

H5CC Digital Timer

EN INSTRUCTION MANUAL

Thank you for purchasing the OMRON Product. To ensure the safe application of the Product, read this manual carefully before using the Product and always keep it close at hand when the Product is in use.

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For details, refer to the latest datasheet (L220-E1).

SUITABILITY FOR USE

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases. NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

SAFETY PRECAUTIONS

Keys to Warning Symbols

CAUTION Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or in property damage.

CAUTION

Do not allow pieces of metal, wire clippings, or fine metallic shavings or fillings from installation to enter the product. Doing so may occasionally result in electric shock, fire, or malfunction.

Do not use the Timer where subject to flammable or explosive gas. Minor injury due to explosion may occasionally occur.

Fire may occasionally occur. Tighten the terminal screws to the rated torque. H5CC terminals and P3GA-11/P3G-08 Socket terminals: 6.55 to 7.97 lb-in (0.74 to 0.90 N·m) P2CF Socket terminals: 4.4 lb-in (0.5 N·m)

Do not touch any of the terminals while power is being supplied. Be sure to mount the terminal cover after wiring. Minor injury due to electric shock may occasionally occur.

The life expectancy of the output relay varies considerably according to its usage. Use the output relay within its rated load and electrical life expectancy. If the output relay is used beyond its life expectancy, its contacts may become fused or there may be a risk of fire. Also, be sure that the load current does not exceed the rated load current and when using a heater, be sure to use a thermal switch in the load circuit.

Do not disassemble, modify, or repair the Timer or touch internal components. Minor electric shock, fire, or malfunction may occasionally occur.

Precautions for Safe Use

- 1) When mounting the Timer to a panel, tighten the two mounting screws alternately, a little at a time, so as to keep them at an equal tightness. If the panel screws are tightened unequally, water may enter the panel.
- 2) Store the Timer at the specified temperature. If the Timer has been stored at a temperature of less than -10°C, allow the Timer to stand at room temperature for at least 3 hours before use.
- 3) Mounting the Timer side-by-side may reduce the life expectancies of internal components.

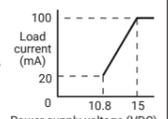
4) Use the Timer within the specified ranges for the ambient operating temperature and humidity.

5) Do not use or store the product in the following locations:

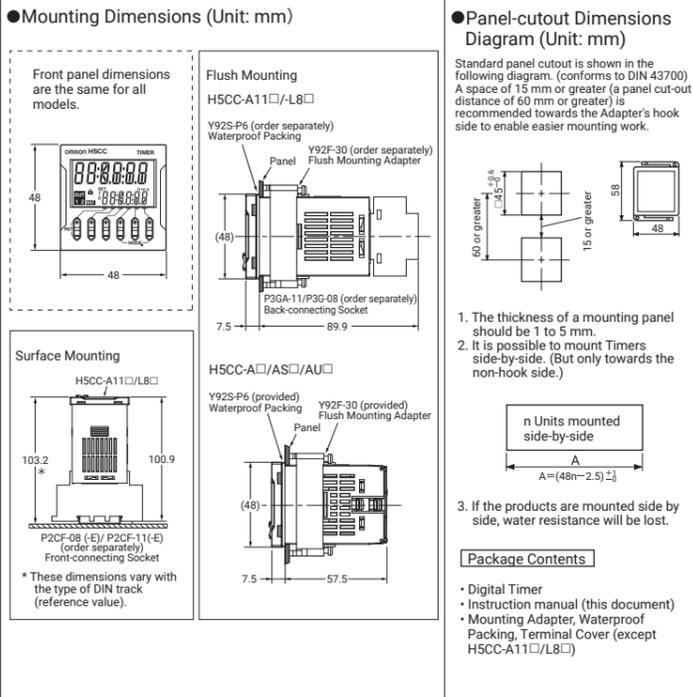
- Locations subject to sudden or extreme changes in temperature.
 - Locations where high humidity may result in condensation.
 - Locations with excessive vibration or shock.
 - Locations subject to water.
 - Locations subject to oil.
 - Locations prone to icing.
 - Locations subject to exposure chemicals.
 - Locations subject to bugs and small animals.
- 6) Do not use this Timer in dusty environments, in locations where corrosive gasses are present, or in locations subject to direct sunlight.
 - 7) Install the Timer well away from any sources of static electricity, such as pipes transporting molting materials, powders, or liquids.
 - 8) Internal elements may be destroyed if a voltage outside the rated voltage range is applied.
 - 9) Be sure that polarity is correct when wiring the terminals.
 - 10) Separate the Timer from sources of noise, such as devices with input signals from power lines carrying length: 5 to 6 mm (recommended).
 - 11) Do not connect more than two crimp terminals to the same terminal.
 - 12) Up to two wires of the same size and type can be inserted into a single terminal.
 - 13) Use the specified wires for wiring. Applicable Wires: AWG 18 to AWG 22, solid or twisted, copper. Wiring stripping length: 5 to 6 mm (recommended).
 - 14) Install a switch or circuit breaker that allows the operator to immediately turn OFF the power, and label it to clearly indicate its function.
 - 15) When the Timer other than H5CC-A11F is operated with no-voltage input (NPN input), approximately 14 V is output from the input terminals. Use a sensor that contains a diode.
 - 16) Use a switch, relay, or other contact so that the rated power supply voltage will be reached within 0.1 second. If the power supply voltage is not reached quickly enough, the Timer may malfunction or outputs may be unstable. Use a switch, relay, or other contact so that the rated power supply voltage will be reached within 0.1 second. If the power supply voltage is not reached quickly enough, the Timer may malfunction or outputs may be unstable.
 - 17) Use a switch, relay, or other contact to turn the power supply OFF instantaneously. Outputs may malfunction and memory errors may occur if the power supply voltage is decreased gradually.
 - 18) If the set value is changed as follows during a timing operation, the output will turn ON because of the influence of the distorted waveform: Elapsed time (UP mode): Present value \geq Set value Remaining time (DOWN mode): Elapsed time \geq Set value (The present value is set to 0.) In the remaining time mode, the amount the set value is changed is added to or subtracted from the present value. The operation under the set value 0 depends on the set output mode.
 - 19) Do not use organic solvents (such as paint thinners or benzene), strong alkali, or strong acids.
 - 20) Confirm that indications are working normally, including the backlight LEDs, and LCD. The indicator LEDs, LCD, and resin parts may deteriorate more quickly depending on the application environment, preventing normal indications. Periodic inspection and replacement are required.
 - 21) The waterproof packing may deteriorate, shrink, or harden depending on the application environment. Periodic inspection and replacement are required.

Precautions for Correct Use

- 1) Read this manual carefully before using the product.
- 2) An inrush current of approx. 1.4 A will flow for a short time when the power supply is turned ON. If the capacity of the power supply is not sufficient, the Timer may not start. Be sure to use a power supply with sufficient capacity.
- 3) Make sure the power supply voltage and loads are within the specifications and ratings for the product.
- 4) Take caution that signal reception is possible, impossible, or indefinite during the following periods after power ON/OFF. To allow for the startup time of peripheral devices (sensors, etc.), the Timer starts timing operation between 200 to 250 ms after power is turned ON. For this reason, if the set value is 249 ms or less in operations where timing starts from power ON, the time until output turns ON will be a fixed value between 200 and 250. The present value display will start from 250 ms. (Normal operation is possible for set values of 250 ms or more.) In applications where a set value of 249 ms or less is required, use start timing with signal input.
- 5) No input signals will be accepted from 5 to 505 ms for H5CC-A□/L□, from 5 to 105 ms for H5CC-A11F, and from 5 to 1005 ms for H5CC-A□□ after the power is turned OFF.
- 6) Inrush current generated by turning ON or OFF the power supply may deteriorate contacts on the power supply circuit. Turn ON or OFF to a device with the rated current of more than 14 A.
- 7) Make sure that all settings are appropriate for the application. Unexpected operation resulting in property damage or accidents may occur if the settings are not appropriate.
- 8) Do not leave the Timer for long periods at a high temperature with output current in the ON state. Doing so may result in the premature deterioration of internal components (e.g., electrolytic capacitors). Do not install the product close contact with the heating element.
- 9) Non-volatile memory is used as backup memory when the power is interrupted. The write life of the non-volatile memory is 100,000 writes. The non-volatile memory is written when the power is turned OFF or when switching from function setting mode or configuration selection mode to run mode.
- 10) Dispose of the product according to local ordinances as they apply.
- 11) Do not use because it may be damaged inside the product when the product fall by mistake.
- 12) Confirm the wiring the input and output terminals correctly before power is supplied.
- 13) Do not use the product near radio wave receivers. Doing so may cause incoming radio waves interference.
- 14) Install product so that the load doesn't span the product body.
- 15) H5CC models with a 24 to 240 VAC/DC power supply use a transformer-free power supply method in which the power supply terminals are not isolated from the signal input terminals. In such cases, unwired current paths may occasionally burn or destroy internal components depending on the wiring. Always check the wiring sufficiently before use.
- 16) Do not wire the terminals that are not used.
- 17) If there is a transformer or other device with a large inductance component on the power supply line, the inductance will cause a reverse voltage. If that occurs, insert a CR filter in the power supply line to reduce the reverse voltage.
- 18) Do not use in a circuit with the waveform is distorted. The error will increase due to the influence of the distorted waveform.
- 19) The capacity of the external power supply is 100 mA at 12 V. When using H5CC-AUD with the DC power supply, however, reduce the load with the power supply voltage, as shown in the diagram on the right.



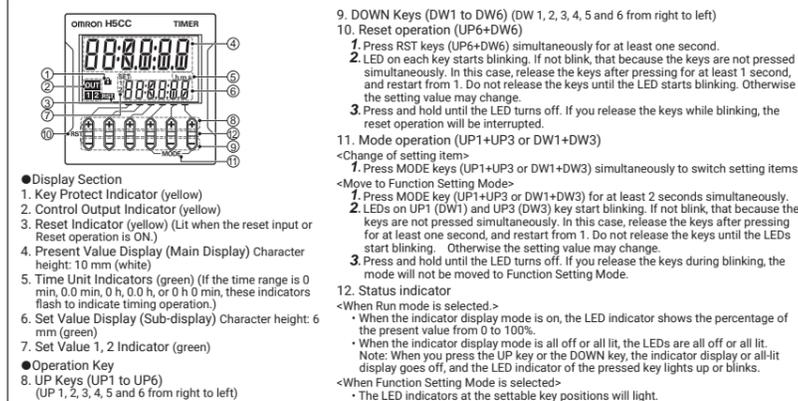
Mounting and Panel-cutout Dimensions Diagram



Ratings (Specifications)

Power supply voltage	100 to 240 VAC, 50/60 Hz 12 to 48 VDC/24 VAC, 50/60 Hz 24 to 240 VDC/24 to 240 VAC, 50/60 Hz	Voltage input	High (logic) level: 4.5 to 30 VDC, Low (logic) level: 0 to 2 VDC (Input resistance: approx. 4.7 k Ω) No-voltage (NPN) input voltage (PNP) input (switchable) (H5CC-A11F/H5CC-L□) supports no-voltage input only
Allowable voltage fluctuation range	85% to 110% of rated supply voltage (12 to 48 VDC: 90% to 110%)	Control output	250 VAC/30 VDC 5A (resistive load) Open collector 30 VDC max., 100 mA max. Residual voltage 1.5 VDC max. (Effective value: approx. 1 VDC) Leakage current 0.1 mA max. 100,000 operations (at an ambient temperature of 23°C)
Power consumption	Approx. 6.5 VA at 100 to 240 VAC Approx. 5.4 VA/2.7 W at 24 VAC/12 to 48 VDC Approx. 5.6 VA/2.7 W at 24 to 240 VAC/24 to 240 VDC	Electrical life of relay	100,000 operations (at an ambient temperature of 23°C)
Operating temperature range	-10 to 55°C (-10 to 50°F) Timers are mounted side by side (with no icing or condensation)	Mechanical life of relay	10,000,000 operations (at an ambient temperature of 23°C)
Storage temperature range	-25 to 70°C (with no icing or condensation)	External power supply	12 VDC 100 mA (H5CC-A□□ only)
Operating humidity range	25% to 85%	Degree of protection	IP66
Altitude	2,000 m max.	Individual mounting	Degree of protection on the front panel of the Timer conforms when all of the following conditions are satisfied: • The Y92S-P6 waterproof packing and Y92F-30 mounting adapter are used with the Timer. Use only these parts for replacement.
Recommended fuse	Relay output: 0216005, Transistor output: 0216.100		
Weight	Approx. 115 g (main unit only)		
Installation environment	Over-voltage category III, pollution degree 2, indoor use only (IEC 61812-1)		
Input method	No-voltage input		
	ON impedance: 1 k Ω max. (Leakage current: 12 mA when 0 V) ON residual voltage: 3 V max., OFF impedance: 100 k Ω min.		

Nomenclature



Conformance to EN/IEC Standards

• When conforming to EMC standards, refer to the information provided in this instruction manual for cable selection and other conditions.

• This is a class A product. In residential areas it may cause radio interference, in which case the user should be instructed to take adequate measures to reduce interference.

• Basic insulation is provided between power supply and input terminals. (There is no insulation between power supply and input terminals for H5CC-A11.) Basic insulation is provided between power supply and output terminals and between input and output terminals. When double insulation or reinforced insulation is required, apply double insulation or reinforced insulation as defined in IEC 60664 that is suitable for the maximum operating voltage with clearances or solid insulation.

• Connect the input and output terminals to devices that do not have any exposed charged parts.

Precautions for Compliance with UL Standards and CSA Standards

Notice to Users of the H5CC in the USA and Canada
Please use the following installation information instead of the general information in the instruction manuals in order to use the product under certified conditions of UL and CSA when the product is installed in the USA or Canada. These conditions are required by NFPA 70, National Electrical Code in the USA and the Canadian Electrical Code, Part I in Canada and may vary from information given in the product manuals or safety precautions.

• Installation in a Panel
H5CC is normally installed on a flat surface in an operation panel. Use a Type 1 Enclosure for the operation panel.

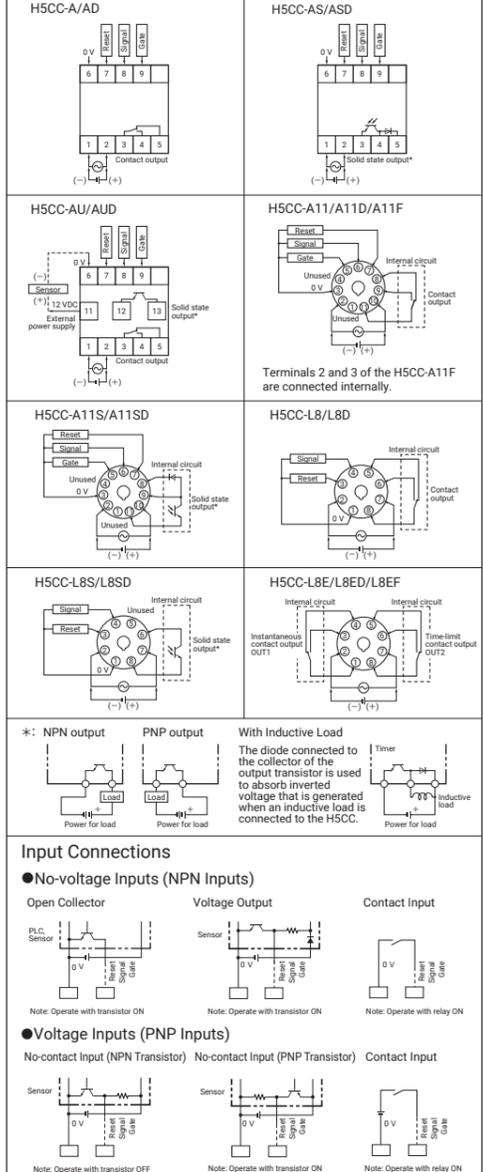
• Environment
Surrounding Air Temperature: -10 to 40°C

• Accessories (Order Separately)

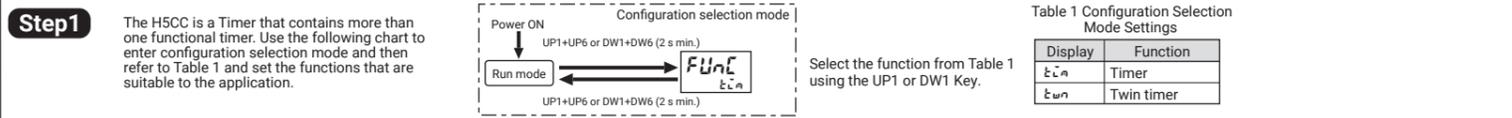
Track Mounting/ Front Connecting Socket	11-pin	P2CF-11
	11-pin, finger-safe type	P2CF-11-E
	8-pin	P2CF-08
	8-pin, finger-safe type	P2CF-08-E

Terminal Arrangement

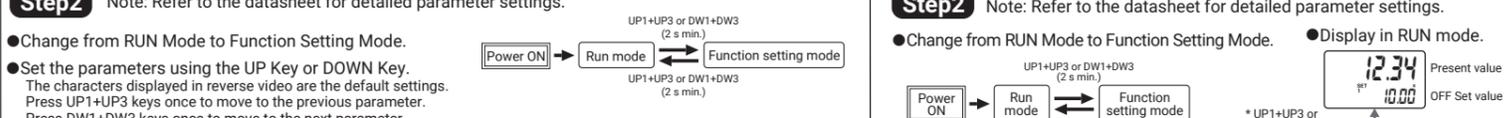
• Wire properly after checking the specifications of the power supply voltage.
• Do not wire the terminals that are not used.



Operating Procedures



Operation as a Timer



Display	Parameter name	Set value	Comments
1 2 3 4 5	Time range	00.00	—
1 2 3 4 5	UP/DOWN mode	00 d d u n	—
1 2 3 4 5	Output mode	00 R - 1, R - 2, R - 3, b, b - 1, b - 5, C, d, E, F, G, H, x, 5	Only modes 0, b, E, and x can be selected for H5CC-L8E□.
1 2 3 4 5	Output time	00.00 / 00.00 ~ 99.99	(If the output time is set to 0.00, hold is displayed.) Displayed for modes R, R - 1, R - 2, R - 3, b, b - 1 and 5 only. Unit: second
1 2 3 4 5	Input signal width	00.00 inS	Displayed only for models other than H5CC-L8E□ and H5CC-A11F.
1 2 3 4 5	NPN/PNP input mode	00 P n P	Displayed only for models other than H5CC-L8E□ and H5CC-A11F.
1 2 3 4 5	Instantaneous/time-limit	00 R 2 C	Displayed only for the H5CC-L8E□.
1 2 3 4 5	Set value upper limit	1 ~ 999999	—
1 2 3 4 5	Key protect level	00 P - 2, P - 3, P - 4, P - 5, P - 6, P - 7	—

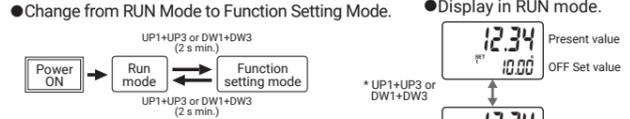
● H5CC-A□ and H5CC-L8E□

Display	Parameter name	Set value	Comments
1 2 3 4 5	Output 1 inversion	00 n - C	—
1 2 3 4 5	Output 2 inversion	00 n - C	—
1 2 3 4 5	Indicator display mode	00 R L d F, R L L t	—
1 2 3 4 5	Output 1 (OUT1) ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output 2 (OUT2) ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output 1 (OUT1) ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Output 2 (OUT2) ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Total run time alarm set value	00 ~ 99.9	Unit: year
1 2 3 4 5	Total run time monitor value	—	The Total run time monitor value is only displayed. It cannot be set.
1 2 3 4 5	Software version	—	The software version is only displayed. It cannot be set.

● Models Other Than H5CC-A□ and H5CC-L8E□

Display	Parameter name	Set value	Comments
1 2 3 4 5	Output inversion	00 n - C	—
1 2 3 4 5	Indicator display mode	00 R L d F, R L L t	—
1 2 3 4 5	Output ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Total run time alarm set value	00 ~ 99.9	Unit: year
1 2 3 4 5	Total run time monitor value	—	The Total run time monitor value is only displayed. It cannot be set.
1 2 3 4 5	Software version	—	The software version is only displayed. It cannot be set.

Operation as a Twin timer



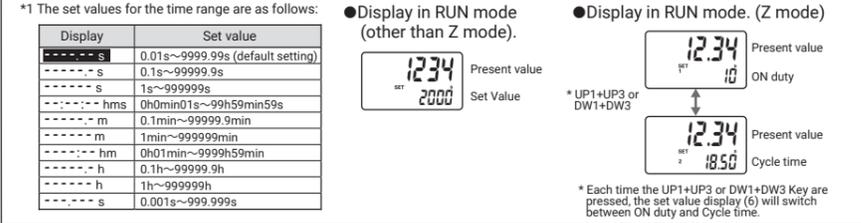
Display	Parameter name	Set value	Comments
1 2 3 4 5	OFF time range	00.00	—
1 2 3 4 5	ON time range	00.00	—
1 2 3 4 5	UP/DOWN mode	00 d d u n	—
1 2 3 4 5	Twin Timer Output mode	00 F d F 1, b n 1	Only modes 0, F, and b n can be selected for H5CC-L8E□.
1 2 3 4 5	Input signal width	00.00 inS	Displayed only for models other than H5CC-L8E□ and H5CC-A11F.
1 2 3 4 5	NPN/PNP input mode	00 P n P	Displayed only for models other than H5CC-L8E□ and H5CC-A11F.
1 2 3 4 5	Instantaneous/time-limit	00 R 2 C	Displayed only for the H5CC-L8E□.
1 2 3 4 5	Set value upper limit 1	1 ~ 999999	—
1 2 3 4 5	Set value upper limit 2	1 ~ 999999	—
1 2 3 4 5	Key protect level	00 P - 2, P - 3, P - 4, P - 5, P - 6, P - 7	—

● H5CC-A□ and H5CC-L8E□

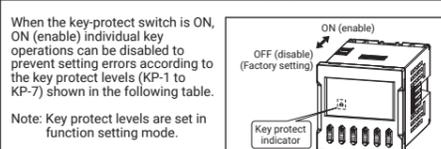
Display	Parameter name	Set value	Comments
1 2 3 4 5	Output 1 inversion	00 n - C	—
1 2 3 4 5	Output 2 inversion	00 n - C	—
1 2 3 4 5	Indicator display mode	00 R L d F, R L L t	—
1 2 3 4 5	Output 1 (OUT1) ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output 2 (OUT2) ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output 1 (OUT1) ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Output 2 (OUT2) ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Total run time alarm set value	00 ~ 99.9	Unit: year
1 2 3 4 5	Total run time monitor value	—	The Total run time monitor value is only displayed. It cannot be set.
1 2 3 4 5	Software version	—	The software version is only displayed. It cannot be set.

● Models Other Than H5CC-A□ and H5CC-L8E□

Display	Parameter name	Set value	Comments
1 2 3 4 5	Output inversion	00 n - C	—
1 2 3 4 5	Indicator display mode	00 R L d F, R L L t	—
1 2 3 4 5	Output ON count alarm set value	0 ~ 9999	× 1,000
1 2 3 4 5	Output ON count monitor value	—	The monitor value is only displayed. It cannot be set. × 1,000
1 2 3 4 5	Total run time alarm set value	00 ~ 99.9	Unit: year
1 2 3 4 5	Total run time monitor value	—	The Total run time monitor value is only displayed. It cannot be set.
1 2 3 4 5	Software version	—	The software version is only displayed. It cannot be set.



Key-protect Switch Settings



Level	Mode change	Display switch in the run mode operation	Reset operation	UP/DOWN Key
KP-1 (default setting)	Invalid	Valid	Valid	Valid
KP-2	Invalid	Valid	Invalid	Valid
KP-3	Invalid	Valid	Valid	Invalid
KP-4	Invalid	Valid	Invalid	Invalid
KP-5	Invalid	Invalid	Invalid	Invalid
KP-6	Invalid	Invalid	Valid	Valid
KP-7	Invalid	Invalid	Invalid	Invalid

* Changing mode to configuration selection mode or function setting mode.

Self-diagnostic Functions

The following displays will appear if an error occurs.

Main display	Sub-display	Description	Output status	Correction method	Set value after reset
E 1	Not lit	CPU error	OFF	Either perform Reset operation or reset the power supply.	No change
E 2	Not lit	Memory error (RAM)	OFF	Turn ON the power again.	No change
E 2	Su	Memory error (non-volatile memory) *1	OFF	Reset operation	Factory setting
PPL C *3	No change	Total run time or Output ON count has reached the maintenance forecast.	No change	Reset operation *2	No change

*1 This includes times when the life of the non-volatile memory has expired.
*2 This is displayed if the alarm set value for either of the two outputs is exceeded if a model with two outputs is used. The total ON count will not be cleared by using Reset operation.
*3 The normal display and PPL C will appear alternately. When Reset operation is performed, PPL C will no longer be displayed even if the alarm set value is exceeded. (Monitoring is possible, however, because the Timer will continue without clearing the total run time and the output ON count.) If the power supply is turned OFF/ON after the PPL C display is turned OFF by Reset operation, PPL C will be displayed again. In order to prevent the display even after the power supply is turned OFF/ON, change the alarm set value to equal to or greater than the count value or change the alarm set value to 0 to be invalid.

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