# LCD Counter / Timer

# **LC** 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

#### 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

 Matrix
 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

#### A 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.

#### A WARNING

Any use of the product other than those ecified by the manufacturer Any use of the product other than those ecilied 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 (use raing: 250 × 0.05 Å).
 Please supply the rated power voltage, in order to prevent product breakdowns or malfunctions.
 To prevent electric shocks and malfunctions, do not supply the nower unit the wirking is completed

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.

#### Model code

Never disassemble, modity, may cause abnormal opera Please disassemble the Failure to do so may res operations or maifuncti Please use this product. is a risk of electric shock	, process, ations, el product sult in el ions. after ins k.	, improve lectric sho t after tu lectric sh stalling it	or repair ocks or fir rning Oi ocks, p to a par	this pro res. FF the pi roduct a nel, beca	duct, as i ower. bnorma ause the	al erre	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 complication with IECG0947 1 or IECG0947. 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, is 1 year, including its accessories, under The warranty period of this product, is 1 year, including its accessories, under The preparation period of the contact output is required during power supply. Tused as a signal to external interlock circuit, etc. please use a delay relay together
Model			Co	de			Content
LC	□ -						LCD Counter / Timer
Dimensions	3						96(W) × 48(H) mm
	4						48(W) × 48(H) mm
	6						72(W) × 36(H) mm
	7						72(W) × 72(H) mm
Settings		Р					Preset Counter / Timer
Display digits 4			4 digits (9999) %LC4 only				
		6				6 digits (999999)	
Control output 1 2					1-stage output		
					2-stage output		
Sub output C			N		No sub output		
			С		RS485 (MODBUS-RTU)		
Power voltage						A	100 - 240 V a.c. 50/60 Hz
						D	24 - 48 V a.c. 50/60 Hz or 24 - 48 V d.c.
	Never disassenike inclusy present disassenike inclusy preserved in the second second disassenike in the second disassenike	Never disassemble, incurry process may cause abnowline operations, e Please disassemble the product a risk of electric shock.	Never dussembler, flowing operations, electric sh Please disassemble the product after tu Please disassemble the product after tu Please use this product after installing it is a risk of electric shock. Model           Model	Never dussesmente, motaris, muces, improve or span nor cause abnomal operations, electrici soldos offi Plesse disassemble the product after turning O apprations or malfunctions. Plesse use this product after installing it to a part is a risk of electric shock. Model	Never disassemble, mooding, process, improved repair using pro- may cause abnowning operations, electric shocks of rifes. Please disassemble the product after turning OFF the particle of a some result in electric shocks, product a operations or malfunctions. Please use this product after installing it to a panel, becris a risk of electric shock.	Never disassemble, moduly, process, improve ungan una proute, as any cause abnormal operations, electric shocks or first. Please disassemble the product after turning OFF the power. Please use this product after furning OFF the power. Please use this product after furning of the power. Please use this product after furning of the power voltage	Model     Code       Display digits     4       Control output     1       Sub output     1       Power voltage     A

### Specifications

Model		Model	LC3	LC4	LC6	LC7				
Power voltage		er voltage	100 - 240 V a.c. 50/60 Hz, 24 - 48 V a.c. 50/60 Hz or 24 - 48 V d.c. (Voltage fluctuation rate: $\pm 10\%$							
Power AC consumption DC			2-stage setting type: max. 12 VA     1-stage setting type: max. 11 VA							
cons	umptio	n DC	• 2-sta	ge setting type: max. 6 W	<ul> <li>1-stage setting type: m</li> </ul>	ax. 5 W				
Character height		cter height	Counting unit (14.5 mm), Setting unit (10 mm)	<ul> <li>6-digit :</li> <li>Counting unit (10.8 mm),</li> <li>Setting unit (8 mm)</li> <li>4-digit :</li> <li>Counting unit (14 mm),</li> <li>Setting unit (8.5 mm)</li> </ul>	Counting unit (10.5 mm), Setting unit (6.7 mm)	Counting unit (17.2 mm), Setting unit (12.5 mm)				
1	Мах соц	unting speed	1 cps / 30 cps / 1 Kcps / 10 Kcps							
Pow	ver outa	ge compensation	10 years (using non-volatile memory)							
Input			<ul> <li>Selection of input method by external switch (voltage input / non-voltage input)</li> <li>Counter: composed of CP1, CP2, RESET, BATCH - RESET</li> <li>Timer: composed of START, NHIBIT, RESET</li> <li>Voltage input: HIGH level (5 - 30 v d.c.), LOW level (0 - 2 v d.c.), input resistance (about 4.5 KΩ)</li> <li>Non-voltage input: impedance during short-circuit (max. 1 KΩ), residual voltage during short-circuit (max. 2 v d.c.)</li> </ul>							
Mir	nimum i	nput signal time		1 ms / 20 ms (START, I	NHIBIT, RESET inputs)					
External power supply				Max. 12 V o	l.c. 100 mA					
	ONE S	HOT output	0.01 ~ 99.99 sec							
	Ht	1-stage	OUT (SF	PDT, 1c)	OUT (SPST, 1a)	OUT (SPDT, 1c)				
H	Itpu	2-stage	OUT1 (SPST	OUT1 (SPST, 1a), OUT2 (SPDT, 1c) * OUT2 of LC6-P62C: SPST configuration						
outpi	89	capacity	SPDT: NC (250 V a.c. 2 A), NO (250 V a.c. 5 A), resistive load     SPST: 250 V a.c. 5 A, resistive load							
rol c		1-stage	NPN 2 circuits (OUT, BAT.O), * LC4-P61C / P41C models NPN 1 circuit configura							
Cont	action	2-stage	NPN 2 circuits (OUT1,OUT2)			NPN 2 circuits (OUT1,OUT2				
-	100	capacity								
	Timer o	peration error	Power start: max. ±0.01 % ±0.05 sec Reset start: max. ±0.01 % ±0.03 sec							
protocol			Modbus RTU							
		method	RS485 (2-wire half-duplex)							
u o	S synchronism		Asynchronous							
icat	offe	speed	2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps							
뒫	ene	cuive distance	Max. within 800 m 31 (address 1 ~ 127)							
L E	rospo	nso waiting time	5 ~ 90 mc							
Ŭ	тезро	START BIT	1 bit (fixed)							
		STOP BIT	1 bit (fixed)							
		DATA BIT		8	8 bit					
		PARITY BIT		None / O	dd / Even					
l li	nsulatio	on resistance	Min. 100 MΩ (500 V d.c.) conductive part terminal - unfilled metal							
Dielectric strength			2000 V a.c. 60 Hz for 1 minute (different live part terminals)							
Noise immunity			Square-wave noise by noise simulator ±2000 V (pulse width 1 μs)							
Shock resistance			300 m/s <sup>2</sup> (30G), 3 times each in X, Y and Z direction							
Vibration durability			10 - 55 Hz, single amplitude 0.5 mm, 3-axis each direction, 2 h							
Re	ifo	electrical		Min. 50,0	000 times					
	lie	of protection		Min. 10,000,000 times						
	Storage	temperature	-25 ~ 65 °C (without condensation)							
Ambi	ent tem	perature & humidity	-10 ~ 55 °C. 35 ~ 85 % RH (without condensation)							
Weight(g)		eight(g)	196	140	143	222				

# Maximum counting speed

HARYOURG NUX

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Liss Caron Tools
 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 homomalities 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 whore vibrations and impacts are not applied directly.
 Please ende product in places whore vibrations and may as a not applied directly.
 Please ende the product model is a not applied directly.
 Please ende therearest

(use neutral detergents). Please avoid places where large inductive interference, static electricity, magnetic

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 then once filter to a grounded panel, etc. and make the wiring of noise filter output and power supply terminal as short as possible.
 Do not wire anything to unused terminals.
 Delases wire correctly after checking the noise in the terminale

The maximum counting speed is the maximum response speed when you input the duty ratio (ON / OFF ratio) of the count input signal as 1: 1. <sup>(1)</sup> Even when the input signal is below the maximum counting speed, it may not be counted if the ON and OFF times are less than the specified minimum signal width.

LC4

LC7



# Part names and functions







(auto save function set value during termination) : used to switch the SV display in operation mode (1-stage/2-stage set values/batch set value) (4) SHIFT KEY

: enters set value change mode and shifts the set value digits : enters communication setting mode in function mode 5 DOWN KEY:

 reduces set value in function mode and set value change mode
 (BATCH setting indicator:
 illuminates when switching SV display to BATCH set value increases set value in function mode and set value change mode (8) SV1 setting indicator:

The set of the se

illuminates when switching SV display to 2-stage set value is applied in timer operation mode

# Operation modes



be in Batch timer Batch output activated when the batch count value reaches batch set value, after counting the time-ups of the timer. count value can be initialized by pressing front reset button in batch count value display mode or by applying a signal to batch reset terminal

Voltag

NPN PNF

#### Input/output connection

Input logic selection (voltage / non-voltage)



#### Input connection







#### When voltage input (PNP) is selected



PNP voltage input PNP open collector input





oF5Ł 000000

% The minimum signal time refers to ON and OFF times.

(8)(9)(10)(11)(12)(13)

TÕDDE

8 9 10 11 12 13

(4)

signal is applied in timer operation mode (i) **RESET input indicator:** illuminates when external RESET signal is applied

operation mode is set, flashes during timing operation
 BATCH output indicator: illuminates during BATCH output operation
 OUT1 output indicator: illuminates during OUT1 output operation

(6) OUT2 output indicator: illuminates during OUT2 output operation

when switching SV display to 1-stage set value

(9) INHIBIT input indicator: illuminates when external INHIBIT

1 LOCK set indicator: illuminates when LOCK is set Communication write inhibit indicator: illuminates when communication write inhibit is set
 Timer setting indicator: illuminates when TIM/TTIM/BTIM

# Counter function modes

Display	Name	Settings	Display condition	Initial value	
ñadE Ent	Operation mode	$\begin{array}{c} \Box n b \longleftrightarrow D a b \\ r b \\ reset \\ a b \\ counter \\ timer \\ timer \\ the operation mode setting phase, you can set \\ the communication function when inputting \\ \end{array}$	Counter	Ent	
l-ñd U-8	Input mode	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Counter	U-R	
0-ñd F	Output mode	$ \begin{array}{c} & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ $	Counter	F	
0000		<ul> <li>Sets OUT2 or OUT output time</li> <li>You cannot set to 00.00 in some output modes</li> </ul>	2-stage setting		
0000	time	0000 ~ 9999 00.00 99.99	1-stage setting	00,00	
olit i Kold	OUT1 output time	• Sets OUT1 output time HoLd ~ 9999 HOLD 99.99	2-stage setting	Hold	
[PS] 30	Counting speed	Sets max counting speed (when duty ratio is 1:1)     I →→ 3D →→ I2 →→ ID2     1 30 1K 10K	Counter	30	
Pdot 000000	Pre-scale decimal point	Up to 5 decimal places can be set     D00000	Counter	000,000	
Pr-E5 00 (000	Pre-scale	0,0001 / ~ 999999	Counter	00 (000)	
dot 000000	Decimal point	** Decimal point display cannot be more than prescale one         000000000000000000000000         0000000         000000         000000         <	Counter	000000	
- 522 2075	Reset time	i⊼5 ↔ 20⊼5 1 ms 20 ms	Counter	2075	
Por SRut	Power outage memory	SAVE (saves count value), CLEAR (resets count value)     SR <sub>J</sub> E ↔ ELEr     SAVE CLEAR	Counter	ELEr	
5 /G	Show input logic	•Shows NPN/PNP input selection status of side dip swtch $n^{P}n \leftrightarrow Pn^{P}$ NPN PNP	Counter	nPn	
Lo[2 Lo <sup>FF</sup>	Key lock	$L_OFF \leftrightarrow L_On \leftrightarrow LSEL \leftrightarrow LrSE$ LOCK LOCK LOCK LOCK OFF ON SET RESET	Counter	L,oFF	
		Available only in LIP mode, it counts from the set offset value			

## Dimensions and panel cutouts

000000

Offset

\* It cannot be used with the twin time

999999

000000 ~ 999999

LC3 Panel cutout Dimensions Min. 121.0 96.0 00 , **z** LC4 Panel cutout Dimensions 00000 LC6 Panel cutout Min. 96.5 Dimensions



### LC7

. . . . .

100 C

I C3-P62N

LC3-P62C

Output connection Dimensions Example of contactless (transistor) output Since internal circuit and contactless output are isolated, please use same as GND. For the contactless output, select the power supply for the load and the load, in order not to exceed the maximum of 30 V 100 mA.



input (PNP) 1. After turning off the power,

check the NPN / PNP display on case top and operate the transfer switch. 2. You can check the input logic setting status in the function setting mode.

#### Example of contact output

Because the contact capacity is 250 V a.c. NO 5 A, NC 2 A (load resistance) make sure that the transient current doe not flow at the contact. The wiring follows the normal









• LC7-P62C



• LC6-P62C

LC6-P62N











# Timer function modes

Display	Name	Settings	Display condition	Initial value
nodE Ł in	Operation mode	* In the operation mode setting phase, you can set the communication function when inputting	Counter/ Timer	[[nb]
558L 60	Decimal/ sexagesimal	10 ↔ 50 10 60	Timer/ TwinTimer	50
E 17E UD 15	Time range	$\begin{array}{c} U \\ U $	Timer/ TwinTimer	<u>UD 15</u>
o-ād Pond mode	$\begin{array}{l} P_{ond} \longleftrightarrow \text{Sond} \longleftrightarrow \text{SoFd} \longleftrightarrow \text{S} \text{ int} \longleftrightarrow \text{SRdd} \longleftrightarrow \text{Sond} \longleftrightarrow \\ \text{POND} & \text{SOND} & \text{SOFD} & \text{SINT} & \text{SADD} & \text{S.OND} \\ \text{Son} & i \longleftrightarrow \text{S} & int \longleftrightarrow \text{SFL}^{t} \leftrightarrow \text{SF}^{t} \cdot r \longleftrightarrow \text{SF}^{t} \cdot P \longleftrightarrow \text{SF}^{t} \cdot 9 \\ \text{S.ON1} & \text{S.INT} & \text{S.FLK} & \text{S.F-R} & \text{S.F-P} & \text{S.F-Q} \end{array}$	Timer	Pond	
		Pand → PaFd → PaFt → Sand → SaFd POND POFD POFT S.OND S.OFD	TwinTimer	
olitt Kold	Output time	•Not displayed in some twin timer operation modes HoLd ~ 9999 HOLD 99.99	Timer	Hold
10-5	Minimum input signal time	Select input terminal min input time (START,INHIBIT,RESET)     I∂5 → 20∂5     1 ms 20 ms	Timer/ TwinTimer	2075
Pour 5865	Power outage memory	SAVE (save time value), CLEAR (reset time value)     SR <sub>J</sub> E → ELEr     SAVE CLEAR	Timer	ELEr
5 /6 	Input logic display	nPn ↔PnP NPN PNP	Timer/ TwinTimer	nPn
Lofy	Key lock	$L_{O}FF \leftrightarrow L_{O}n \leftrightarrow LSEE \leftrightarrow L_{T}SE$ LOCK LOCK LOCK LOCK OFF ON SET RESET	Timer/ TwinTimer	LoFF
oF52 000000	Offset	Only in UP mode, display from set offset value     DIDDDD ~ 999999 Note) Can not be used     000000 999999 with twin timer.	Timer	000000

#### Time ranges

- 4

- 13

- 1

000000

[Unit:mm]

Counter

0					
tion display	4-digit ti	me range	6-digit time range		
DOWN	Decimal notation	Sexagesimal notation	Decimal notation	Sexagesimal notation	
d0 /S	99.99 s	59.99 s	9999.99 s	59 m 59.99 s	
d IS	999.9 s	9 m 59.9 s	99999.9 s	9 h 59 m 59.9 s	
d 15	9999 s	59 m 59 s	999999 s	99 h 59 m 59 s	
d lõ	9999 m	99 h 59 m	999999 m	9999 h 59 m	
d IH	9999 h	99 d 23 h	999999 h	9999 d 23 h	
	tion display DOWN d[] 15 d 15 d 15 d 15 d 17 d 14	tion display         4-digit ti           DOWN         Decimal notation           digit 15         99.99 s           di 15         999.9 s           di 15         9999 n           di 14         9999 h	Ition display         4-digit time range           DOWN         Decimal notation         Sexagesimal notation           digit 15         99.99 s         59.99 s           dif 15         999.9 s         9 m 59.9 s           dif 15         9999 s         59 m 59.s           dif 15         9999 s         59 m 59 s           dif 15         9999 s         59 m 59 s           dif 15         9999 m         99 h 59 m           dif 16         9999 m         99 h 59 m           diff         9999 h         99 d 23 h	Own         A-digit time range         6-digit time           DOWN         Decimal notation         Sexagesimal notation         Decimal notation           digit 15         99.99 s         59.99 s         9999.99 s           dif 15         999.9 s         9 m 59.9 s         99999.9 s           dif 15         9999 s         59 m 59.9 s         99999.9 s           dif 15         9999 s         59 m 59 s         999999 s           dif 15         9999 m         99 h 59 m         999999 m           dif 16         9999 m         99 h 59 m         999999 m           diff         9999 h         99 d 23 h         999999 h	





LC4-P62C/P42C





LC7-P62N



IC4-P61N/P41N



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