

H7CX-A□-N Digital Counter

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 (Cat. No. M079).

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.

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.

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

Fire may occasionally occur. Tighten the terminal screws to the rated torque. H7CX 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)

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

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.

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

Precautions for Safe Use

- 1) When mounting the Counter 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 uncqually, water may enter the panel.
2) Store the Counter at the specified temperature. If the Counter has been stored at a temperature of less than -10°C, allow the Counter to stand at room temperature for at least 3 hours before use.

- 3) Mounting the Counter side-by-side may reduce the life expectancies of internal components.
4) Use the Counter within the specified ranges for the ambient operating temperature and humidity.
5) Do not use 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.
6) Do not use the Counter outside of the rated ranges for vibration, shock, water exposure, and oil exposure.
7) Do not use this Counter in dusty environments, in locations where corrosive gases are present, or in locations subject to direct sunlight.
8) Install the Counter well away from any sources of static electricity, such as pipes transporting molding materials, powders, or liquids.
9) Internal elements may be destroyed if a voltage outside the rated voltage range is applied.
10) Separate the Counter from sources of noise, such as devices with input signals from power lines carrying noise, and wiring for I/O signals.
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 wiring for wiring. Applicable Wires: AWG 18 to AWG 22, solid or twisted, copper
14) Install a switch or circuit breaker that allows the output to immediately turn OFF the power, and label it to clearly indicate its function.
15) When the Counter 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 seconds. If the power supply voltage is not reached quickly enough, the Counter 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) When changing the set value during operation, because the H7CX uses a constant read-in system, output will turn ON if the set value is equal to the present value.
19) If the set value and present value are both 0, the output will turn ON for the default setting. The output will turn OFF during a reset operation.
20) Do not use organic solvents (such as paint thinners or benzene), strong alkali, or strong acids. They will damage the external finish.
21) Confirm that indications are working normally, including the backlight LED, 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.
22) The waterproof packing may deteriorate, shrink, or harden depending on the application environment. Periodic inspection and replacement are required.

Precautions for Correct Use

- 1) H7CX models with a 12 to 24 VDC power supply use a transformer-free power supply method in which the power supply terminals are not isolated from the signal input terminals. If a non-isolating DC power supply is used, unwanted current paths may occasionally burn or destroy internal components depending on the wiring. Always check the wiring suitability before use.
2) An inrush current of approx. 10 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 Counter may not start. Be sure to use a power supply with sufficient capacity.
3) Maintain voltage fluctuations in the power supply within the specified operating voltage range.

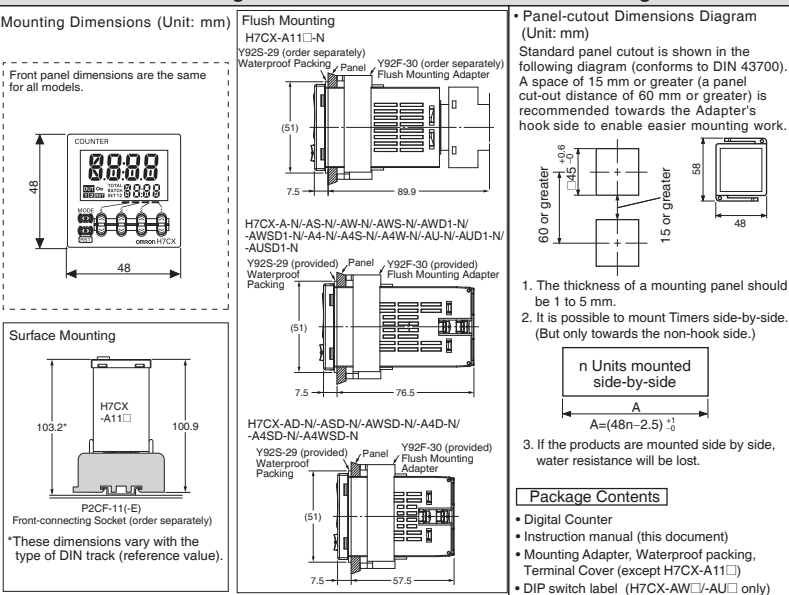
4) To allow for the startup time of peripheral devices (e.g., sensors), start Counter timing operation 200 ms to 290 ms after turning ON the power. The input signal will not be accepted before 200 to 290 ms has elapsed.
5) The input signal will not be accepted after 5 to 1000 ms has elapsed from when the power supply 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 10 A.
7) The capacity of the external power supply is 100 mA at 12 V. When using a 24 VAC/12 to 24 VDC power supply, reduce the load with the power supply voltage, as shown in the diagram (DC power supplies only) on the right.
8) If the prescale value setting is incorrect, a counting error will occur. Check that the settings are correct before using this function.
9) 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.
10) Do not leave the Counter 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).
11) EEPROM is used as memory when the power is interrupted. The write life of the EEPROM is 100,000 writes. The EEPROM is written when the power is turned OFF or when switching from function selection mode or configuration selection mode to run mode.
12) Dispose of the product according to local ordinances as they apply.
13) Attach the front panel to the main body when using the Counter. The latches in the middle of each of four sides secure the front panel to the main body. To remove the panel, when the four latches and pull the panel toward you. To mount the panel, fit all four latches correctly into the slots on the main body.

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 may be required to take adequate measures to reduce interference.
Basic insulation is provided between power supply and input terminals, between power supply and output terminals, and between input and output terminals. (No insulation is provided between the power supply and input terminals for the H7CX-A□. D.)
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 H7CX in the USA and Canada
Please use the following installation information instead of the general information in the instruction manual to order 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 1 in Canada and may vary from information given in the product manual safety precautions.

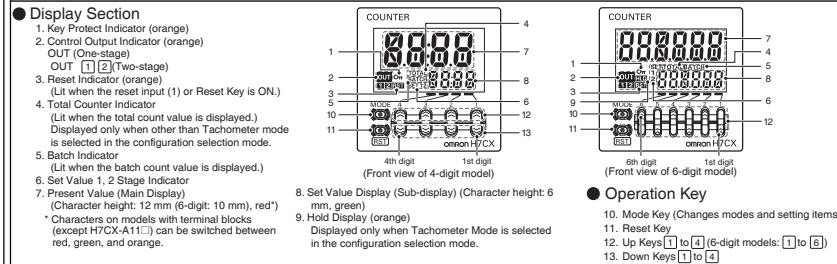
Mounting and Panel-cutout Dimensions Diagram



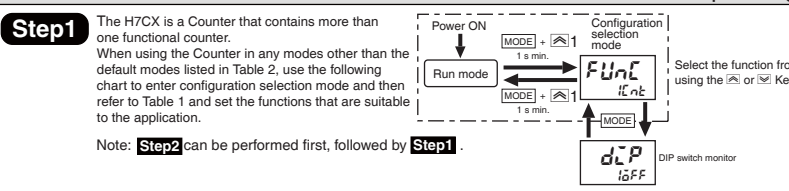
Ratings (Specifications)

Table with 2 columns: Rating/Specification and Value. Includes Power supply voltage (100 to 240 VAC, 50/60 Hz), Allowable voltage fluctuation range (85% to 110%), Power consumption (Approx. 9.4 VA at 100 to 240 VAC), Operating temperature range (-25 to 70°C), Storage temperature range (-25 to 70°C), and Input method (No-voltage input).

Nomenclature



Operating Procedures



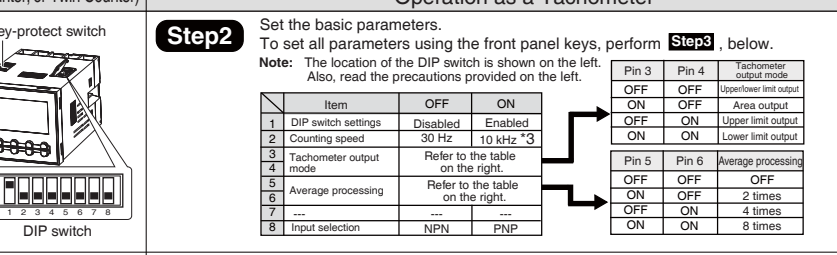
Operation as a Counter

Table 1 Configuration Selection Mode Settings and Table 2 Default Modes and Selectable Functions. Table 1 lists functions like 1-stage preset counter, 2-stage preset counter, Total and preset counter, Batch counter, Dual counter, Twin counter, and Tachometer. Table 2 lists default modes and selectable functions for models H7CX-A4W, H7CX-AW, and H7CX-AU.

Operation as a Tachometer

Table with 2 columns: Item and Settings. Lists DIP switch settings, Counting speed, Tachometer output mode, Average processing, and Input selection.

Input Connections



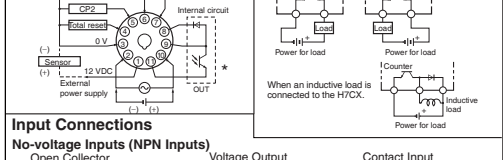
Function Setting Mode

Table with 4 columns: Display, Parameter name, Set value, and Comments. Lists parameters like Input mode, Output mode, Counting speed, Prescale value, Display color, and Key protect level.

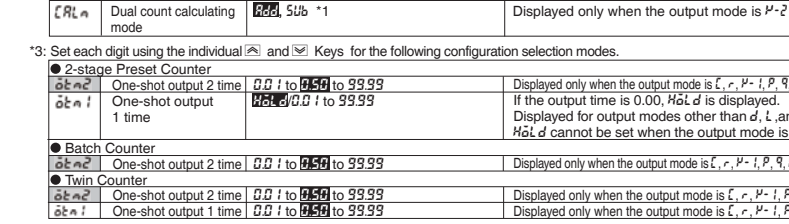
Function Setting Mode

Table with 4 columns: Display, Parameter name, Set value, and Comments. Lists parameters like Tachometer input mode, Counting speed, Decimal point position, Prescale value, Averaging processing, Startup time, Display color, Peak/bottom hold, Output hysteresis, Output OFF delay, Set value upper limit, OUT allocation change, Key protect level, Pulse cycle measurement/pulse width measurement, Display unit, Measurement cycle, and Output 1/2 ON count alarm set value.

Key-protect Switch Settings



Displays and Settings in Run Mode



Self-diagnostic Functions

Table with 5 columns: Main display, Sub-display, Description, Output status, and Correction method. Lists error codes like E1 (Not lit CPU error), E2 (Not lit Memory error), E3 (No change Output Counter Overflow), and E4 (No change Output Counter Overflow).

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