

Timer/Counter

GF4 Timer/Counter

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 NUX



■ 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 : 250V 0.5A)
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 devise 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
GF4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Timer/Counter
	P	Preset
	T	Total
Digit	4	4 Digits
Stage	1	1 Stage
	0	Indicator
Connection	N	Terminal Block
	S	Socket 8 Pin

■ Specification

In Timer func tion	Repeat accuracy	$\pm 0.01\%$ $\pm 0.05\%$ second Max. (Power supply start)
	Variation due to voltage change	$\pm 0.005\%$ $\pm 0.003\%$ second Max. (Reset start)
	Variation due to temperature change	Ratio to set value
Insulation resistance		100 $\text{M}\Omega$ Min. (at 500 V d.c) (between current-carrying terminal and exposed noncurrent-carrying metal parts, between power supply circuit and control output circuit)
Dielectric strength		2,000 V a.c 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 : ± 2 k V (between power supply terminal board) ± 500 V (between input 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. 10 G)
Life expectancy		Mechanical : 10,000,000 operations Min.. Electrical : 100,000 operations Min. (250 V a.c 3 A)
Weight		GF4 - P 184 gms, GF4 - T: 168 gms (with adaptor) GF4 - P41S : 100 gms

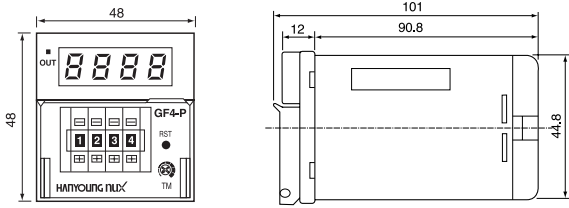
■ Ratings

Power Supply	100 - 240 V a.c 50 - 60 Hz
Power Consumption	GF4-T : 4.8 V A, GF4-P : 6.2 V A (240 V a.c 60 Hz)
Reset / Inhibit	Reset by power OFF : Min. power OFF time : 0.5 s External reset or inhibit : Min. reset input signal width : 0.02 s
	Control output
Ambient temperature	Operating : -10 $^{\circ}\text{C}$ to 55 $^{\circ}\text{C}$
Humidity	35 to 85 % R.H.

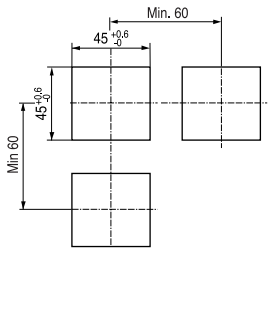
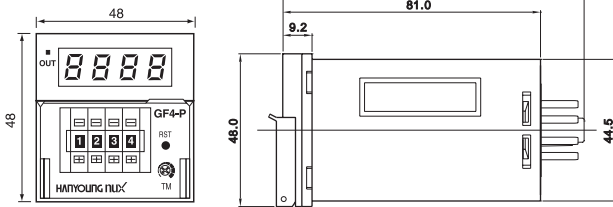
Dimension & Panel Cutout

(Unit : mm)

GF4-P41N / GF4-T40N

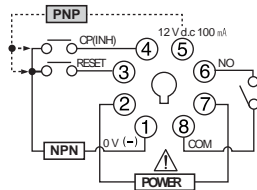


GF4-P40S

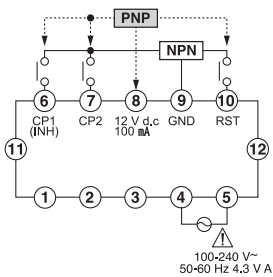


Connection

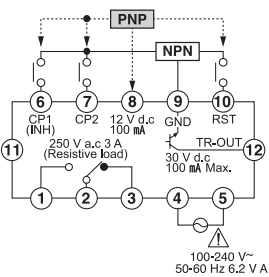
GF4-P41S



GF4-T40N



GF4-P41N

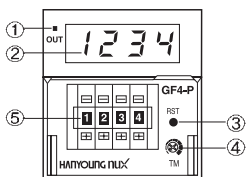


Features

- Operates all functions by switches at front (Multi-range input/Free scale)
- Counting speed 5 kcps selectable
- ON-DELAY/OFF-DELAY selectable
- Position of a decimal point is movable (in counter)
- Wide ranges of power supply (100 - 240 V a.c)
- Semi-permanent backup power for memory protection
- 14 input / 16 output mode
- Relay output and transistor output

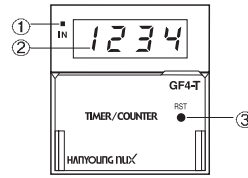
Name & Description

GF4-P41N / GF4-P41S



① Output operation display LED	When output happens in output line, OUT is flickered.
② Figures / Time display	Counter : Display accumulator figures value. Timer : Display process time.
③ Reset Key	Use when you initialize accumulated figures value & time process value. Use when you change the operation option of Counter / Timer.
④ Volume for controlling output time(One-short time)	Time setting range is variable from 0.1 to 12.5 sec Counter : Use when you input setting value which you want to count. Timer : Use when you input setting time.
⑤ Number/Time setting	

GF4-T40N



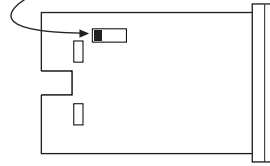
① Output operation display LED	When output happens in output line, IN is flickered.
② Number/Time setting	Counter : Display accumulator figures value. Timer : Display process time.
③ Reset Key	Use when you initialize accumulated figures value & time process value. Use when you change the operation option of Counter / Timer.

Function

Input logic setting

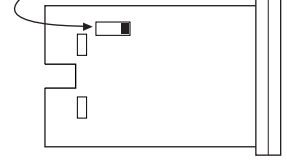
- Please Cut the power of GF4 off
- Please set the switch for controlling Voltage(PNP)/NON- Voltage(NPN) input attached on the side of case to fit with the exterior input
- If you supply the power of GF4 after setting end, Counter/Timer are operated according to the input situation of Voltage(PNP)/NON-Voltage(NPN) set. (Caution) when you change the input setting of Voltage(PNP)/NON-Voltage(NPN), please change after power isolation

Switch for controlling Voltage(PNP)/Non - Voltage(NPN) input



PNP input setting

Switch for controlling Voltage(PNP)/Non - Voltage(NPN) input



NPN input setting

Decimal Point Selection

SW2	Display
NO.2	ON OFF <input type="checkbox"/>
	ON OFF <input type="checkbox"/>

One Short Time Setting

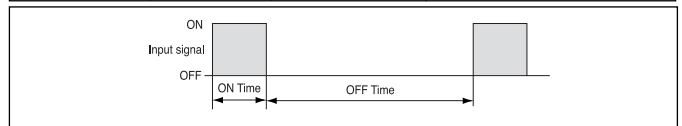


Setting of one short time by TM (0.1 ms ~ 12.5 s variable)

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.
- Please use a reliable contact in case of contact input

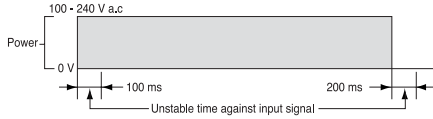
SW2	MCS	Minimum Signal Time
NO.1	ON OFF <input type="checkbox"/> 5 kcps	0.1 ms Min
	ON OFF <input type="checkbox"/> 30 cps	16 ms Min



※Minimum signal time means ON time.

Power Supply

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



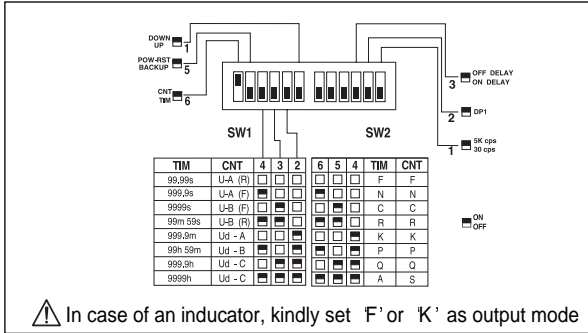
Power for Sensor

12 V d.c 100 mA Max. of power for sensor is built-in.

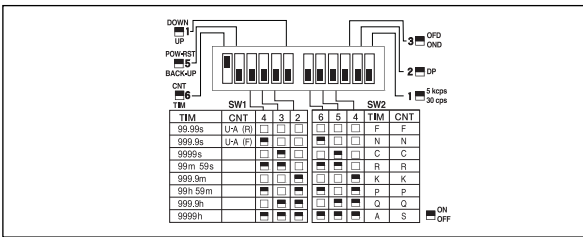
- Proximity Switch - Approx. 10 mA
- Rotary Encoder - Approx. 30 mA

Mode Selection Switch

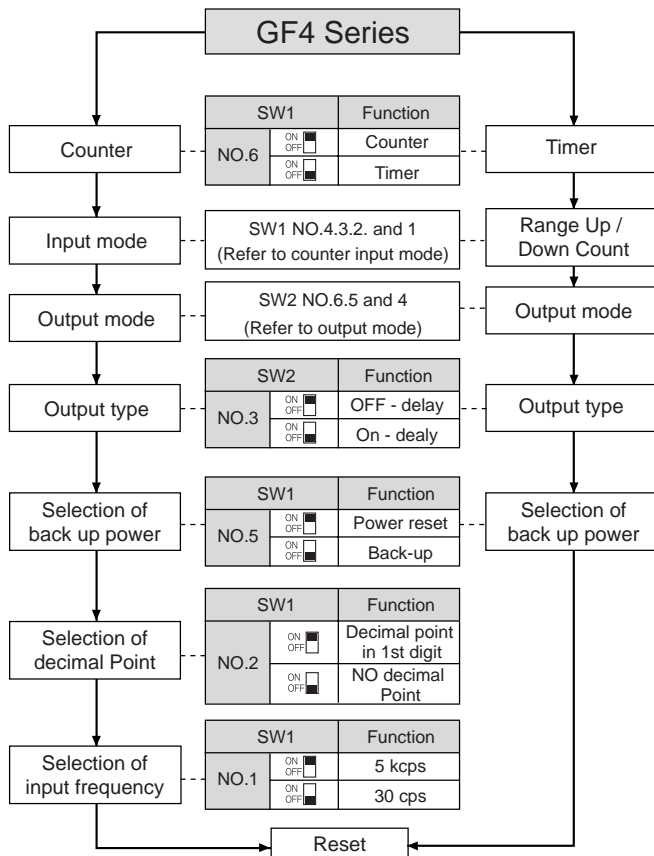
GF4-P41N / GF4-T40N



GF4-P41S



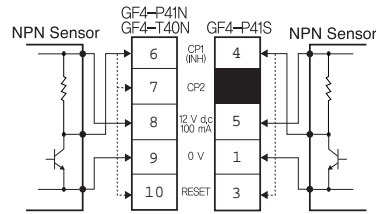
Mode Selection



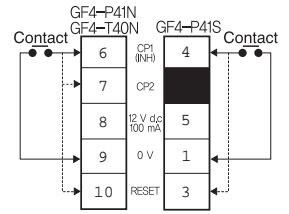
Input Connection

Input connection when the exterior equipment is 'NPN' output

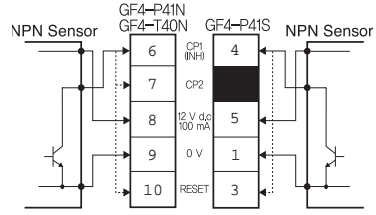
Non-contact input(NPN voltage output)



Contact input (NPN)



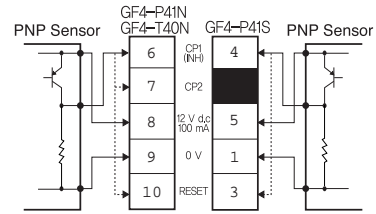
Non-contact input(NPN open collector output)



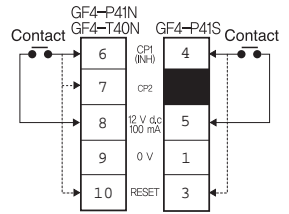
- Please change 'NPN/PNP' S/W attached in the side of 'GF4' into the direction 'NPN' when the exterior equipment is 'NPN'.
- Set counting speed as 30 cps in case of using contact and then use it.

Input connection when the exterior equipment is 'PNP' output

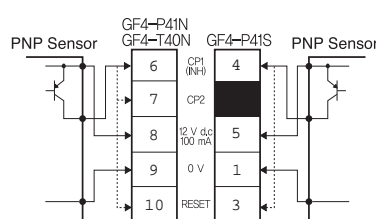
Non-contact input(PNP voltage output)



Contact input (PNP)



Non-contact input(PNP open collector output)



- Please change 'NPN/PNP' S/W attached in the side of 'GF4' into the direction 'NPN' when the exterior equipment is 'NPN'.
- Set counting speed as 30 cps in case of using contact and then use it.

Timer Range

SW1	UP mode	SW1	Down mode
ON OFF	99.99s	ON OFF	99.99s
ON OFF	999.9s	ON OFF	999.9s
ON OFF	9999s	ON OFF	9999s
ON OFF	99m59s	ON OFF	99m59s
ON OFF	999.9m	ON OFF	999.9m
ON OFF	99h59m	ON OFF	99h59m
ON OFF	999.9h	ON OFF	999.9h
ON OFF	9999h	ON OFF	9999h
'0' display in reset(up count)		'Set value' display in reset (Down count)	

Counter input mode

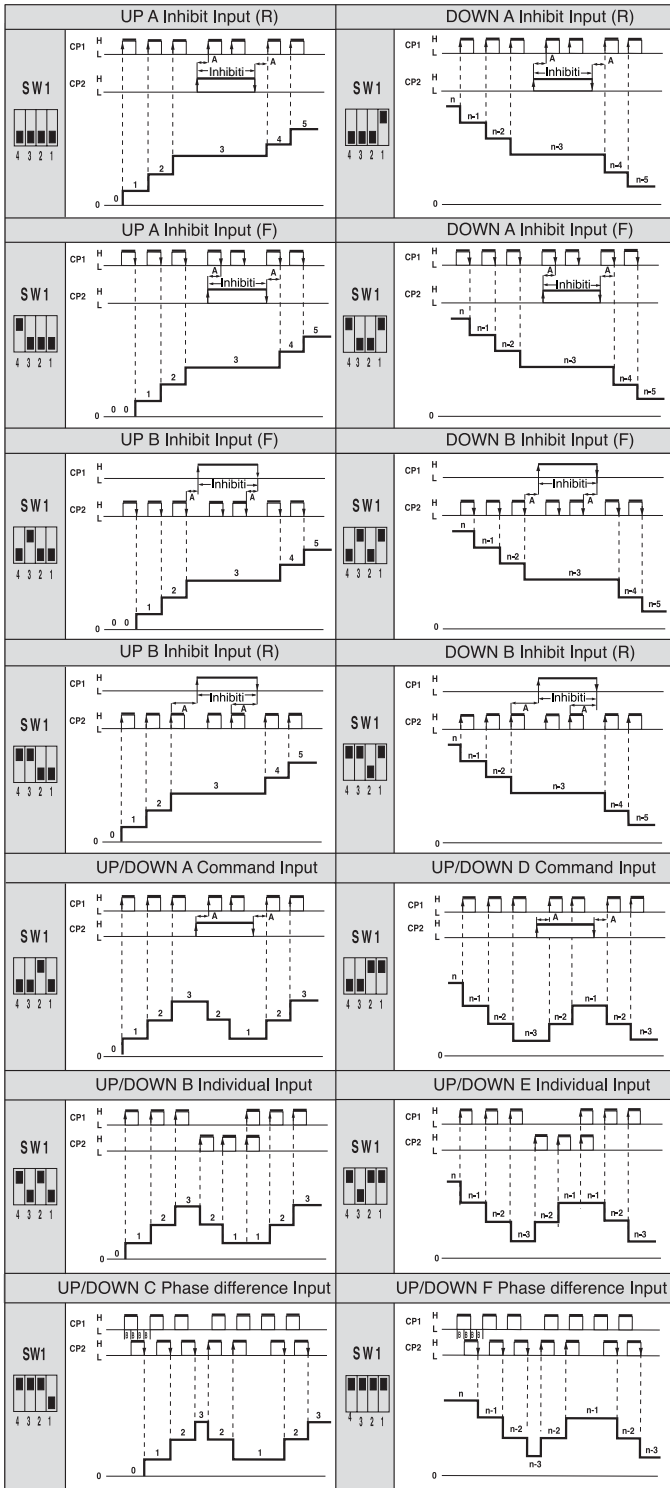
GF4-P41N / GF4-P40N

※ 'A₁' requires over minimum signal width and 'B₁' requires over half of minimum signal width.

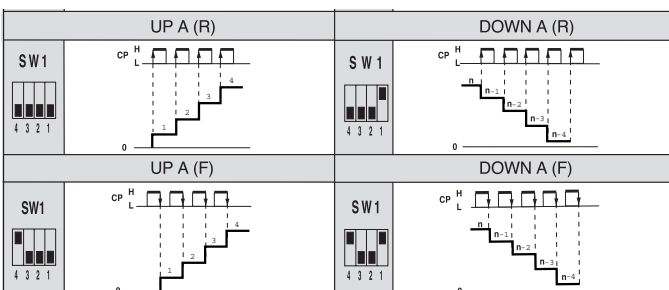
※ The following timing diagram of Timer input is for the PNP mode.

※ In case of the NPN mode, it is reverse image against the PNP mode

- Rising situation of Input signal (\uparrow)
- Falling situation of Input signal (\downarrow)



GF4-P41S



Output mode



self-holding



one short output

0.1 ms ~ 12.5 s
variable

