

디지털 카운터 & 타이머

GE series 사용설명서

(주)한영닉스의 제품을 구입하여 주셔서 대단히 감사드립니다. 본 제품을 사용하기 전에 사용설명서를 잘 읽은 후에 올바르게 사용해 주십시오. 또한, 사용설명서는 언제든지 볼 수 있는 곳에 반드시 보관해 주십시오.



(주)한영닉스

본사/공장 인천광역시 남구 주안동 1381-3 TEL : (032)867-0941 FAX : (032)868-5899 고객지원센터 TEL : 1577-1047 http://www.hynux.com



PT. HANYOUNG ELECTRONIC INDONESIA

Jl. cempaka blok F16, No.02 Delta Silicon II Cikarang Bekasi Indonesia TEL : 62-21-8911-8120~4 FAX : 62-21-8911-8126

안전상 주의사항

사용전에 안전에 관한 주의사항을 잘 읽어 주시고 올바르게 사용하여 주십시오.

위험

입·출력 단자는 감전의 위험이 있으니 신체 및 통전물이 절대로 접촉 되지 않도록 하십시오.

경고

- 본 제품의 고장이나 이상이 시스템에 중대한 사고로 이어질 우려가 있는 경우에는 외부에 적절한 보호회로를 설치하여 주십시오.
감전 방지 및 기기 고장 방지를 위하여 모든 배선이 종료될 때까지 전원을 투입하지 마십시오.
방폭구조가 아니므로 가연성, 폭발성 가스가 있는 장소에서는 사용하지 마십시오.

주의

- 사용설명서의 내용은 사전 통보 또는 예고 없이 변경될 수 있습니다.
부속성 가스(특히 유해가스, 암모니아 등), 가연성 가스가 발생하지 않는 장소에서 사용하십시오.
고도 2,000 m 이하의 장소에서 사용하십시오.
스위치나 차단기는 운전자가 조작이 용이하도록 가까운 거리에 설치하십시오.

형명구분

Table with columns for model name, code, and description. Includes details for GE series digital counter/timer models.

사양

Table with columns for model (GE4, GE6, GE3, GE7) and specifications for power supply, load capacity, accuracy, and environmental conditions.

각부의 기능 및 명칭

GE7

- 1. 카운터 표시부(RED FND) : 계수값(카운터), 시간 진행 값(타이머), 배치 계수값 및 설정 항목 표시
2. 설정 표시부(GREEN FND) : 설정값(카운터), 설정시간(타이머), 배치설정값, 순시출력설정
3. SET1, SET2(SET), BAT : 계수부와 설정부의 상태 표시
4. TIM (타이머) : 타이머 진행시 점멸, INHIBIT 입력이나 RESET으로 인해 정지시 점등 상태 유지
5. CNT (카운터) : 장치변경 모드에서 CNT / TTIM 설정시 표시됩니다.
6. OUT1, OUT2(OUT), BAT.O (출력 동작 표시)
7. LOCK : 키잠금(KEY LOCK) 동작표시, LOCK 설정시 점등.
8. 기능 설정 모드 진입 및 모드 변경 키, 설정값 변경시 SAVE 후 종료용으로도 사용됩니다.
9. 설정값 변경 진입 및 자리이동
10. UP 방향키
11. RESET 키 (SET,BAT)램프가 동시 표시시에는 RESET키가 작동하지 않습니다.
12. 배치와 운전 모드 1번, 2번 전환 키, BAT 램프가 커져면 배치 모드이며 운전은 계속됩니다.
13. Down 방향키
* TOTAL모드는 설정표시부와 SET1, SET2, BAT 램프가 없으며, OUT1, OUT2, BAT.O는 CP1, CP2, RST입력상태 확인 램프로 용도 변경됩니다. 1단 설정모드는 SET1, OUT1 램프가 없으며 SET2는 SET으로 OUT2는 OUT으로 표시됩니다.

카운터 모드 설정 방법

운전모드에서 KEY를 2초 이상 누르면 기능설정 모드로 진입합니다. 설정항목간 이동은 KEY를 2초 이상 누르면 이동합니다.

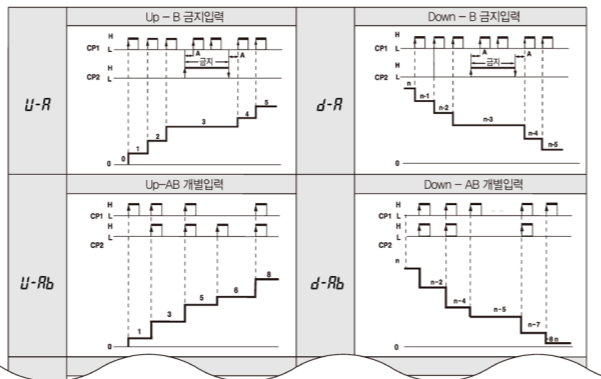
전원 ON

Flowchart for counter mode settings. Includes sections for '기능설정모드' (Function Setting Mode) and '운전모드' (Operation Mode) with various parameter settings like input mode, output mode, and timing.

- 타이머 카운터 누르면 저장하지 않고 운전모드로 복귀합니다. 60초 이상 키 입력이 없으면 운전모드로 복귀 합니다.
* 토탈(TOTAL)제품은 출력모드, OUT2 출력시간, OUT1 출력시간, BATCH 출력등의 설정 항목이 표시 되지 않습니다.
* 1단 설정 제품은 OUT1 출력 시간이 표시 되지 않습니다.
* BATCH 출력설정은 [NGNE] 하는 경우 설정기능과 표시기능이 제한 됩니다.

카운터 입력 동작

A는 최소신호폭 이상, B는 최소신호폭의 1/20상이 필요함.



* 엔코더(인크리멘탈 방식) 사용자 U-R, U-F 를 사용하여 주십시오.
주) 상기의 타이밍 또는 입력 논리가 'PMP' 모드로 설정되어 있는 경우에 대한 것입니다.

카운터 출력 동작

Timing diagrams for counter output operations. Includes sections for '출력 모드' (Output Mode) and 'COUNT UP 후의 동작' (Operation after COUNT UP) with waveforms for UP, DOWN, and UP/DOWN/A,B,C modes.

타이머 모드 설정 방법

운전모드에서 KEY를 2초 이상 누르면 기능설정 모드로 진입합니다. 설정항목간 이동은 KEY를 2초 이상 누르면 이동합니다.

전원 ON

Flowchart for timer mode settings. Includes sections for '기능설정모드' (Function Setting Mode) and '운전모드' (Operation Mode) with various parameter settings like input mode, output mode, and timing.

- * 토탈(제품)은 출력시간 항목과 BAT 설정항목이 없습니다.
* 1단 출력 모델은 트윈 타이머 기능을 지원하지 않습니다.

타이머 시간 레인지

Table showing timer range selection for UP and DOWN directions across different timer models (UP, d, u, U, UH).

* s : 초 m : 분 h : 시간 d : 하루

타이머 동작 모드

Table of timer operation modes including Power RUN, Signal START, Signal RUN, Interval, and Signal Addition for various models.

- CP1/INHIBIT 기능은 시간을 정지 시킵니다.
[S----]는 CP2(START)를 ON할 때 동작합니다.
[S---]는 CP2를 ON유지해야 동작되며 OFF하면 RESET됩니다.
[P---]는 전원 ON과 함께 동작합니다.
* POWER OFF시 잠정 보정하려면 [CLEAR]를 [SRu]로 설정하십시오. (전원 재투입시 기억된 값 표시)

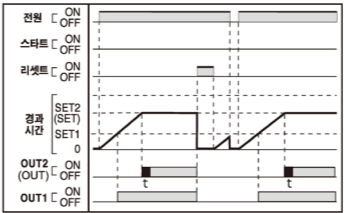
타이머 출력 동작 모드

- * 1단 설정형 출력은 OUT1입니다.
* INHIBIT(CP1)은 시간을 일시 정지합니다.

- [Pond] Power RUN / ON delay
* POWER ON 이면 RUN
* RESET 신호 인가시 지시값 초기화한 후 RUN

트윈타이머 출력 동작

- [Pond] Power RUN - ON delay
* POWER ON이던 RUN
* SET1 시간동안 OFF출력, SET2 시간동안 ON, 반복
* RESET ON 시 초기화 및 STOP



입력 결선방법

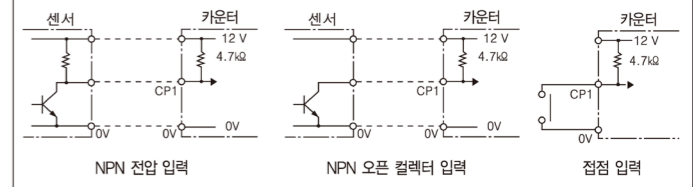
■ 입력 논리 선택

상단에 표시된 NPN/PNP 표시를 확인 후 전환 스위치를 조작합니다. * NPN/PNP오픈 콜렉터 입력을 받기위해 내부에 4.7 kΩ의 저항을 Pull Up/Pull Down 할 수 있도록 입력논리(NPN/PNP)전환 스위치가 내장 되어 있습니다. (출하시 NPN 설정)

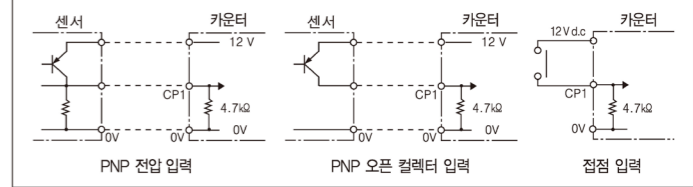
Table showing input connection methods for PNP and NPN settings, including input voltage and output current specifications.

■ 입력 결선방법

- 무전압 입력 (NPN)으로 선택 했을때



- 전압 입력 (PNP)으로 선택 했을때

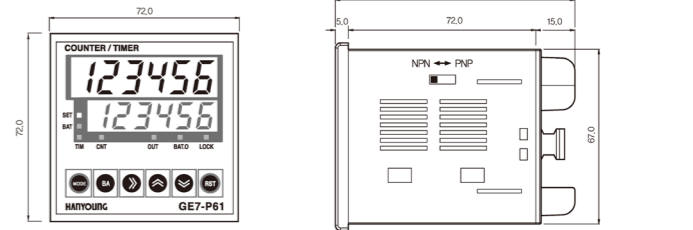


NPN ↔ PNP

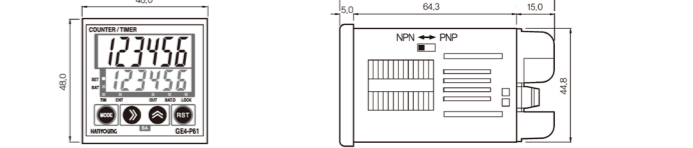
* 기능설정 모드에서 입력논리 설정상태를 확인해 볼 수 있습니다.
* 내부 임피던스는 4.7 kΩ 이며 NPN/PNP 선택에 의해 플립 또는 플다운으로 전환 됩니다. (입력의 접속 참조)
* 유정전 입력 카운터 사용 시 체터링을 방지하기 위해 기능 설정 모드에서 계수 속도를 1초는 30 cps로 설정하십시오.

외형 및 패널가공치수

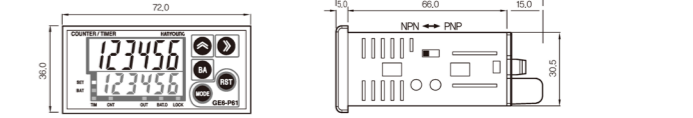
■ GE7



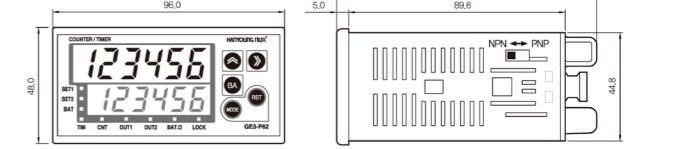
■ GE4



■ GE6



■ GE3



■ 패널가공치수

Table showing panel cutout dimensions (a1, a2, L1, L2) for GE7, GE4, GE6, and GE3 models.

상세한 사용설명서는 당사 홈페이지에서 다운로드하십시오. www.hynux.com

Digital counter & timer

GE series

INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG product. Please check whether the product is the exactly same as you ordered. Before using the product, please read this instruction manual carefully. Please keep this manual where you can view at any time

HANYOUNG CO., LTD
1381-3, Juan-Dong, Nam-Gu Incheon, Korea.
TEL : (82-32)876-4697 FAX : (82-32)876-4696
http://www.hynux.net

HANYOUNG NUX



HEAD OFFICE
INDONESIA FACTORY

PT. HANYOUNG ELECTRONIC INDONESIA
Jl. cempaka blok F16, No.02 Delta Silicon II
Cikarang Bekasi Indonesia
TEL : 62-21-8911-8120~4 FAX : 62-21-8911-8126

Safety information

Before using the product, please read the safety information thoroughly and use it properly.

⚠ DANGER

Do not touch or contact the input/output terminals because it may cause electric shock.

⚠ WARNING

- If there is a possibility of an accident caused by errors or malfunctions of this product, install external protection circuit to prevent the accident.
- To prevent electric shock or equipment failure, please do not turn on the power until completing wiring.
- Since this is not explosion-proof structure, please do not use in a place where combustible or explosive gas is around.

⚠ CAUTION

- The contents of the instruction manual are subjective to change without prior notice.
- Please use this product in a place where corrosive gas (such as harmful gas, ammonia, etc.) and flammable gas do not occur.
- Please use this product in a place where the elevation is below 2,000 m.
- Please install a switch or break near the operator to facilitate its operation.

Suffix code

Model	Code	Description
GE	□ □ □ □ □ □	Digital counter & timer
Appearance	3	96(W) x 48(H) mm
	4	48(W) x 48(H) mm
	6	72(W) x 36(H) mm
	7	72(W) x 72(H) mm
Type	P	Preset counter
	T	Total counter (Only for indication)
Displayable digit	4	4 digits (9999) * GE3 and GE7 are not selectable
	6	6 digits (999999)
Setting stage (excludes the total counter)	1	1 stage setting
	2	2 stage setting
Power supply voltage	A	100 - 240 V a.c 50 - 60 Hz
	D	24 - 60 V d.c / a.c 50 - 60 Hz

Specification

Model	GE4	GE6	GE3	GE7	
Power supply voltage	100 - 240 V a.c 50 - 60 Hz, 24 - 60 V d.c a.c (voltage fluctuation : ±10 %)				
Power consumption	Approx. 13.5 VA (100 - 240 V a.c), approx. 5 W (24 - 60 V d.c), Approx. 9 VA (24 - 60 V a.c)				
Character height(mm)	11 (computed), 8 (set value)	13 (computed), 10 (set value)			
Input counting speed	1 cps, 30 cps, 1 kcps, 10 kcps (ON/OFF ratio : 1:1, "H" level : 5 - 3 V d.c., "L" level : 0 - 2 V d.c.)				
Memory back-up	10 years (non-volatile memory)				
Input	CP1, CP2, RESET, BATCH RESET (excludes TOTAL) 4inputs [H] level 4 - 30 V d.c., [L] level 0 - 2 V d.c. Internal pull up/pull down resistance connection due to NPN/PNP setup				
Min input signal	Counter	External reset Min. input signal range : select among 0.1 ms, 1 ms, 20 ms			
	Timer	START, INHIBIT, RESET Min. input signal range : select either 1 ns, 20 ns			
External supplying power	12 V d.c 100 mA max				
ONE SHOT output	0.01 - 99.99 s [OUT1, OUT2][OUT]				
Control output	Contact	1st level	1c (OUT)	1a (OUT)	1c (OUT)
		2st level	1a (OUT1), 1c (OUT2)		
		capacity	a contact : 250 V a.c 3 A (resistive load), b contact : 250 V a.c 2 A		
Non-contact	1st level	NPN 2contacts (OUT, BAT.O)			
		2st level	NPN 2 contact (OUT1, OUT2)		
			capacity	Open collector, 30 V d.c., 100 mA max	
Timer action error	With power start : ±0.01 % ±0.05 sec max With reset start : ±0.005 % ±0.003 sec max				
Insulation resistance	100 MΩ min (500 V d.c) Between current-carrying terminals and exposed non-current-carrying metal parts.				
Dielectric strength	2000 V a.c 60 Hz for 1 min (different recharging terminal from each other)				
Noise resistance	Square wave by the noise simulator (1 μs pulse per 16 ns) ±2 V (Power supply terminal), ±500 V (Input terminal)				
Vibration resistance	10 - 55 Hz, peak amplitude 0.5 mm, 3 axis each direction for 2 hour				
Shock resistance	300 %, 3 axis each three times				
Relay life	Electrical	100 thousand times min (250 V a.c 2 A resistance load)			
	Mechanical	1 million times min			
Protection structure	IP65 (Front part only)				
Storage temperature	-20 °C ~ 65 °C				
Ambient temperature humidity	-10 °C ~ 55 °C, 35 % ~ 85 % RH				
Weight	133 g max	138 g max	203 g max	203 g max	

* If you want to input and output type, please contact HANYOUNG sales office

Part name and functions

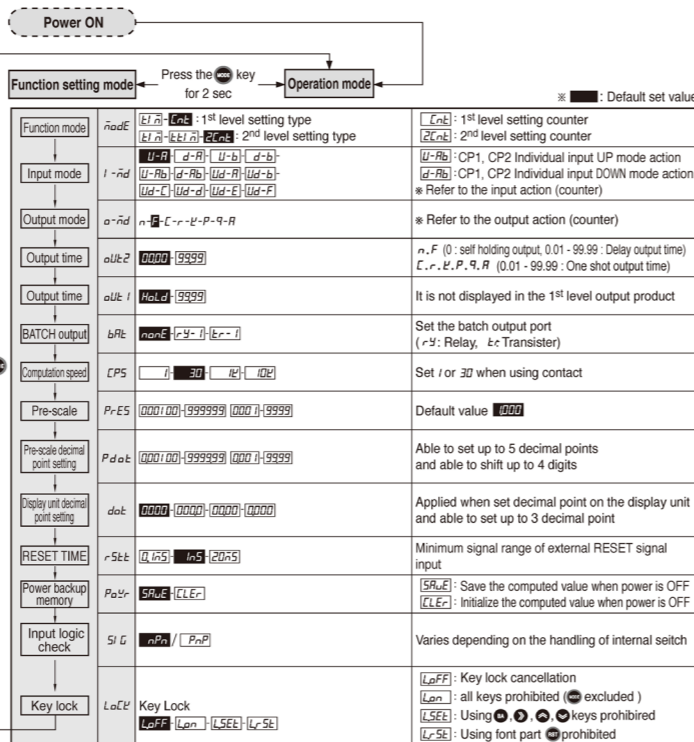
■ GE7

- ① Coefficient display (RED FND) : Display coefficient value (counter), time process value (timer), batch coefficient value and setup list.
- ② Setup display (GREEN FND) : Display setup value (counter), setup time (timer), batch setup value, instant output setup (batch setup is 0 in Timer) and setup contents
- ③ SET1, SET2 (SET), BAT : Indicates the status of coefficient section and setup section (BAT lamp corresponds to batch status.)
- ④ TIM (Timer) : This flashes when the timer progresses and remains lighted when the device stops from inhibit input or reset. (It is indicated in Change Mode of the device during TIM/TWIN setup.)
- ⑤ CNT (Counter) : This is indicated during 1CNT/2CNT setup in Change Mode of the device.
- ⑥ OUT1, OUT2(OUT), BAT.O (Output Action Indication)
 - BAT.O lights up when the batch setup value is set. (OUT1 Output)
 - BAT.O lights up and outputs when the device operates with the instant output
 - where the batch setup value is 0 (timer).
 - CP1, CP2, RST : Verification of Input Status. (Exclusively for TOTAL)
- ⑦ LOCK : Key Lock (KEY LOCK) Action Indication This lights up during Lock Setup.
- ⑧ : This key is for function setup Mode Entry and Mode change. It can also be used for ending after saving when changing the setup value
- ⑨ : Setup value change Entry and Location shift
- ⑩ : UP Key
- ⑪ : RESET KEY ⑬ When SET, BAT lamp light, RESET key will not operate.
- ⑫ : Batch and operation mode 1 stage and 2 stage conversion key. When BAT lamp light, it is batch mode and keep operate.
- ⑭ : DOWN Key

* TOTAL Model does not have Setup Indication Section, SET1, SET2 and BAT Lamp. OUT1, OUT2, BAT.O change their use as CP1, CP2, RST Input Status Check Lamp. 1 Stage Setup Model does not have SET1 and OUT1 Lamp, and SET2 is displayed as SET and OUT2 is displayed as OUT.

Counter mode setting method

Pressing the **MODE** key in the operation mode for 2sec will set the function setting mode. Please press the **MODE** key for 2 sec to move other modes.

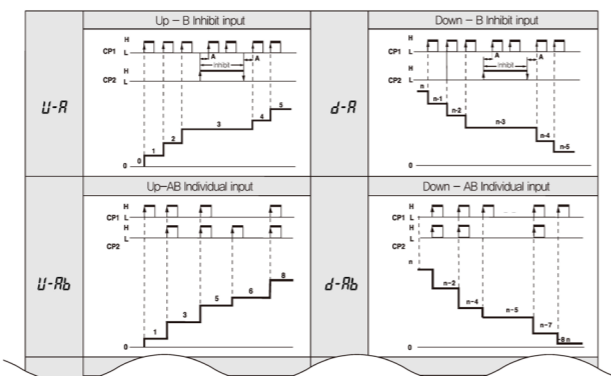


Pressing **MODE** key will return to operation mode without saving. Return to operation mode if there is no key input more than 60 seconds. With function setup mode, it ignores external signal input and maintains output in OFF state

- TOTAL product does not display setting lists such as output mode, OUT2 output time, OUT1 output time, BATCH output and etc
- 1st setting product does not display OUT1 output time
- Selecting [NONE] for BATCH output setting, it limits the setting function and display function.

Counter input action

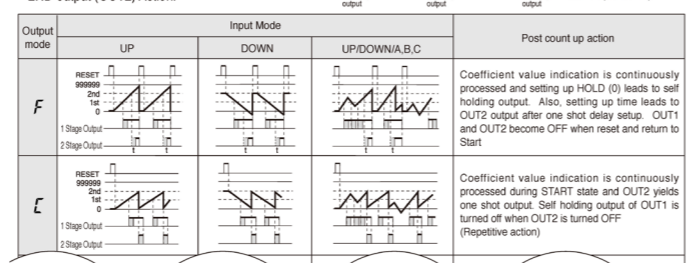
'A' needs value greater than min signal width, B need value greater than half of min signal width.



• When using encoder (incremental method). Please use **U-L** **U-F** (Noise) The input Logic of above list is PNP.

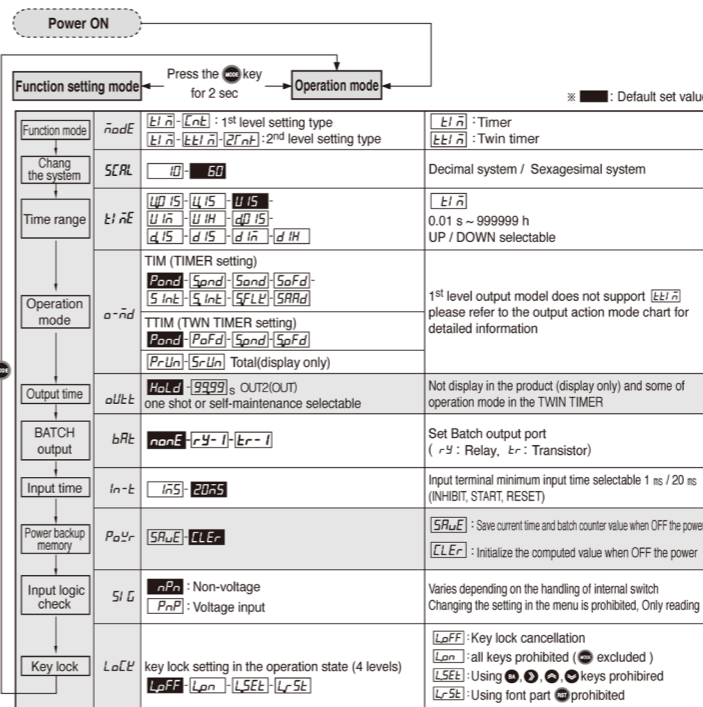
Counter output action mode

* As for 1 stage counter (OUT), it is the same as 2ND output (OUT2) Action.



Timer mode setting method

Pressing the **MODE** key in the operation mode for 2sec will set the function setting mode. Please press the **MODE** key for 2 sec to move other modes.



* Total (product) does not have output time list and BAT setting list
* 1st level output model does not support twin timer function

Timer time range

Range selection symbol	4 digits time range		6 digits time range			
	UP	DOWN	Decimal System	Sexagesimal system	Decimal System	Sexagesimal system
U 15	d 15		99.99 s	59.99 s	9999.99 s	59 m 59.99 s
U 15	d 15		999.9 s	9 m 59.9 s	99999.9 s	9 h 59 m 59.9 s
U 15	d 15		9999 s	59 m 59 s	999999 s	99 h 59 m 59 s
U 1h	d 1h		9999 m	99 h 59 m	999999 m	9999 h 59 m
U 1H	d 1H		9999 h	99 d 23 h	999999 h	9999 d 23 h

* s : second m : minute h : hour d : day

Timer operation mode

TIM(TIMER) Setting	TTIM(TWIN TIMER) Setting	For total model
P and Power RUN / ON delay	P and Power RUN -ON delay	P rUn Power RUN
S and Signal START / ON delay	S and Power RUN -OFF delay	S rUn Signal RUN
S and Signal START / ON delay	P and Power RUN -OFF delay	
S and Signal RUN / ON delay	S and Signal START -ON delay	
S and Signal RUN / OFF delay	S and Signal START -OFF delay	
S and Interval / Signal RUN	S and Signal START -OFF delay	
S and Interval / Signal START	S and Signal START -OFF delay	
S and Flicker / Signal START	S and Signal START -OFF delay	
S -r Flicker (Counter r Mode)	P and Power ON RUN -OFF time	
S -P Flicker (Counter P Mode)		
S -Q Flicker (Counter Q Mode)		
S and Signal Addition		

- CP1/INHIBIT function stops the time.
- [S-...] is activated when CP2 (START) is 'ON'
- [S-...] is activated when CP2 is maintained 'ON', and resets when 'OFF'.
- [P-...] activates with 'POWER ON'
- Setup [CLE] as [SRE] in order to compensate for interruption of electric power during 'POWER OFF' (Indicates the Memorized Value when electric power is inputted again.)

Timer output action mode

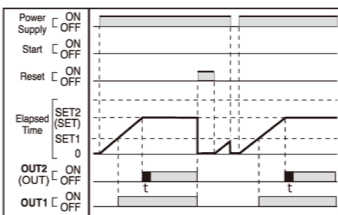
* 1 Stage Setup Type Output is OUT.
* INHIBIT (CP1) temporarily stops the time.

■ [P]and Power RUN / ON delay

- Runs when 'POWER ON'
- When Reset signal is authorized, process value initializes and runs.

■ [P]and Power RUN - ON delay

- RUNS when 'POWER is ON'
- OFF Output for T1 Time / ON for T2 Time. Repetition
- Initializes and stops when RESET is ON



Input connection method

■ Input Logic Selection

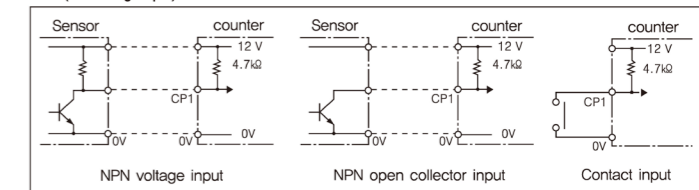
Operate the conversion switch after confirming NPN/PNP indication which is displayed on the right

* For receiving Open Collector Input, Input Logic (PNP/NPN) Conversion Switch is embedded internally to Pull up / Pull down the resistance of 4.7 kΩ (NPN Setup during shipment)

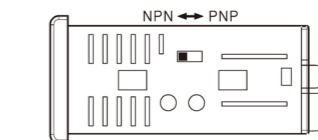
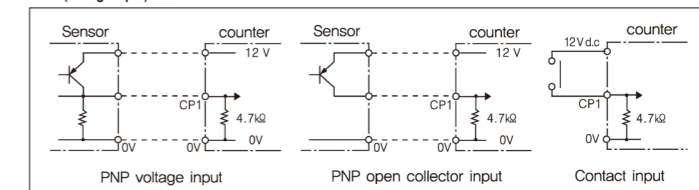
Input type	PNP setting		NPN setting	
	Voltage Input	Input PNP O.C	NPN voltage Input	NPN O.C
H	5 - 30 V d.c	5 - 30 V d.c	0 - 2 V d.c	0 - 2 V d.c
L	0 - 2 V d.c	OPEN	5 - 30 V d.c	OPEN

■ Input connection

• NPN (non-voltage input) state



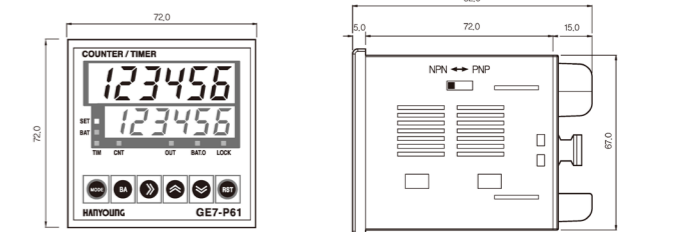
• PNP (voltage input) state



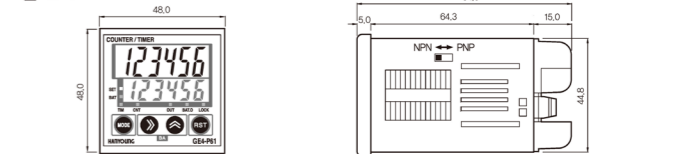
* Input Logic Setup Status can be verified in Function Setup Mode.
* Internal Impedance is 4.7kΩ, and switches over to Pull Up or Pull Down from NPN/PNP Selection. (Refer to Input Connection)
* To prevent chattering during the use of Contact Input Counter, setup the coefficient speed at 1 or 30 cps in Function Setup Mode.

Dimension and panel cutout

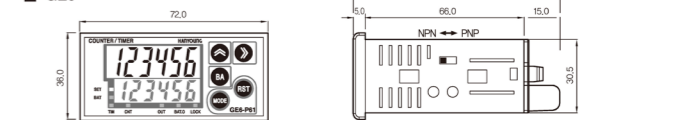
■ GE7



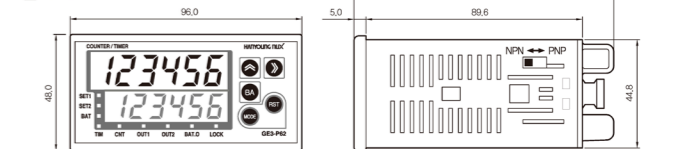
■ GE4



■ GE6



■ GE3



■ Panel cutout

	GE7	GE4	GE6	GE3
a1	68.0 +0.7 0	45.0 +0.6 0	66.5 +0.5 0	91.0 +0.5 0
a2	68.0 +0.7 0	45.0 +0.6 0	32.0 +0.5 0	45.0 +0.5 0
L1	82.0 min	60.0 min	97.0 min	120.0 min
L2	82.0 min	60.0 min	57.0 min	60.0 min

For more detailed information, please download a detailed manual from our webpage. - www.hynux.net -