

Counter / Timer

GF7 Free Ticom

INSTRUCTION MANUAL

We appreciate you for purchasing HanYoung NUX Co.,Ltd product. Before using the product you have purchased, check to make sure that it is exactly what you ordered. Then, please use it following the instructions below.

MAIN PRODUCTS

- DIGITAL : Temperature Controller, Counter, Timer, Speedmeter, Tachometer, Panel Meter, Recorder
- SENSOR : Proximity Switch/Photo Electric Sensor, Rotary Encoder, Optical Fiber Sensor, Pressure Sensor
- ANALOG : Timer, Temperature Controller

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HANYOUNG

■ Safety information

Before you use, read safety precautions carefully, and use this product properly. The precautions described in this manual contains important contents related with safety; therefore, please follow the instructions accordingly. The precautions are composed of DANGER, WARNING and CAUTION.

⚠ DANGER

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

⚠ WARNING

1. If there is a possibility of an accident caused by errors or malfunctions of this product, install external protection circuit to prevent the accident.
2. This product does not contain an electric switch or fuse, so the user needs to install a separate electric switch or fuse externally. (Fuse rating : 250 V 0.5 A)
3. To prevent deflection or malfunction of this product, supply proper power voltage in accordance with the rating.
4. To prevent electric shock or devise malfunction of this product, do not supply the power until the wiring is completed.
5. Since this product is not designed with explosion-protective structure, do not use it at any place with flammable or explosive gas.
6. Do not decompose, modify, revise or repair this product. This may cause malfunction, electric shock or fire.
7. Reassemble this product while the power is off. Otherwise, it may cause malfunction or electric shock.
8. If you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
9. Due to the danger of electric shock, use this product installed onto a panel while an electric current is applied.

⚠ CAUTION

1. The contents of this manual may be changed without prior notification.
2. Before using the product you have purchased, check to make sure that it is exactly what you ordered.
3. Check to make sure that there is no damage or abnormality of the product during delivery.
4. Do not use this product at any place with corrosive (especially noxious gas or ammonia) or flammable gas.
5. Do not use this product at any place with direct vibration or impact.
6. Do not use this product at any place with liquid, oil, medical substances, dust, salt or iron contents. (Pollution level 1 or 2)
7. Do not polish this product with substances such as alcohol or benzene.
8. Do not use this product at any place with excessive induction trouble, static electricity or magnetic noise.
9. Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
10. Install this product at place under 2,000m in altitude.
11. When the product gets wet, the inspection is essential because there is danger of an electric leakage or fire.
12. If there is excessive noise from the power supply, using insulating transformer and noise filter is recommended. The noise filter must be attached to a panel grounded, and the wire between the filter output side and power supply terminal must be as short as possible.
13. If gauge cables are arranged too closely, the effect on noise may occur.
14. Do not connect anything to the unused terminals.
15. After checking polarity of terminal, connect wires at the correct position.
16. When this product is connected to a panel, use a circuit breaker or switch approved with IEC847-1 or IEC947-3.
17. Install the circuit breaker or switch at near place for convenient use.
18. Write down on a label that the operation of circuit breaker or switch disconnects the power since the device is installed.

19. For the continuous and safe use of this product, the periodical maintenance is recommended.
20. Some parts of this product have limited life span, and others are changed by their usage.
21. The warranty period for this product including parts is one year if this product is properly used.
22. When the power is on, the preparation period of contact output is required. In case of use for signals of external interlock circuit, use with a delay relay.

■ Model and Suffix code

MODEL	Suffix code	Description
GF7	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Free Ticom (Timer/Counter)
	P	Preset
	T	Total
Digit	4	4 Digits
	6	6 Digits
Stage	1	1 Stage
	2	2 Stage

■ Features

- Free scale setting by front BCD Switch
- Operates all functions by switches at front (Multi-range input/Free scale)
- Counting speed 30cps/1Kcps/3Kcps/5Kcps selectable
- ON-DELAY/OFF-DELAY selectable
- Position of a decimal point is movable (in counter)
- Wide range of power supply (AC 100~240V)
- Semi-permanent backup power for memory-protection
- 14 input/18 output mode

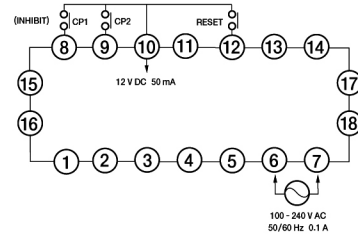
■ Characteristics

Item	Code	GF7
Repeat accuracy		$\pm 0.01 \% \pm 0.05 \%$ second max.
Variation due to voltage change		(Power supply start)
Variation due to temperature change		$\pm 0.005 \% \pm 0.03 \%$ second max. (Reset start) (Ratio to set value)
Insulation resistance		100 M Ω Min. (at 500 V DC) (between current-carrying terminal and exposed noncurrent-carrying metal parts, between power supply circuit and control output circuit)
In Pulse voltage		6 KV (between operating power supply terminal)
Dielectric strength		2,000 V AC, 50/60 Hz for 1 minute (between current-carrying terminal and exposed noncurrent-carrying metal parts. between power supply circuit and control output circuit)
Noise immunity		Square wave noise by simulator AC : ± 1 KV (inbetween power supply terminal board) ± 500 V (inbetween terminal)
Vibration		Mechanical durability : 10 to 55 Hz : 0.75 mm double amplitude Malfunction durability : 10 to 55 Hz : 0.5 mm double amplitude
Shock		Mechanical durability: 300 m/s ² (approx. 30 G) Malfunction durability: 100 m/s ² (approx. 30 G)
Life expectancy		Mechanical: 10,000,000 operations min. Electrical: 100,000 operations min (AC 250V 2A)
Weight		Approx. 254 gms (with adaptor)

Ratings

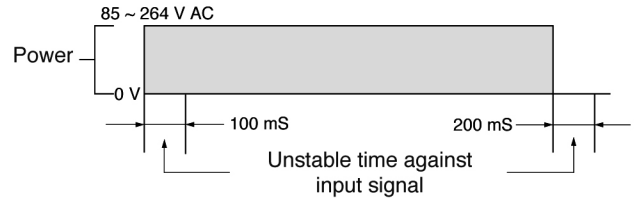
Item	Code	GF7
Supply voltage		100 ~ 240 V AC 50 ~ 60Hz, 0.1 A
Power consumption		Approx 5 VA (at 220 V AC, 60 Hz)
Reset/Inhibit		Reset by power OFF : (Min. power OFF time : 0.5 sec.) External reset or inhibit : (Min. reset input signal width : 0.02 sec.)
Control output		SPDT: 250 V AC 2 A $\cos\phi=1$ (resistive load) Open collector : 30 V DC max 100 mA max.
Ambient temperature		Operating : -10 °C to 55 °C
Humidity		35 to 85 % RH

GF7-T60



※ 2 Stage setting: If you set only 1 stage, 2nd output is operated

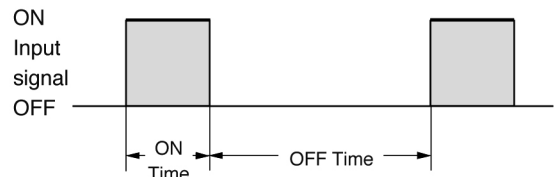
Power supply



Please note that voltage of inside circuit is increasing or decreasing in time between 100ms after power on and 200ms after power off.

Maximum counting speed

- Rating of maximum counting speed(MCS) is response speed in case of input for 1:1 duty ratio.
- Though input signal is in the MCS, if ON/OFF time is lower than the rating of minimum input signal width, counting is not operated.
- Minimum signal time
 - 30 cps mode : 16 ms min.
 - 3 Kcps mode : 0.16 ms min.
 - 1 Kcps mode : 0.5 ms min.
 - 5 Kcps mode : 0.1 ms min.



※ Minimum signal time means ON time.

What is Free Scale Function?

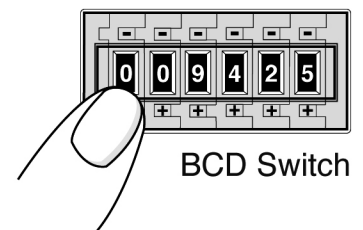
It means signal function to substitute actual scale for count value.

Illustration of Free Scale Figure

Winding rope in a roller, it is possible to show length of winding or to show output at the setting length.

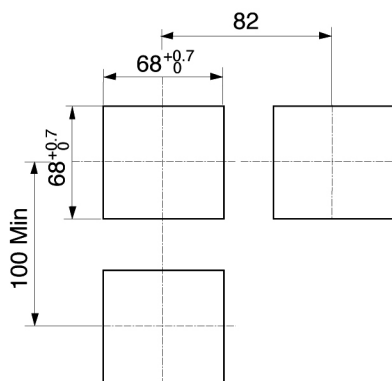
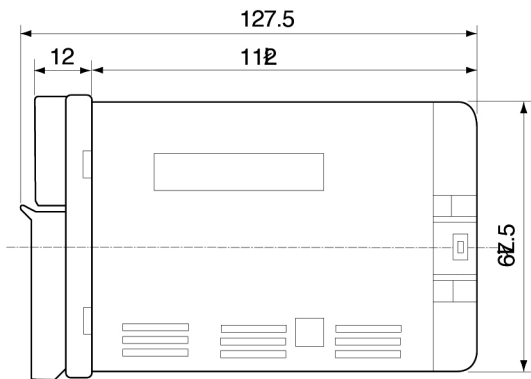
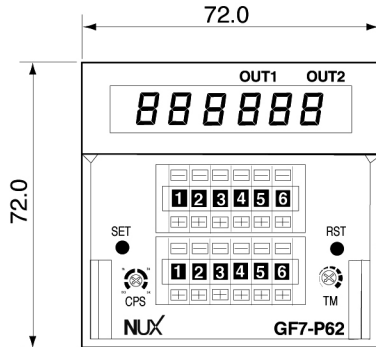
$$\begin{aligned} \text{Diameter of roller (D): } 600 \text{ mm} \\ \text{Encoder: } 20 \text{ P/R} \\ \text{unit: m} \end{aligned} \rightarrow \begin{aligned} \text{Circumference} &= D \cdot \pi \\ 600 \times 3.1416 &= 1884.96 \text{ mm} \\ 1884.96 \times \frac{1}{20} &= 94.248 \text{ mm} \\ \text{convert unit into meter(m)} &: 0.09424 \text{ m} \end{aligned}$$

- To select counter, move SW1 No.7 to ON position.
- To select Free Scale mode, move SW1 No.8 to ON position.
- To set down to three places of decimal for display and set value, move SW2 No.7 and 8 to ON position, finally press RST button. (In 2 stage setting, you may see **Err** display, when you set 0 or set lower value than 1st scaling value)
- When you press SET button to set Free Scale value, decimal point is movable. Place down to five places of decimals.
- Set 0.09425 on front BCD Switch and press RST button. Press scale setting is completed.



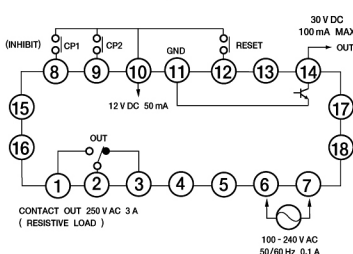
Dimension & Panel cutout

Unit : mm

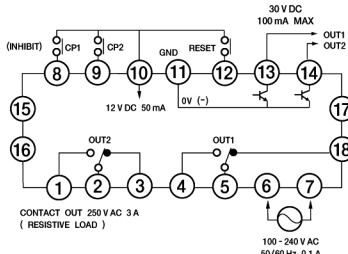


Connection

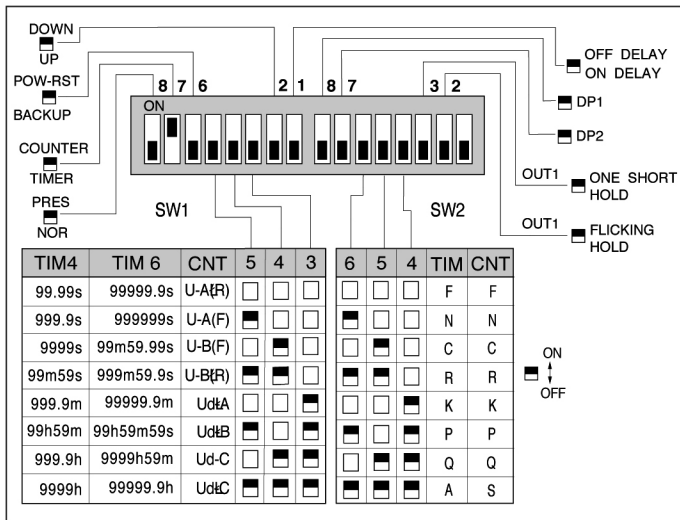
GF7-P61, P41



GF7-P62, P42



Mode selection switch



Timer range

Mode (SW1)	UP mode(Timer)		Mode (SW1)	DOWN mode(Timer)	
	4 digits	6digits		4 digits	6digits
ON OFF	99.99s	99999.9s	ON OFF	99.99s	99999.9s
ON OFF	999.9s	999999s	ON OFF	999.9s	999999s
ON OFF	9999s	99m59.99s	ON OFF	9999s	99m59.99s
ON OFF	99m59s	999m59.9s	ON OFF	99m59s	999m59.9s
ON OFF	999.9m	99999.9m	ON OFF	999.9m	99999.9m
ON OFF	99h59m	99h59m59s	ON OFF	99h59m	99h59m59s
ON OFF	999.9h	9999h59m	ON OFF	999.9h	9999h59m
ON OFF	9999h	9999.9h	ON OFF	9999h	99999.9h

0 display in reset(up count)

Initial setting

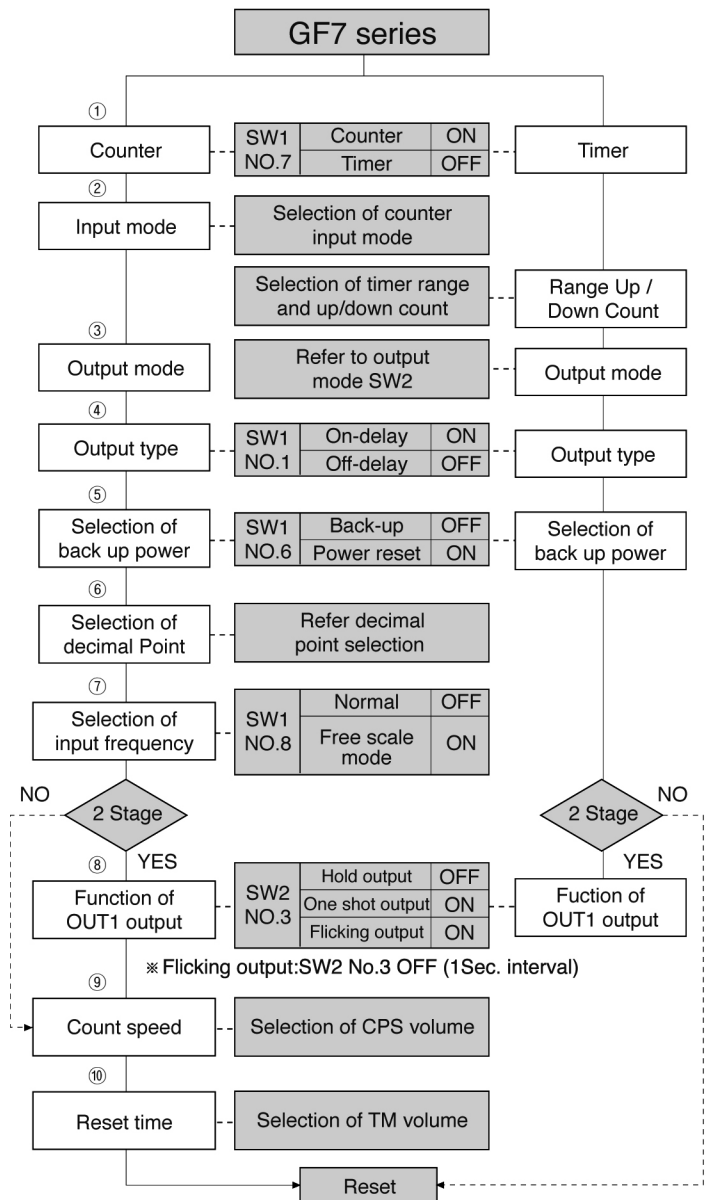
Mode	Setting
Decimal point	NO
Function	Counter
Free scale	NO Setting
Memory Protection	Built in
Count speed	30 CPS
Output type	ON-DELAY
Input mode	U-A(R)
Output mode	F mode
2 Stage setting. OUT1 output	HOLD
Reset time	50ms

Counting speed selection



30 CPS-Left end
1 Kcps-Center
3 Kcps-Center
5 Kcps-Right end

Mode selection



Decimal point selection (Common to set value)

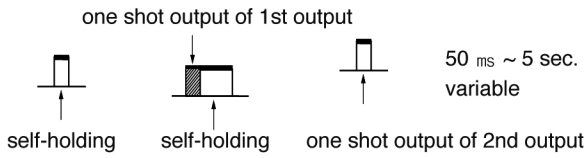
SW2	No. 7	OFF	
	No. 8	OFF	
No. 7	OFF		
No. 8	ON		
No. 7	ON		
No. 8	OFF		
No. 7	ON		
No. 8	ON		

One shot time setting



Setting of one short time by TM
(50 ms ~ 5 Sec variable)

Output mode



Mode		Input mode	
		UP	DOWN
 F	 F		
 N	 N		
 C	 C		
 R	 R		
 K	 K		
 P	 P		
 Q	 Q		
 S	 S		
 A	 A		

Counter input mode

※ 「A」 requires over minimum signal width and 「B」 requires over half of minimum signal width.

● R : Count in rising (\uparrow) of input ● F : Count in falling (\downarrow) of input

Mode	UP A Inhibit Input(R)	DOWN A Inhibit Input(R)
 SW1		
 SW1		
 SW1		
 SW1		
 SW1		
 SW1		
 SW1		
0 display in reset(up count)		Set value display in reset(Down count)