

LCD 타이머

LT4 series

취급설명서

(주)한영넥스
인천광역시 미추홀구 길파로 71번길 28
고객지원센터 1577-1047
http://www.hanyoungnux.co.kr

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■ 안전상 주의사항

사용전에 안전에 관한 주의사항을 잘 읽어 주시고 올바르게 사용하여 주십시오.
설명서에 표시된 주의사항은 중요도에 따라 **위험, 경고, 주의** 삼별로 구분하고 있습니다.

위험	지키지 않을 경우, 사망 또는 중상을 이르는 결과를 낳는 절박한 위험 상황을 표시하고 있습니다.
경고	지키지 않을 경우, 사망 또는 중상이 발생할 가능성이 예상되는 내용을 표시하고 있습니다.
주의	지키지 않을 경우, 경미한 상해나 재산상의 손해가 발생할 가능성이 예상되는 내용을 표시하고 있습니다.

- ! 위험**
 - 압·충격 단자는 감전의 위험이 있으니 신체 및 통전물과 절대로 접촉되지 않도록 하십시오.
- ! 경고**
 - 제조자가 지정한 방법 이외로 사용시에는 상해를 입거나 재산상의 손실이 발생할 수 있습니다.
 - 본 제품의 고장이나 이상이 시스템에 중대한 사고로 이어질 우려가 있는 경우에는 외부에 적절한 보호장치를 설치하여 주십시오.
 - 본 기기에는 전압 스위치 및 용량이 부착되어 있지 않으므로 외부에 별도로 설치하여 주십시오. (용량: 250VAC 0.5A)
 - 본 기기의 파손방지 및 고장방지를 위하여 정격에 맞는 전원전압을 공급 하여 주십시오.
 - 감전 방지 및 기기 고장 방지를 위하여 모든 배선이 종료될 때까지 전원을 투입하지 마십시오.
 - 방폭구조가 아니므로 가연성, 폭발성 가스가 있는 장소에서는 사용하지 마십시오.
 - 본 기기는 절대로 분해, 가공, 개선, 수리하지 마십시오. 이상동작, 감전, 화재의 위험이 있습니다.
 - 본 기기의 탈착은 전원을 OFF한 후 조치하여 주십시오. 감전, 오동작, 고장의 원인이 됩니다.
 - 감전될 위험이 있으므로 본 기기를 폐널에 설치된 상태로 사용하여 주십시오.
- ! 주의**
 - 취급설명서의 내용은 사전 통보 또는 예고 없이 변경될 수 있습니다.
 - 주변하신 사항과 일치하는지 확인 하십시오.
 - 운송중 파손 및 제품에 이상이 없는지 확인 하십시오.
 - 부식성 가스(특히 유해가스, 염모아아 등), 가연성 가스가 발생하지 않는 장소에서 사용하십시오.
 - 노출에 직접 접촉, 충격이 가여지지 않는 장소에서 사용하십시오.
 - 물, 기름, 액물, 증기, 먼지, 염분, 필름 등이 있는 장소에서 사용하지 마십시오.
 - 알루미늄, 백철 등 유기 용제로 분기를 닦지 마십시오. (중성세제로 닦아 주십시오)
 - 유도장치가 크고 정전기, 자기 노이즈가 발생하는 장소는 피하여 주십시오.
 - 직사광선 및 복사열 등에 의한 열폭박이 발생하는 장소는 피하여 주십시오.
 - 고도 2,000 m 이하의 장소에서 사용하십시오.
 - 물이 들어있을 때에는 누전, 화재의 위험성이 있으므로 물이 점결을 받아 주십시오.
 - 전원으로부터 노이즈가 많은 경우에는 절연트랜스 및 노이즈 필터를 사용할 것을 권합니다.
 - 노이즈 필터는 필히 장치되어 있는 패널들에 부착하고 노이즈 필터 출력측과 계기 전원단자의 배선은 짧게 하여 주십시오.
 - 계기 전원선은 충출하게 꼬여진 노이즈에 대하여 효과가 있습니다.
 - 사용하지 않는 단자에는 아무것도 연결하지 마십시오.
 - 단자의 극성을 확인한 후 배선을 정확하게 연결 바랍니다.
 - 본 기기를 폐널에 설치시에는 IEC60947-1 또는 IEC60947-3의 승인된 스위치나 차단기를 사용 하십시오.
 - 스위치나 차단기는 운전자가 조작이 용이하도록 가까운 거리에 설치하십시오.
 - 본 기기를 계속적으로 안전하게 사용하기 위하여 정기적인 보수를 권장합니다.
 - 본 기기의 탑재부품에는 수명이 있는 것과 장년 변화 하는 것이 있습니다.
 - 부속품을 포함한 본 기기의 보증기간은 정상적으로 사용한 경우에 1년입니다.
 - 전원 투입시엔 접점출력의 준비 기간이 필요 합니다. 외부의 인더크 회로등에 신호로 사용되는 경우에는 지연 릴레이를 병용하여 주십시오.

■ 형명구성

형명	코드	내 용
LT4	<input type="checkbox"/>	LCD 타이머, 48 (W) X 48 (H) mm
제어출력	무표시 S	한시 2c, 한시 1c + 순시 1c

■ 사양

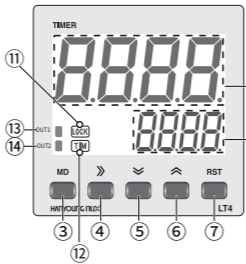
형 명	LT4	LT4S
전원전압	24 ~ 240 V a.c. 50/60 Hz or 24 ~ 240 V d.c. (경용)	
허용전압변동률	전원전압의 ± 10 %	
소비전력	4 VA 이하 (24 ~ 240 V a.c. 50/60 Hz) 1.6 W 이하 (24 ~ 240 V d.c.)	4.5 VA 이하 (24 ~ 240 V a.c. 50/60 Hz) 2 W 이하 (24 ~ 240 V d.c.)
표시방식	광시야각 네거티브 LCD 표시	
표시모드	가산표시 및 감산표시	
표시 행수	4행	
문자높이	PV 표시부 : 14 mm, SV 표시부 : 8.5 mm	
복귀시간	100 ms 이하	
외부접속	소켓 8핀	
동 작 시 간 범 위	0.01 sec ~ 9999 hour	
외부 입력	입력신호 전원START	START, INHIBIT, RESET 무전압 입력, 단락 시 임피던스 : 1 kΩ 이하 단락 시 잔류전압 : 0.5 V 이하 개방 시 임피던스 : 100 kΩ 이상
최소입력시간	-	START, INHIBIT, RESET 최소입력신호 폭 1 ms / 20 ms 선택
동작시간오차	전원 START : ± 0.01 % ± 0.05 sec 이하, 시그널 START : ± 0.005 % ± 0.03 sec 이하	
제어 출력	동작모드 점점구성 점점용량	POND / PFKF / PFKN / PINT / TWON / TWOF / S-D SOND / SFKF / SINT / SNFN / SNFF / SOFD / S.OND / S.FKN / S.TWON / S.TWOF / S-D 일 한시 2c, 순시 1c + 한시 1c 250 V a.c. 5A 저항부하
릴레이수명	기계적 수명 : 1000 만회 이상, 전기적 수명 : 10 만회 이상 (250 V a.c. 5A 저항부하)	
절연저항	100 MΩ 이상 (500 V d.c. 메가 기준, 도전부 단자와 노출된 비중전 금속 부문)	
내전압	2000 V a.c. 60 Hz 1분 간 (도전부 단자와 노출된 비중전 금속 부문)	
내노이즈	± 2 kV (조적 전원 단자 간, Pulse 폭 = 1 us, 노이즈 시뮬레이터에 의한 병행파 노이즈)	
내진동	10 ~ 55 Hz (1분 간) 편진폭 0.5 mm X, Y, Z 각 방향 2 시간	
내충격	300 m/s (30G) X, Y, Z 각 방향 3 회	
사용주위온도	-10 ~ 55 °C (단, 결로되지 않을 것)	
보관온도	-25 ~ 65 °C (단, 결로되지 않을 것)	
사용주위습도	35 ~ 85 % RH	
인증	CE, K	
보호등급	IP66 (전면부)	

■ 시간범위

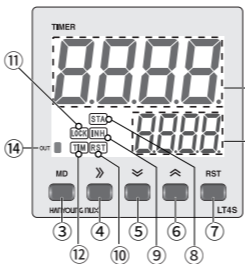
UP	DOWN	시간범위		비고
		10진법	60진법	
u001	d001	0.01sec ~ 9.999sec	0.01Sec ~ 9.999sec	시간범위 10진법, 60진법 동일
u015	d015	0.01sec ~ 99.99sec	0.01Sec ~ 59.99sec	
u15	d15	0.1sec ~ 999.9sec	0.1sec ~ 9m 59.9sec	
u1n	d1n	0.1min ~ 999.9min	0.1min ~ 9hour 59.9min	
u1n	d1n	1min ~ 9999min	1min ~ 99hour 59min	
u1H	d1H	0.1hour ~ 999.9hour	0.1hour ~ 999.9hour	시간범위 10진법, 60진법 동일
u1H	d1H	1hour ~ 9999hour	1hour ~ 9999hour	시간범위 10진법, 60진법 동일

■ 각 부의 기능 및 명칭

■LT4



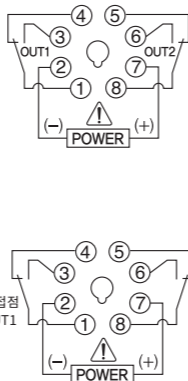
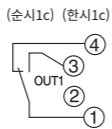
■LT4S



No	명 칭	용 도
①	PV 표시부	• POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR 동작모드에서 계시값 표시 • PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN 동작모드에서 설정값 및 계시값 표시 • 기능설정모드에서 설정항목 표시
②	SV 표시부	• POND / PINT / SOND / SINT / SOFD / S.OND / S.INT / S.ODR 동작모드에서 설정값 표시 • PFKF / PFKN / TWON / TWOF / S-D / SFKF / SNFN / SNFF / S.FKN 동작모드에서 설정값 및 계시값 표시
③	MODE KEY	기능설정모드 진입 및 종료 (종료 시 기능설정값 자동 저장)
④	SHIFT KEY	설정값변경모드 진입 및 설정값의 자릿수 이동
⑤	DOWN KEY	기능설정모드 및 설정값변경모드에서 설정값 감소
⑥	UP KEY	기능설정모드 및 설정값변경모드에서 설정값 증가
⑦	RESET KEY	계시값 및 출력상태 초기화
⑧	START 입력 표시등	외부 START 신호 인가 시 점등
⑨	INHIBIT 입력 표시등	외부 INHIBIT 신호 인가 시 점등
⑩	RESET 입력 표시등	외부 RESET 신호 인가 시 점등
⑪	LOCK 설정 표시등	LOCK 설정 시 점등
⑫	타이머 동작 표시등	계시 동작 시 점등
⑬	OUT1 출력 표시등	OUT1 출력 동작 시 점등
⑭	OUT2 출력 표시등	OUT2 출력 동작 시 점등 LT4S 모델에서는 OUT 출력 동작 시 점등

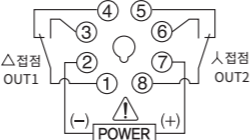
■ 접속도

■ LT4



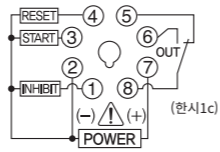
* 기능모드에서 CONT 를 1c, 1c 로 설정시, OUT1 은 순시출력으로 동작됩니다.

■ LT4(STAR-DELTA)



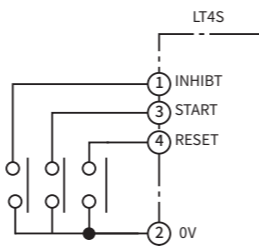
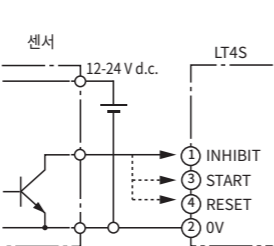
* 기능모드에서 o-nd 를 S-D 로 설정시, OUT1 은 △출력으로 동작되며, OUT2 는 s 출력으로 동작됩니다.

■ LT4S



■ 입력 결선방법

- 무점점 입력 (센서 출력이 NPN 오픈 콜렉터 출력일 때)
- 유점점 입력

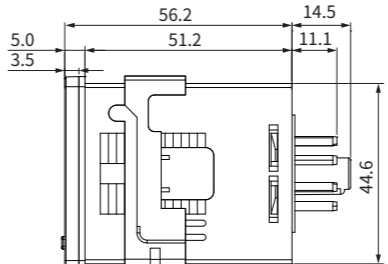
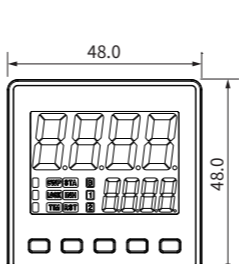


■ 기능 설정 모드

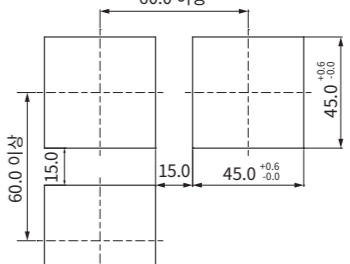
설정항목	LCD 표시	설정내용	초기값																																
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출력시간 설정		<ul style="list-style-type: none"> ONE-SHOT 출력의 동작시간 설정 LT4 모델의 POND 동작모드에서만 사용 LT4S 모델의 SOND / S.OND / S.ODR 동작모드에서만 사용 ONE-SHOT 출력시간 설정범위 : HOLD - 99.99 sec (HOLD : 출력유지) 	<table border="1"> <thead> <tr> <th colspan="2">출력유지</th> </tr> </thead> <tbody> <tr> <td>99.99 sec</td> <td></td> </tr> </tbody> </table>	출력유지		99.99 sec																													
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시간진법 선택		<ul style="list-style-type: none"> 시간레인지의 시간진법 선택 10진법 및 60진법으로 구성 	<table border="1"> <thead> <tr> <th colspan="2">10진법</th> <th colspan="2">60진법</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>60</td> <td>10</td> <td>60</td> </tr> </tbody> </table>	10진법		60진법		10	60	10	60																								
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가산/감산 선택		<ul style="list-style-type: none"> 동작시간의 계지방식 선택 0 부터 가산하여 계시하는 '가산계시 (UP)' 및 설정값부터 감산하여 계시하는 감산계시 (DOWN) 로 구성 	<table border="1"> <thead> <tr> <th colspan="2">가산</th> <th colspan="2">감산</th> </tr> </thead> <tbody> <tr> <td>UP</td> <td>dn</td> <td>UP</td> <td>dn</td> </tr> </tbody> </table>	가산		감산		UP	dn	UP	dn																								
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점점구성 설정		<ul style="list-style-type: none"> LT4 모델에서만 표시 파라미터 "1C,1C" 선택 시, 출력점점은 "순시1c + 한시1c" 로 구성 됨. 파라미터 "2C" 선택 시, 출력점점은 "한시2c" 로 구성 됨. 동작모드 "TWON / TWOF / S-D" 에서는 "한시2c" 로 자동 고정됩니다. 	<table border="1"> <thead> <tr> <th colspan="2">순시 1c + 한시 1c</th> <th colspan="2">한시 2c</th> </tr> </thead> <tbody> <tr> <td>1c, 1c</td> <td>2c</td> <td>1c, 1c</td> <td>2c</td> </tr> </tbody> </table>	순시 1c + 한시 1c		한시 2c		1c, 1c	2c	1c, 1c	2c																								
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최소입력시간 선택		<ul style="list-style-type: none"> LT4S 모델에서만 표시 START / INHIBIT / RESET 입력신호의 최소입력시간 선택 최소입력시간은 1ms 및 20ms 로 구성 	<table border="1"> <thead> <tr> <th colspan="2">1 ms</th> <th colspan="2">20 ms</th> </tr> </thead> <tbody> <tr> <td>1n5</td> <td>20n5</td> <td>1n5</td> <td>20n5</td> </tr> </tbody> </table>	1 ms		20 ms		1n5	20n5	1n5	20n5																								
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키잠금선택		<ul style="list-style-type: none"> Key 잠금 사용 시 선택 파라미터 "L.OFF" 선택 시, 전체 Key 잠금은 해제됩니다. 파라미터 "L.ON" 선택 시, MID Key 를 제외한 RST, Key 는 잠금상태가 됩니다. 파라미터 "L.SET" 선택 시, Key 만 잠금상태가 됩니다. 파라미터 "L.RST" 선택 시, RST Key 만 잠금상태가 됩니다. 	<table border="1"> <thead> <tr> <th colspan="2">Lock off</th> <th colspan="2">Lock on</th> <th colspan="2">Lock Set Key</th> <th colspan="2">Lock Reset Key</th> </tr> </thead> <tbody> <tr> <td>LoFF</td> <td>Lon</td> <td>LSet</td> <td>LrSt</td> <td>LoFF</td> <td>Lon</td> <td>LSet</td> <td>LrSt</td> </tr> </tbody> </table>	Lock off		Lock on		Lock Set Key		Lock Reset Key		LoFF	Lon	LSet	LrSt	LoFF	Lon	LSet	LrSt																
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■ 외형치수 및 패널가공치수

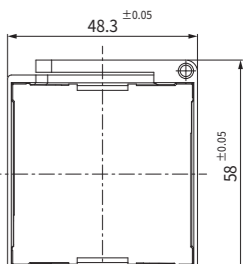
■ 외형치수



■ 패널가공치수



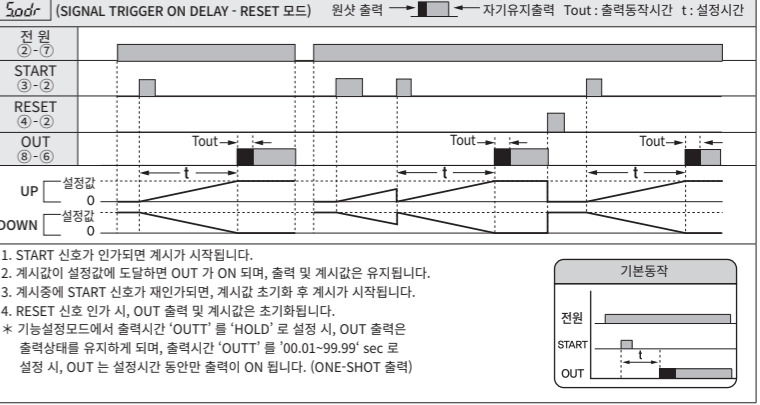
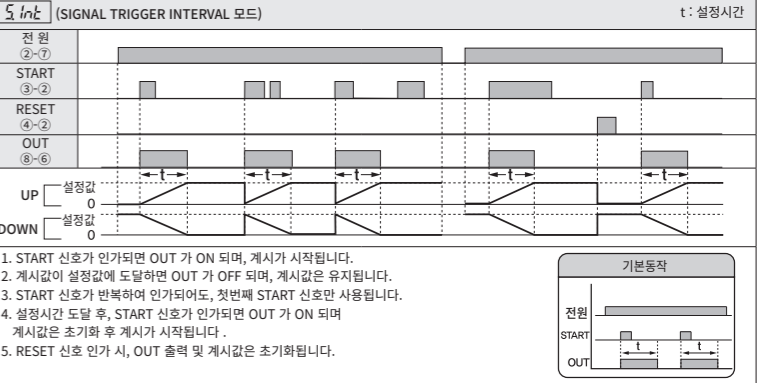
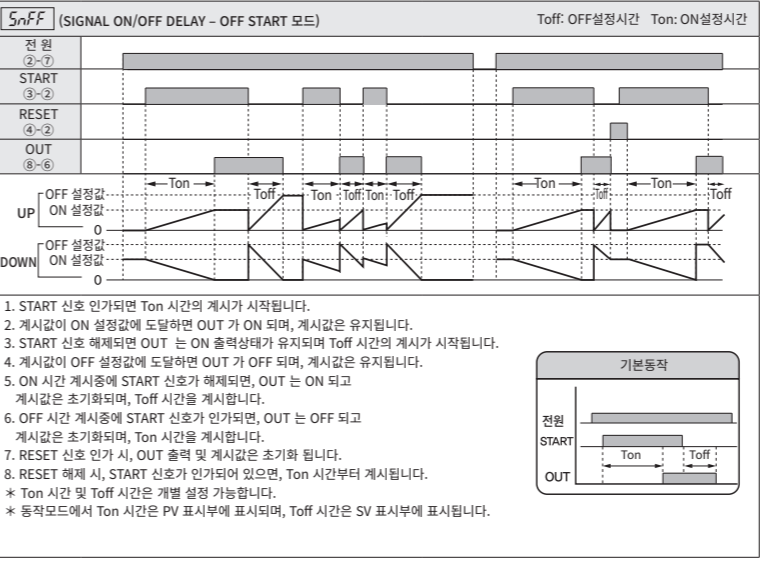
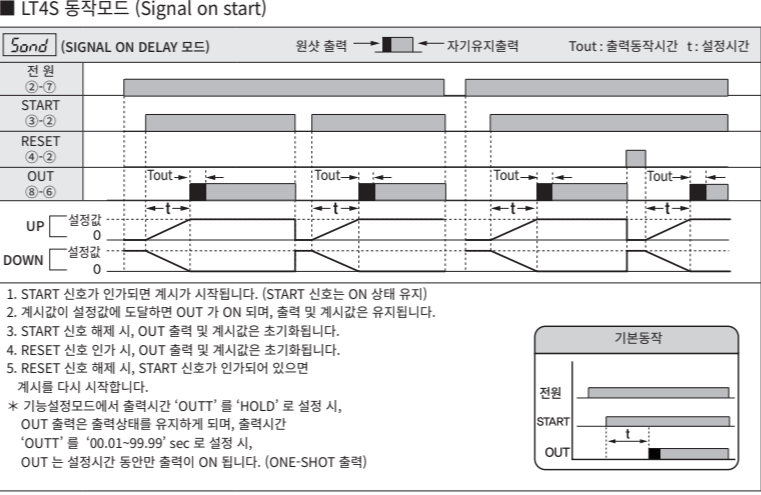
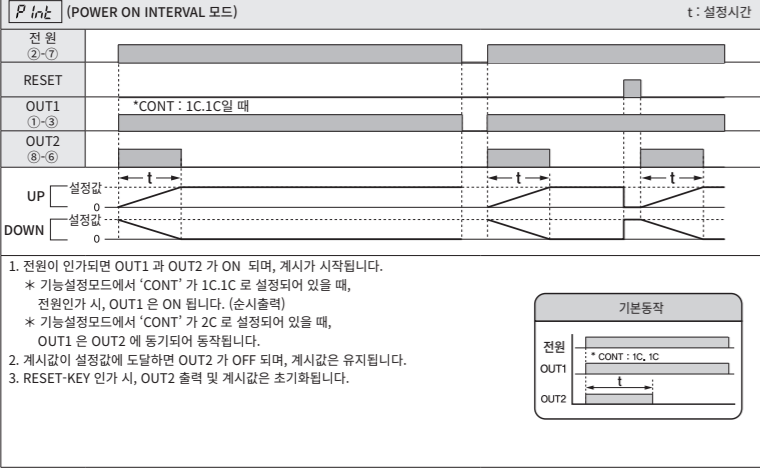
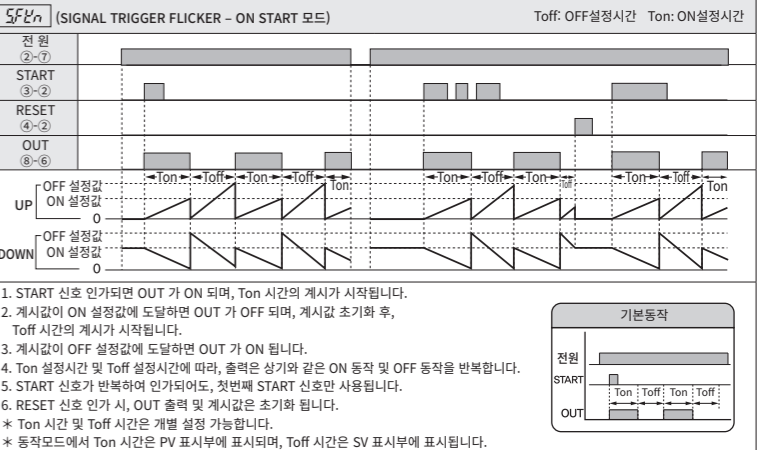
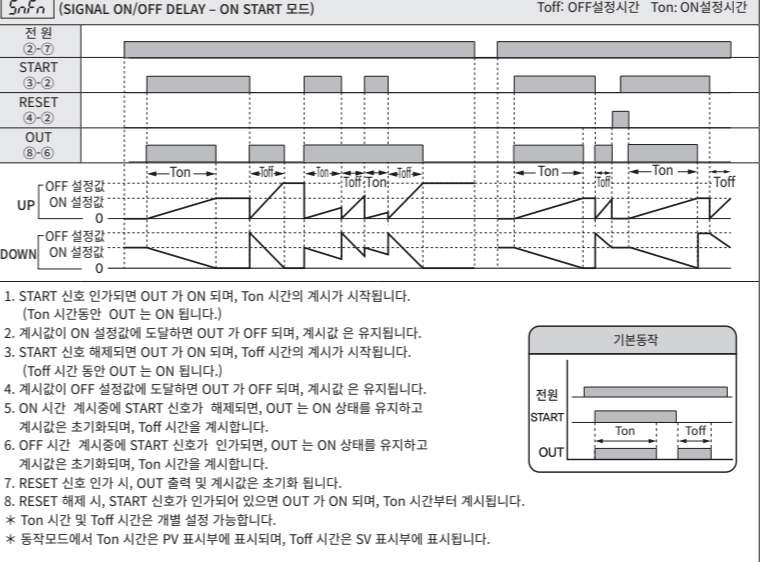
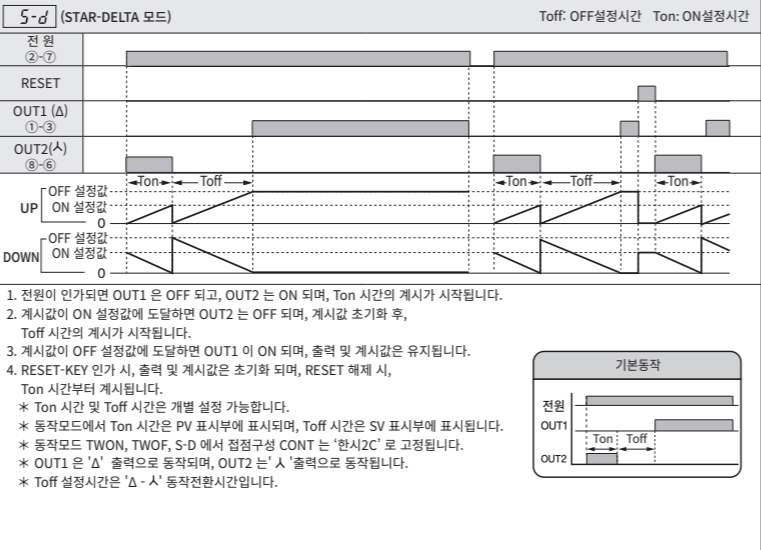
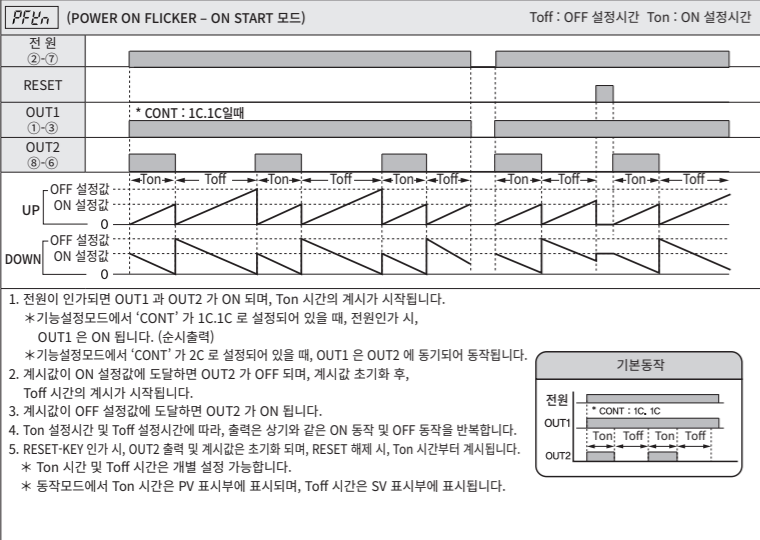
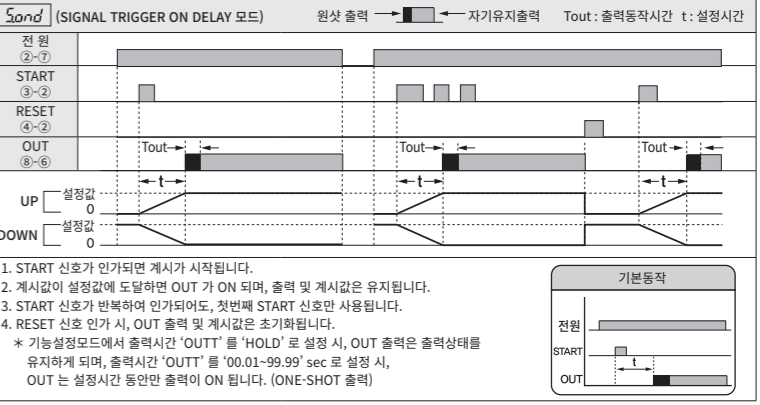
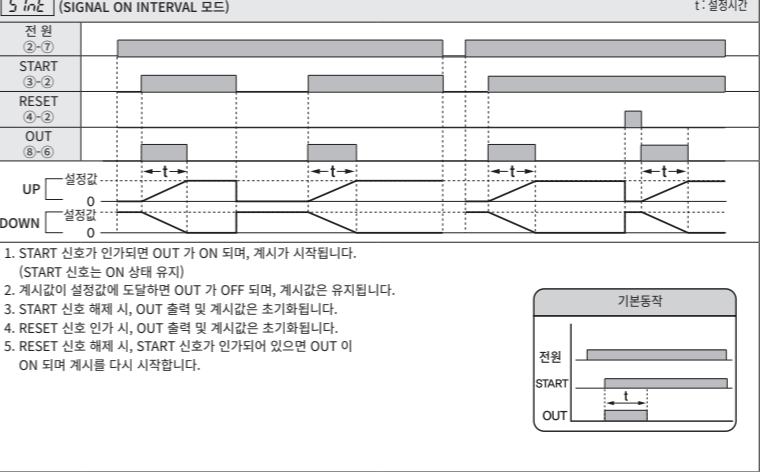
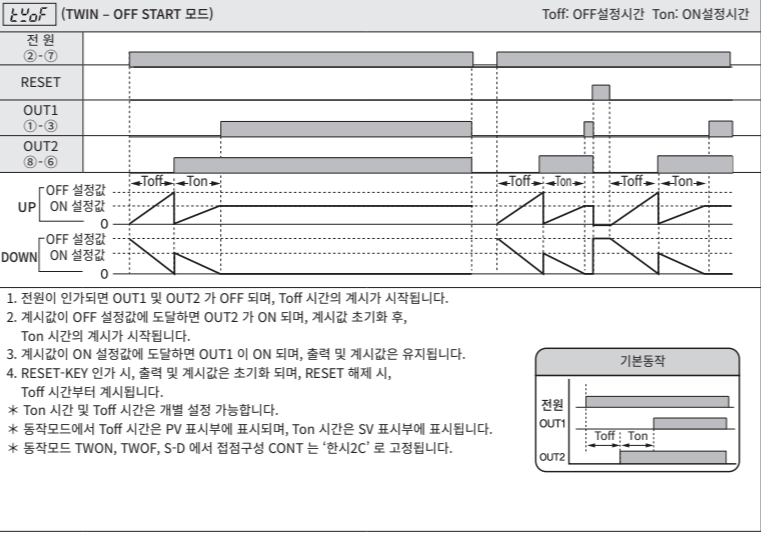
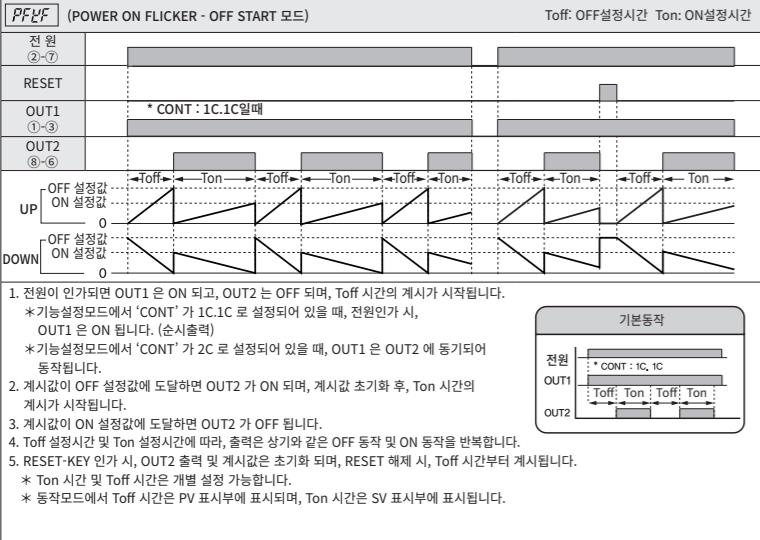
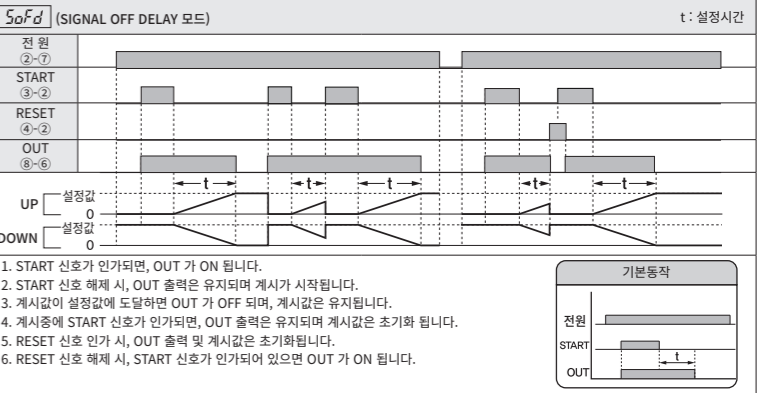
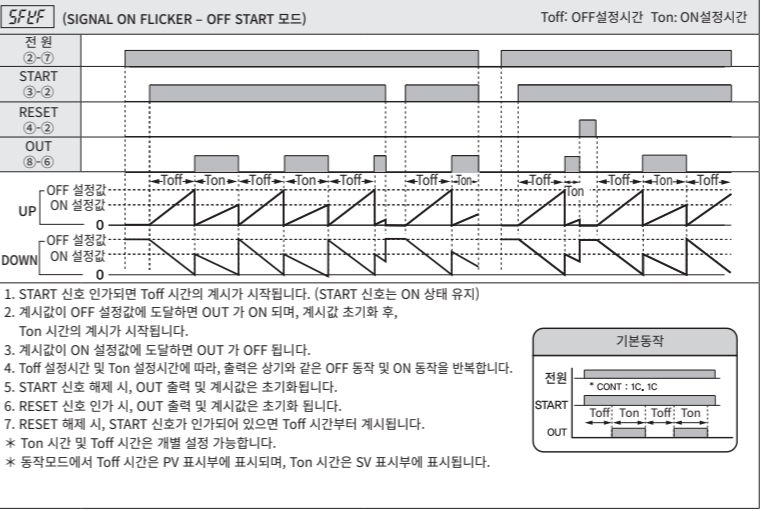
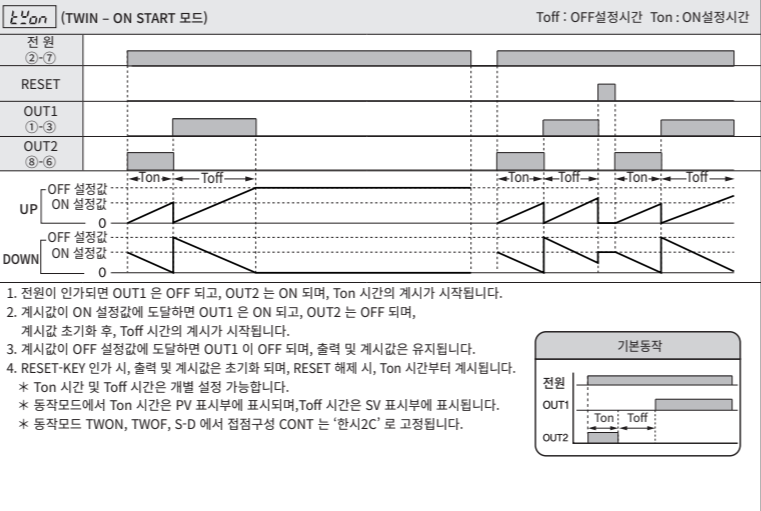
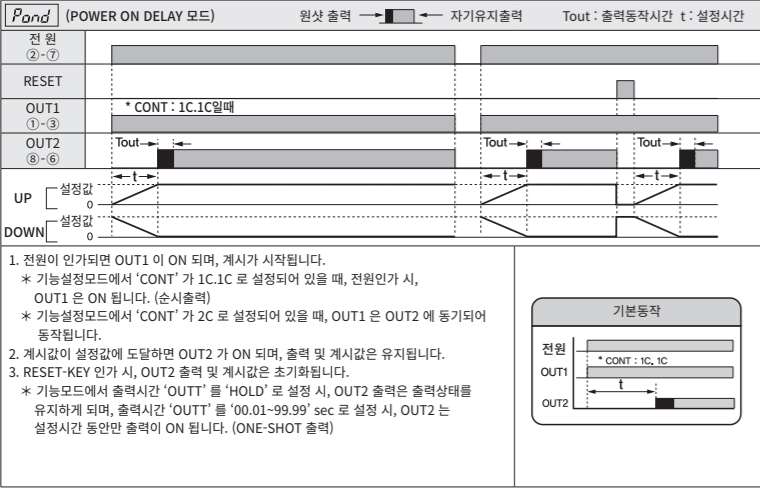
■ 브라켓치수



[단위:mm]

동작모드

■LT4 동작모드 (Power on start)



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

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.

HANYOUNGNEX CO.,LTD
28, Gilpa-ro 71beon-gil,
Micheul-1-gu, Incheon, Korea
TEL : +82-32-876-4697
http://www.hanyoungnux.com

MD1101KE210113

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 0.5A).
 - 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.
 - 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

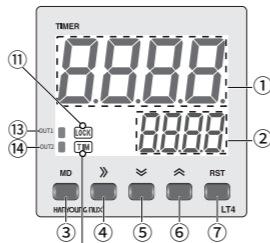
Model	LT4	LT4S
Power voltage	24 ~ 240 V a.c. 50/60 Hz or 24 ~ 240 V d.c. (dual usage)	
Voltage fluctuation rate	± 10 % of power voltage	
Power consumption	Max. 4 VA (24 ~ 240 V a.c. 50/60 Hz) Max. 1.6 W (24 ~ 240 V d.c.)	Max. 4.5 VA (24 ~ 240 V a.c. 50/60 Hz) Max. 2 W (24 ~ 240 V d.c.)
Display	Wide viewing 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	START, INHIBIT, RESET
Input method	-	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.
Minimum input time	-	START, INHIBIT, RESET min. input signal width 1ms / 20ms selection
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/s (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

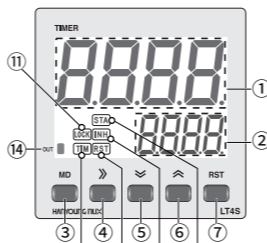
Parameter	Time range			Remarks
	UP	DOWN	Decimal	
0001	0001	0.01sec ~ 9.999sec	0.01sec ~ 9.999sec	Time range Decimal, Sexagesimal (same)
0015	0015	0.01sec ~ 99.99sec	0.01sec ~ 59.99sec	
015	015	0.1sec ~ 999.9sec	0.1sec ~ 9m 59.9sec	
015	015	1sec ~ 9999sec	1sec ~ 59min 59sec	
01h	01h	0.1min ~ 999.9min	0.1min ~ 9hour 59.9min	Time range Decimal, Sexagesimal (same)
01h	01h	1min ~ 9999min	1min ~ 99hour 59min	
01H	01H	0.1hour ~ 999.9hour	0.1hour ~ 999.9hour	Time range Decimal, Sexagesimal (same)
01H	01H	1hour ~ 9999hour	1hour ~ 9999hour	

Part name and functions

LT4



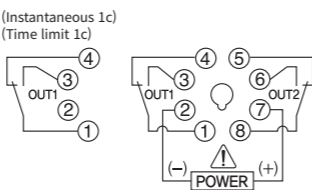
LT4S



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

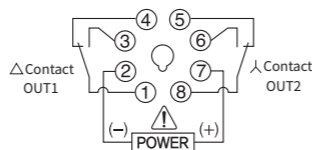
Connection diagrams

LT4



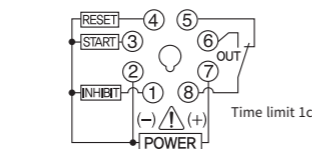
* When you set CONT to 1c. 1c in function mode, OUT1 operates as instantaneous output.

LT4(STAR-DELTA)



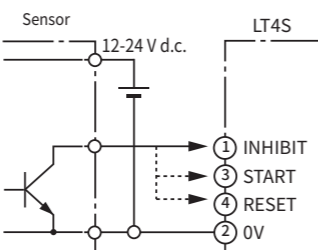
* When you set a-nd to S-D in function setting mode, OUT1 operates as Δ output, and OUT2 operates as λ output.

LT4S

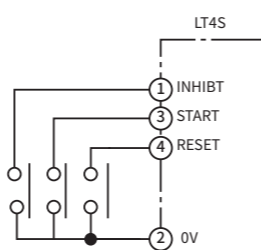


Input connection

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



● Contact input

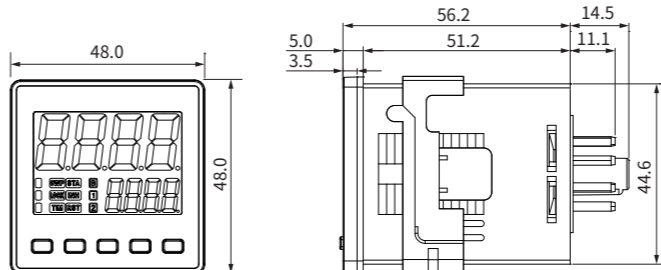


Function setting mode

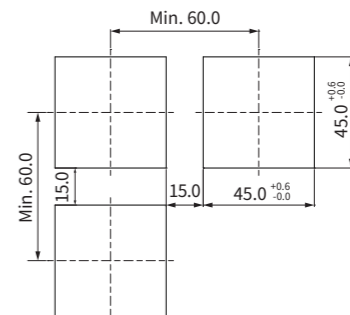
Setting item	LCD display	Settings	Default																							
Operation mode selection		<ul style="list-style-type: none"> Selects LT4 operation mode (7 operation modes). <p>$Pond \rightarrow PPFK \rightarrow PPFN \rightarrow PInt \rightarrow tYon$ $S-d \rightarrow tYof$</p>	<table border="1"> <thead> <tr> <th colspan="2">LT4 operation mode configuration table</th> </tr> </thead> <tbody> <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> </tbody> </table>	LT4 operation mode configuration table		POND	POWER ON DELAY	PFKF	POWER ON FLICKER - OFF START	PFKN	POWER ON FLICKER - ON START	PINT	POWER ON INTERVAL	TWON	TWIN - ON START	TWOF	TWIN - OFF START	S-D	STAR - DELTA	<i>Pond</i>						
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Operation mode selection		<ul style="list-style-type: none"> Selects LT4S operation mode (10 operation modes). <p>$Sond \rightarrow SFKF \rightarrow SInt \rightarrow SnFn \rightarrow SnFF$ $Sodr \rightarrow SInt \leftarrow SFN \leftarrow Sond \leftarrow SoFd$</p>	<table border="1"> <thead> <tr> <th colspan="2">LT4S operation mode configuration table</th> </tr> </thead> <tbody> <tr> <td>SOND</td> <td>SIGNAL ON DELAY</td> </tr> <tr> <td>SFKF</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> </tbody> </table>	LT4S operation mode configuration table		SOND	SIGNAL ON DELAY	SFKF	SIGNAL ON FLICKER - OFF START	SINT	SIGNAL ON INTERVAL	SNFN	SIGNAL ON/OFF DELAY - ON START	SNFF	SIGNAL ON/OFF DELAY - OFF START	SOFD	SIGNAL OFF DELAY	S.OND	SIGNAL TRIGGER ON DELAY	S.FKN	SIGNAL TRIGGER ON FLICKER - ON START	S.INT	SIGNAL TRIGGER ON INTERVAL	S.ODR	SIGNAL TRIGGER ON DELAY - RESET	<i>Sond</i>
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S.ODR	SIGNAL TRIGGER ON DELAY - RESET																									
Output time setting		<ul style="list-style-type: none"> 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). <p>$Hold \rightarrow 9999$ output hold 99.99 sec</p>	<i>Hold</i>																							
Numeral system selection		<ul style="list-style-type: none"> Selects the numeral system of time range. Consists of decimal and sexagesimal systems. <p>$10 \rightarrow 60$ decimal sexagesimal</p>	<i>60</i>																							
Addition/ subtraction selection		<ul style="list-style-type: none"> 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. <p>$UP \rightarrow dn$ addition subtraction</p>	<i>UP</i>																							
PV time range selection		<ul style="list-style-type: none"> 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). <p>• UP mode $0001 \rightarrow 0015 \rightarrow 015 \rightarrow 015 \rightarrow 01h \rightarrow 01h \rightarrow 01H \rightarrow 01H$ 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</p> <p>• DOWN mode $d001 \rightarrow d015 \rightarrow d15 \rightarrow d15 \rightarrow d1h \rightarrow d1h \rightarrow d1H \rightarrow d1H$ 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</p>	<i>0015</i>																							
SV time range selection		<ul style="list-style-type: none"> Selects SV operating time and and SV set value time range (see time range of each parameter). <p>• UP mode $0001 \rightarrow 0015 \rightarrow 015 \rightarrow 015 \rightarrow 01h \rightarrow 01h \rightarrow 01H \rightarrow 01H$ 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</p> <p>• DOWN mode $d001 \rightarrow d015 \rightarrow d15 \rightarrow d15 \rightarrow d1h \rightarrow d1h \rightarrow d1H \rightarrow d1H$ 0.001 sec 0.01 sec 0.1 sec 1 sec 0.1 min 1 min 0.1 hour 1 hour</p>	<i>0015</i>																							
Contact configuration setting		<ul style="list-style-type: none"> Displayed only on LT4. 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 limit2c". <p>$1c.1c \rightarrow 2c$ Instantaneous 1c Time limit 2c + Time limit 1c</p>	<i>1c.1c</i>																							
Minimum input time selection		<ul style="list-style-type: none"> Displayed only on LT4S. Selects START / INHIBIT / RESET minimum input time of input signal. Minimum input time consists of 1ms and 20ms. <p>$1ms \rightarrow 20ms$ 1 ms 20 ms</p>	<i>20ms</i>																							
Lock		<ul style="list-style-type: none"> 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. <p>$LoFF \rightarrow Lon \rightarrow LSet \rightarrow LrSt$ Lock off Lock on Lock Set Key Lock Reset Key</p>	<i>LoFF</i>																							

Dimensions and panel cutout

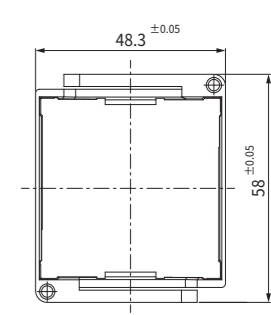
Dimensions



Panel cutout



Bracket



[Unit :mm]

Operation modes

LT4 operation modes (Power on start)

P_{ond} (POWER ON DELAY mode) One-shot output Self-hold output Tout: output operating time t: set time

- 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.
- When the time value reaches the set value OUT2 turns ON, output and time value are held.
- 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).

Basic operation

P_{FF}F (POWER ON FLICKER - OFF START mode) Toff: OFF set time Ton: ON set time

- 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.
- When the time value reaches the OFF set value OUT2 turns ON, and after time value initialization, Ton time timing starts.
- OUT2 turns OFF when time value reaches ON set value.
- Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations.
- When RESET-KEY is applied, OUT2 output and time value are initialized.
 - * 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.

Basic operation

P_{FF}n (POWER ON FLICKER - ON START mode) Toff: OFF set time Ton: ON set time

- 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.
- When the time value reaches the ON set value, OUT2 turns OFF and Toff time timing starts after time value initialization.
- OUT2 turns ON when time value reaches OFF set value.
- Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations as above.
- When RESET-KEY is applied, OUT2 output and time value are initialized.
 - * 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.

Basic operation

P_{In}t (POWER ON INTERVAL mode) t: set time

- 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.
- When time value reaches set value, OUT2 turns OFF, time value is held.
- When RESET-KEY is applied, OUT2 output and time value are initialized.

Basic operation

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

- When power is applied OUT1 turns OFF, OUT2 turns ON, Ton time timing starts.
- When the time value reaches the ON set value OUT1 turns ON, OUT2 turns OFF, and Toff time timing starts after time value initialization.
- When the time value reaches the OFF set value OUT1 turns OFF, output and time value are held.
- When RESET-KEY is applied, output, time value are initialized.
 - * 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'

Basic operation

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

- When power is applied OUT1 and OUT2 turn OFF, Toff time timing starts.
- When the time value reaches the OFF set value OUT1 and OUT2 turn ON, and after time value initialization, Ton time timing starts.
- When the time value reaches the ON set value OUT1 turns ON, output and time value are held.
- 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, Toff time is displayed on the PV display, and Ton time is displayed on SV display.
 - * In operation modes TWON, TWOF, S-D, the contact configuration CONT is fixed as 'Time limit 2c'

Basic operation

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

- When power is applied OUT1 turns OFF, OUT2 turns ON, Ton time timing starts.
- When the time value reaches the ON set value OUT2 turns OFF, and Toff time timing starts after time value initialization.
- When the time value reaches the OFF set value OUT1 turns ON, output and time value are held.
- 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, the Ton time is displayed on the PV display, and the Toff time is displayed on 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 'Λ' output.
 - * Toff set time is the 'Δ - Λ' operation switching time.

Basic operation

LT4S operation modes (Signal on start)

S_{ond} (SIGNAL ON DELAY mode) One-shot output Self-hold output Tout: output operating time t: set time

- When START signal is applied, timing starts (START signal holds ON status).
- When the time value reaches the set value OUT turns ON, output and time value are held.
- When START signal is cancelled, OUT output, time value are initialized.
- When RESET signal is applied, OUT output, time value are initialized.
- 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).

Basic operation

S_{FF}F (SIGNAL ON FLICKER - OFF START mode) Toff: OFF set time Ton: ON set time

- When START signal is applied, Toff time timing starts (START signal holds ON status)
- When the time value reaches the OFF set value OUT turns ON, and Ton time timing starts after time value initialization.
- When the time value reaches the ON set value OUT turns OFF.
- Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations.
- When START signal is cancelled, OUT output, time value are initialized.
- When RESET signal is applied, OUT output and time value are initialized.
- 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, Toff time is displayed on the PV display, and Ton time is displayed on SV display.

Basic operation

S_{In}t (SIGNAL ON INTERVAL mode) t: set time

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

Basic operation

S_nF_n (SIGNAL ON/OFF DELAY - ON START mode) Toff: OFF set time Ton: ON set time

- When START signal is applied OUT turns ON, Ton time timing starts. (OUT is ON during Ton time)
- When the time value reaches the ON set value OUT turns OFF, the time value is held.
- When START signal is cancelled, OUT turns ON, Toff time timing starts. (OUT is ON during Toff time)
- When the time value reaches the OFF set value OUT turns OFF, the time value is held.
- If START signal is cancelled during ON time timing, OUT holds ON status, time value is initialized, Toff time is displayed.
- If START signal is applied during OFF time timing, OUT holds ON status, time value is initialized, Ton time is shown.
- When RESET signal is applied, OUT output and time value are initialized.
- 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, the Ton time is displayed on the PV display, and the Toff time is displayed on the SV display.

Basic operation

S_nFF (SIGNAL ON/OFF DELAY - OFF START mode) Toff: OFF set time Ton: ON set time

- When START signal is applied Ton time timing starts.
- When the time value reaches the ON set value OUT turns ON, time value is held.
- When START signal is cancelled, OUT holds ON output status, Toff time timing starts.
- When the time value reaches the OFF set value OUT turns OFF, time value is held.
- If START signal is cancelled during ON time timing, OUT turns ON, time value is initialized, Toff time is displayed.
- If START signal is applied during OFF time timing, OUT turns OFF, time value is initialized, Ton time is displayed.
- When RESET signal is applied, OUT output and time value are initialized.
- 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 on the PV display, and the Toff time is displayed on the SV display.

Basic operation

S_oF_d (SIGNAL OFF DELAY mode) t: set time

- When START signal is applied, OUT turns ON.
- When START signal is cancelled, OUT output is held, timing starts.
- When the time value reaches the set value OUT turns OFF, time value is held.
- If START signal is applied during timing, OUT output is held, time value is initialized.
- When RESET signal is applied, OUT output, time value are initialized.
- When RESET signal is cancelled, if START signal is applied, OUT turns ON.

Basic operation

S_{ond} (SIGNAL TRIGGER ON DELAY mode) One-shot output Self-hold output Tout: output operating time t: set time

- When START signal is applied, timing starts.
- When the time value reaches the set value OUT turns ON, output and time value are held.
- Even if the START signal is applied repeatedly, only the first START signal is used.
- 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)

Basic operation

S_{FF}n (SIGNAL TRIGGER FLICKER - ON START mode) Toff: OFF set time Ton: ON set time

- When START signal is applied OUT turns ON, Ton time timing starts.
- When the time value reaches the ON set value OUT turns OFF, and Toff time timing starts after time value initialization.
- When the time value reaches the OFF set value OUT turns ON.
- Depending on the Ton set time and Toff set time, the output repeats the above ON and OFF operations as above. Even if the START signal is applied repeatedly, only the first START signal is used.
- When RESET signal is applied, OUT output and time value are initialized.
- * 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.

Basic operation

S_{In}t (SIGNAL TRIGGER INTERVAL mode) t: set time

- When START signal is applied OUT turns ON, and timing starts
- When the time value reaches the set value OUT turns OFF, time value is held.
- Even if the START signal is applied repeatedly, only the first START signal is used.
- After reaching the set time, when START signal is applied OUT turns ON and timing starts after time value initialization.
- When RESET signal is applied, OUT output, time value are initialized.

Basic operation

S_{odr} (SIGNAL TRIGGER ON DELAY - RESET mode) One-shot output Self-hold output Tout: output operating time t: set time

- When START signal is applied, timing starts.
- When the time value reaches the set value OUT turns ON, output and time value are held.
- If START signal is re-applied during timing, timing starts after time value initialization.
- 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).

Basic operation

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