

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

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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/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)		
	Non-contact	1st level	a contact : 250 V a.c 3 A (resistive load), b contact : 250 V a.c 2 A		
		2st level	NPN 2contacts (OUT, BAT.O)		
	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 strenght	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

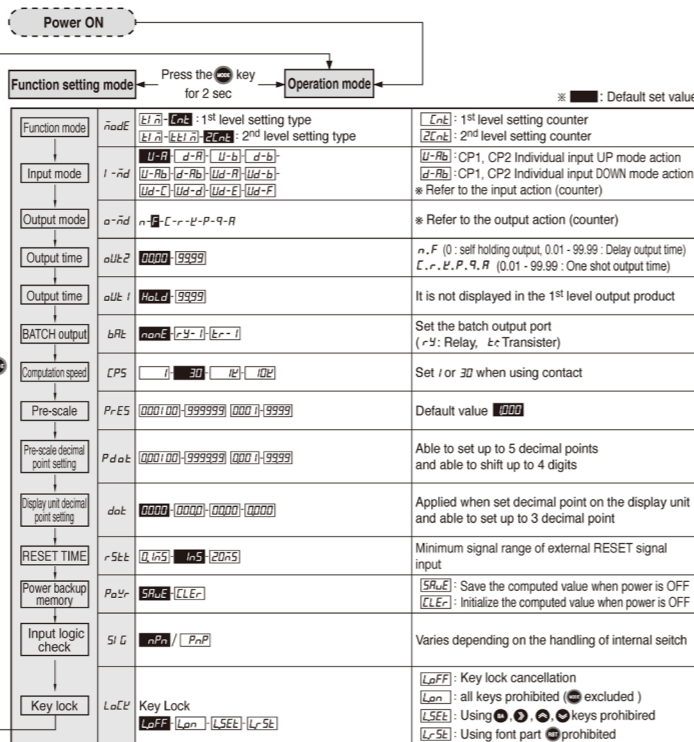
- ① Coefficient display (RED FND) : Display coefficient value (counter), time process value (timer), batch coefficient value and setup list.
- ② Setup display (GREEN FND) : Display setup value (counter), setup time (timer), batch setup value, instant output setup (batch setup is 0 in Timer) and setup 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.

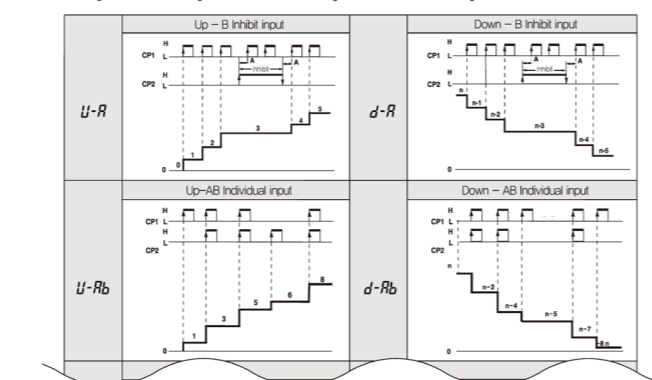


Pressing **MODE** key will return to operation mode without saving. Return to operation mode if there is no key input more than 60 seconds. With function setup mode, it ignores external signal input and maintains output in OFF state

- 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

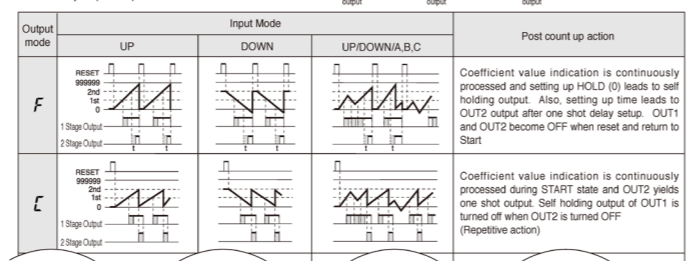
'A' needs value greater than min signal width, B need value greater than half of min signal width.



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

Counter output action mode

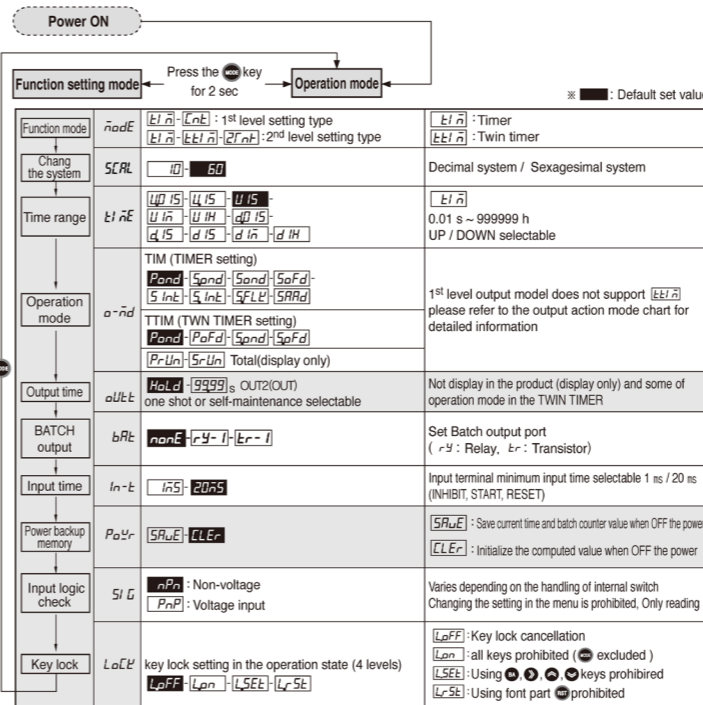
* As for 1 stage counter (OUT), it is the same as 2ND output (OUT2) Action.



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	
Ud IS	d IS	99.99 s	59.99 s	9999.99 s	59 m 59.99 s	9999.99 s	59 m 59.99 s
Ud 1S	d 1S	999.9 s	9 m 59.9 s	99999.9 s	9 h 59 m 59.9 s	99999.9 s	9 h 59 m 59.9 s
Ud 15	d 15	9999 s	59 m 59 s	999999 s	99 h 59 m 59 s	999999 s	99 h 59 m 59 s
Ud 1H	d 1H	9999 m	99 h 59 m	999999 m	9999 h 59 m	999999 m	9999 h 59 m
Ud 1H	d 1H	9999 h	99 d 23 h	999999 h	9999 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
Pand Power RUN / ON delay	Pand Power RUN -ON delay	PrUn Power RUN
Sand Signal START / ON delay	Sand Signal START -ON delay	SrUn Signal RUN
Son 1 Signal START / ON delay	Pofd Power RUN -OFF delay	
Sond Signal RUN / ON delay	Sond Signal START -ON delay	
Sofd Signal RUN / OFF delay	Sofd Signal START -OFF delay	
Slnt Interval / Signal RUN	Sofd Signal START -OFF delay	
Slnt Interval / Signal START	Sofd Signal START -OFF delay	
SFLr Flicker / Signal START	PofL Power ON RUN -OFF time	
SF-r Flicker (Counter r Mode)		
SF-P Flicker (Counter P Mode)		
SF-Q Flicker (Counter Q Mode)		
SAdd Signal Addition		

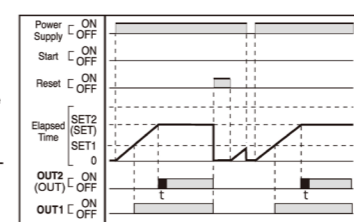
- CP1/INHIBIT function stops the time.
- [S-...] is activated when CP2 (START) is 'ON'
- [S-...] is activated when CP2 is maintained 'ON', and resets when 'OFF'.
- [P-...] activates with 'POWER ON'
- Setup [CLE] as [SRUE] in order to compensate for interruption of electric power during 'POWER OFF' (Indicates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

- **Pand** Power RUN / ON delay
 - Runs when 'POWER ON'
 - When Reset signal is authorized, process value initializes and runs.



Twin timer output action

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

Input connection method

■ Input Logic Selection

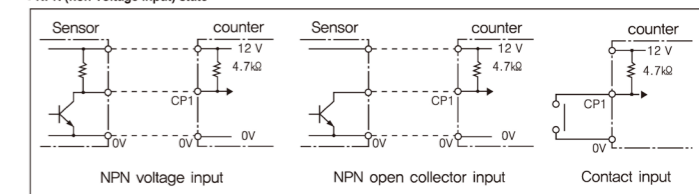
Operate the conversion switch after confirming NPN/PNP indication which is displayed on the right

* 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)

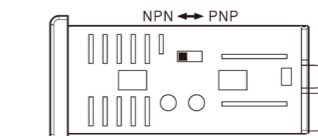
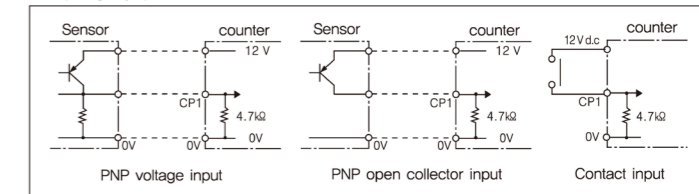
Input type	PNP setting		NPN setting	
	Voltage Input	Input PNP O.C	NPN voltage Input	NPN O.C
H	5 - 30 V d.c	5 - 30 V d.c	0 - 2 V d.c	0 - 2 V d.c
L	0 - 2 V d.c	OPEN	5 - 30 V d.c	OPEN

■ Input connection

• NPN (non-voltage input) state



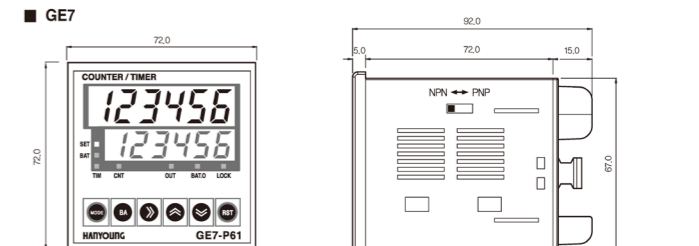
• PNP (voltage input) state



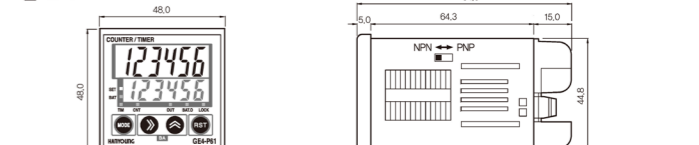
* Input Logic Setup Status can be verified in Function Setup Mode.
* Internal Impedance is 4.7kΩ, and switches over to Pull Up or Pull Down from NPN/PNP Selection. (Refer to Input Connection)
* To prevent chattering during the use of Contact Input Counter, setup the coefficient speed at 1 or 30 cps in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

Dimension and panel cutout

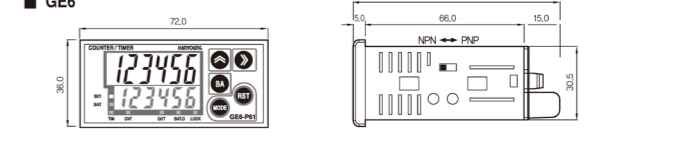
[Unit : mm]



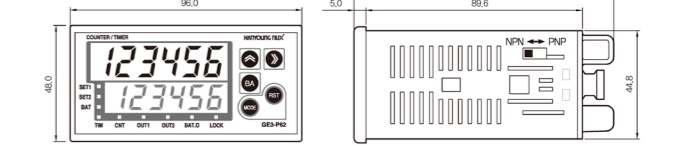
■ GE4



■ GE6



■ GE3



■ Panel cutout

	GE7	GE4	GE6	GE3
a1	68.0 +0.7	45.0 +0.6	66.5 +0.5	91.0 +0.5
a2	68.0 +0.7	45.0 +0.6	32.0 +0.5	45.0 +0.5
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 -