

Preset Counter/Timer H8GN

World's Smallest Compact Preset Counter/Timer

1/32-mm DIN with Communications

- Only 48 x 24 x 83 mm (W x H x D)
- Switch between 4-digit preset counter and 4-digit timer operation.
- While using the preset counter, it is possible to switch the display to monitor the totalizing count value (8 digits).
- Built-in prescaling for counter operation.
- ON/OFF-duty adjustable flicker mode that can be used to perform cyclic control is available for timer operation.
- Four preset values that can be changed by the front panel key (SV-bank).
- Finger protection terminal block to meet VDE0106/P100.
- Panel surface compatible with NEMA4X/IP66.
- Conforms to UL, CSA, and IEC safety standards as well as CE Marking.
- Six-language instruction manual provided.



Model Number Structure

Model Number Legend

H8GN-AD-

1 2

1. Supply Voltage

D: 24 VDC

2. Communications Output Type

None: Communications not supported

FLK: RS-485

Ordering Information

List of Models

Supply voltage	Output	Communications	
		No communications	RS-485
24 VDC	Contact output (SPDT)	H8GN-AD	H8GN-AD-FLK

Specifications

■ Ratings

Rated supply voltage		24 VDC
Operating voltage range		85% to 110% of rated supply voltage
Power consumption		1.5 W max. (for max. DC load) (Inrush current: 15 A max.)
Mounting method		Flush mounting
External connections		Screw terminals (M3 screws)
Terminal screw tightening torque		0.5 N·m max.
Attachment		Waterproof packing, flush mounting bracket
Display		7-segment, negative transmissive LCD; time display (h, min, s); CMW, OUT, RST, TOTAL Present value (red, 7-mm-high characters); Set value (green, 3.4-mm-high characters)
Digits		PV: 4 digits SV: 4 digits When total count value is displayed: 8 digits (Zeros suppressed)
Memory backup		EEPROM (non-volatile memory) (number of writes: 100,000 times)
Counter	Maximum counting speed	30 Hz or 5 kHz (See note.)
	Counting range	-999 to 9,999
	Input modes	Increment, decrement, individual, quadrature inputs
	Output modes	N, F, C, or K
Timer	Time ranges	0.000 to 9.999 s, 0.00 to 99.99 s, 0.0 to 999.9 s, 0 to 9999 s, 0 min 00 s to 99 min 59 s, 0.0 to 999.9 min, 0 h 00 min to 99 h 59 min, 0.0 h to 999.9 h, 0 h to 9999 h
	Timer modes	Elapsed time (Up), remaining time (Down)
	Output modes	A, B, D, E, F, or Z
Inputs	Input signals	For Counter: CP1, CP2, and reset For Timer: Start, gate, and reset
	Input method	No-voltage input (contact short-circuit and open input) Short-circuit (ON) impedance: 1 K Ω max. (Approx. 2 mA runoff current at 0 Ω) Short-circuit (ON) residual voltage: 2 VDC max. Open (OFF) impedance: 100 k Ω min. Applied voltage: 30 VDC max.
	Start, reset, gate	Minimum input signal width: 1 or 20 ms (selectable)
	Power reset	Minimum power-opening time: 0.5 s
Control output		SPDT contact output: 3 A at 250 VAC/30 VDC, resistive load ($\cos \phi = 1$)
Minimum applied load		10 mA at 5 VDC (failure level: P, reference value)
Reset system		External, manual, and power supply resets (for timer in A, B, D, E, or Z modes)
Sensor waiting time		260 ms max. (Inputs cannot be received during sensor wait time if control outputs are turned OFF.)

Note: The figures given for maximum counting speed are for incrementing or decrementing operation with a prescale value of $\times 1$. If prescaling is used and 5 kHz is set, the maximum counting speed will be reduced to about half. The maximum counting speed will also be reduced to about half when the up/down mode is selected.

■ Characteristics

Timer function	Accuracy of operating time and setting error (including temperature and voltage effects)	Signal start: $\pm 0.03\% \pm 30$ ms max. Power-ON start: $\pm 0.03\% \pm 50$ ms max.
Insulation resistance		100 M Ω min. (at 500 VDC)
Dielectric strength		1,500 VAC, 50/60 Hz for 1 min between output terminals and non-current-carrying metal parts 510 VAC, 50/60 Hz for 1 min between current-carrying terminals (except output terminals) and non-current-carrying metal parts 1,500 VAC, 50/60 Hz for 1 min between output terminals and current-carrying terminals (except output terminals) 500 VAC, 50/60 Hz for 1 min between communications terminals and current-carrying terminals (except output terminals) 1,000 VAC, 50/60 Hz for 1 min between contacts not located next to each other
Noise immunity		Square-wave noise by noise simulator; ± 480 V (between power terminals), ± 600 V (between input terminals)
Static immunity		± 8 kV (malfunction), ± 15 kV (destruction)
Vibration resistance	Malfunction	10 to 55 Hz with 0.35-mm single amplitude each in three directions for 10 min
	Destruction	10 to 55 Hz with 0.75-mm single amplitude each in three directions for 2 h
Shock resistance	Malfunction	100 m/s ² , 3 times each in six directions
	Destruction	300 m/s ² , 3 times each in six directions
Life expectancy	Mechanical	10 million operations
	Electrical	100,000 operations min. (3 A at 250 VAC, resistive load) (See note.)
Ambient temperature	Operating	-10°C to 55°C (with no icing or condensation)
	Storage	-25°C to 65°C (with no icing or condensation)
Ambient humidity		25% to 85%
EMC		(EMI): EN61326 Emission Enclosure: EN55011 Group 1 Class A (EMS): EN61326 Immunity ESD: EN61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3: 10 V/m (Amplitude-modulated, 80 MHz to 1 GHz) (level 3); 10 V/m (Pulse-modulated, 900 MHz \pm 5 MHz) (level 3) Immunity Conducted Disturbance: EN61000-4-6: 3 V (0.15 to 80 MHz) (level 2) Immunity Burst: EN61000-4-4: 2 kV power-line (level 3); 1 kV I/O signal-line (level 4); 1 kV communications-line (level 3) Immunity Surge: EN61000-4-5: 1 kV between lines (power and output lines) (level 3); 2 kV between grounds (power and output lines) (level 3)
Approved standards		UL508, CSA C22.2 No.14 Conforms to EN61010-1/IEC61010-1 (Pollution degree 2/overvoltage category II) Conforms to VDE0106/P 100 (Finger Protection)
Case color		Rear section: Gray smoke; Front section: N1.5 (black)
Degree of protection		Panel surface: IP66 and NEMA Type 4X (indoors) Rear case: IP20 Terminal block: IP20
Weight		Approx. 80 g

Note: Refer to the *Life-test Curve*.

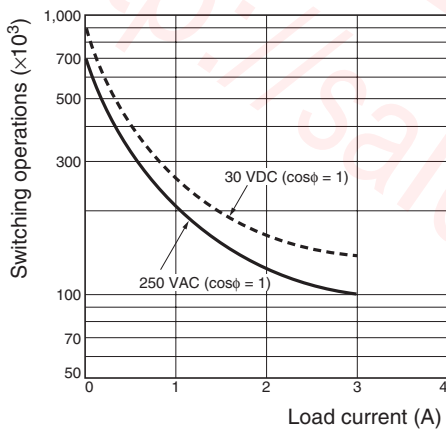
■ Communications Specifications

Transmission path connections	Multidrop
Communications method	RS-485 (two-wire, half duplex)
Synchronization method	Start-stop synchronization
Baud rate (See note.)	1,200/2,400/4,800/9,600 bit/s
Transmission code	ASCII
Data bit length (See note.)	7 or 8 bits
Stop bit length (See note.)	1 or 2 bits
Error detection (See note.)	Vertical parity (none, even, or odd) (See note.) Block check character (BCC)
Flow control	Not supported.
Interface	RS-485
Retry function	Not supported.
Communications buffer	40 bytes
Reading and writing from H8GN	Reading present value and totalizing count value; reading/writing preset and set values; switching between SV-banks; switching between communications write-enabled/write-prohibited; reading/writing other initial and advanced function setting parameters

Note: The baud rate, data bit length, stop bit length, and vertical parity can be individually set using the communications setting level.

■ Life-test Curve (Reference Values)

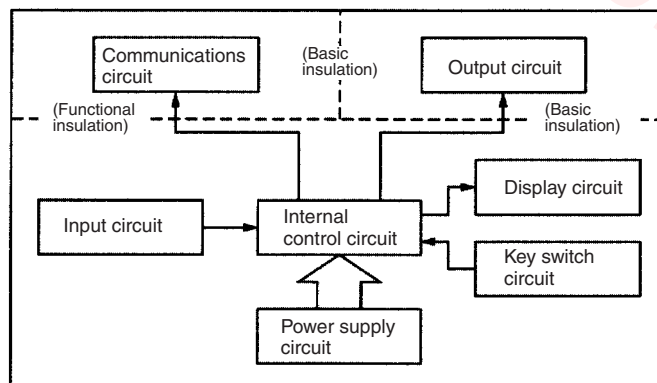
Resistive Load



Reference: A maximum current of 0.15 A can be switched at 125 VDC (cosφ = 1) and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected. The minimum applicable load is 10 mA at 5 VDC (failure level: P).

Connections

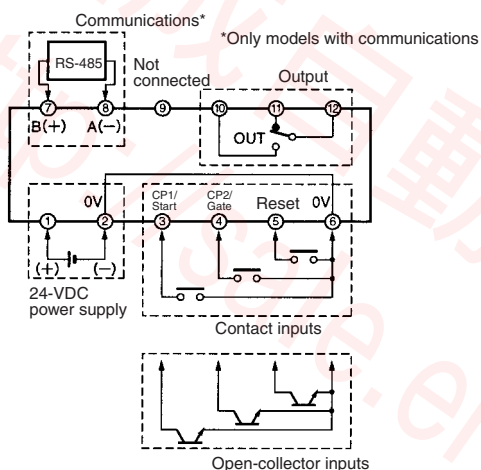
■ Block Diagram



I/O Functions

Inputs	Counter inputs	CP1/CP2	<ul style="list-style-type: none"> Receive count signals. Receive increment, decrement, individual, and quadrature inputs. In increment mode and decrement mode, CP1 is used for the count input and CP2 is used for count prohibit input.
		Reset	<ul style="list-style-type: none"> Resets the present value. (Totalizing count value is not reset.) (In increment mode or increment/decrement mode, the present value returns to 0; in Decrement Mode the present value returns to the set value.) The count input is not received during resetting. The RST indicator is lit during resetting.
	Timer inputs	Start	<ul style="list-style-type: none"> Starts timing.
		Reset	<ul style="list-style-type: none"> Resets the timer. (In elapsed time mode the time returns to 0; in remaining time mode, the time returns to the set value.) During resetting, timing stops and the control output turns OFF. The RST indicator is lit during resetting.
		Gate	<ul style="list-style-type: none"> Prohibits timing operation.
	Outputs	OUT	<ul style="list-style-type: none"> Output made according to the output mode setting when the set value is reached.

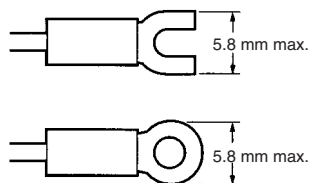
Terminal Arrangement



Note: (2) and (6) are connected internally.
Do not use unused terminals as relay terminals.

Wiring

Use the following type of crimp terminals for M3 screw.



Nomenclature

No. 1 Display

Displays the present value or parameter type. When totalizing count is displayed, the leftmost 4 digits of the 8-digit totalizing count will be displayed. (Zeros suppressed)

Operation display 2

Indicator	Meaning
CMW	Lit when communications writing is enabled.
RST	Lit during reset using reset input or Reset Key.
OUT	Lit when control output is ON.
TOTAL	Lit when totalizing count value is displayed.

Operation display 1

Displays the time unit when the timer function has been selected.

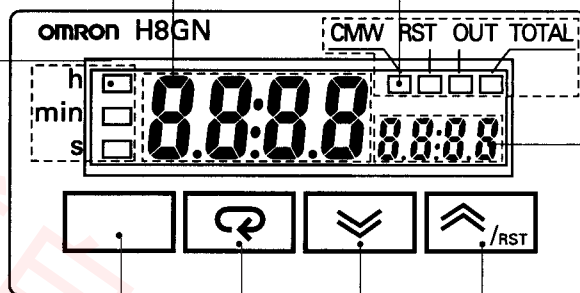
Example

5 h 30 min **5:30**
 123.4 s **123.4**

Flashes while timer is on 0.0 min, 0 h 00 min, 0.0 h, or 0 h.

No. 2 Display

Displays set value or set value of the parameter. Displays the rightmost 4 digits of the count value (8 digits) when the H8GN is used as a totalizing counter. (Zeros suppressed)



Level Key

Press this key to select the setup level. The setup level is selected in order "operation level" ↔ "adjustment level", "initial setting level" ↔ "communications setting level".

Mode Key

Press this key to select parameters within each level.

Down Key

Each press of this key decreases values displayed on the No. 2 display. Hold down this key continuously to decrease values quickly. Also returns setting items.

Up/Reset Key

Each press of this key increases values displayed on the No. 2 display. Hold down this key continuously to increase values quickly. Also advances setting items.

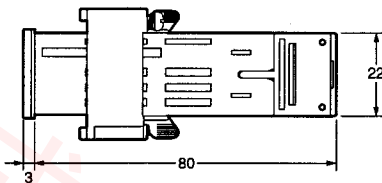
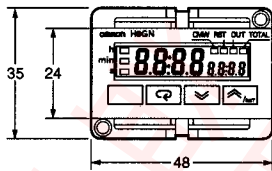
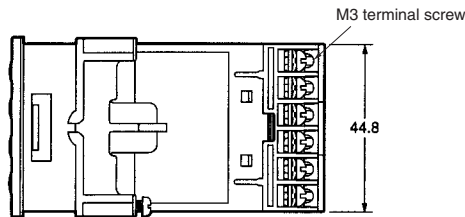
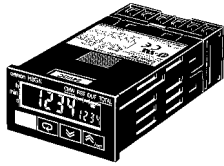
Reset Function

To reset the present value, press this key while the present value is displayed. If this key is pressed while the totalizing count value is displayed, the totalizing count value and the present value will be reset.

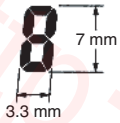
Dimensions

Note: All units are in millimeters unless otherwise indicated.

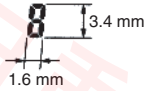
H8GN



No. 1 display digit size

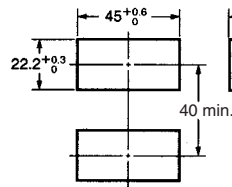


No. 2 display digit size

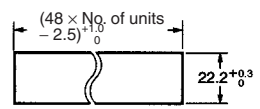


Panel cutout

Separate mounting



Gang mounting



The product cannot be made waterproof when gang-mounted.

- Insert the H8GN in the square cutout, insert the adapter from the back, and push the H8GN into the cutout as far as possible. Use screws to secure the H8GN. To make the H8GN waterproof, insert waterproof packing and tighten the screws.
- When mounting two or more products in a cutout, be sure that the ambient temperature does not exceed the specifications.

Precautions

⚠ Caution

Do not use the product in locations subject to flammable or explosive gases. Doing so may result in explosion.

⚠ Caution

The service life of the output relays depends on the switching capacity and switching conditions. Consider the actual application conditions and use the product within the rated load and electrical service life. Using the product beyond its service life may result in contact deposition or burning.

⚠ Caution

Do not disassemble, repair, or modify the product. Doing so may result in electric shock, fire, or malfunction.

⚠ Caution

Do not allow metal objects or conductive wires to enter the product. Doing so may result in electric shock, fire, or malfunction.

Other Precautions

- Store at the specified temperature. If the H8GN has been stored at a temperature of less than -10°C , allow the H8GN to stand at room temperature for at least 3 hours before use.
- Use the product within the ratings specified for vibration, shock, submerging in water, and exposure to oil.
- Do not use the product in locations subject to dust, corrosive gases, or direct sunlight.
- Use the product within the ratings specified for temperature and humidity.
- The product is designed for 24 VDC. Applying voltages other than the rated one such as 100 to 240 VAC may damage the internal elements.
- Separate the input signal devices, input signal cables, and the product from the source of noise or high-tension cables producing noise.
- Separate the product from the source of static electricity when using the product in an environment where a large amount of static electricity is produced (e.g., forming compounds, powders, or fluid materials being transported by pipe).
- Do not expose the product to organic solvent such as thinner or benzene, strong alkali materials, or strong acid materials. Doing so may damage the product surface.

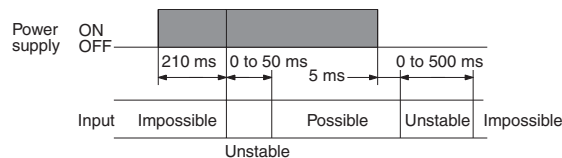
Application Precautions

1. Do not use the product in locations where condensation may occur due to high humidity or where temperature changes are severe.
2. Be sure to wire terminals correctly, with the correct polarity.
3. Maintain the power supply voltage within the allowable ranges.
4. Connect the power supply through a relay or switch so that the voltage reaches a fixed value immediately. If the voltage increases gradually the power supply may be reset or outputs may turn ON.
5. When the power is turned ON, an inrush current (approx. 15 A) will flow momentarily. Depending on power supply capacities, the product may not start due to this leakage current. The power supply must be of a sufficiently large capacity.
6. For the main power supply or the power supply for input devices, use a power supply transformer whose primary side is insulated from the secondary side and whose secondary side is not grounded.

7. Leaving the H8GN with outputs ON at a high temperature for a long time may hasten the degradation of internal parts (such as electrolytic capacitors). Therefore, use the product in combination with relays and avoid leaving the product as long as more than 1 month with the output turned ON.

Power Supplies

When turning the power ON and OFF, input signal reception is possible, unstable, or impossible as shown in the diagram below.



Turn the power ON and OFF using a relay with a rated capacity of 15 A minimum to prevent contact deterioration due to inrush current caused by turning the power ON and OFF.

When power is turned ON, a starting current flows momentarily. Therefore, pay attention to the overcurrent detection level of the power supply used.

Timer Control with Power Start

To allow for the startup time of peripheral devices (sensors, etc.), the H8GN starts timing operation between 210 to 260 ms after power is turned ON (see diagram above). For this reason, in operations where timing starts from power ON, the time display will actually start from 258 ms. If the set value is 258 ms or less, the time until output turns ON will be a fixed value between 210 and 260. (Normal operation is possible for set value of 259 ms or more.) In applications where a set value of 258 ms or less is required, use start timing with signal input.

When the H8GN is used with power start in F mode (i.e., accumulative operation with output on hold), there will be a timer error (approximately 100 ms each time the H8GN is turned ON) due to the characteristics of the internal circuitry. Use the H8GN with signal start if timer accuracy is required.

Changing the Set Value

In Counter Operation

When changing the set value during operation, the output will turn ON if the set value equals the present value.

In Timer Operation

When changing the set value during operation, if the set value is changed in so that the conditions below are satisfied, the Timer operates in the same way as when the present value reaches the set value because a constant read-in system is in use. Depending on the output mode, this may result in output turning ON.

Timer mode UP: Present value \geq set value
 Timer mode DOWN: Elapsed time \geq set value
 (Present value = 0)

Note: When in DOWN mode, the amount set value is changed is added to or subtracted from the present value.

Operation with a Set value of 0

In Counter Operation

The output will turn ON if the set value (0) equals the present value. The output will be OFF while the Reset Key is pressed or the reset input is ON.

In Timer Operation

- a) When the output mode is set to A, B (one-shot output), D, or F, output will turn ON when the start signal is input.
- b) When the output mode is set to B (hold output), E, or Z, output will remain OFF even when the start signal is input.

Response Delay Time When Resetting

The following table shows the delay from when the reset signal is input until the output is turned OFF.

Minimum reset signal width	Output delay time
1 ms	3.7 to 6.0 ms
20 ms	19 to 21 ms

Output Delay Time

The following table shows the delay from when the timer value passes the set value until the output is produced.

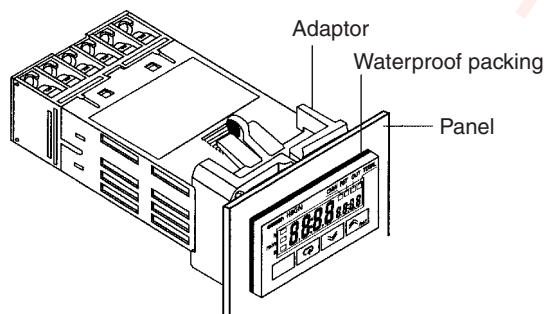
Actual Measurements in N or K Mode

Control output	Max. counting speed	Output delay time*
Contact output	30 Hz	17.3 to 18.9 ms
	5 kHz	3.5 to 5.2 ms

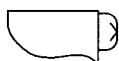
*The variation in delays is due to different modes and conditions.

Mounting

Tighten the two mounting screws on the Adaptor. Tighten them alternately, a little at a time, so as to keep them at an equal tightness.

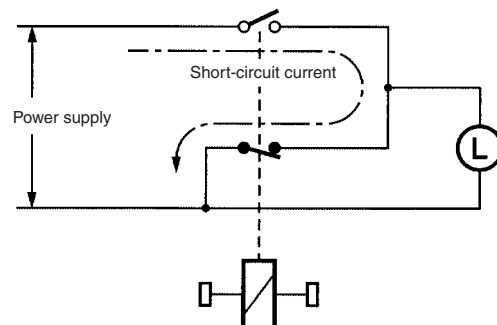


The H8GN's panel surface is water-resistive (conforming to NEMA 4X (indoors) and IP66). In order to prevent the internal circuit from water penetration through the space between the Counter and operating panel, attach a rubber packing (provided with the H8GN) between the Counter and operating panel and secure the rubber packing with the Y92F-34 Flush-mounting Adaptor.



Output

The SPDT (single-pole, double-throw) consists of an SPST-NO contact and an SPST-NC contact. Do not form a circuit with 3-point short-circuit (power short-circuiting with arc).





Reference

For details about communications functions, refer to H8GN Preset Counter/Timer User's Manual (Catalog No. M066).

Operating Procedures

Initial Setup

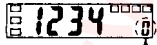
The  and  Keys are used to switch between setup menus, and the amount of time that you hold the keys down for determines which setup menu you move to. This section describes two typical examples.



Note: In the following sections, "PV" is used to indicate a present value and "SV" to indicate a set value.

1. Using the H8GN as a Counter

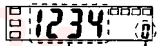
Typical Application Examples

1. Changing Set Values



Set value and selections in each display can be changed by pressing the  and  Keys.

2. Displays



No. 1 display No. 2 display

Typical Application

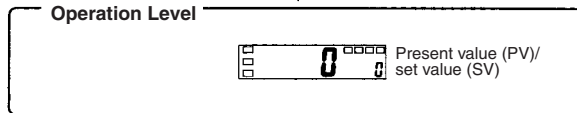
Input mode	Individual input
Output mode	F (overcount)
Counting speed	30 Hz
Input signal width	20 ms
Decimal point	None
Prescale	None


Setup Procedure

Power ON

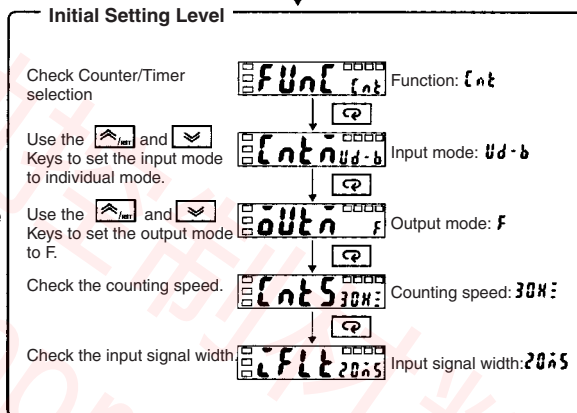



Operation Level



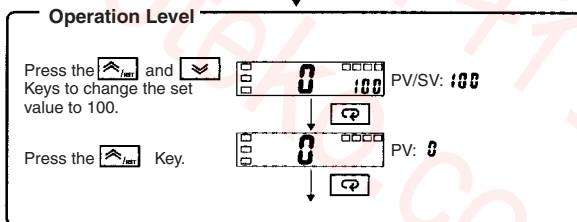
 Press the Level Key for at least 3 s. Operation stops.

Initial Setting Level



 Press the Level Key for at least 1 s. Operation starts.

Operation Level



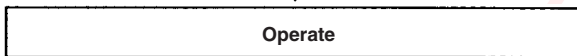
Set SV

Press the  and  Keys to change the set value to 100.

Reset PV

Press the  Key.

Start operation



Confirming Set Values

Set values are effective two seconds after key operation is stopped or when the  or  Key is pressed.

2. Using the H8GN as a Timer

Typical Application Examples

1. Changing Set Values

Set value and selections in each display can be changed by pressing the and Keys.

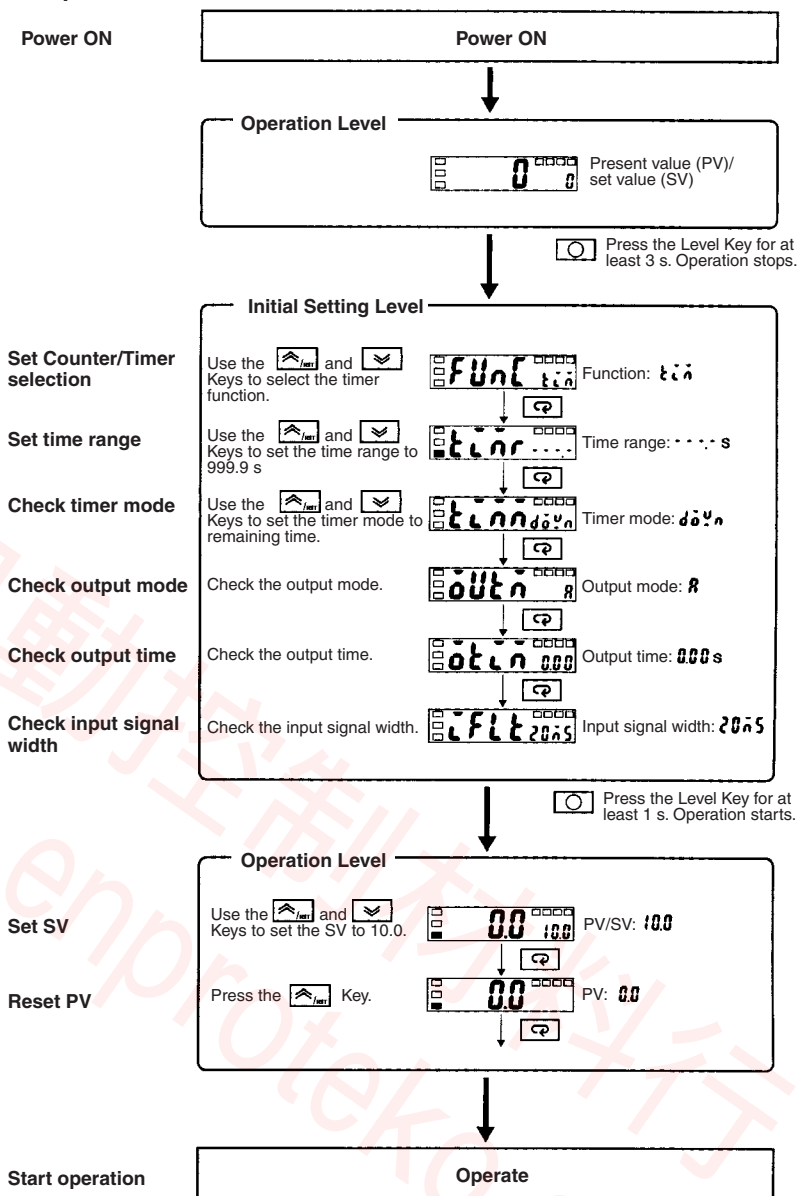
2. Display

No. 1 Display No. 2 Display

Typical Application Examples

Time range	0.0 to 999.9 s
Timer mode	DOWN (remaining time)
Output mode	A mode
Output time	Hold
Input signal width	20 ms

• Setup Procedure



• Confirming Set Values

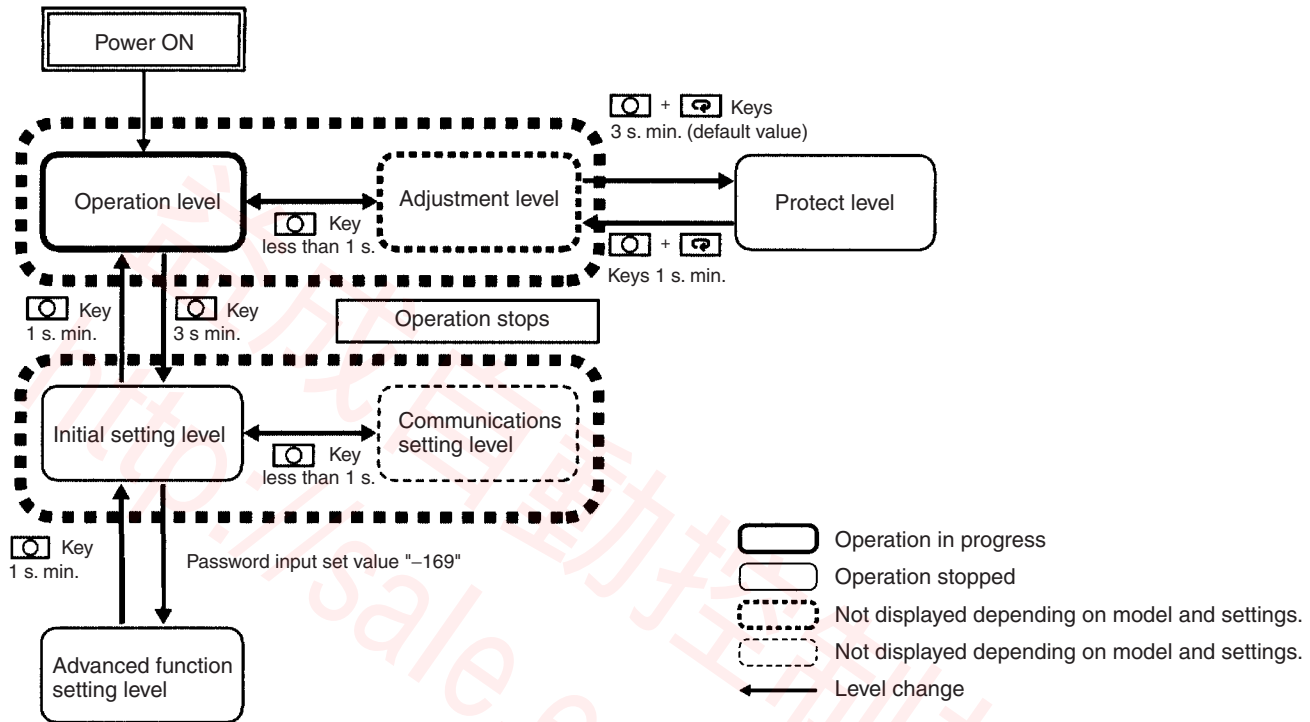
Set values are effective two seconds after key operation is stopped or when the or Key is pressed.

■ Setting Specifications after Turning ON Power

Outline of Operation Procedure

Key Operation

In the following descriptions, all the parameters are introduced in the display sequence. Some parameters may not be displayed depending on the protection settings and operating conditions.



Note: Of these levels, the initial setting level, communications setting level, and advanced function setting level can be used only when operation has stopped. Control output is stopped when these three levels are selected. When switched back to the operation level from one of these levels, operation will start.

Description of Each Level

Operation Level

- This level is displayed when you turn the power ON. You can move to the protect level, initial setting level, and adjustment level from this level.
- Normally, select this level during operation.
- During operation, the present value, set value, totalizing count value, and setting number of SV-bank can be monitored using the Key.

Adjustment Level

- To select this level, press the Key once for less than one second.
- This level is for entering set value (SV 0 to 3) for operation. This level contains parameters for communications writing enable/disable, set value of SV-bank, and cycle time (timer Z mode).
- You can move to the top parameter of the operation level, protect level, or initial setting level from here.

Initial Setting Level

- To select this level, press the Key for at least three seconds in the operation level or adjustment level.
- This level is for selecting the function, input mode, time range, timer mode, output mode, output time, counting speed, input signal width, decimal point position, prescale value, and rising/falling edge for input signal.

- You can move to the advanced function setting level or communications setting level from this initial setting level. To return to the operation level, press the Key for at least one second. To move to the communications setting level, press the key once for less than one second.

Protect Level

- To select this level, simultaneously press the and Keys for at least three seconds (default value). This level is to prevent unwanted or accidental modification of parameters. Protected levels will not be displayed, and so the parameters in that level cannot be modified.

Communications Setting Level

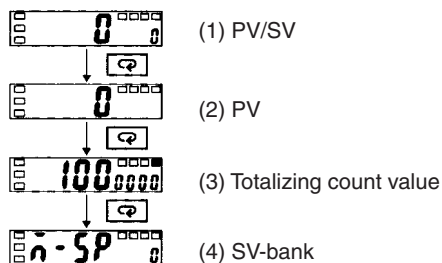
- To select this level, press the Key once for less than one second in the initial setting level. When the communications function is used, set the communications conditions in this level. Communicating with a personal computer (host computer) allows set values to be read and written.

Advanced Function Setting Level

- To select this level, you must change the initial settings/communications protection setting in the protect level to "0" and then enter the password ("-169") in the initial setting level.
- This level is for initializing settings, enabling SV-bank and totalizing counter use, setting display auto-return time, and move-to-protect-level time.
- You can move to the initial setting level from this level.

Parameters

Operation Level



1. PV/SV

This display appears when the power is turned ON. No. 1 display shows the present value and No. 2 display shows the set value. The values displayed will be determined by the settings for Counter/Timer selection, time range, timer mode, and decimal point position made in the initial setting level.

Use the and Keys to change the settings.

2. PV

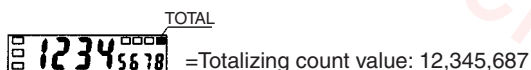
No. 1 display will show the present value and No. 2 display will remain blank. The values displayed will be determined by the settings for Counter/Timer selection, time range, timer mode, and decimal point position made in the initial setting level.

Press the Key to reset the present value.

3. Totalizing Count Value

The totalizing count value is displayed only if "totalizing counter used" in the advanced function setting level has been set to ON.

The leftmost four digits of the 8-digit totalizing count value will be shown in No. 1 display and the rightmost four digits will be shown in No. 2 display.



Press the Key to simultaneously reset the totalizing count value and the present value.



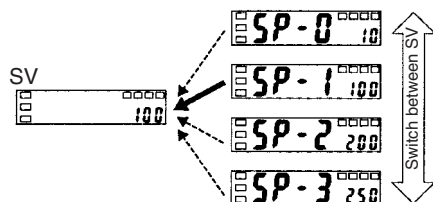
PV 0→1→2→3→0→1→2→0→1→2
 Totalizing count value 0→1→2→3→3→4→5→0→1→2

Refer to **Input/Output Mode Settings** on page 21 for information on totalizing counter operation.

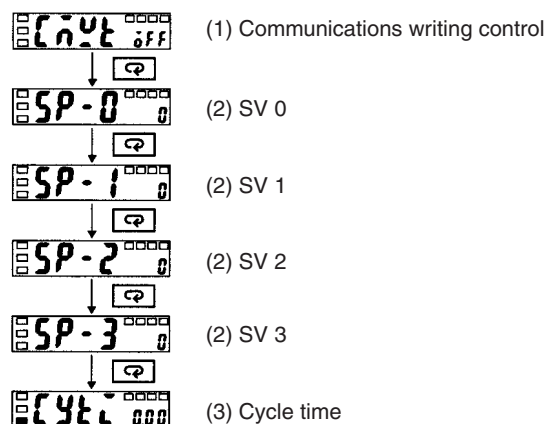
4. SV-bank (SP-0 to SP-3)

SV-bank is displayed only when "SV-bank used" in the advanced function setting level has been set to ON.

Select the SV-bank (SV 0 to 3). To use the SV-bank function, the four set values (SV 0 to 3) can be set beforehand in the adjustment level. The keys on the front of the Unit can then be used during operation to switch between the set values. For models with built-in communications, communications can be used to switch between the set values.



Adjustment Level



1. Communications Writing Control (E2E)

Communications writing control is displayed only for models with communications.

Allows or prohibits communications to write data from a personal computer (host computer). Communications can be used to read data regardless of this setting.

2. SV 0 to 3 (SP-0, SP-1, SP-2, SP-3)

SV 0 to 3 is displayed only when "SV-bank used" in the advanced function setting level has been set to ON.

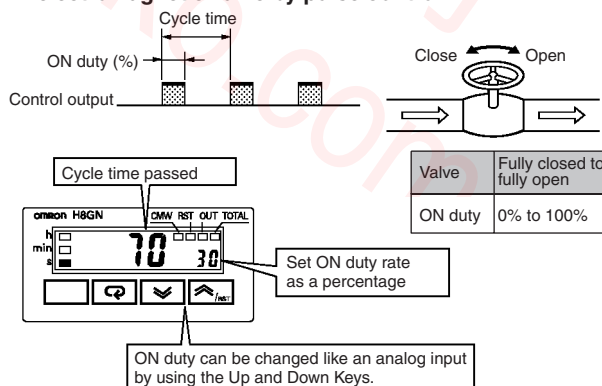
Used to set the set value when the SV-bank function is used. The operator can use the keys on the front to switch between the set values (SV 0 to 3). When the set value is changed in operation mode, the set value (SV 0 to 3) set in the adjustment level for SV-bank will also change.

3. Cycle Time (E4E)

Cycle time is displayed only when the "output mode for timer function" in the initial setting level has been set to "Z."

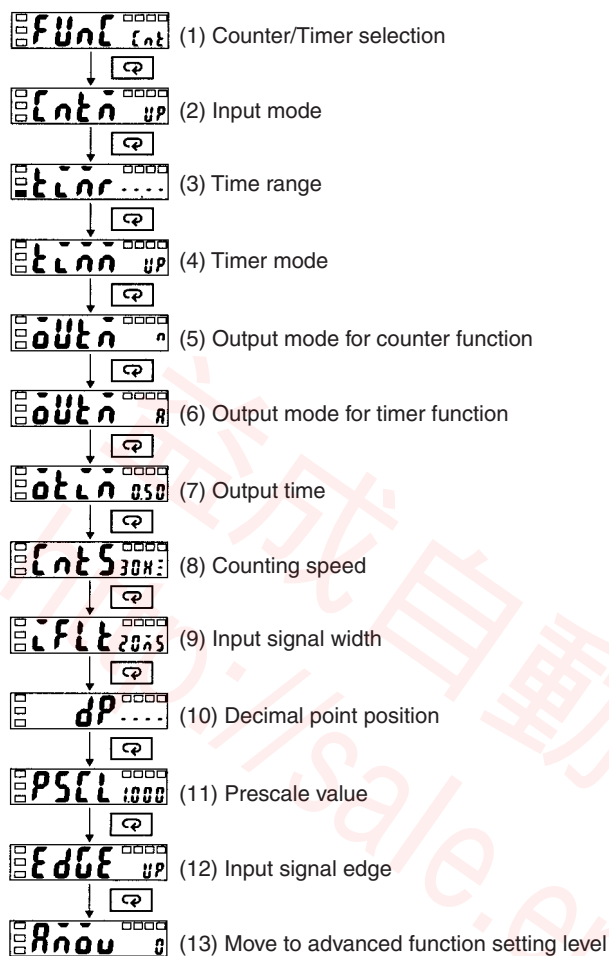
Sets the cycle time used for ON/OFF-duty adjustable flicker mode (Z). Cyclic control can be performed easily in ON/OFF-duty adjustable flicker mode by first setting the cycle time in the adjustment level and by using the set value in operation level to change the ON-duty ratio.

Controlling the flowrate by opening and closing the electromagnetic valve by pulse control.



Refer to **Input/Output Mode Settings** on page 22 for information on ON/OFF-duty adjustable flicker mode operation.

Initial Setting Level



1. Counter/Timer Selection (FUN)

Select to use the H8GN as either a counter or a timer.

2. Input Mode (ENT)

The input mode is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

When the H8GN is to be used as a counter, select increment, decrement, individual, or quadrature for the input mode. If increment or decrement is selected, the input signal edge for CP1 (count input) can be switched using the input signal edge setting. Refer to **Input/Output Modes and Count Values** on page 20 for information on input mode operations.

3. Time Range (TLR)

The time range is displayed only when “Counter/Timer selection” in the initial setting level has been set to timer.

When the H8GN is to be used as a timer, set the time range to be timed.

4. Timer Mode (TLN)

The timer mode is displayed only when “Counter/Timer selection” in the initial setting level has been set to timer.

When the H8GN is to be used as a timer, set the elapsed or remaining time mode.

5. Output Mode for Counter Function (OUT)

The output mode is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

When the H8GN is to be used as a counter, set the output mode. Refer to **Input/Output Mode Settings** on page 21 for information on output mode operations.

6. Output Mode for Timer Function (OUT)

The output mode is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

When the H8GN is to be used as a timer, set the output mode.

Refer to **Input/Output Mode Settings** on page 21 for information on output mode operations.

7. Output Time (OTL)

The output time is displayed only when “output mode for counter function” in the initial setting level has been set to C or K or when “output mode for timer function” in the initial setting level has been set to A or B.

When using one-shot output in the H8GN, set the output time for the one-shot output (0.01 to 99.99 s).

One-shot output can be used only when the C or K output mode is selected for counter function or A or B output mode is selected for timer function.

If the output time is set to “0” when selecting timer function, the output will be held. The output time cannot be set to “0” for counter function.

8. Counting Speed (CNT)

The counting speed is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

When the H8GN is used as a counter, the operator can switch between maximum counting speeds (30 Hz/5 kHz) for CP1 and CP2.

Set to 30 Hz when using a contact for the input signal. When the counting speed is set to 30 Hz, input signal chattering is removed.

9. Input Signal Width (FLW)

Switches between minimum input signal widths (20 ms/1 ms) for start, reset and gate inputs. All input signal widths are set together via external input.

When the counter function is selected, only the reset input is set, but when the timer function is selected the start, gate, and reset inputs are all set together.

Set to 20 ms when using a contact for the input signal. When the input signal width is set to 20 ms, input signal chattering is removed.

10. Decimal Point Position (dP)

The decimal point position is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

This determines the decimal point position for PV, SV, SV-bank (SV 0 to 3), and totalizing count values. Press the Key to move the decimal point to the left and press the Key to move it to the right.

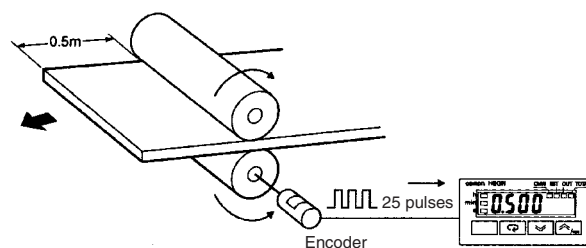
11. Prescale Value (PSEL)

The prescale value is displayed only when “Counter/Timer selection” in the initial setting level has been set to counter.

Converts the counter input pulse to any value within the setting range (0.001 to 9.999).

Example: To have a display of m for a system that outputs 25 pulses when the object has been moved forward 0.5 m, perform the following steps.

1. Set the decimal point position to before the second-last digit.
2. Set the prescale value to 0.02 (0.5 ÷ 25).



12. Input Signal Edge (EdGE)

The input signal edge will be displayed only when the “input mode” at the initial setting level has been set to increment or decrement.

Switches the CP1 input edge when the H8GN is used as an incrementing or decrementing counter. In the counter increment or decrement modes, CP2 will function as the gate input and CP1 counting will be prohibited while CP2 is ON.

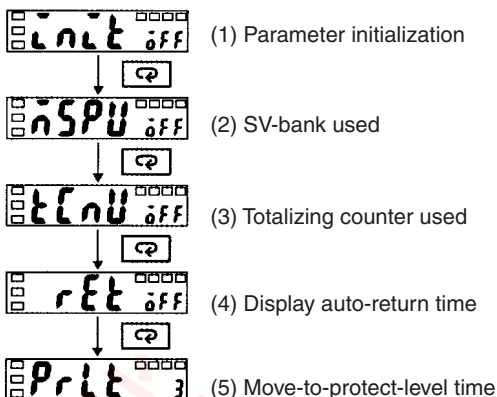
Refer to *Input/Output Modes and Count Values* on page 20 for information on input mode operations.

13. Move to Advanced Function Setting Level (RnDu)

This will be displayed only when the “initial setting/communications protection” in protect level is set to 0.

This setting enables the advanced function settings to utilize the counter/timer functions to the maximum. To move to the advanced function setting level, enter the password (-169) from the initial setting level.

Advanced Function Setting Level



1. Parameter Initialization (LnLl)

Used to return all settings to default values.

Turn ON parameter initialization and shift to another display to return all settings to default values.

2. SV-bank Used (nSPU)

Set "SV-bank used" to ON and operate the keys from the panel to switch between SV 0 to 3.

To use the SV-bank function, the set value (SV 0 to 3) must be set beforehand in the adjustment level. These set value are then used during operation by operating the keys on the front of the Unit.

3. Totalizing Counter Used (tLnU)

Set totalizing counter use to ON to display and enable use of the totalizing counter in the operation level.

The totalizing counter displays the leftmost four digits of the 8-digit totalizing count on No. 1 display and the rightmost four digits on No. 2 display to enable 8-digit counting.

4. Display Auto-return Time (rEt)

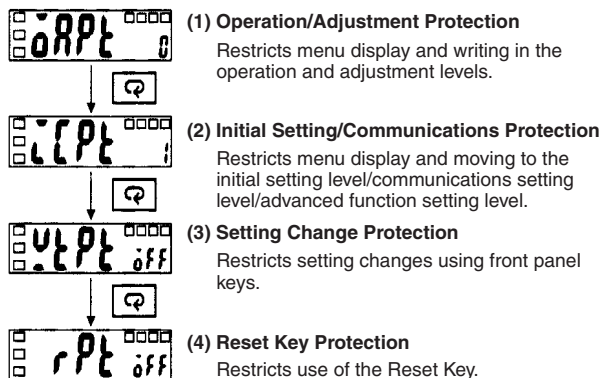
If this function is used, the display in the operation and adjustment levels will automatically return to the PV/SV display if no key operations have been made for the set period. (setting range: 1 to 99 s.)

The time before auto-return of the display can be set here. If this setting is set to OFF, the auto-return function will not operate.

5. Move-to-protect-level Time (PrLt)

If the and Keys are pressed for more than 3 seconds in the operation level, the display will move to the protect level. Use this setting to change the time that the key must be pressed to any time within the setting range (3 to 30 s).

Protect Level



1. Operation/Adjustment Protection (oRPL)

The following table shows the protection given for each setting level.

Setting level	Operation level		Adjustment level
	PV/SV	Other	
0	Not protected	Not protected	Not protected
1	Not protected	Not protected	No display, no level shift
2	Not protected	No display, no level shift	No display, no level shift
3	Display only	No display, no level shift	No display, no level shift

Not protected: Display and setting changes are possible.

Display only: Display is possible.

No display, no level shift: Display and level shifts are not possible.

The initial setting level is 0 and no protection is given at this setting level.

2. Initial Setting/Communications Protection (iLPL)

Moving to initial setting, communications setting, or advanced function setting levels is restricted.

Setting	Initial setting level	Communications setting level	Advanced function setting level
0	OK	OK	OK
1	OK	OK	NO
2	NO	NO	NO

OK: Move to other levels possible

NO: Move to other levels not possible

The default setting is 1.

3. Setting Change Protection (sLPL)

Restricts setting changes using front panel keys.

Setting	Meaning
OFF	Settings can be changed by key operation.
ON	Settings cannot be changed by key operation. (Only protect level settings can be changed.)

The default setting is OFF.

4. Reset Key Protect (rPL)

Prohibits the use of the Reset Key.

Setting	Meaning
OFF	PV and totalizing count values can be reset by the Reset Key.
ON	PV and totalizing count values cannot be reset by the Reset Key.

The default setting is OFF.

Communications Setting Level






The communications specifications are set in the communications setting level. Make the individual communications settings from the front panel.

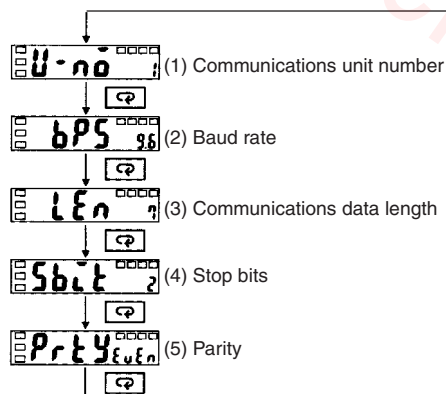
The communications parameters and their settings are listed in the following table.

Parameter	Display	Settings	Set value
Communications unit number	$U-n\bar{o}$	0 to 99	0 / 1 to 99
Baud rate	bPS	1.2, 2.4, 4.8, or 9.6 (kbps)	1.2 / 2.4 / 4.8 / 9.6
Communications data length	LEn	7/8 (bits)	7 / 8
Stop bits	$Sb\bar{c}t$	1/2	1 / 2
Parity	$Pr\bar{t}y$	None, even, or odd	$n\bar{o}nE$ / $EUEn$ / $\bar{o}dd$

- Note:**
- The settings shown in reverse video are the default settings.
 - Settings made in the communications setting level are enabled when the power is turned ON again.

Before performing communications, perform the following procedure with the front panel keys to set the communications unit number, baud rate, and other settings. Refer to the communications manual for operation methods for other communications settings.

- Press the  Key for at least 3 seconds and move from the operation level to the initial setting level.
- Press the  Key and move from the initial setting level to the communications setting level.
- Press the  Key to change the settings items as shown below.
- Use the  and  Keys to change the settings data.



Align each communications setting with the settings on the personal computer or other communications device.

1. Communications Unit Number ($U-n\bar{o}$)

When communicating with a host computer, set a unit number to enable the host computer to identify each unit. The number can be set in a range from 0 to 99 in increments of 1. The default unit number is 1. When using multiple units, the units will not function normally if the same unit number is set for more than one unit.

2. Baud Rate (bPS)

Set the baud rate for communications with the host computer. The settings correspond to the following baud rates.

1.2 (1,200 bps), 2.4 (2,400 bps), 4.8 (4,800 bps), and 9.6 (9,600 bps).

3. Communications Data Length (LEn)

The communications data length can be changed to either 7 or 8 bits.

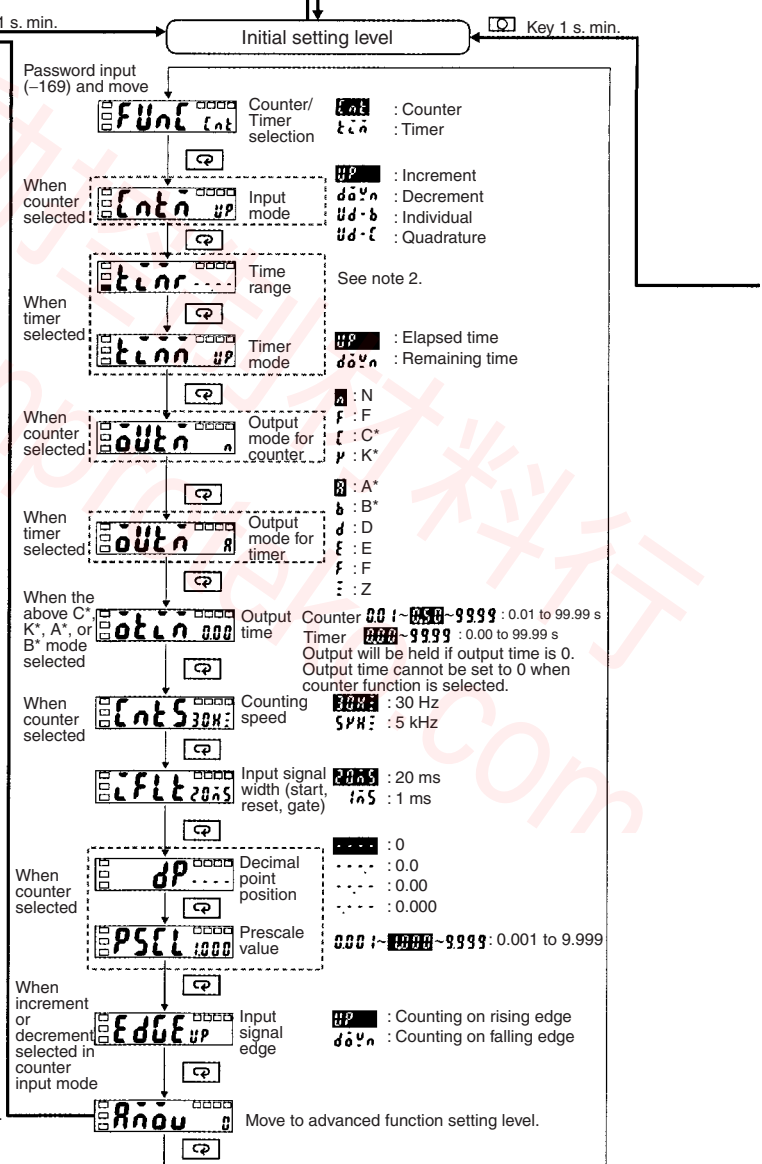
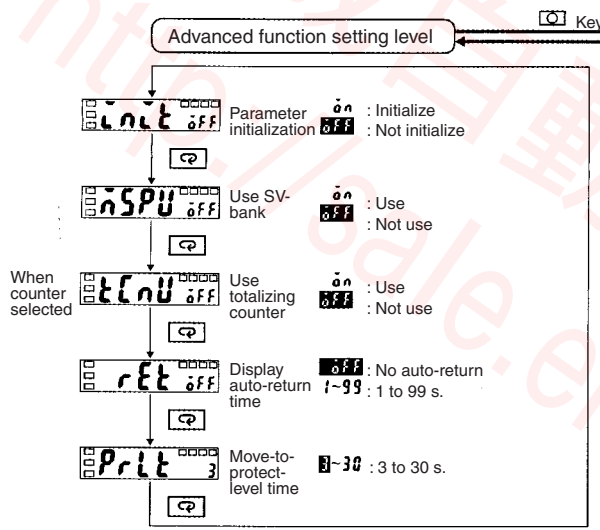
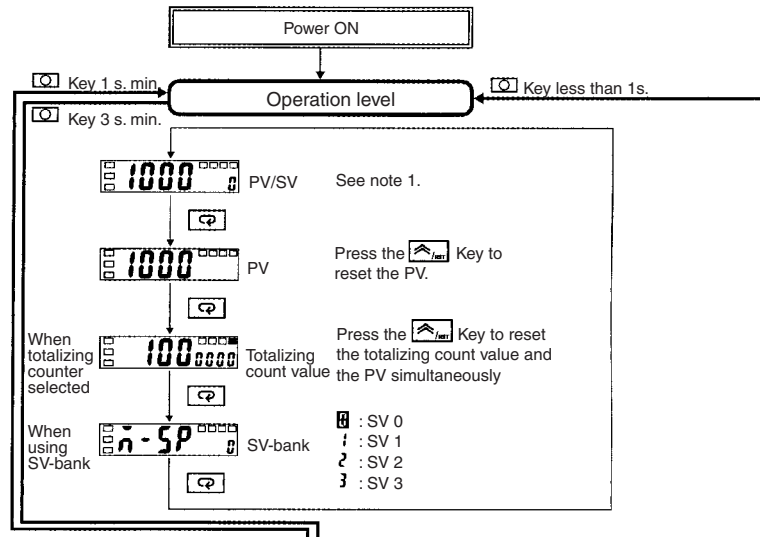
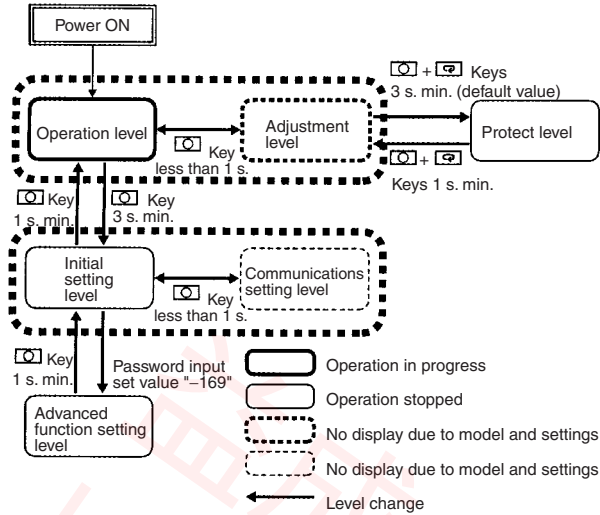
4. Stop Bits ($Sb\bar{c}t$)

The stop bits can be set to either 1 or 2.

5. Parity ($Pr\bar{t}y$)

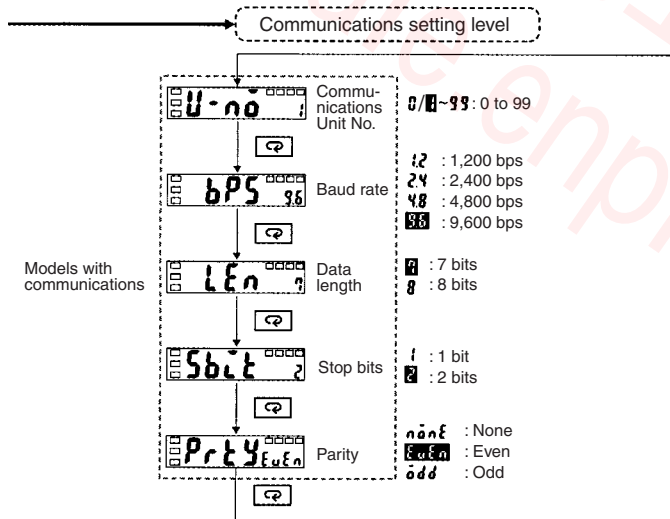
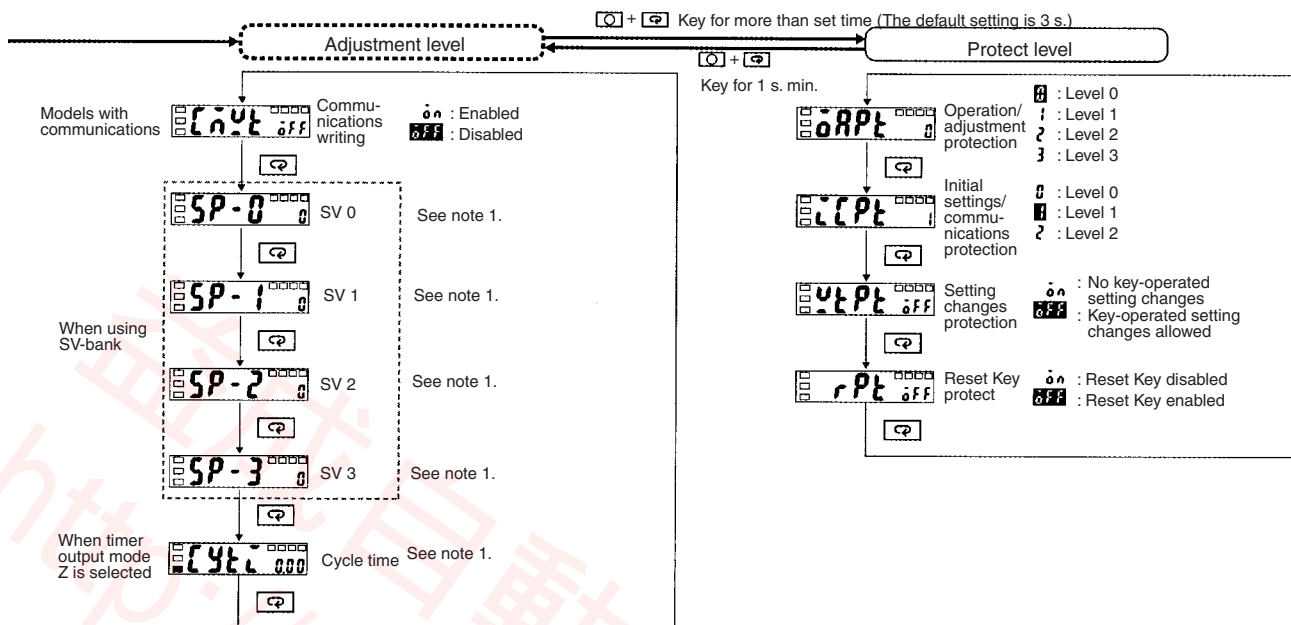
The parity can be set to none, even, or odd.

Parameters



Note : The parameters shown in reverse video are the default settings.

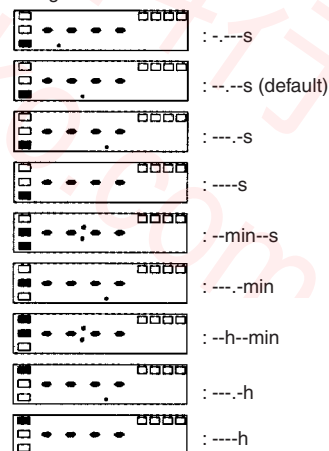
See note 3.



Note : Settings made in the communications setting level are enabled when the power is turned ON again.

- Note:** 1. Counter (increment or decrement)
 0~9999 : 0 to 9999
 Counter (individual or quadrature)
 -999~0~9999 : -999 to 9999
 Timer (cycle time or mode other than output mode Z)
 0.000~9.999 : 0.000 to 9.999 s
 0.00~99.99 : 0.00 to 99.99 s
 0.0~999.9 : 0.0 to 999.9s, min, h
 0~9999 : 0 to 9999 s, h
 0.000~99.59 : 0 min 00 s to 99 min 59 s
 0.00~99.59 : 0 h 00 min to 99 h 59 min
 Timer (output mode Z)
 0~100 : 0% to 100% (ON duty)

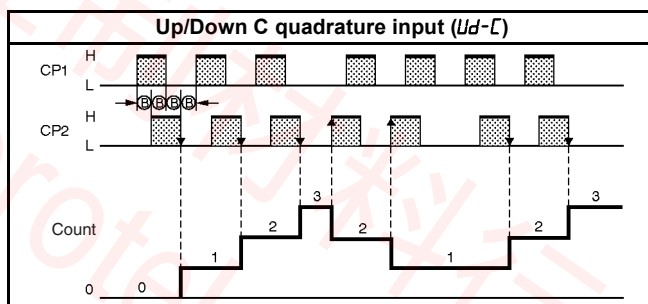
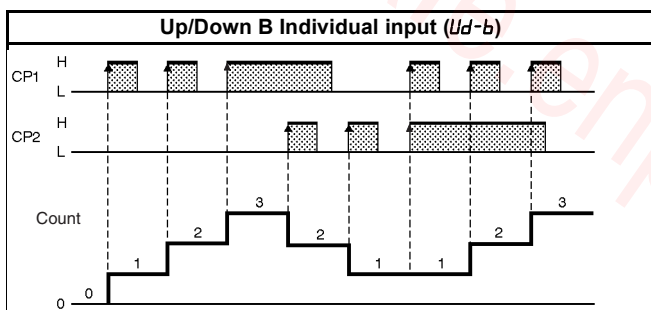
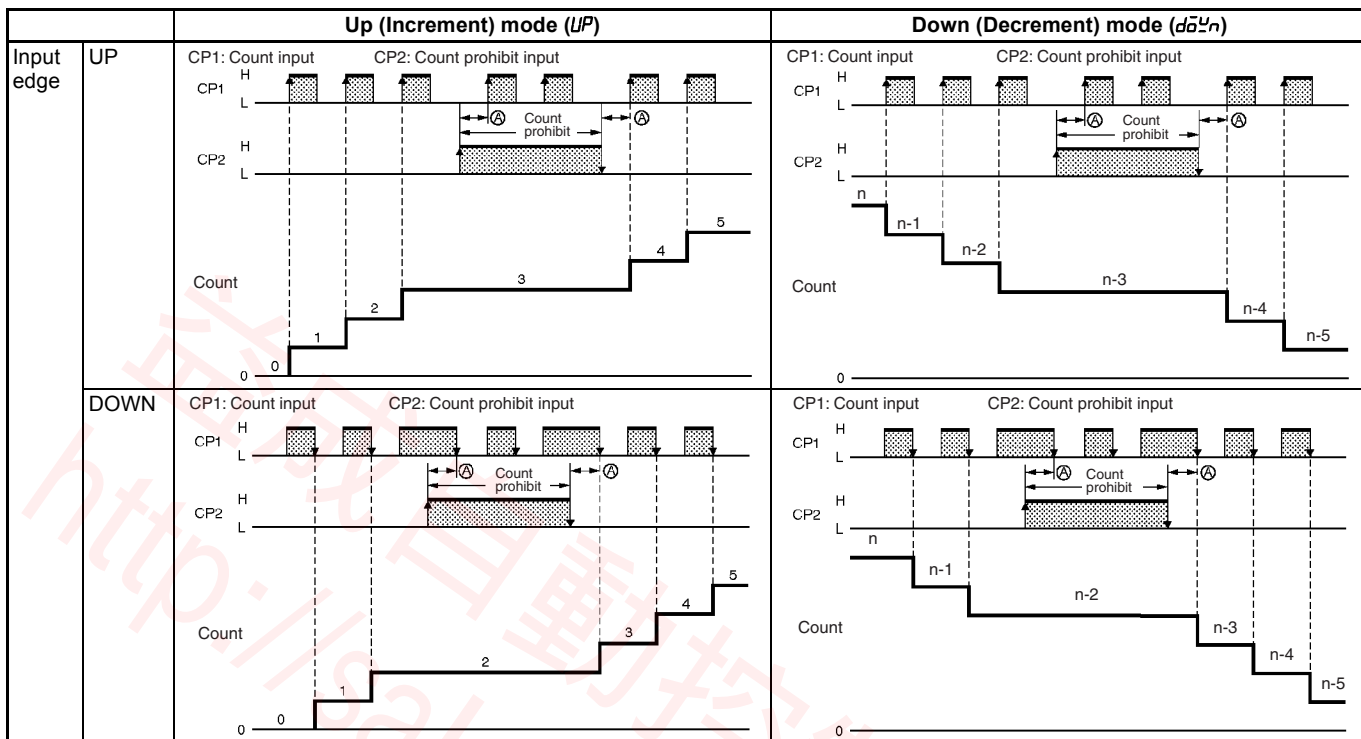
2. Time range



3. Displayed when level 0 is selected for initial setting/communications protection in the protect level.

Operating Mode

Input/Output Modes and Count Values



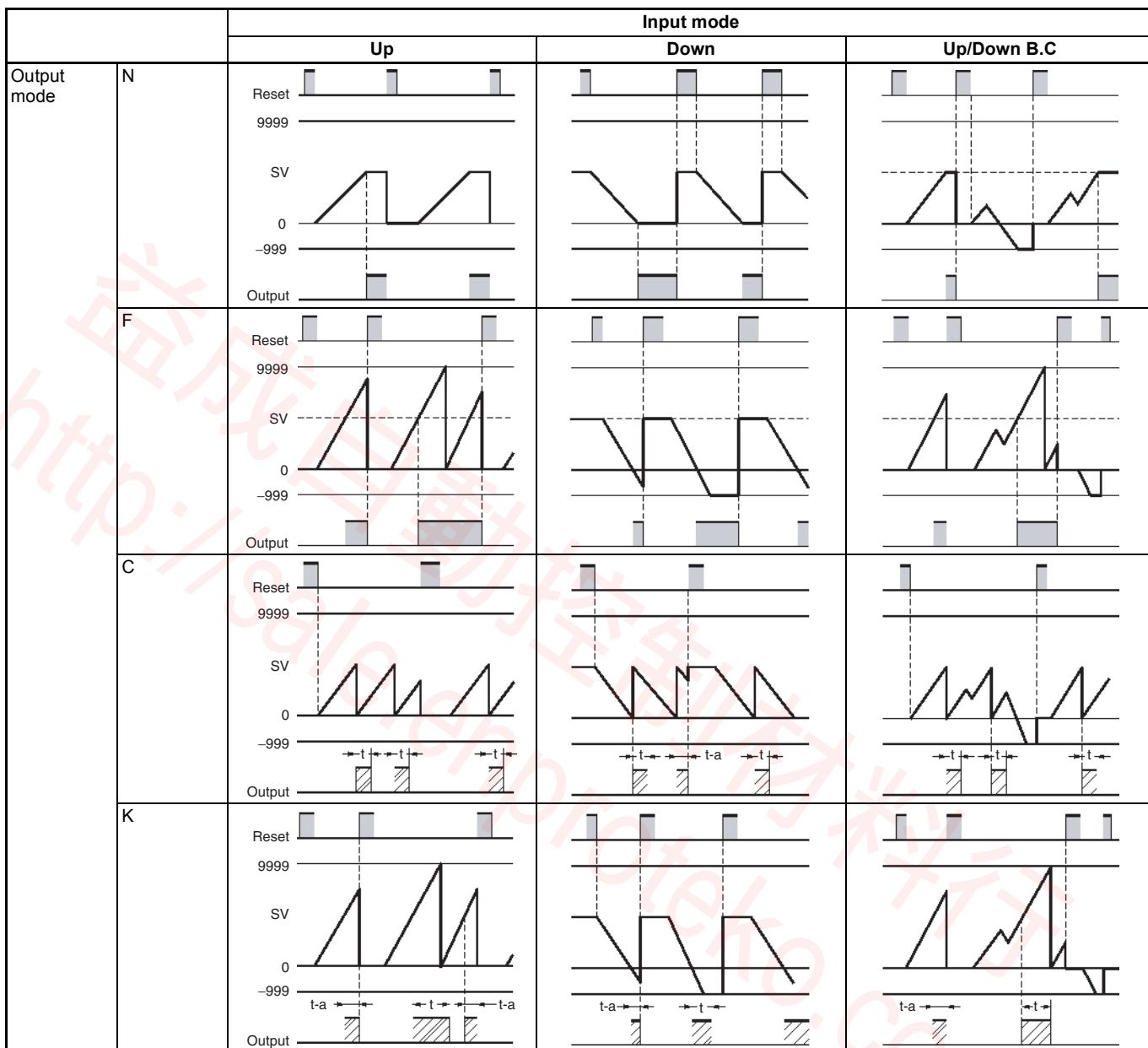
Note: 1. (A) indicates the minimum signal width and (B) requires at least 1/2 the minimum signal width. If these conditions are not met, a counting error (+1 or -1) may occur.

2. The following table explains the L and H symbols in the above graphics.

Symbol	Input
H	Short-circuited
L	Open

Input/Output Mode Settings

Counter Function

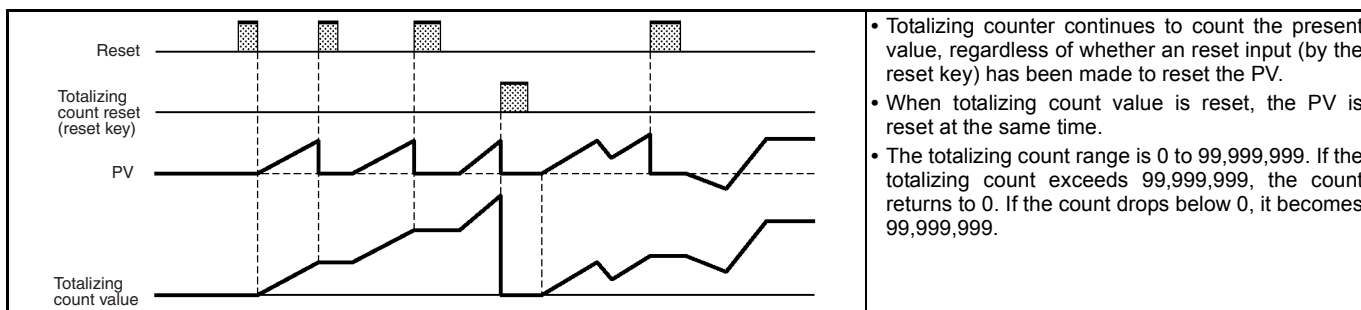


Note: 1. t : output time. $t - a < t$: Less than the output time.

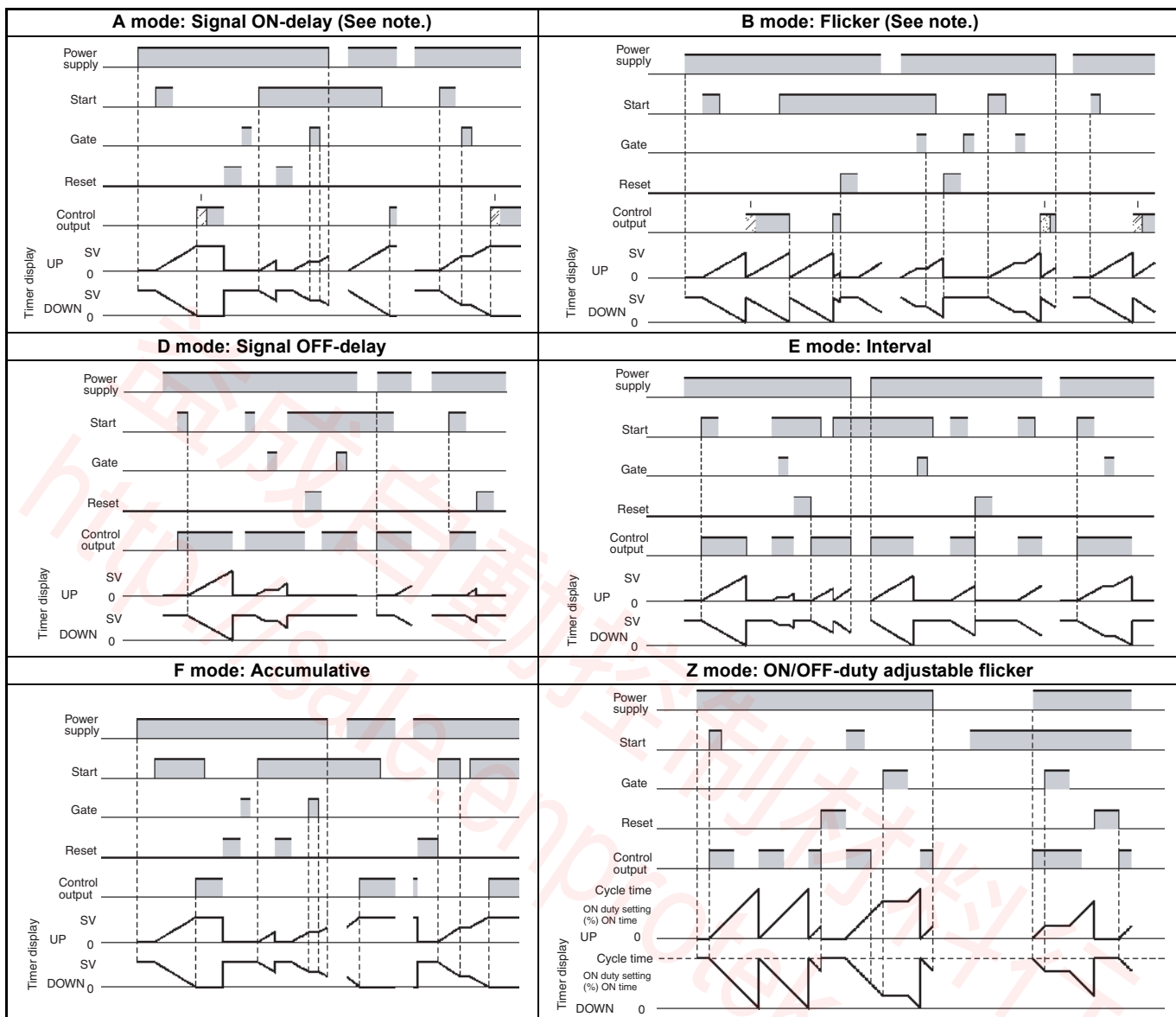
2. If there is a power failure during output ON, output will turn ON again when the power supply has recovered. For one-shot output, an output will be made again for the duration of the output time setting once the power supply has resumed.

3. Output timing restarted during one-shot outputs is ignored.

Totalizing Counter Operation



Timer Function

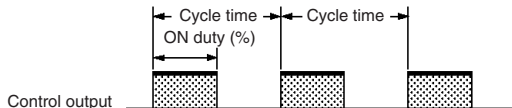


Note: One-shot output or HOLD output can be selected for output:

Z Mode

Output quantity can be adjusted by changing the cycle time set in the adjustment level to 1 and by changing the ON duty (%) set value.

The set value shows the ON duty (%) and can be set to a value between 0 and 100 (%). When the cycle time is 0, the output will always be OFF. When the cycle time is not 0 and when ON duty has been set to 0 (%), the output will always be OFF. When ON duty has been set to 100 (%), the output will always be ON.



■ Troubleshooting

When an error occurs, the error code is displayed on the main display. Take countermeasures according to the code.

No. 1 display	No. 2 display	Error contents	Countermeasure
E 111	No display	Memory error (RAM)	Turn the power OFF and ON again. If normal operation is still not restored, it may be necessary to repair or replace the H8GN. If normal operation is restored by turning the power supply OFF and ON, it is possible that there is noise interference. Check that there is nothing in the vicinity that may be the source of noise.
E 111	5U \bar{n}	Memory error (EEP)	
E 1	No display	CPU error	This is not an actual error. This display indicates that the present value has dropped to a value less than -999. Reset using reset input or pressing the Up Key when "----" is displayed.
- - - - Flashes	Set value displayed or no display	Present value under-flow	

Note: Error codes are displayed only if PV/SV or PV is being displayed.

Additional Information

Parameters List

Fill in your set values in the *Set value* column of the following tables and utilize the tables for quick reference.

Protect Level

Parameter name	Parameter	Setting range	Default value	Unit	Set value
Operation/Adjustment Protection	$\bar{O}APL$	0 to 3	0		
Initial Setting/Communications Protection	$\bar{I}CP$	0 to 2	1		
Setting Change Protection	$\bar{Y}LP$	$\bar{O}N/\bar{O}FF$	$\bar{O}FF$		
Reset Key Protection	$\bar{R}PL$	$\bar{O}N/\bar{O}FF$	$\bar{O}FF$		

Operation Level

Parameter name		Parameter	Setting (display) range	Default value	Unit	Set value	
Present value (PV)/ Set Value (SV)	PV	Counter	-999 to 9999/---- (PV<-999)	0			
		Timer		0.000 to 9.999 (Time range=----s)	0.000	Second	
				0.00 to 99.99 (Time range=--.-s)	0.00	Second	
				0.0 to 999.9 (Time range=---.s)	0.0	Second	
				0 to 9999 (Time range=----s)	0	Second	
				0:00 to 99:59 (Time range=--min--s)	0:00	Minute: Second	
				0.0 to 999.9 (Time range=---.min)	0.0	Minute	
				0:00 to 99:59 (Time range=--h--min)	0:00	Hour: Minute	
				0.0 to 999.9 (Time range=---.h)	0.0	Hour	
				0 to 9999 (Time range=----h)	0	Hour	
	SV		Counter		0 to 9999 (Input mode=Up or Down)	0	
				-999 to 9999 (Input mode=Individual or quadrature)	0		
		Timer (Output mode: A, B, D, E, F)		0.000 to 9.999 (Time range=----s)	0.000	Second	
				0.00 to 99.99 (Time range=--.-s)	0.00	Second	
				0.0 to 999.9 (Time range=---.s)	0.0	Second	
				0 to 9999 (Time range=----s)	0	Second	
				0:00 to 99:59 (Time range=--min--s)	0:00	Minute: Second	
				0.00 to 999.9 (Time range=---.min)	0.0	Minute	
				0:00 to 99:59 (Time range=--h--min)	0:00	Hour: Minute	
				0.00 to 999.9 (Time range=---.h)	0.0	Hour	
	0 to 9999 (Time range=----h)	0	Hour				
	Timer (Output mode: Z)	0 to 100	0	%			
PV			Same as for PV in the above PV/SV column.				
Totalizing count value			0 to 99999999	0			
SV-bank		$\bar{n}-5P$	01/12/13	0			

Adjustment Level

Parameter name	Parameter	Setting range	Default value	Unit	Set value
Communications writing control	$CnWt$	$\bar{0}/\bar{0}FF$	$\bar{0}FF$		
SV 0	$SP-0$	Same as for PV in the above PV/SV column.			
SV 1	$SP-1$	Same as for PV in the above PV/SV column.			
SV 2	$SP-2$	Same as for PV in the above PV/SV column.			
SV 3	$SP-3$	Same as for PV in the above PV/SV column.			
Cycle time	Timer (Output mode=Z)	$CYtC$	0.000 to 9.999 (Time range=---s)	0.000	Second
			0.00 to 99.99 (Time range=--s)	0.00	Second
			0.0 to 999.9 (Time range=---s)	0.0	Second
			0 to 9999 (Time range=----s)	0	Second
			0:00 to 99:59 (Time range=--min--s)	0:00	Minute: Second
			0.0 to 999.9 (Time range=---min)	0.0	Minute
			0:00 to 99:59 (Time range=--h--min)	0:00	Hour: Minute
			0.0 to 999.9 (Time range=---h)	0.0	Hour
		0 to 9999 (Time range=----h)	0	Hour	

Initial Setting Level

Parameter name	Parameter	Setting range	Default value	Unit	Set value
Counter/Timer selection	$FUnC$	Cnt/tCn	Cnt		
Input mode	$CntEn$	$UP/d\bar{0}Yn/Ud-b/Ud-C$	UP		
Time range	$tCnr$	$----S/----S/----S/----S/--nLn--S/----nLn/-H--nLn/----H0----H$	$----$	Second	
Timer mode	$tCnn$	$UP/d\bar{0}Yn$	UP		
Output mode for counter function	$\bar{0}UtEn$	$n/FICIP$	n		
Output mode for timer function	$\bar{0}UtEn$	$RIBIdIEIFIE$	R		
Output time	Counter	$\bar{0}tCn$	0.0 to 99.99	0.50	Second
	Timer		0.00 to 99.99	0.00	Second
Counting speed	$CntS$	$30H\bar{E}15PH\bar{E}$	$30H\bar{E}$		
Input signal width	$CFLt$	$20\bar{r}51\bar{r}5$	$20\bar{r}5$		
Decimal point position	dP	$----/----/-/--/-----$	$----$		
Prescale value	$P5CL$	0.00 to 9.999	1.000		
Input signal edge	$EdeE$	$UP/d\bar{0}Yn$	UP		
Move to function setting level	$Rn\bar{0}U$	-999 to 9999	0		

Communications Setting Level

Parameter name	Parameter	Setting range	Default value	Unit	Set value
Communications unit number	$U-n\bar{0}$	0 to 99	1		
Baud rate	bPS	1.2/2.4/4.8/9.6	9.6	kbps	
Communications data length	LEn	7/8	7	bit	
Stop bits	$SbCt$	1/2	2	bit	
Parity	$PrEtY$	$n\bar{0}nE/EuEn/\bar{0}dd$	$EuEn$		

Advanced Function Setting Level

Parameter name	Parameter	Setting range	Default value	Unit	Set value
Parameter initialization	\overline{CnL}	$\overline{0n}/\overline{0FF}$	$\overline{0FF}$		
SV-bank used	\overline{nSPU}	$\overline{0n}/\overline{0FF}$	$\overline{0FF}$		
Totalizing counter used	\overline{tCnU}	$\overline{0n}/\overline{0FF}$	$\overline{0FF}$		
Display auto-return time	\overline{rEt}	$\overline{0FF}/1$ to 99	$\overline{0FF}$	Second	
Move-to-protect-level time	$\overline{P-rL}$	3 to 30	3	Second	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

H7GP 型加總計數器 / 計時器 (DIN48 × 24)

實現易辨識性與IP66G之耐油性、耐水性
DIN48 × 24 尺寸之加總計數器、計時器

- 採用寸身高度 8.5mm 之陰極式 LCD 及紅色 LED 背光，以低消耗電力實現與 LED 同等之高辨識性。
- 前面部位與殼部份之一體化以及使用耐油質材質符合 IP66(JEM 規格 IP66G) MEMA4。
- 實現機體深度 80mm 之短體型化。
- 以開關之切換對應 NPN 及 PNP 各種輸入模式。
- 對應外部復歸及手動復歸兩種方式。
- 附有 VDE0106Part 100 標準之保護手指防止觸電之端子台蓋蓋。
- AC 式為 AC 100~240V 自由輸入電源。
- 取得 UL、CSA 安全規格。
- 符合 EMC 規格 (EN50081-2、EN50082-2)。



種類

額定電額	內容 前置遮蓋顏色	6 位數加總計數器		6 位數計時，計數器	
		淺灰色	黑色	淺灰色	黑色
AC100~240V	型式	H7GP-C 型	H7GP-CB 型	H7GP-T 型	H7GP-TB 型
DC12~24V	型式	H7GP-CD 型	H7GP-CDB 型	H7GP-TD 型	H7GP-TDB 型

銘記

項目	6 位數加總計數器		6 位數計時，計數器		
型式	H7GP - C 型	H7GP -CD 型	H7GP-T 型	H7GP-TD 型	
額定電額	AC100~240V(50/60Hz)	DC12~24V ※	AC100~240V(50/60Hz)	DC12~24V ※	
外部供給電源	DC12V 50mA	—	DC12 50mA	—	
電壓允許變異範圍	額定電壓之 85~110%				
消耗電力	AC 電源：6.5VA 以下 DC 電源：0.6W 以下				
外觀尺寸	寬 48 × 高 24 × 深 80mm				
裝置方式	埋入式安裝				
外部連接方法	螺栓端子				
保護構造	JEM 規格 IP66G、美國 MEMA 規格 4(室內) 僅指面板表面				
顯示方式	7 段式陰極式 LCD(附有紅色背光)				
位數(寸身高度)	6 位數(文字高度 8.5mm)				
輸入方式	加算		累計		
最高計數速度	30Hz {cps}、5kHz {k cps} (使用按鍵開關切換)		—		
計數範圍	0 ~ 999999		—		
時間模樣	—		0.1~99999.9h/1s~99h59m59s		
時間精度	—		± 100ppm(-10~55°C)		
停電記憶方式	使用 EEPROM 做備份(可重寫次數 20 萬次以上)				
輸入	輸入信號	計數、復歸、按鍵保護※※		啟動、復歸、按鍵保護※※	
	輸入方式	無電壓輸入(NPN 電晶體輸入) / 電壓輸入(PNP 電晶體輸入) 共用(使用按鍵開關切換)			
	計數、復歸、啟動	<ul style="list-style-type: none"> 無電壓輸入(NPN 電晶體輸入) 短路(ON 時)阻抗：1k Ω 以下 短路(ON 時)殘留電壓：DC2V 以下 開路(OFF 時)阻抗：100k Ω 以上 		<ul style="list-style-type: none"> 電壓輸入(PNP 電晶體輸入) 短路(ON 時)阻抗：1k Ω 以下 ON 電壓：DC9~24V OFF 電壓：DC5V 以下 開路(OFF 時)阻抗：100k Ω 以上 	
	按鍵保護※※	<ul style="list-style-type: none"> 無電壓輸入(NPN 電晶體輸入) 短路(ON 時)阻抗：1k Ω 以下 短路(ON 時)殘留電壓：DC0.5V 以下 開路(OFF 時)阻抗：100k Ω 以上 			
輸入應答速度	復歸	20/1ms(調整計數速度自動切換)		20ms	
	啟動	—		20ms	
	按鍵保護	約 1s		約 1s	
復歸方式	外部復歸、手動復歸				
使用溫度範圍	-10~+55°C(但不結冰狀態)				
保存溫度	-25~+65°C(但不結冰狀態)				
使用濕度範圍	35~85%RH				
外觀裝色	灰霧色(前面部份為 5Y7/1(淺灰色)或 N1.5(黑色))				

※含有漣波 20%(p-p) 以下。
 ※※按鍵保護輸入只有無電壓輸入(NPN 電晶體輸入)。
 請注意使用 NPN/PNP 輸入模式之切換開關亦無法轉成 PNP 輸入模式。

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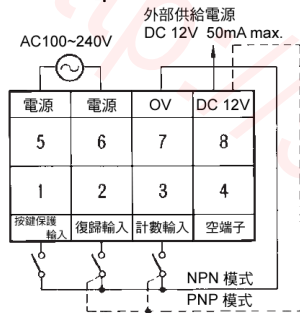
H7GP

性能

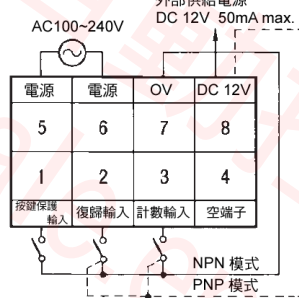
絕緣阻抗	100M Ω以上 (DC500V Mega 時)	
耐電壓	AC2000V 1min 導電部端子及露出非充電之金屬部間 (AC 式) AC1000V 1min 導電部端子及露出非充電之金屬部間 (DC 式) AC2000V 1min 電源端子及控制輸入端子間 (AC 式) AC1000V 1min 電源端子及控制輸入端子間 (DC 式)	
衝擊電壓	3KV(電源端子間)、但 DC12~24V 式為 1KV 4.5KV(導電部端子及露出之非充電金屬部間)、但 DC12~24V 式為 1.5KV	
耐雜波	± 1.5kV(AC 電源端子間)、± 480V(DC 電源端子間)、± 480V(輸入端子間) 根據雜波模擬器之方形雜波 (脈衝振幅 100ns、1 μs 起始 1ns)	
靜電電氣耐性	顯示部位：誤動作 8kV、破壞 15kV 按鍵開關：誤動作 4kV、破壞 8kV	
振動	耐久	10~55Hz 單振幅 0.75mm 3 軸各方向
	誤動作	10~55Hz 單振幅 0.75mm 3 軸各方向
衝擊	耐久	294m/s ² (約 30G) 3 軸各方向
	誤動作	196m/s ² (約 20G) 3 軸各方向
重量	約 76g	
取得規格	詳情請參閱機種規格認定一覽表	

端子排列

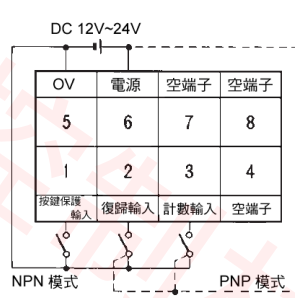
AC 型 H7GP-C 型



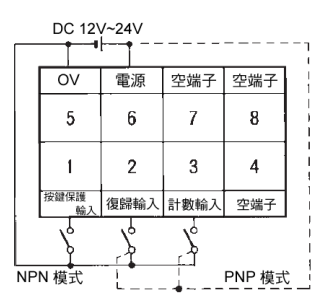
H7GP-T 型



DC 型 H7GP-CD 型

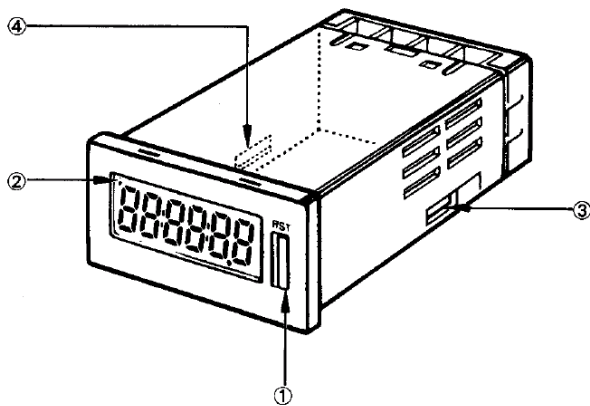


H7GP-TD 型



各部付之名稱及按鈕開關之設定方法

各部位之名稱



① 復歸鍵

復歸計數值。
但，按鍵保護中無動作。

② 按鍵保護動作顯示

表示按鍵保護中 (復歸鍵無效中)。

③ 切換 NPN/PNP 輸入模式用之按鍵開關

(復歸及計數動作停止)
切換後必須再次輸入電源。
還有，此時之表示數值變成 0。
詳細請參照下述內容。

④ 切換計數速度用之按鍵開關 (H7GP-C 型)

④ 切換時間常律用之按鍵開關 (H7GP-T 型)

切換後必須再次輸入電源。還有，此時之表示數值變成 0。
詳細請參照下述內容。

出貨時全部設定在顯示側。

H7GP-C、-CD 型

開關	項目	內容	
③ (從前面看 上去之右側)	輸入模式 *1	顯示側	NPN
		端子側	PNP
④ (從前面看 上去之左側)	計數速度 *1	顯示側	30Hz
		端子側	5kHz

*1. 有再次輸入電源之必要。還有，此時之表示數值變成 0。

H7GP-T、-TD 型

開關	項目	內容	
③ (從前面看 上去之右側)	輸入模式 *1	顯示側	NPN
		端子側	PNP
④ (從前面看 上去之左側)	計數速度 *1	顯示側	9999.9h * 2
		端子側	99h59m59s

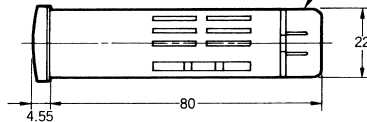
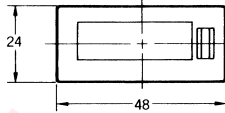
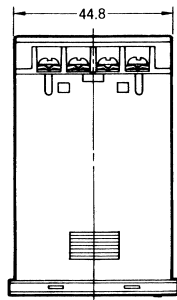
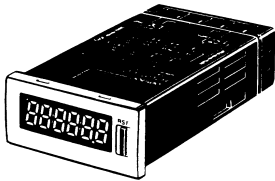
*1. 有再次輸入電源之必要。還有，此時之表示數值變成 0。

*2. 在設定 9999.9h 之時，小數點 1 秒 1 秒地閃爍。

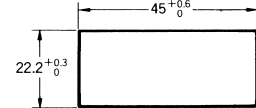
H7GP

■ 外觀尺寸

H7GP-C 型
H7GP-T 型



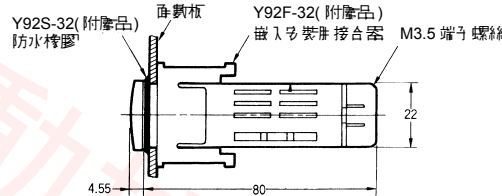
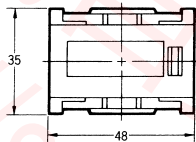
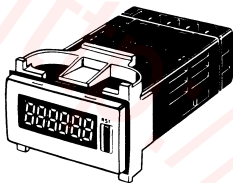
面板裁切尺寸
標準面皮裁切尺寸如下圖。
(DIN43700 標準)



註：1. 安裝面板厚度在1~6mm適當
2. 安裝時會失去防水性，不可。

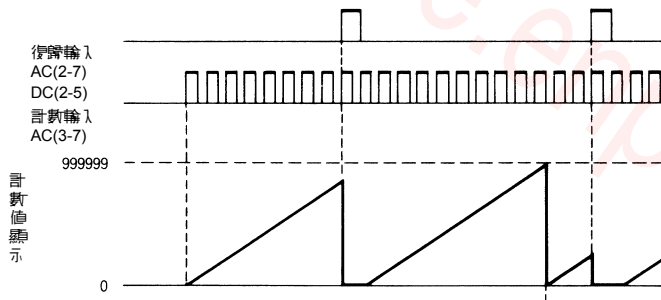
CAD檔 H7GP_01

■ 接合器安裝尺寸

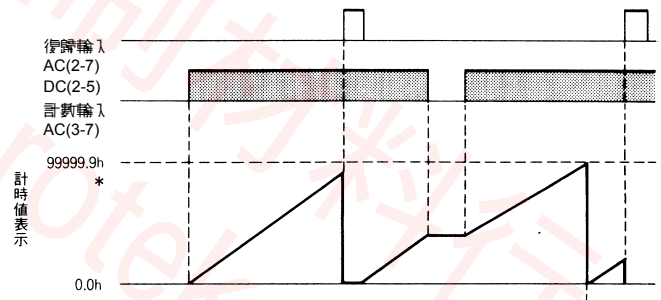


■ 計數動作

● Total 計數動作



● 時間計數動作

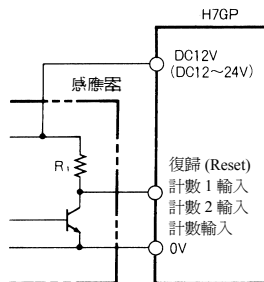


* 由全刻度值 99999.9 選擇表示的值

■ 輸入的連接

● 無電壓輸入 (NPN 輸入模式選擇)

復歸 (Reset)、計數 1、計數 2
計數輸入

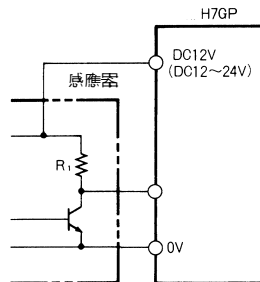


規格

- 短路 (ON 時) 阻抗 : 1k Ω 以下
- 短路 (ON 時) 殘留電壓 : DC2V 以下
- 0 Ω 短路時流出電流 : 約 2mA
- 開放 (OFF 時) 阻抗 : 100k Ω 以上

註：2 線式感應器不可使用

Key 保護輸入



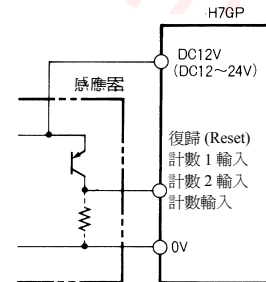
規格

- 短路 (ON 時) 阻抗 : 1k Ω 以下
- 短路 (ON 時) 殘留電壓 : DC0.5V 以下
- 0 Ω 短路時流出電流 : 約 0.5mA
- 開放 (OFF 時) 阻抗 : 100k Ω 以上

註：2 線式感應器不可使用

電壓輸入 (PNP 輸入模式選擇)

復歸 (Reset)、計數 1、計數 2 計數輸入



規格

- 短路 (ON 時) 阻抗 : 1k Ω 以下
- ON 電壓 : DC9~24V 以下
- OFF 電壓 : DC5V 以下
- 開放 (OFF 時) 阻抗 : 100k Ω 以上

註：2 線式感應器不可使用

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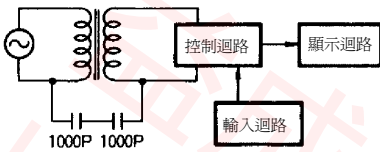
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H7GP

■ 請正確使用

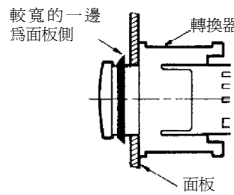
注意

- H7GP型之電源(1次側)及控制迴路(2次側)間以變壓器分離，因由電容器結合電晶體之 1 次、2 次間，高頻電波成份可能在 2 次側邊洩露出來。
- 因可能引起觸電，故請勿將輸入迴路與可接觸部位（裝置之主體等）連接。還有，請先切斷電源後再進行配線工作。



● 安裝時注意 (嵌入安裝時)

操作部位有防止水浸入之構造 (NEMA4、IP66標準)，且附有橡膠包裝防止水從計數器本體與顯示面板切面間的縫隙滲入，但此橡膠包裝如果沒有確實壓緊，仍有滲水的可能，請注意包裝之方向性外，請務必使用安裝變壓器 (Y92F-32 型)。為確保防水性，安裝變壓時請使用一字螺絲起子等確實將壓緊。



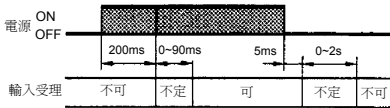
● 其他

- 會因使用環境等因素而導致耐水性惡化。敬請定期檢查確認其防水性。
- 會因油之類等物質使性能無法發揮。敬請事先研究。

正確使用方法

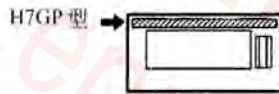
● 關於電源

- 請注意輸入信號的受理會因電源之 ON/OFF 出現可、不可、及不可的狀況。



● 關於單位貼紙

單位貼紙為同梱之故，請依用途調整使用。



● 關於附屬配件

H7GP 型之附屬配件如下所述。請先確認使用方法後，正確使用之。

防水橡膠包裝	Y92S-32 型
埋入式安裝之連接器	Y92F-32 型

● 關於自我診斷機能

發生異常時如下顯示。

顯示	內容	復歸方式
E1	CPU 異常	<div style="border: 1px solid black; padding: 2px; display: inline-block;">RST</div> 鍵或重新輸入電源
E2	記憶異常	

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H7HP 型加總計數器 / 計時器 (DIN72 × 36)

實現易辨識性與IP66G之耐油性、耐水性

DIN72 × 36 尺寸之加總計數器計時器

- 實現大型顯示，6位數型之字高為15mm、8位數型為12mm。
- 採用字高8.5mm之陰極式LCD及紅色LED背光，以低消耗電力實現與LED同等之高辨識性。
- 前面部位與外殼部份之一體化以及使用耐油質材質符合IP66(JEM規格IP66G) NEMA4。
- 實現機體深度66mm之短體型化。
- 6位數型具可切加總計數器/計時器之功能。
- 以開關之切換對應NPN及PNP各種輸入模式。
- 對應外部復歸及手動復歸兩種方式。
- 附有VDE0106Part 100標準之保護手指防止觸電之端子夾扼B蓋。
- AC式為AC 100~240V自由輸入。
- 取得UL、CSA安全規格。符合EMC規格(EN50081-2、EN50082-2)。



種類

額定電額	前置遮蓋顏色	6位數加總計數器 / 計時器		8位數加總計數器	
		淺灰色	黑色	淺灰色	黑色
AC100~240V	型式	H7HP-A型	H7HP-AB型	H7HP-C8型	H7HP-C8B型
DC12~24V	型式	H7HP-AD型	H7HP-ADB型	H7HP-C8D型	H7HP-C8DB型

概要

項目	6位數加總計數器 / 計時器		8位數加總計數器	
項目	H7HP-A型	H7HP-AD型	H7HP-C8型	H7HP-C8D型
額定電額	AC100~240V(50/60Hz)	DC12~24V ※	AC100~240V(50/60Hz)	DC12~24V ※
外部供給電源	DC12V 50mA	—	DC12 50mA	—
電壓容許變動範圍	額定電壓之85~110%			
消耗電力	AC電源：6.5VA以下 DC電源：0.6W以下			
外觀尺寸	寬72×高36×深66mm			
裝置方式	埋入式安裝			
外部連接方法	螺絲端子			
保護構造	JEM規格IP66G、美國MEMA規格4(室內)僅指面板表面			
顯示方式	7段式陰極式LCD(附有紅色背光)			
位數(字高)	6位數(文字高度15mm)		8位數(文字高度12mm)	
機能	加總計數器/計時器(共用)(使用按鍵開關切換)		加總計數器	
輸入方式	加減算(加總計數器時)累計(計時器時)		加減算	
最高計數速度	30Hz [cps]、5kHz [k cps] (使用按鍵開關切換)			
計數範圍	-99999~999999		-9999999~99999999	
時間模樣	0.1~99999.9h/1s~99h59m59s		—	
時間精密度	±100ppm(-10~55℃)		—	
停電記憶方式	使用EEP-ROM做備份(可重寫次數20萬次以上)			
輸入	輸入信號	計數1(加算)、計數2(減算)復歸、按鍵保護※※		
	輸入方式	無電壓輸入(NPN電晶體輸入)/電壓輸入(PNP電晶體輸入)共用(使用按鍵開關切換)		
	計數、啟動、開門、復歸	<ul style="list-style-type: none"> • 無電壓輸入(NPN電晶體輸入) 短路(ON時)阻抗 : 1kΩ以下 短路(ON時)殘留電壓 : DC2V以下 開路(OFF時)阻抗 : 100kΩ以上 	<ul style="list-style-type: none"> • 電壓輸入(PNP電晶體輸入) 短路(ON時)阻抗 : 1kΩ以下 ON電壓 : DC9~24V以下 OFF電壓 : DC5V以下 開路(OFF時)阻抗 : 100kΩ以上 	
	按鍵保護※※	無電壓輸入(NPN電晶體輸入) 短路(ON時)阻抗: 1kΩ以下 短路(ON時)殘留電壓: DC0.5V以下 開路(OFF時)阻抗: 100kΩ以上		
復歸	復歸	計時器時為20ms、加總計數器20/1ms(調整計數速度自動切換)		
	啟動	計時器時為20ms		—
	按鍵保護	約1s		約1s
復歸方式	外部復歸、手動復歸			
使用溫度	-10~+55℃(但不結冰狀態)			
保存溫度	-25~+65℃(但不結冰狀態)			
使用濕度	35~85%RH			
外觀裝色	灰霧色(前面部份為5Y7/1(淺灰色)或N1.5(黑色))			

※含有波動率20%(p-p)以下。
 ※※按鍵保護輸入只有無電壓輸入(NPN電晶體輸入)。
 請注意使用NPN/PNP輸入模式之切換開關亦無法轉成PNP輸入模式。

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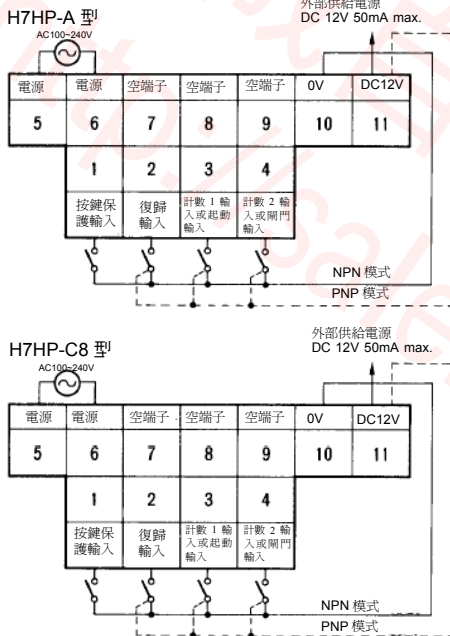
H7HP

性能

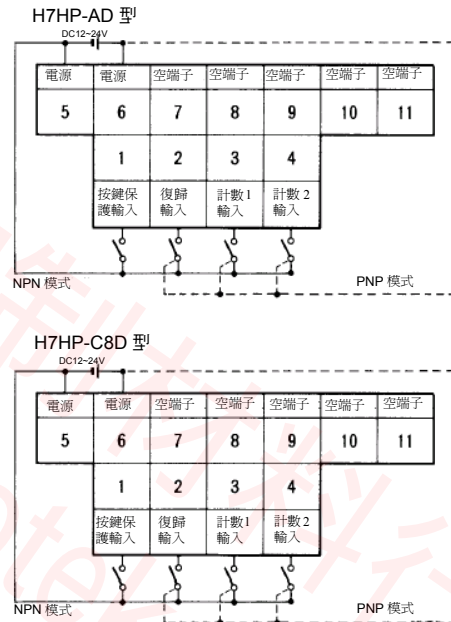
絕緣阻抗	100M Ω以上 (DC500V 依 Mega 數)	
耐電壓	AC2000V 1min 導電部端子及露出非充電之金屬部間	(AC 式)
	AC1000V 1min 導電部端子及露出非充電之金屬部間	(DC 式)
	AC2000V 1min 電源端子及控制輸入端子間	(AC 式)
	AC1000V 1min 電源端子及控制輸入端子間	(DC 式)
衝擊電壓	3kV(電源端子間)、但 DC12-24V 式為 1kV 4.5kV(導電部端子及露出之非充電金屬部間)、但 DC12-24V 式為 1.5kV	
耐雜波	± 1.5kV(AC 電源端子間)、± 480V(DC 電源端子間)、± 480V(輸入端子間) 根據雜波模擬器之方形雜波 (脈衝振幅 100ns、1 μs 起始 1ns)	
靜電氣耐力	顯示部位：誤動作 8kV、破壞 15kV	
	按鍵開關：誤動作 4kV、破壞 8kV	
振動	耐久	10~55Hz 單振幅 0.75mm 3 軸各方向
	誤動作	10~55Hz 單振幅 0.5mm 3 軸各方向
衝擊	耐久	294m/s ² (約 30G) 3 軸各方向
	誤動作	196m/s ² (約 20G) 3 軸各方向
重量	約 160g	

端子排列

● AC 型



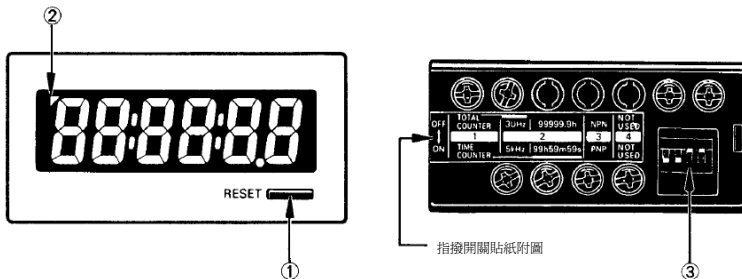
● DC 型



註：計數 1 輸入 (CP1) 加算、計數 2 輸入 (CP2) 減算

H7HP 各部分名稱及按鍵開關之設定方法

● 各部分名稱



① 復歸鍵

復歸計數值。
但，按鍵保護中無動作。

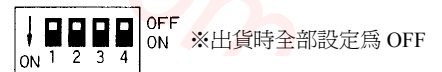
② 按鍵保護動作顯示

表示按鍵保護中 (復歸鍵無效中)。

③ 變換設定使用

詳細請參照右表。

● 指撥開關之設定方法



H7HP-A、AD

番付	項目	OFF	ON
1	機能	加總計數器	計時計數器
2	計數速度 *	30Hz	5kHz
	時間範圍 *	99999.9h	99h59m59s
3	輸入模式 *	NPN	PNP
4	未使用	-	-

H7HP-C8、-C8D

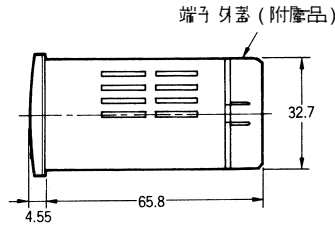
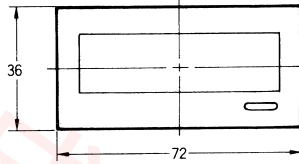
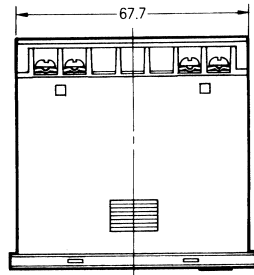
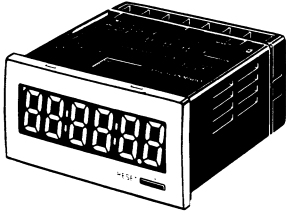
番付	項目	OFF	ON
1	未使用	-	-
2	計數速度 *	30Hz	5kHz
3	輸入模式 *	NPN	PNP
4	未使用	-	-

※切換後、電源須再次輸入。還有，當時之顯示變成 0。

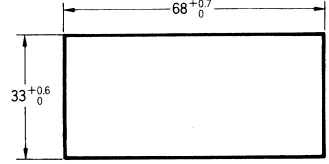
H7HP

外觀尺寸

H7HP-A 型
H7HP-C8 型



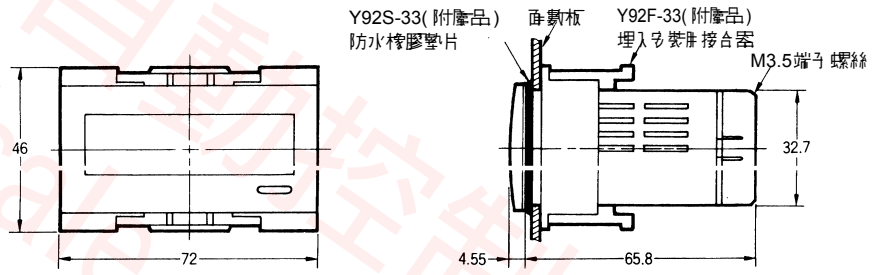
面板裁切尺寸
標準面板裁切尺寸如下圖
(DIN43700 標準)



註：1. 安裝面板厚度 1~6mm 適當
2. 密著安裝想法失去耐水性，不可。

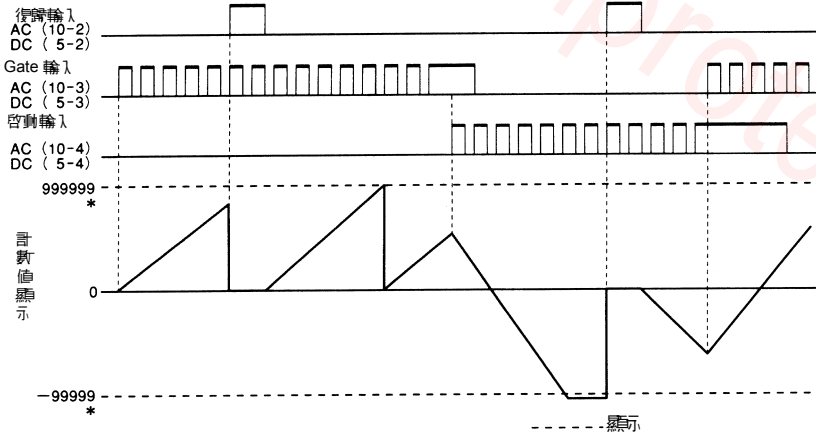
CAD 檔 H7HP_01

接合器標準尺寸



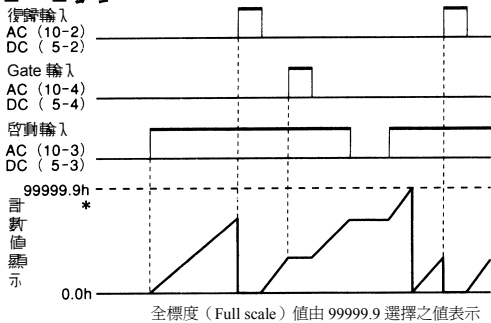
計數動作

● 綜合計數動作



* 6 行數字的型式表示

● 高字元計數動作



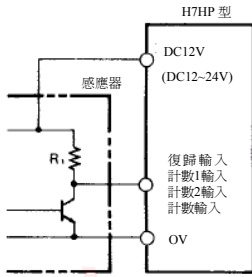
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H7HP

■ 輸入的連接

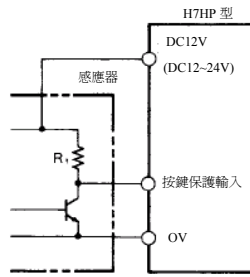
- 無電壓輸入 (選擇 NPN 輸入模式)
復歸、計數 1、計數 2、計數輸入



規格

- 短路 (ON 時) 阻抗: 1k Ω 以下
- 短路 (ON 時) 殘留電壓: DC2V 以下
- 0 Ω 短路時流出電流: 約 2mA
- 開路 (OFF 時) 阻抗: 100k Ω 以上
- 註: 不能使用 2 線式感應器。

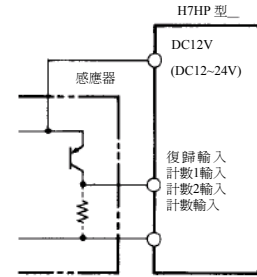
- 按鍵保護輸入



規格

- 短路 (ON 時) 阻抗: 1k Ω 以下
- 短路 (ON 時) 殘留電壓: DC0.5V 以下
- 0 Ω 短路時流出電流: 約 0.5mA
- 開路 (OFF 時) 阻抗: 100k Ω 以上
- 註: 不能使用 2 線式感應器。

- 高電壓輸入 (選擇 PNP 輸入模式)
復歸、計數 1、計數 2、計數輸入



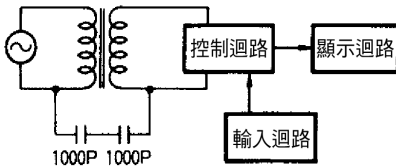
規格

- 短路 (ON 時) 阻抗: 1k Ω 以下
- ON 電壓: DC09-24V 以下
- OFF 電壓: DC5V 以下
- 開路 (OFF 時) 阻抗: 100k Ω 以上
- 註: 不能使用 2 線式感應器。

■ 請正確使用

注意

- H7GP 型之電源 (1 次側) 及控制迴路 (2 次側) 間以變壓器分離, 因由電容器結合電晶體之 1 次、2 次間, 高周波成份可能在 2 次側邊洩露出來。因可能引起觸電, 故請勿將輸入迴路與可接觸部位 (裝置之主體等) 連接。還有, 請先切斷電源後再進行配線工作。

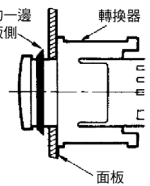


- 安裝時注意 (埋入式安裝)

雖然操作部位有防止水浸入之構造 (NEMA4、IP66 標準), 且附有橡膠包裝防止水從計數器本體與顯示面板切面間的縫隙滲入, 但此橡膠包裝如果沒有確實壓緊, 仍有滲水的可能, 請注意包裝之方向性外, 請務必使用安裝變壓器 (Y92F-33 型)。為確保防水性, 安裝變壓時請使用一字螺絲起子等確實將壓緊。

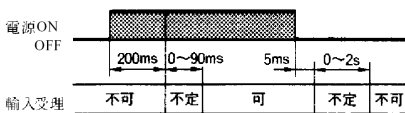
- 其他

- 會因使用環境等因素而導致耐水性惡化。敬請定期檢查確認其防水性。
- 會因油之類等物質使性能無法發揮。敬請事先研究。



正確使用手法

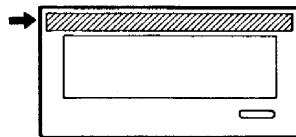
- 關於電源
請注意輸入信號的受理會因電源之 ON/OFF 產生可、不可、及不定的狀況。



- 關於添附貼紙

添附貼紙有單位貼紙及按鍵開關貼紙。請貼在下圖指示處使用。

- 關於貼紙



- 按鍵器圖式



- 關於附屬配件

H7GP 型之附屬配件如下所述。請先確認使用方法後, 正確使用之。

防水橡膠包裝	Y92S-33 型
埋入式安裝之連接器	Y92F-33 型

- 關於自動診斷功能

發生異常時如下顯示。

顯示	內容	復歸方式
-----	-99999 以下時 (6 位數型)	[RST] 鍵或復歸輸入
-----	-9999999 以下時 (8 位數型)	
E1	CPU 異常	[RST] 鍵或重新輸入電源
E2	記憶體異常	

H7E □ N 型小型總計數器 / 計時器 / 轉速器

提升辨識與使用容易度的小型計數器。

- 寸高 8.6mm 實現了大型的表示。
- 計數可達 8 位。
- 重視辨識性而將螢幕顯示燈系統化。
- 採用保護按鍵裝置防止 Reset 的誤動。
- 外殼顏色除原有的淺灰色外增加了黑色使其系統化。
- 面板部分與 NEMA4 對應，交換電池後其本機可再使用。
- 採用與 VDE0106 Part100 相準的手指防護構造。
- 取得安全規格 UL、CSA，與 CE 市場對應。符合 EN61010-1 污染度 2 / 絕緣等級 III。
- 1口以上符合 EN50081-1、EN50082-2 的 EMC 規格，則可在商業、輕工業環境中使用。
* 並未與海外型對應。



「本商品另備有中文單冊目錄 OTE-SCEF-D2，請洽詢購買經銷商」

■ 型式基準

- 標準 / 附帶螢幕顯示燈
- H7E □ -N □ □ □ - □ □ 型
① ②③④ ⑤⑥

編號	分類	記號	記號的意義
①	機能	C	總數計數
		T	計時
		R	數位轉速計數
② ③	輸入信號 (註 1)	無	無電壓輸入
		V	電壓輸入
		FV	自由電壓輸入
④	表示	總數計數	無 8 位數 <0 ~ 99999999>
		計時	無 7 位數 <0.0h ~ 999999.9h/0.0h ~ 3999d23.9h>
		1	7 位數 <0s ~ 999h59m59s/0.0m ~ 9999h59.9m>
		數位轉速計數 (註 2)	無 4 位數 (1kHz)<1000min ⁻¹ /1000s ⁻¹ >
1	5 位數 (10kHz)<100.00s ⁻¹ /10000min ⁻¹ /1000.0min ⁻¹ >		
⑤	外形顏色	無	淺灰色 (5Y7/1)
		1	黑色 (N1.5)
⑥	螢幕顯示燈 (註 3)	無	無螢幕顯示器
		1	有螢幕顯示器

註 1) 數位轉速計數 自由電壓輸入型式 (FV) 無。
 註 2) 數位轉速計數的表示記號「1」只有電壓輸入型式才有。
 註 3) 螢幕顯示燈只有壓輸入型式的設定機種才有。

- 海外型式
- H7E □ -N □ P 型
① ②

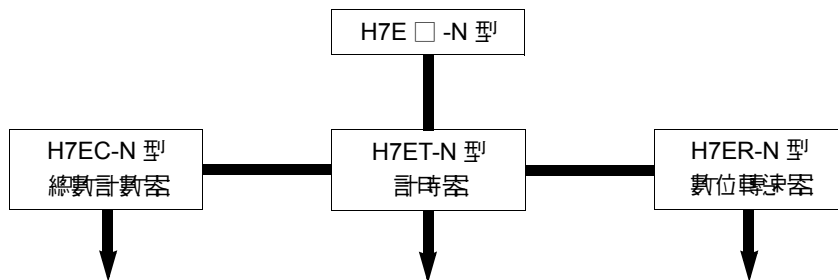
編號	分類	記號	記號的意義
①	機能	C	總數計數
		T	計時
②	計數速度 及表示	總數計數	無 1kHz 8 位數 <0 ~ 99999999>
		L	30Hz 8 位數 <0 ~ 99999999>
		計時	無 7 位數 <0.0h ~ 999999.9h>

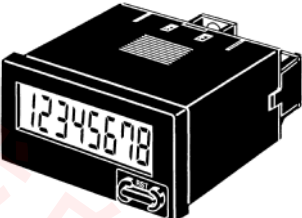

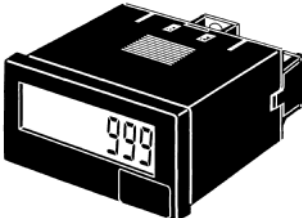
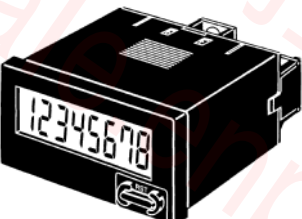
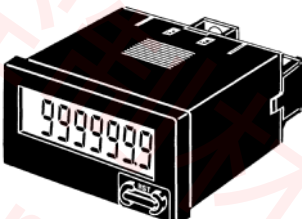
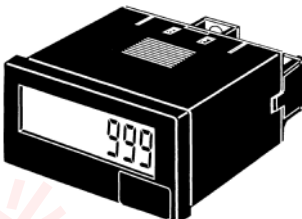

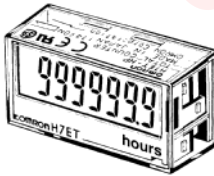
H7E □ N 型小型總計數器 / 計時器 / 轉速器

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H7E □ N

■機種構成



<p>標準形式</p> <ul style="list-style-type: none"> ・無輸入電壓型式 ・有輸入電壓型式 ・自由輸入電壓型式 	 <p>・ 8 位數</p>	 <ul style="list-style-type: none"> ・ 999999.9h ・ 999h59m59s ・ 9999h59.9m ・ 3999d23.9h 	 <ul style="list-style-type: none"> ・ 1 脈衝 / 回轉 1,000s⁻¹{rps} ・ 10 脈衝 / 回轉 1,000.0s⁻¹{rps} ・ 60 脈衝 / 回轉 1,000min⁻¹{rpm} ・ 60 脈衝 / 回轉 10,000min⁻¹{rpm} ・ 600脈衝/回轉1,000.0min⁻¹{rpm}
<p>附液晶顯示型式</p>	 <p>・ 8 位數</p>	 <ul style="list-style-type: none"> ・ 999999.9h ・ 999h59m59s ・ 9999h59.9m ・ 3999d23.9h 	 <ul style="list-style-type: none"> ・ 1 脈衝 / 回轉 1,000s⁻¹{rps} ・ 10 脈衝 / 回轉 1,000.0s⁻¹{rps} ・ 60 脈衝 / 回轉 1,000min⁻¹{rpm} ・ 60 脈衝 / 回轉 10,000min⁻¹{rpm} ・ 600脈衝/回轉1,000.0min⁻¹{rpm}
<p>海外型式</p>	 <p>・ 8 位數</p>	 <p>・ 999999.9h</p>	

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H7EC-N 型總數計數器

種類

●標準型式

安裝方式	埋入式					
動作方式	加算					
表示方式	LCD(液晶數字表示)(文字高 8.6mm)					
回復方式	外部 Reset/ 手動 Reset					
位數	8 位數					
計數輸入	無電壓輸入		電壓輸入		自由電壓輸入	
最高計數速度	30Hz/1kHz				20Hz	
外形顏色	淺灰	黑	淺灰	黑	淺灰	黑
型式	H7EC-N 型 *	H7EC-N 型 -B*	H7EC-N 型 V*	H7EC-N 型 V-B*	H7EC-N 型 FV	H7EC-N 型 FV-B
附屬品	防水橡膠, 埋入用連結器					

* 印形式的相關, 可以變更成無 RESET 按鍵的特殊對應。(特殊對應的場合, 其型號之後加 300) 詳情請洽購買商社。

●附有螢幕顯示燈

安裝方式	埋入式	
動作方式	加算	
表示方式	LCD(液晶數字表示)(文字高 8.6mm) 附有綠色 LED 螢幕顯示燈	
回復方式	外部 Reset/ 手動 Reset	
位數	8 位數	
計數輸入	電壓輸入	
最高計數速度	30Hz/1kHz	
外形顏色	淺灰	黑
型式	H7EC-NV-H 型	H7EC-NV-BH 型
附屬品	防水橡膠, 埋入用連結器	

註: 附有螢幕顯示燈的, 爲了要點亮必需由外部供給 AC/DC24V(0.3W max.)。

銘記

項目	型式	標準型式 (無電壓輸入)	標準型式 (輸入電壓)	附有螢幕顯示燈 (輸入電壓)	標準型式 (自由電壓輸入)
外部電源		不要 (電池內藏)			
螢幕顯示電源		--	AC/DC24V(± 10%)	--	
輸入		<ul style="list-style-type: none"> 計數輸入/RESET 輸入 短路時最大單位 10k Ω 以下 爲 ON 短路時殘留電壓在 0.5V 以下 (實力 1.0V) 開放時最小單位 750k Ω 以上 爲 OFF 	<ul style="list-style-type: none"> 計數輸入/RESET 輸入 [H] 級: AC/DC4.5 ~ 30V [L] 級: AC/DC0 ~ 2V (輸入阻抗約 4.7k Ω) 	<ul style="list-style-type: none"> 計數輸入 [H] 級: AC/DC24 ~ 240V [L] 級: AC/DC0 ~ 2.4V RESET 輸入 短路時最大單位 10k Ω 以下 爲 ON 短路時殘留電壓在 0.5V 以下 (實力 1.0V) 開放時最小單位 750k Ω 以上 爲 OFF 	
最高計數速度		1kHz: 最小信號幅 0.5ms/30Hz: 最小信號幅 16.7ms (ON/OFF 比 1:1)(開關切換)		20Hz: 最小信號幅 25ms(ON/OFF 比 1:1)	
RESET		外部 RESET/ 手動 RESET(最小 RESET 信號時間 20ms)			
保護構造		IEC 規格 IP66, 美國 NEMA 規格 4(室內) 但是只有表面			
使用溫度		-10 ~ +55°C(但是不得結露、結冰)			
保存溫度		-25 ~ +65°C(但是不得結露、結冰)			
使用濕度		相對濕度 25 ~ 85%			

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性能

項目	型式	標準型式 (無電壓輸入)	標準型式 (輸入電壓)	附非螢幕顯示燈 (輸入電壓)	標準型式 (自由電壓輸入)
絕緣阻抗		100M Ω 以上 (在 DC500Vmega 時) 導電部端子與露出的非充電金屬部門		100M Ω 以上 (在 DC500Vmega 時) 導電部端子與露出的非充電金屬部門，顯示器電源端子與計數輸入端子 /reset 端子間	100M Ω 以上 (在 DC500Vmega 時) 導電部端子與露出的非充電金屬部門，顯示器電源端子與計數輸入端子 /reset 端子間
耐電壓		AC1,000V 50/60Hz 1min 導電部端子與露出的非充電金屬部門		AC1,000V 50/60Hz 1min 導電部端子與露出的非充電金屬部門，顯示器電源端子與計數輸入端子 /reset 端子間	AC3,700V 50/60Hz 1min 導電部端子與露出的非充電金屬部門， AC2,200V 50/60Hz 1min 導電部端子與露出的非充電金屬部門，顯示器電源端子與計數輸入端子 /reset 端子間
脈衝電壓		4.5kV 導電部端子與露出的非充電金屬部門			4.5kV 導電部端子與露出的非充電金屬部門 3kV 計數輸入端子與 RESET 端子
耐雜訊		依雜訊模擬器提供之方形波 (振幅 100ns，1 μ s 持續 ns)			
		± 500V (計數輸入端子間 /Reset 端子間)	± 600V (計數輸入端子間 /Reset 端子間)	± 480V (螢幕顯示電源端子間) ± 600V (計數輸入端子間 /Reset 端子間)	± 1.5kV (計數輸入端子間) ± 500V (Reset 端子間)
靜電電壓耐打		± 8kV(誤動)			
振動	耐久	10 ~ 55Hz 片振幅 0.375mm 3 方向各 2h			
	誤動	10 ~ 55Hz 片振幅 0.15mm 3 方向各 10min			
衝擊	耐久	300m/s ² 6 方向各 3 次			
	誤動	300m/s ² 6 方向各 3 次			
重量		約 60g		約 65g	約 60g

註 重量是包含附屬品(防水橡膠，埋入用連結器)

●電池壽命 (參考值)

在連續動作的情況下可達 7 年以上 (25°C)(鋰電池)

註：電池的壽命是依據上記的條件而算出的並非是保證值。

資料是作為維修、替換等的參考資料。

規格

安全規格	UL508 CSA C22.2 No.14 取得 EN61010-1(IEC61010-1)：污染度 2/ 過電壓範疇 III 適合 EMC 規格 (EN50081-1、EN50082-2) 適合 VDE0106 Part100 適合 (手指防護規定) LR 規格 取得預定	
EMC	(EMI) 放射妨害電界強度 (EMS) 靜電氣放電係數	EN50081-1 EN55022 class B EN50082-2 EN61000-4-2：4V 接觸 (2 級) 8V 氣中 (3 級) 電界強度係數 (AM 變調) ENV50140：10V/m(80MHz ~ 1GHz)(3 級) 電界強度係數 (puls 變調) ENV50204：10V/m(900MHz ± 5MHz)(3 級) 傳導性噪音係數 ENV50144：10V(0.15 ~ 80MHz)(3 級) BUST 噪音係數 EN61000-4-4：2kV 電源線 (3 級) 2kV I/O 信號線 (4 級)

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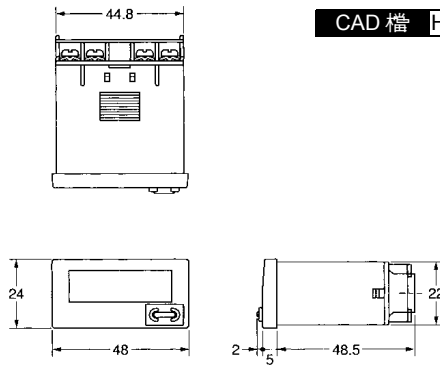
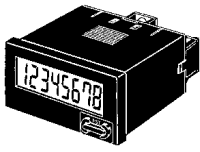
■ 外觀尺寸

● 標準型式 / 附螢幕顯示燈型式

CAD 檔 的標示是表示載有此商品外形尺寸的 CAD 檔案名稱

CAD 資料可從 OMRON 聯網的網頁 (<http://www.fa.omron.co.jp/catalog/>) 下載。

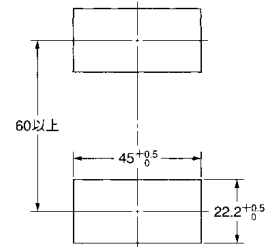
H7EC-N 型 埋入型



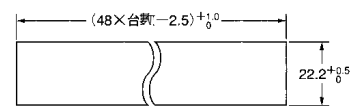
CAD 檔 H7EC_04

嵌板開口尺寸

· 個別組裝時



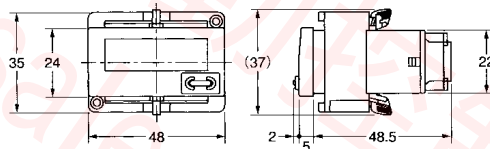
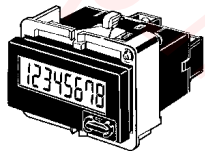
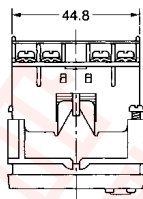
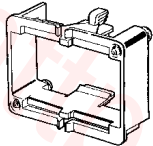
· 緊密組裝時



緊密組裝時不能防水

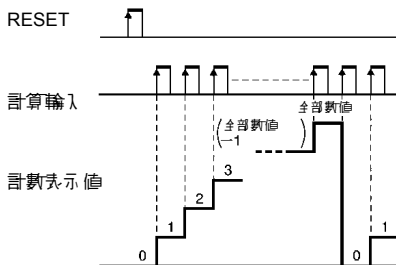
- 組裝是由機體放入嵌板的角孔，從裏面插入連結器，壓緊使與嵌板面之間的空隙變少。再以螺絲固定。需要防水時，請在機體插入防水橡膠。
- 使用複數組裝時，請注意不使其超過機體周圍溫度的式樣。
- 組裝用嵌板的厚度約為 1 ~ 5mm 較適當。

H7EC-N 型 埋入型連接器的尺寸

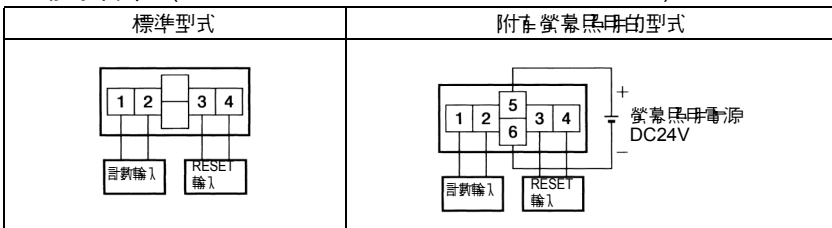


■ 計數機能

加算 (UP) 動作



■ 端子配置 (BOTTOM VIEW : 機體 180 度脈衝 / 旋轉狀態)



註：螺絲旋緊螺絲起子 建議：0.5N · m
最大：0.98N · m max

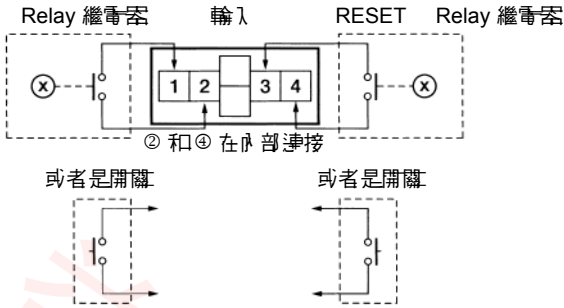
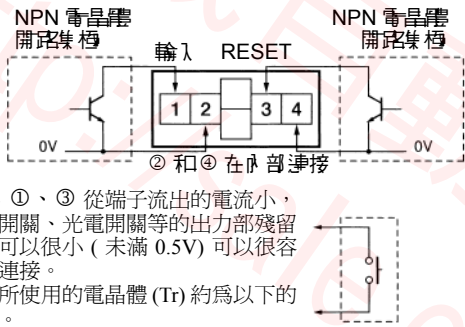
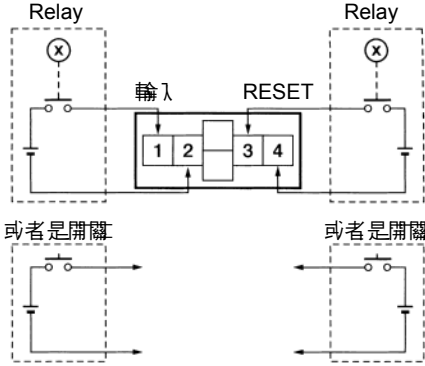
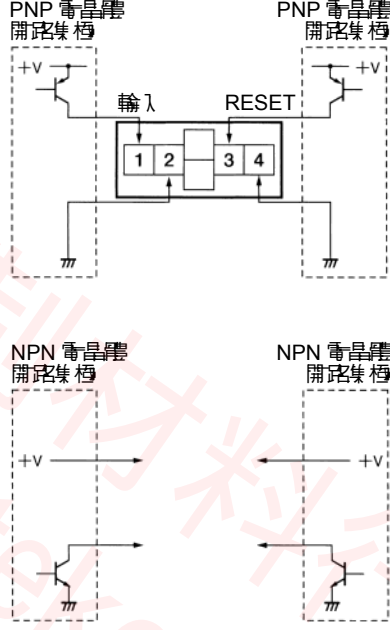
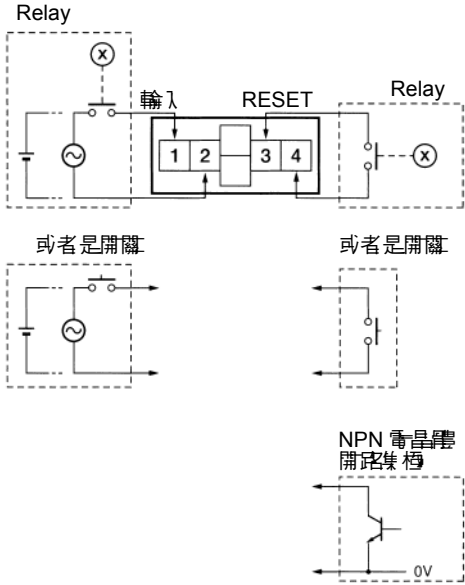

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■ 連接

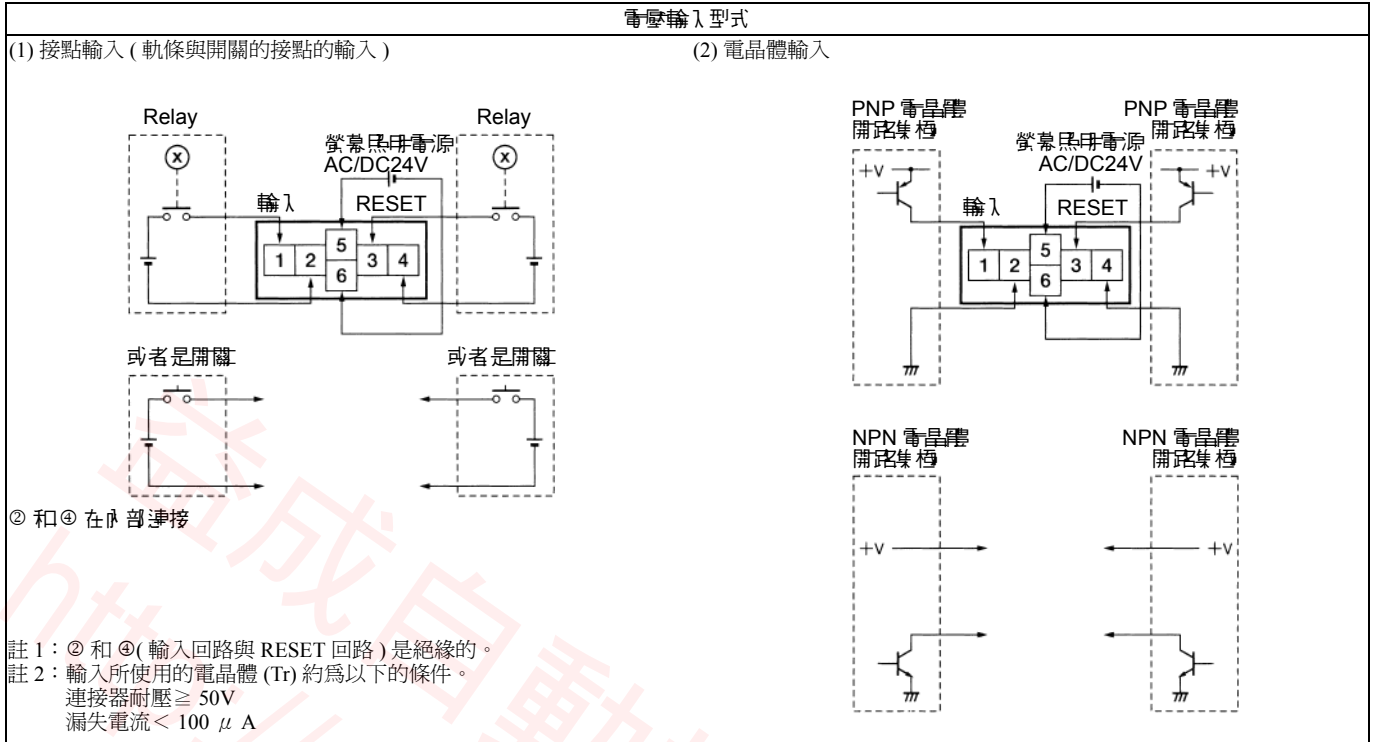
● 標準型式

無電壓輸入型式	電壓輸入型式
<p>(1) 接點輸入 (軌條與開關的接點的輸入)</p>  <p>註：因為 ①、③ 從端子流出的電流小，請使用觸性佳的 Relay 或開關。 另外，SSR 的場合以 OMRAN 所製的 SSR：形 G3TA-1A/ID 較為適當。</p> <p>(2) 電晶體輸入 (NPN 電晶體)</p>  <p>註 1：因為 ①、③ 從端子流出的電流小，近接開關、光電開關等的出力部殘留電壓可以很小 (未滿 0.5V) 可以很容易的連接。 註 2：輸入所使用的電晶體 (Tr) 約為以下的條件。 連接器耐壓 ≥ 50V 漏失電流 < 1 μA</p>	<p>(1) 接點輸入 (軌條與開關的接點的輸入)</p>  <p>(2) 電晶體輸入 (NPN 電晶體)</p>  <p>註 1：◎ 和 ⊕ (輸入回路與 RESET 回路) 是絕緣的。 註 2：輸入所使用的電晶體 (Tr) 約為以下的條件。 連接器耐壓 ≥ 50V 漏失電流 < 100 μA</p>
<p>自由電壓輸入</p>  <p>註：輸入所使用的電晶體 (Tr) 約為以下的條件。 連接器耐壓 ≥ 50V 漏失電流 < 1 μA</p>	<p>自由電壓輸入</p>  <p>註 1：◎ 和 ⊕ (輸入回路與 RESET 回路) 是絕緣的。 註 2：輸入所使用的電晶體 (Tr) 約為以下的條件。 連接器耐壓 ≥ 50V 漏失電流 < 100 μA</p>

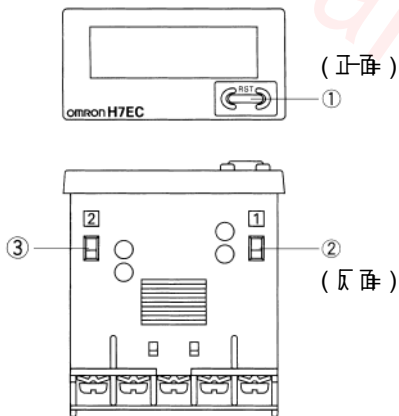
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● 附件 螢幕顯示形式



■ 各部的名稱・機能



- ① RESET 鍵
計數值 RESET。但是在按鍵保護狀態下無法動作。
- ② 按鍵保護開關 (SW 1)
詳請參照下記。
- ③ 機能切換開關 (SW 2)
詳請參照下記。

* 出貨時的設定

	無電壓輸入	電壓輸入	自由電壓輸入
② 按鍵保護開關		(面板側) OFF * ↑ ↓ (端子台側) ON	
③ 計數速度切換開關		(面板側) 30Hz * ↑ ↓ (端子台側) 1kHz	—

註 1. 開關的設定請在組裝嵌版前進行。
 註 2. 變更開關的組合，請壓下前面的 RESET 鍵。

H7E □ N

H7ER-N 型數位轉速器

種類

●標準型式

安裝方式	埋入式					
動作方式	加算					
表示方式	LCD(液晶數字表示)(文字高 8.6mm)					
位數	4 位數			5 位數		
計數輸入	無電壓輸入			電壓輸入		
最高計數速度 (準掛式樣)	1,000s ⁻¹ (1P/R 使用時)、 1,000min ⁻¹ (60P/R 使用時)			1,000.0S ⁻¹ (10P/R 使用時)、 1,000.0min ⁻¹ (600P/R 使用時) 10,000min ⁻¹ (60P/R 使用時) * 開關切換		
外型色	淺灰	黑	淺灰	黑	淺灰	黑
型式	H7NR-N 型	H7NR-N-B 型	H7NR-NV 型	H7NR-NV-B 型	H7NR-NV1 型	H7NR-NV1-B 型
附屬品	防水橡膠、埋入用聯結器、單位片					

●附有螢幕顯示燈

安裝方式	埋入式			
動作方式	加算			
表示方式	LCD(液晶數字表示)(文字高 8.6mm) 附有綠色 LED 螢幕顯示燈			
操作方式	外部 RESET/ 手動 RESET			
位數	4 位數		5 位數	
計數輸入	電壓輸入			
最高計數速度 (準掛式樣)	1,000S ⁻¹ (1P/R 使用時)、 1,000min ⁻¹ (60P/R 使用時)		1,000.0S ⁻¹ (10P/R 使用時)、 1,000.0min ⁻¹ (600P/R 使用時) 10,000min ⁻¹ (60P/R 使用時) * 開關切換	
外型色	淺灰	黑	淺灰	黑
型式	H7NR-NV-H 型	H7NR-NV-BH 型	H7NR-NV1-H 型	H7NR-NV1-BH 型
附屬品	防水橡膠、埋入用聯結器			

- 註 1. 沒有 RESET。
 註 2. 沒有電源時，請表示為 0.0 或 0。
 註 3. 訂購之時，請確認所要的式樣。
 註 4. 附有 rpm、rps、s⁻¹、min⁻¹ 貼紙。
 註 5. 附有螢幕顯示燈的型式，為了要點亮必須由外部供給 AC/DC24V(0.3W max.)

額定

項目	型式	標準型式 (無電壓輸入)	標準型式 (電壓輸入)	附有螢幕顯示燈 (電壓輸入)
外部電源		不要 (電池內藏)		
螢幕顯示電源		—		DC24V (±10%)
輸入		<ul style="list-style-type: none"> 計數輸入 / RESET 輸入 短絡時最大單位 10k Ω 以下為 ON 短絡時殘留電壓在 0.5V 以下 (實力 1.0V) 開放時最小單位 750K Ω 以上為 OFF 	<ul style="list-style-type: none"> 計數輸入 / RESET 輸入 [H] 級: AC/DC4.5~30V [L] 級: AC/DC0~2V (輸入組抗約 4.7k Ω) 	
保護構造		ICE 規格 IP66, 美國 NEMA 規格型式 4(室內) 但是只有表面		
最高計數速度		1kHz: 最小信號幅 0.5ms . . . 4 位數	1kHz: 最小信號幅 0.5ms . . . 4 位數 10kHz: 最小信號幅 0.05ms . . . 5 位數	
使用溫度		-10~+55°C (但不可結露、結冰)		
保存溫度		-25~+65°C (但不可結露、結冰)		
使用濕度		相對濕度 25~85%		

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性能

項目	型式	標準型式 (無電壓輸入)	標準型式 (電壓輸入)	附在螢幕顯示燈 (電壓輸入)	
絕緣阻抗		100M Ω 以上 (在 DC500Vmega 時) 導電部端子與露出的充電金屬部門		100M Ω 以上 (在 DC500Vmega 時) 導電部 端子與露出的充電金屬部門, 顯示器電源 端子與計數器輸入端子 /RESET 端子間	
耐電壓		AC1,000V 50/60Hz 1min 導電部端子與露出的充電金屬部門		AC1,000V 50/60Hz 1min 導電部端子與露出的充電金屬部門, 顯示器 電源端子與計數器輸入端子 /RESET 端子間	
脈衝電壓		4.5kV 導電部端子與露出的充電金屬部門			
耐雜訊		依雜訊模擬器所提供的方形波 (振幅 1,000ns, 1μs 持續 1ns)			
		±500V (計數輸入端子間 /RESET 端子間)	±600V (計數輸入端子間 /RESET 端子間)	±480V (螢幕顯示電源端子間) ±600V (計數輸入端子間 /RESET 端子間)	
靜電容許		±8kV(誤動)			
振動	耐久	10~55Hz 片振幅 0.375mm 3 方向 各 2h			
	誤動	10~55Hz 片振幅 0.15mm 3 方向 各 10min			
衝擊	耐久	300m/s ² 6 方向 各 3 次			
	誤動	200m/s ² 6 方向 各 3 次			
重量		約 60g		約 65g	

註 重量是包含附屬品 (防水橡膠, 埋入用連結器)。

●電池壽命 (參考值)

在連續動作的情況下可達 7 年以上 (25°C)(鋰電池)

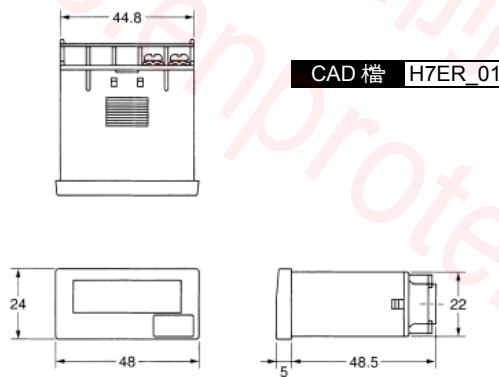
註: 電池的壽命是依據上記的條件而算出的並非是保證值。資料是作為維修、替換等的參考。

外觀尺寸

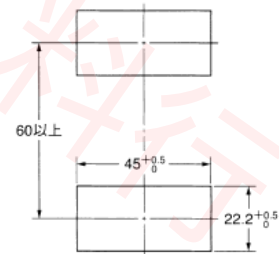
●標準型式 / 附在螢幕顯示燈型式

H7ER-N 型

埋入型



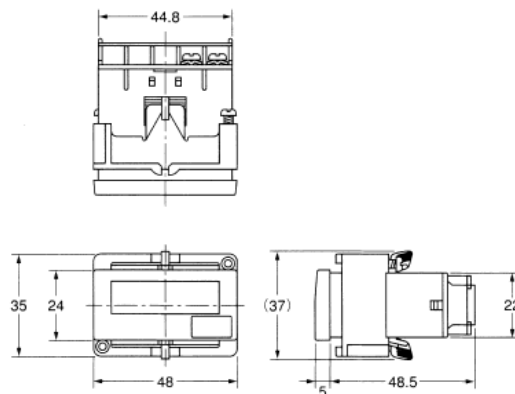
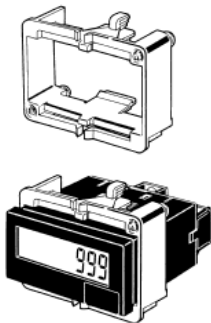
嵌版尺寸



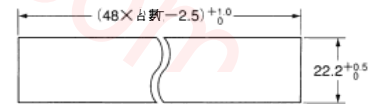
・個別組裝時

H7ER-N 型

埋入型連接器的尺寸



・緊密組裝時



緊密組裝時不能防水

- ・組裝是由嵌版放入機體的角孔, 從裡面插入連結器, 壓緊使與嵌版面之間的空隙變少, 再以螺絲固定。需要防水時, 請在機體插入防水橡膠。
- ・使用複數組裝時, 請注意不使其超過機體周圍溫度的式樣。
- ・組裝用嵌版的厚度約為 1~5mm 較適當。

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