal START : max. ± 0.005 % ± 0.03 sec.	
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 composition	Time limit 2c, Instantaneous 1c + Time limit 1c	Time limit 1c
	Contact capacity	250 V a.c. 5A resistive load	250 V a.c. 3A resistive load (N.O.:5A, N.C.:3A)
Relay life		Mechanical life: min. 10,000,000 times, Electrical life: min. 100,000 times (250 V a.c. 5A resistive load)	
Insulation resistance		100 MΩ min (500 V d.c. Megger standard, conductive part terminal and exposed unfilled metal)	
Dielectric strength		2000 V a.c. 60 Hz for 1 minute (conductive part terminal and exposed unfilled metal)	
Noise immunity		± 2 kV (among operation power terminals, pulse width = 1 us, square-wave noise by noise simulator)	
Vibration resistance		10 ~ 55 Hz (for 1 minute) single amplitude 0.5 mm X, Y, Z each direction, 2 h	
Shock resistance		300 m# (30G) X, Y, Z each direction, 3 times	
Ambient temperature		-10 ~ 55 °C (without condensation)	
Storage temperature		-25 ~ 65 °C (without condensation)	
Ambient humidity		35 ~ 85 % RH	
Approval		CE	
Degree of protection		IP66 (front panel)	

Time range

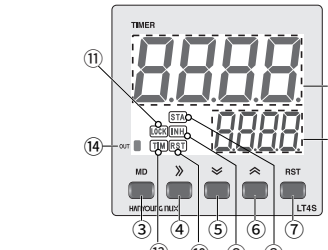
Parameter		Time range		Remarks
UP	DOWN	Decimal	Sexagesimal	
<i>0001</i>	<i>0001</i>	0.01sec ~ 9.999sec	0.01sec ~ 9.999sec	Time range Decimal, Sexagesimal (same)
<i>0015</i>	<i>0015</i>	0.01sec ~ 99.99sec	0.01sec ~ 59.99sec	
<i>0115</i>	<i>0115</i>	0.1sec ~ 999.9sec	0.1sec ~ 9m 59.9sec	
<i>0115</i>	<i>0115</i>	1sec ~ 9999sec	1sec ~ 59m 59sec	
<i>0115</i>	<i>0115</i>	0.1min ~ 999.9min	0.1min ~ 9hour 59.9min	Time range Decimal, Sexagesimal (same)
<i>0115</i>	<i>0115</i>	1min ~ 9999min	1min ~ 99hour 59min	
<i>0115</i>	<i>0115</i>	0.1hour ~ 999.9hour	0.1hour ~ 999.9hour	
<i>0115</i>	<i>0115</i>	1hour ~ 9999hour	1hour ~ 9999hour	

Part name and functions

LT4



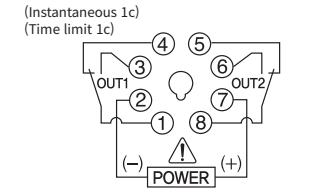
LT4S



No	Name	Usage
①	PV display	• Displays time value in POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR operation modes • Displays set value and time value in PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN operation modes • 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 • 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 (automatically 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	Turns on when external START signal is applied
⑨	INHIBIT input indicator	Turns on when external INHIBIT signal is applied
⑩	RESET input indicator	Turns on when external RESET signal is applied
⑪	LOCK set indicator	Turns on when LOCK is set
⑫	Timer operation indicator	Blinks during timing operation
⑬	OUT1 output indicator	Turns on during OUT1 output operation
⑭	OUT2 output indicator	Turns on during OUT2 output operation. In LT4S models, it turns on during OUT output operation

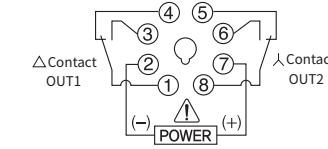
Connection diagrams

LT4



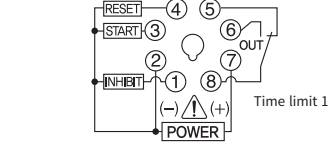
* When you set CONT to 1c. 1c in function mode, OUT1 operates as instantaneous output.

LT4(STAR-DELTA)



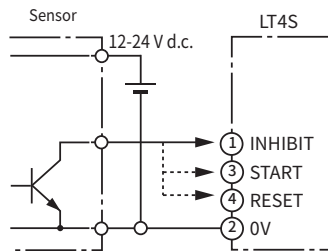
* When you set *o-nd* to S-D in function setting mode, OUT1 operates as Δ output, and OUT2 operates as λ output.

LT4S

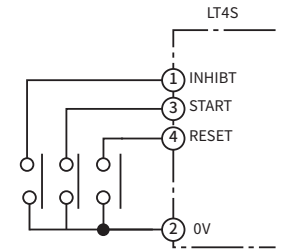


Input connection

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



● Contact input

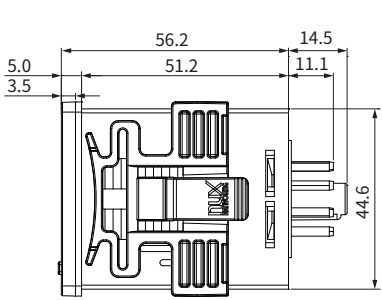
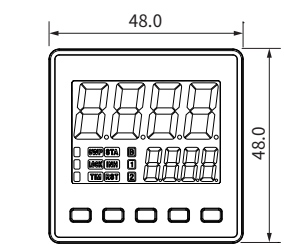


Function setting mode

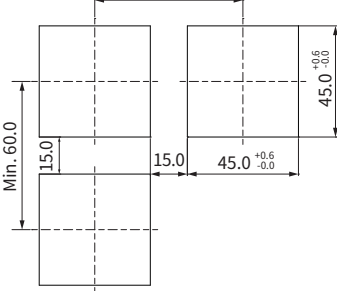
Setting item	LCD display	Settings	Default
Operation mode selection	<i>o-nd</i> <i>Pond</i>	• Selects LT4 operation mode (7 operation modes). <i>Pond → PFKF → PFKN → PInt → tOn → S-d → tOff</i>	<i>Pond</i>
	<i>o-nd</i> <i>Sond</i>	• Selects LT4S operation mode (10 operation modes). <i>Sond → SFKF → SInt → SNFN → SNFF → Sodr → SInt → SFKN → Sond → SoFd</i>	<i>Sond</i>
Output time setting	<i>oult</i> <i>HoLd</i>	• Sets ONE-SHOT output operation time. • Only in POND operation mode (LT4). • Only in SOND / S.OND / S.ODR operation modes (LT4S). • ONE-SHOT output time setting range: HOLD ~ 99.99 sec (HOLD : output hold). <i>HoLd → 9999</i> output hold 99.99 sec	<i>HoLd</i>
Numeral system selection	<i>ScAL</i> <i>60</i>	• Selects the numeral system of time range. • Consists of decimal and sexagesimal systems. <i>10 → 60</i> decimal sexagesimal	<i>60</i>
Addition/ subtraction selection	<i>UPdn</i> <i>UP</i>	• Selects the timing method of operating time. • Consists of "addition timing (UP)", that displays after adding from 0, and "subtraction timing (DOWN)", that displays after subtracting from set value. <i>UP → dn</i> addition subtraction	<i>UP</i>
PV time range selection	<i>P.rnG</i> <i>0015</i>	• Selects PV operating time and PV set value time ranges (refer to the time range for each parameter). • For PV time range selection, 2 time set values are used in operation mode (ON set value and OFF set value). • Displayed only when the operation modes are PFKF / PFKN / TWON / TWOF / S-D (LT4). • Displayed only when the operation modes are SFKF / SNFN / SNFF / S.FKN (LT4S). • UP mode <i>0001 → 0015 → 0115 → 0115 → 0115 → 0115 → 0115 → 0115</i> 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour • DOWN mode <i>0001 → 0015 → 0115 → 0115 → 0115 → 0115 → 0115 → 0115</i> 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour	<i>0015</i>
SV time range selection	<i>S.rnG</i> <i>0015</i>	• Selects SV operating time and SV set value time range (see time range of each parameter). • UP mode <i>0001 → 0015 → 0115 → 0115 → 0115 → 0115 → 0115 → 0115</i> 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour • DOWN mode <i>0001 → 0015 → 0115 → 0115 → 0115 → 0115 → 0115 → 0115</i> 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour	<i>0015</i>
Contact configuration setting	<i>Cont</i> <i>1C.1C</i>	• Displayed only on LT4 model. • When parameter "1C.1C" is selected, the output contact is configured as "Instantaneous 1c + Time limit 1c". • When parameter "2C" is selected, the output contact is configured as "Time limit 2c". • In operation mode "TWON / TWOF / S-D", it is automatically fixed to "Time limit 2c". <i>1C.1C → 2C</i> Instantaneous 1c Time limit 2c + Time limit 1c	<i>1C.1C</i>
Minimum input time selection	<i>In-t</i> <i>2015</i>	• Displayed only on LT4S model. • Selects START / INHIBIT / RESET minimum input time of input signal. • Minimum input time consists of 1ms and 20ms. <i>115 → 2015</i> 1 ms 20 ms	<i>2015</i>
Lock	<i>LoLk</i> <i>LoFF</i>	• Used for key lock. • Unlocks all keys when you select Parameter "L.OFF". • When you select Parameter "L.ON", locks RST , , , , (except MD). • When you select Parameter "L.SET", locks only. • When you select Parameter "L.RST", locks RST only. <i>LoFF → Lon → LSet → L-Rst</i> Lock off Lock on Lock Set Key Lock Reset Key	<i>LoFF</i>

Dimensions and panel cutout

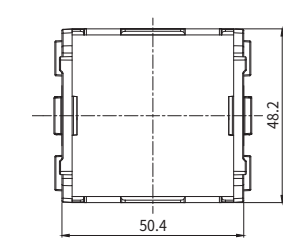
Dimensions



Panel cutout



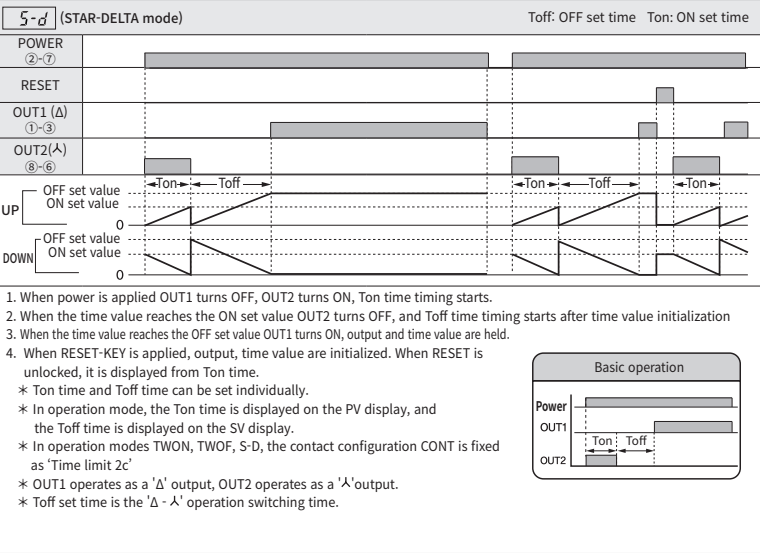
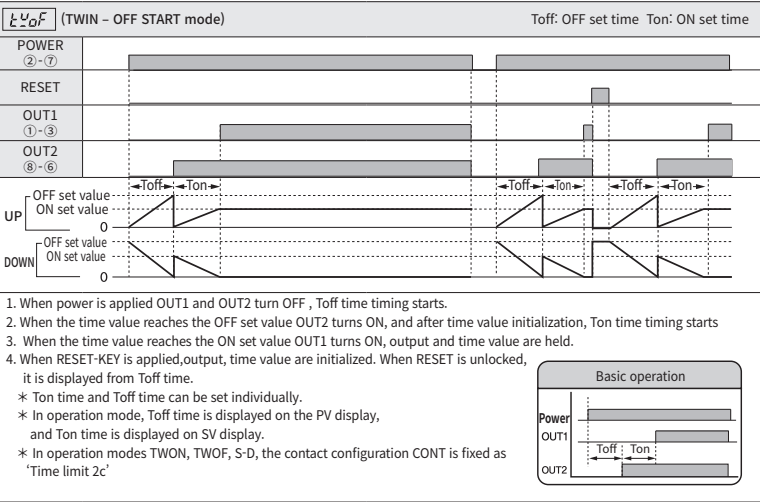
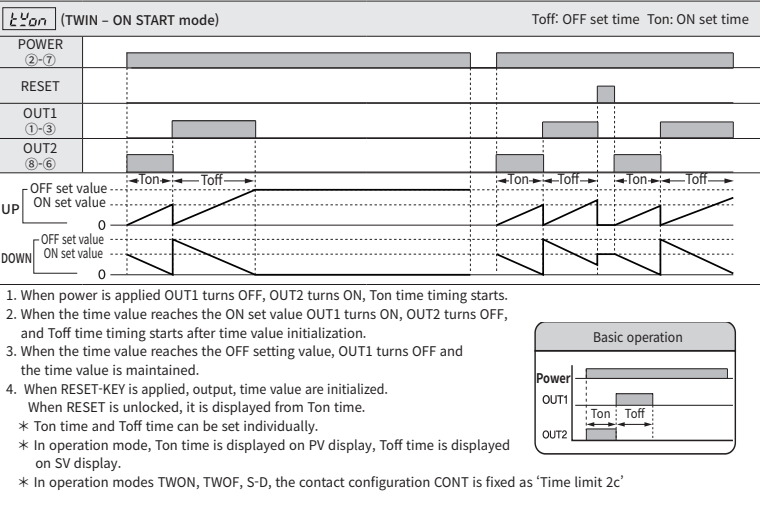
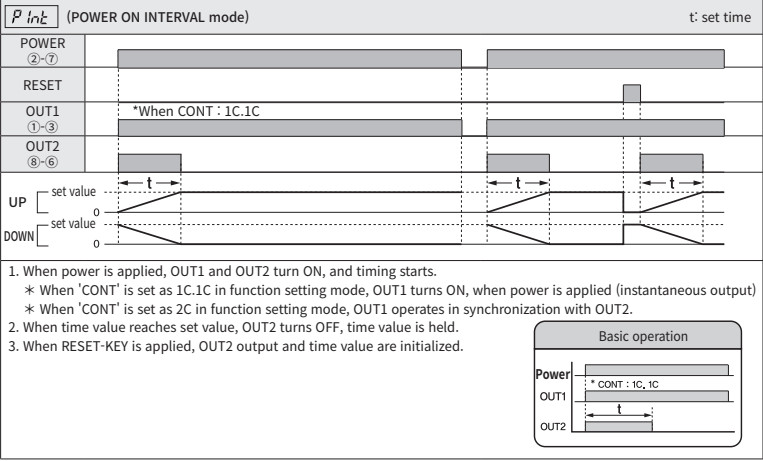
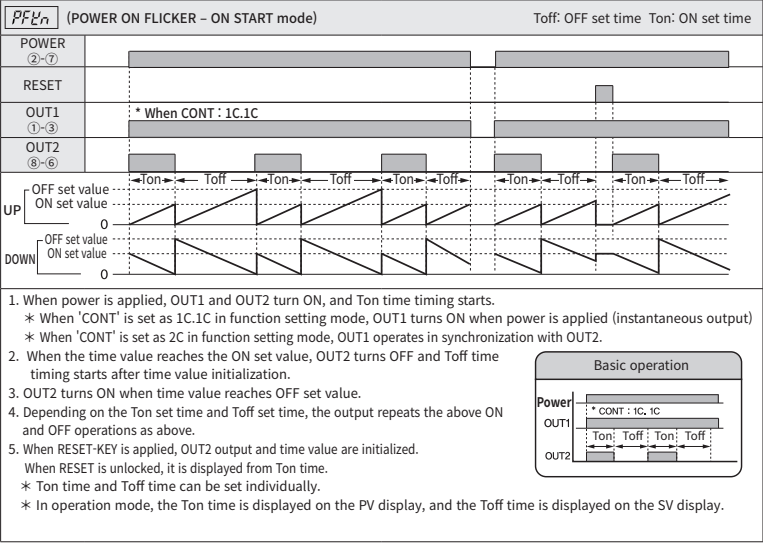
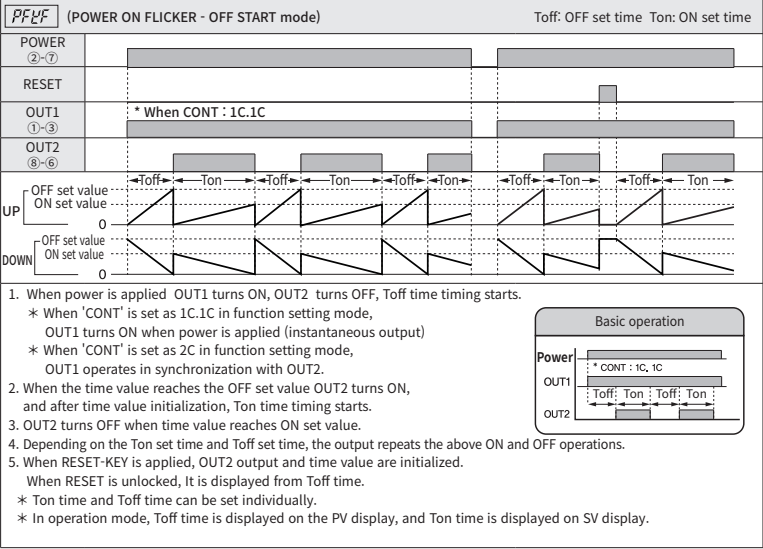
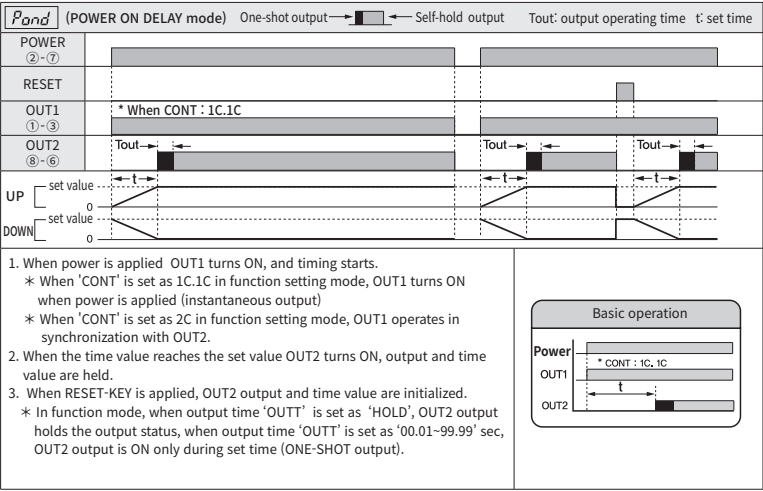
Bracket



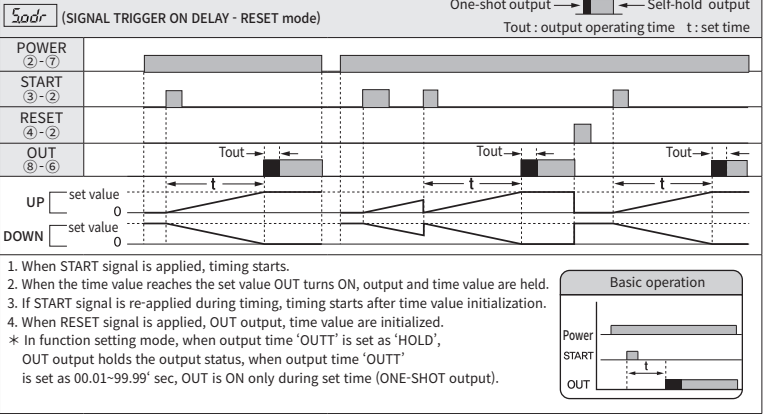
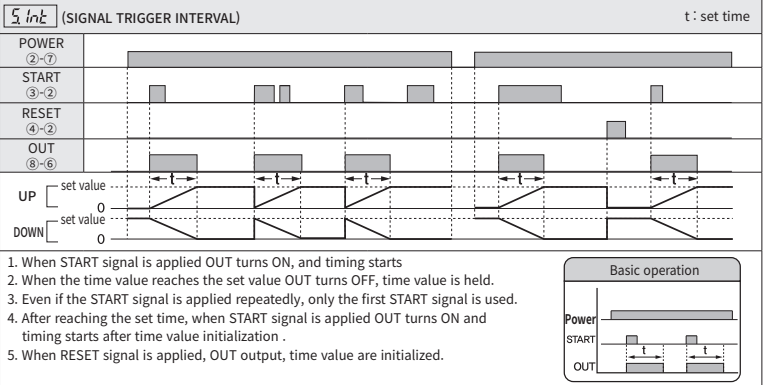
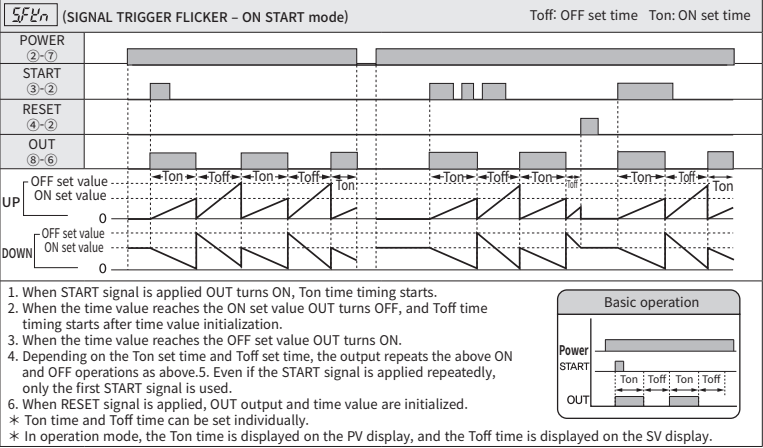
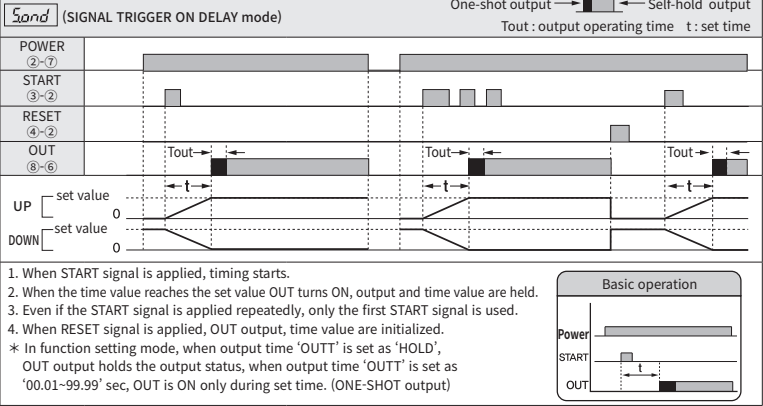
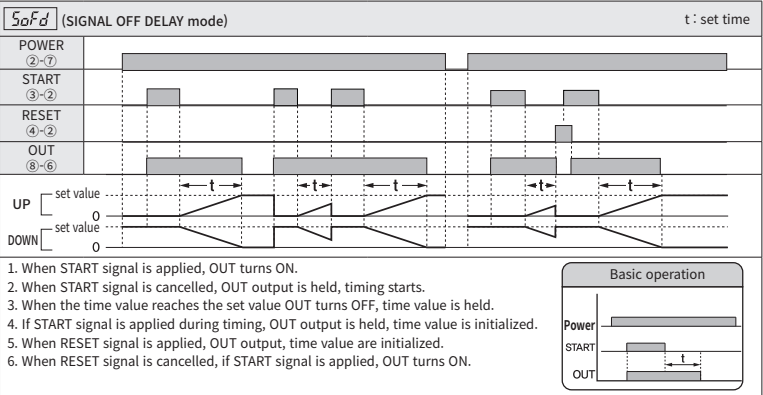
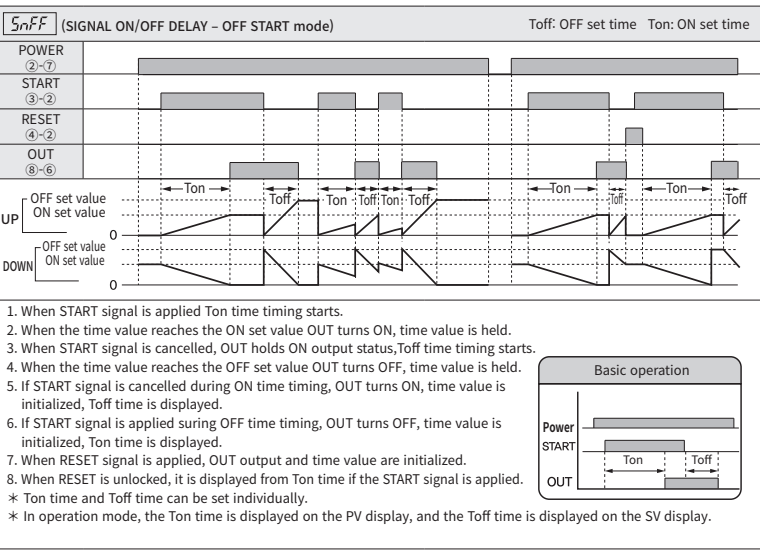
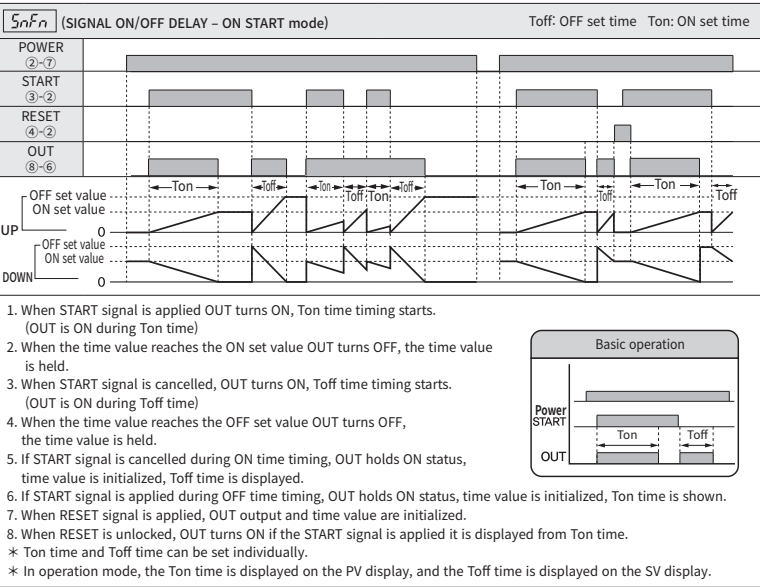
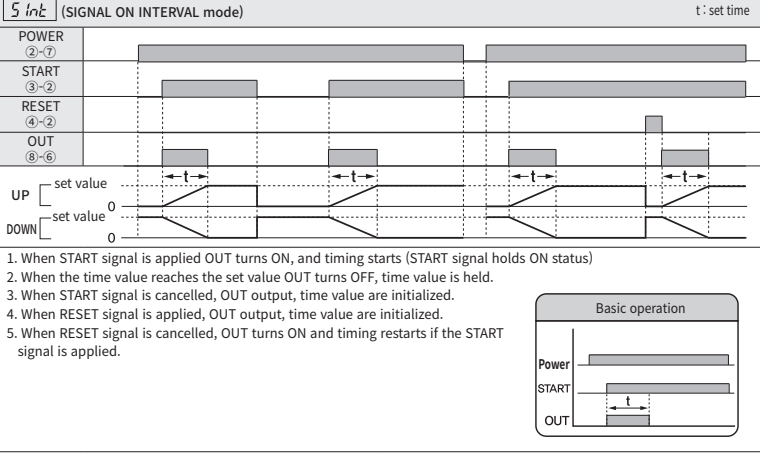
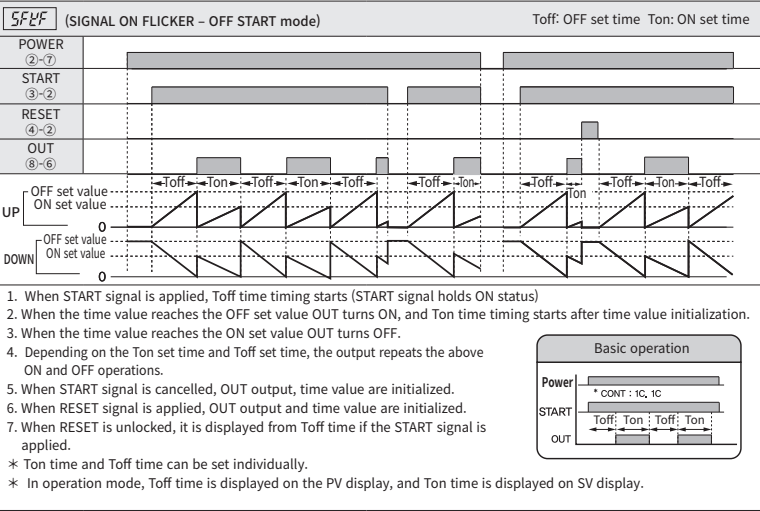
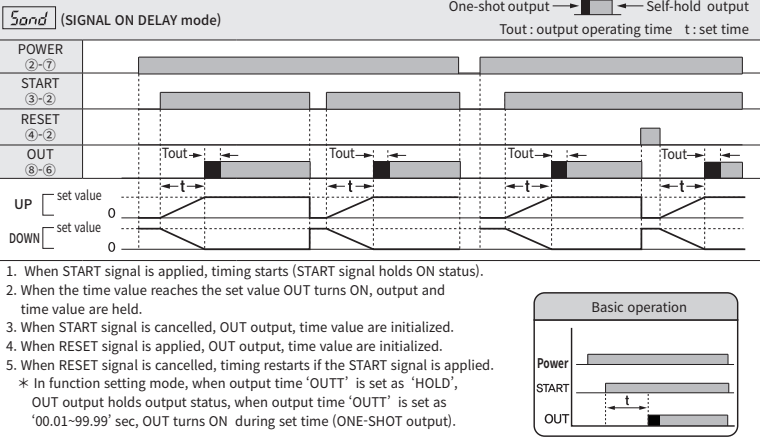
[Unit :mm]

Operation modes

■ LT4 operation modes (Power on start)



■ LT4S operation modes (Signal on start)



※ For further information, please visit our homepage(www.hanyoungnux.com) and refer to the user's manual in the archive.