

Thank you for purchasing this OMRON product. Please read this instruction MANUAL and thoroughly familiarize yourself with the functions and characteristics of the product before use. Please retain this MANUAL for future reference.

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SAFETY PRECAUTIONS

Definition of Precautionary Information

CAUTION Indicates information that, if not followed, could result in relatively serious or minor injury, damage to the product, or faulty operation.

Precautionary Information

- CAUTION Tighten the terminal screws securely. The recommended tightening torque is 0.5 N·m. Loose screws may result in fire or malfunction. Do not use the product where flammable or combustion gases are present. There may be a risk of explosion. 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. Never disassemble, repair or modify the product. This may cause electric shock, fire or malfunction. Do not allow metal fragments or lead wire scraps to fall inside this product. This may cause electric shock, fire or malfunction.

Suitability for Use

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product. Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product. NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

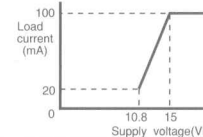
Precautions for Safe Use

Please comply strictly with the following instructions which are intended to ensure safe operation of the controller.

- 1. Environmental Considerations: Do not use in locations affected by excessive vibration or shock, or in locations subject to exposure to water or oil. Do not use this equipment in dusty environments or expose it to corrosive gases or direct sunlight. Wire signal lines and power lines separately to reduce the influence of noise. Do not install the H7CX close to sources of excessive static electricity (e.g., forming compounds, powders, or fluid materials being transported by pipe). To prevent damage to the exterior of the counter, it must not be exposed to organic solvents (e.g. Paint thinner or benzene), strong alkalis, or strong acids. 2. Usage Considerations: Store at the specified temperature. If the H7CX has been stored at a temperature of less than -10 °C, allow the H7CX to stand at room temperature for at least 3 hours before use. Locations subject to temperatures or humidity outside the range specified in the specifications. Application of voltages other than the rated voltage may seriously damage the internal elements. The rated capacity of the external power supply is 12 VDC, 100 mA. Do not exceed the rated load current.

Precautions for Correct Use

- (1) Apply the power through a relay or switch so that the voltage reaches the rated supply voltage immediately. If the voltage increases gradually, the recycle power function doesn't work properly or Output may fluctuate. (2) When power is supplied, an inrush current (approx. 10 A) will flow for a short time. If the power supply capacity is too small, the H7CX may not operate. Make sure that a power supply of a sufficiently large capacity is used. (3) Always maintain the power supply voltage within specifications. (4) If left at high temperatures for long periods with the output turned ON, there is risk of accelerated deterioration of the internal components (such as the electrolytic capacitor). Therefore, make sure that it is used in combination with a relay and avoid leaving it with output ON for long periods (e.g., greater than 1 month). (5) When mounting on a panel, tighten the two screws alternately and evenly until they become secured. If the screws are not tightened evenly, water may penetrate inside of the panel. (6) Do not install the H7CX in the following places: Locations subject to condensation as a result of high humidity. Locations subject to severe changes in temperature. (7) This counter always compares Count value with Set value. Thus, if you want to change the setting value during operation, please remember that the output will turn ON when the Set value becomes equal to the Count value. (8) Please note that with the factory setting, Output will turn on when the power is supplied to the counter, since the Set value and Count value are both zero. During resetting, however, the output stays OFF. (9) Use the product with consideration on the startup time of peripheral devices (sensors, etc.). The counter operation starts approximately 200 to 290ms after the power is turned ON. Note that the input signal is not accepted before 200 to 290 ms. (10) Ensure that the terminals are connected with the correct polarity. (11) In the case of using the external power supply for the models with AC24 V/DC12-24 V specification, the load should be reduced according to the power supply voltage as shown in the diagram on the right. (Only when DC power is supplied)

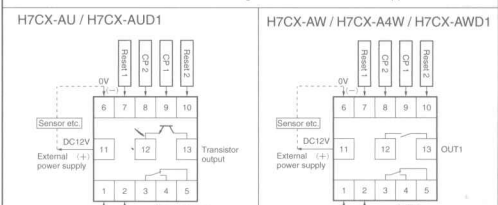


Conformance to EN/IEC Standards

- There exists basic insulation between the power supply and input, power supply and output, and between input and output terminals. (For H7CX-A/D, there is no insulation between the power supply and input terminals.) When double insulation is required, apply supplemental insulation defined in IEC 60664 that is suitable for the maximum operating voltage with clearances or solid insulation. Connect input and output terminals to devices in such a way that there are no accessible live parts.

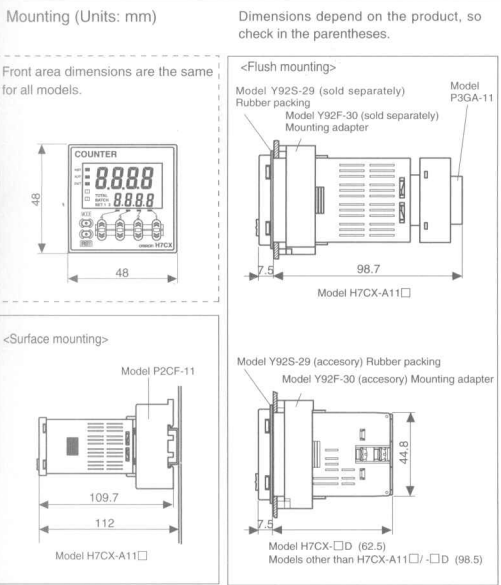
Terminal Arrangement

- Please check the power supply specifications, and install wiring. Do not connect unneeded terminals. Recommended lead wire: AWG 18 to 24, single wire or stranded wire, copper.



Mounting

Mounting and Panel-cutout Dimensions Diagram

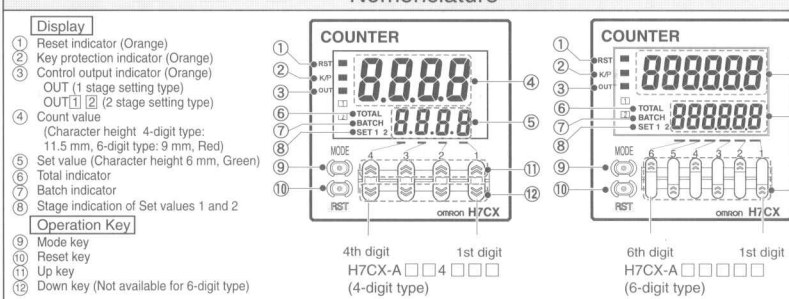


Dimensions depend on the product, so check in the parentheses. Panel-cutout Dimensions Diagram (Units: mm) Standard panel cutout is shown in the following diagram (conforms to DIN 43700). A space of 15 mm or greater (a panel cutout distance of 60 mm or greater) is recommended towards the Adapter's hook side to enable easier mounting work. Notes: 1. The thickness of a mounting panel should be 1 to 5 mm. 2. It is possible to mount the counters side-by-side. (But only towards the non-hook side.) 3. When more than one counter is mounted in an opening, such as side-by-side mounting, the water resistance rating does not apply. In the pack: Main unit, Instruction manual (this document), Mounting Adapter, Rubber packing, Terminal Cover (Except for Model H7CX-A11C), DIP switch label (Only for Model H7CX-AW/C/AU/D).

Specifications

Power supply voltage/Power consumption: AC100-240 V 50/60 Hz, AC24 V 50/60 Hz / DC12-24 V, DC12-24 V. Operating voltage range: 85 to 110 % of the rated voltage (90 to 110 % in the case of DC12-24 V). Ambient temperature: -10 to +55 °C (When side-by-side mounting: -10 to +50 °C). Ambient humidity: 25 to 85 % (Avoid freezing or condensation). Storage temperature: -25 to +65 °C (Avoid freezing or condensation). Altitude: MAX. 2,000 m. Recommended external fuse: T2A, 250 VAC, time-lag, low-breaking capacity. Weight: Approximately 140 g (main unit only). Installation environment: Over-voltage category II, pollution degree 2 (as per IEC61010-1).

Nomenclature



Operation

Step 1 This product is the counter functioning as one of the several different counter models. If you want to use the product as the model other than default setting as shown in the table 2, please enter the Model selection mode as per the chart described on the right, and then select the model that is suitable to the application referring to the table 1. Note: You may set the Step2 first, and then Step1.

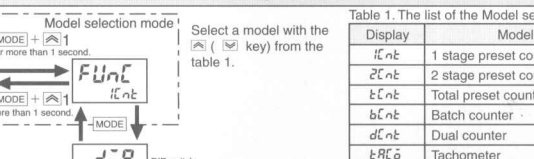


Table 1. The list of the Model selection mode. Table 2. The model at the default setting and selectable models.

When using as a counter (of 1 stage preset, 2 stage preset, Total preset, Batch, or Dual)

Step 2 Set the basic parameter. (If the following table does not contain a desired input/output mode, or if you want to conduct all the settings with the keys on the front panel, please conduct setting as per the Step3.) Includes a table for DIP switch settings and a key-protect switch diagram.

When using as a tachometer

Step 2 Conduct the basic parameter setting. (If you want to conduct all the settings with the keys on the front panel, please conduct setting as per the Step3.) Includes a table for DIP switch settings and a key-protect switch diagram.

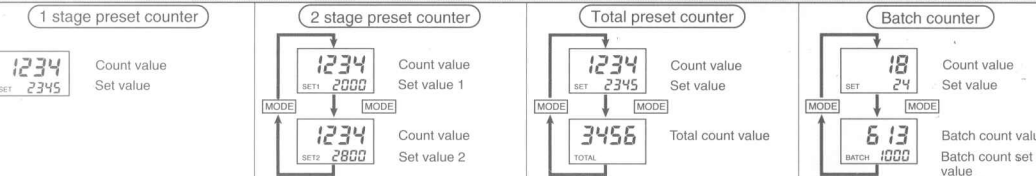
Step 3 Set the parameter, which cannot be set with the DIP switch, with the keys on the front panel.

Step 3 parameter setting flowchart. Includes instructions for switching between RUN and Function setting modes, and a detailed flowchart for setting various parameters like input mode, output mode, counting speed, decimal point position, and key protection levels.

Step 3 Set the parameter, which cannot be set with the DIP switch, with the keys on the front panel.

Step 3 parameter setting flowchart for tachometer mode. Includes instructions for switching between RUN and Function setting modes, and a detailed flowchart for setting parameters like tachometer output mode, counting speed, averaging number, and key protection levels.

Display/Setting in the RUN mode



Key-protect Switch Settings

When the key-protect switch is ON, individual key operations can be disabled to prevent setting errors according to the key-protection levels shown in the following table. Key-protection levels are set in Function Setting mode.

Table with 5 columns: Level, Mode change, Display switch in the RUN mode, Reset key, Up / Down key. Rows include KP-1 through KP-5.

Self-Diagnostic Functions

Table with 6 columns: Count value display, Set value display, Details, Output state, Recovering method, Set value after recovery. Rows include error codes like E1, E2, E3, E4, E5.

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