



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON H7CX. You'll find the answers to all your questions on the OMRON H7CX in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual OMRON H7CX**  
**User guide OMRON H7CX**  
**Operating instructions OMRON H7CX**  
**Instructions for use OMRON H7CX**  
**Instruction manual OMRON H7CX**

**OMRON**


**Multifunction Counter/Tachometer**  
**H7CX Series**

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to Warranty and Application Considerations (page 64), and Safety Precautions (page 59).

**DIN 48 x 48 mm Multifunction Counter/Tachometer Series**


- Highly visible display with backlit negative transmissive LCD
- Intuitive setting enabled using ergonomic up/down digit keys (4-digit models) and DIP switch.
- PNP/NPN switchable DC voltage input.
- Finger-safe terminals (screw terminal block models).
- Complies with IP66/NEMA/UL Type 4X (when using the Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter).

**H7CX Series**



**H7CX-A**

**Multifunction Counter**  
Preset Counter  
Total Counter  
Batch Counter  
Dual Counter  
Tachometer



**H7CX-R**

**Tachometer**

**Contents**

<b>Multifunction Counter</b>	
H7CX-A .....	2
<b>Tachometer</b>	
H7CX-R .....	42
<b>Common to All Models</b>	
Safety Precautions .....	59
Warranty and Application Consideration .....	64

---

Multifunction Counter/Tachometer **H7CX Series** 1



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)  
<http://yourpdfguides.com/dref/2888791>

**Manual abstract:**

*· Finger-safe terminals (screw terminal block models). · Complies with IP66/NEMA4/UL Type 4X (when using the Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter). H7CX Series H7CX-A H7CX-R Multifunction Counter Preset Counter Total Counter Batch Counter Dual Counter Tachometer Tachometer Contents Multifunction Counter H7CX-A.....*

.....  
.....  
.....

.....  
.....  
.....  
.....

*.. 2 Tachometer H7CX-R.....*

.....  
.....  
.....

.....  
.....  
.....  
.....

*.. 42 Common to All Models Safety Precautions .....*

.....  
.....  
.....

.....  
.....

*59 Warranty and Application Consideration .....*

*.... 64 Multifunction Counter/Tachometer H7CX Series 1 Multifunction Preset Counter H7CX-A DIN 48 × 48 mm Multifunction Preset Counter with a Bright, Easy-to-view, Negative Transmissive LCD · Programmable PV color to visually alert when output status changes (screw terminal block models). · Configurable as 1-stage counter, 2-stage counter, total and preset counter, batch counter, dual counter, or tachometer. (Configurability varies with model.) · Meets a variety of mounting requirements: Screw terminal block models, and pin-style terminal models. · Six-language instruction manual.*

*Contents Model Number Structure .....*

.....  
.....  
.....

.....  
.....  
.....  
.....

*..3 Ordering Information .....*

.....  
.....  
.....

.....  
.....  
.....  
.....

*3 Specifications .....*

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....4 Connections .

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

8 Nomenclature .....

.....  
.....  
.....

.....  
.....  
.....

.....12 Dimensions.

.....  
.....

.....  
.....  
.....

.....  
.....  
.....

..13 Operating Procedures .....

.....  
.....

.....  
.....  
.....

.....17 Setting Procedure Guide..

.....  
.....

.....  
.....  
.....

....17 Operating Procedures (Counter Function) .....

.....





[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)

<http://yourpdfguides.com/dref/2888791>

5), light gray (Munsell 5Y7/1, produced upon request) Waterproof packing, flush mounting adapter None Yes (0.

001 to 99.999) Yes (0.001 to 9.999) Yes (0.001 to 99.999) N, F, C, R, K-1, P, Q, A, K-2, D, L N, F, C, R, K-1, P, Q, A N, F, C, R, K-1, P, Q, A, K-2, D, L Reset input Reset system Output modes One-shot output time Output type Control output External power supply Key protection Prescaling function Decimal point adjustment Sensor waiting time Memory backup Ambient temperature Ambient humidity Case color Attachments -10 to 55°C (-10 to 50°C if counters are mounted side by side) (with no icing or condensation) -25 to 65°C (with no icing or condensation) Note: 1. Permissible ripple: 20% (p-p) max. 2. The display is lit only when the power is ON. 3.

Only when the following modes are selected. Input mode: command, individual, or quadrature; output mode: K-2, D, or L 4 Multifunction Preset Counter H7CX-A Ratings (contd.) Item Classification Supported configurations H7CX-A4W@ Preset counter H7CX-AW@ Preset counter/tachometer H7CX-AU@ 1-stage counter, 2-stage counter, 1-stage 1-stage counter, 2-stage counter, 1-stage counter with total counter, 1-stage counter with batch counter with total counter, 1-stage counter counter, dual counter (addition/subtraction), tachometer (selectable) with batch counter, dual counter (addition only) (selectable) 100 to 240 VAC (50/60 Hz), 12 to 24 VDC 100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC, 12 to 24 VDC 100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC Rated supply voltage (See note 1.) Operating voltage range Power consumption 85% to 110% of rated supply voltage (90% to 110% at 12 VDC) Approx. 9.

2 VA at 264 VAC Approx. 7.2 VA at 26.4 VAC Approx. 3.

7 W at 12 VDC Flush mounting Screw terminals 0.5 N-m max. 7-segment, negative transmissive LCD PV SV 11.5-mm-high characters, red or green (programmable) 6-mm-high characters, green 4 digits (-999 to 9,999) SV range: 0 to 9,999 CP1, CP2, reset 1, and reset 2 No-voltage input/voltage input (switchable) No-voltage input ON impedance: 1 k max. (Leakage current: 5 to 20 mA at 0 ) ON residual voltage: 3 V max. OFF impedance: 100 k min. Voltage input High (logic) level: 4.5 to 30 VDC Low (logic) level: 0 to 2 VDC (Input resistance: approx. 4.7 k) 6 digits (-99,999 to 999,999 or 0 to 999,999 when using as Tachometer) SV range: -99,999 to 999,999 (See note 3.

) or 0 to 999,999 9-mm-high characters, red or green (programmable) Mounting method External connections Terminal screw tightening torque Display (See note 2.) Digits Input signals Input method Counter Max. counting speed Input mode Reset input Reset system Output modes One-shot output time 30 Hz or 5 kHz (selectable, ON/OFF ratio 1:1), common setting for CP1 and CP2 Increment, decrement, command, individual, and quadrature Minimum reset input signal width: 1 or 20 ms (selectable), common setting for all inputs External, manual, and automatic reset (internal according to C, R, P, and Q mode operation) N, F, C, R, K-1, P, Q, A 0.01 to 99.99 s -----Periodic measurement (Sampling period: 200 ms) 30 Hz or 10 kHz (selectable) 30 Hz: 0.01 to 30.00 Hz 10 kHz: 0.01 Hz to 10 kHz  $\pm 0.1\%$  FS  $\pm 1$  digit max. (at 23  $\pm 5^\circ$ C) HI-LO, AREA, HI-HI, LO-LO 0.

1 to 99.9 s 0.0 to 99.9 s OFF/2/4/8 times H7CX-AU/-AUD1: SPDT and 1 transistor H7CX-AUSD1: 2 transistors (Output allocation possible) N, F, C, R, K-1, P, Q, A, K-2, D, L, H Tachometer Pulse measurement method Max. counting speed Measuring ranges Measuring accuracy Output modes Auto-zero time Startup time Average processing Output type H7CX-A4W/-AW/-AWD1: SPDT (OUT2) and SPST-NO (OUT1) H7CX-A4WSD/-AWS/-AWSD/-AWSD1: 2 transistors Contact output: 3 A at 250 VAC/30 VDC, resistive load (cos=1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) Transistor output: NPN open collector, 100 mA at 30 VDC Residual voltage: 1.

5 VDC max. (approx. 1 V) Leakage current: 0.1 mA max. Control output NEMA B300 Pilot Duty, 1/4 HP 3-A resistive load at 120 VAC, 1/3 HP 3-A resistive load at 240 VAC External power supply Key protection Prescaling function Decimal point adjustment Sensor waiting time Memory backup Ambient temperature Ambient humidity Case color Attachments 12 VDC ( $\pm 10\%$ ), 100 mA (except for H7CX-A@D models) Refer to Safety Precautions (page 60) for details.

Yes Yee H7CX. Otherwise, H7CX-A11@ models are considered to meet UL508 recognition requirements. 2. The Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter are necessary to ensure IP66, NEMA4, and UL Type 4X waterproofing between the H7CX and installation panel. 6 Multifunction Preset Counter H7CX-A Life-test Curve (Reference Values) Resistive Load 1,000 Inductive Load 1,000 No. of operations ( $\times 103$ ) No. of operations ( $\times 103$ ) 700 500 700 500 300 30 VDC (cos=1) 300 30 VDC (L/R=7 ms) 250 VAC (cos=1) 100 70 50 0 1 2 3 4 100 70 50 0 250 VAC cos=0.4 1 2 3 4 Load current (A) Reference: A current of 0.15 A max. can be switched at 125 VDC (cos=1) and current of 0.

1 A max. can be switched if L/R=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). Load current (A) Inrush Current (Reference Values) Model H7CX-A11/-AW H7CX-AD Voltage 100 to 240 VAC 12 to 24 VDC Applied voltage Inrush current (peak value) 264 VAC 26.4 VDC 5.8 A 10.4 A 6.0 A Time 0.7 ms 1.

2 ms 1.2 ms H7CX-A11D1/-AWD1 24 VAC/12 to 24 VDC 26.4 VAC Multifunction Preset Counter H7CX-A 7 Connections Block Diagram Output circuit (Basic insulation) Input circuit Internal control circuit (Basic insulation) Power supply circuit (See note.) Display circuit Key switch circuit Note: All models except for H7CX-@D (models with 12 to 24-VDC power supplies) have basic insulation. I/O Functions Using as a Counter Inputs CP1, CP2 · In general (except for dual counter mode) Reads counting signals Increment, decrement, command, individual, and quadrature inputs accepted.

· When used as a dual counter Reads CP1 count signals with CP1 input and CP2 count signals with CP2 input. Increment signals can be input. · In general (except for dual counter mode) Resets present value and outputs (OUT2 when using the batch counter). (See note 1.) Counting cannot be performed during reset/reset 1 input.

The reset indicator is lit during reset input. · When used as a dual counter Resets the CP1 present value (to 0). Counting for CP1 input cannot be performed during reset 1 input. The reset indicator is lit during reset 1 input. · When used as a 1-stage/2-stage counter Does not operate (Not used). · When used as a total and preset counter Resets the total count value. Holds the total count value at 0 during total reset input. · When used as a batch counter Resets the batch count value and batch output (OUT1). Holds the batch count value at 0 during reset 2 input.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)  
<http://yourpdfguides.com/dref/2888791>

· When used as a dual counter Resets the CP2 present value.

Counting for CP2 input cannot be performed during reset 2 input. Outputs take place according to designated output mode when corresponding preset is reached. Reset or Reset 1 Total Reset or Reset 2 (See note 2.) Outputs OUT1, OUT2 Note: 1. In increment mode or increment/decrement mode, the present value returns to 0; in decrement mode, the present value returns to the set value with 1-stage models, and returns to set value 2 with 2-stage models. 2. The reset indicator will not be lit when the total reset or reset 2 input is ON. Using as a Tachometer Inputs CP1, CP2 Reset 1, Reset 2 Outputs OUT1, OUT2 Reads counting signals. (CP2 input is not available.) Holds the measurement value and outputs.

(Reset 2 input is not available.) The reset indicator is lit during hold. Outputs signals according to the specified output mode when a set value is reached. 8 Multifunction Preset Counter H7CX-A Terminal Arrangement Confirm that the power supply meets specifications before use. H7CX-A/A4 1-stage Contact Output Total reset Reset CP2 CP1 H7CX-AD/A4D 1-stage Contact Output Total reset 10 Unused Reset CP2 8 Unused 0V 6 Unused 0V (-) Sensor, etc. 6 7 8 Unused 9 10 Unused 7 (+) 12 VDC 11 External power supply 12 13 11 12 CP1 9 4 OUT 13 1 2 3 4 OUT 5 1 (-) 2 (+) 3 5 Note: Terminals 1 and 6 are connected internally. H7CX-AS/A4S 1-stage Transistor Output Total reset Reset CP2 CP1 H7CX-ASD/A4SD 1-stage Transistor Output Total reset 10 Unused Reset CP2 8 Unused 0V 6 Unused 0V (-) Sensor, etc. 6 7 8 Unused 9 10 Unused 7 (+) 12 VDC 11 External power supply 12 13 11 12 CP1 9 4 OUT 13 1 2 3 4 OUT 5 1 (-) 2 (+) 3 5 Note: Terminals 1 and 6 are connected internally. H7CX-A11/A114/A11D1/A114D1 1-stage Contact Output Reset CP1 CP2 Total reset H7CX-A11S/A114S/A11SD1 1-stage Transistor Output Reset CP1 Internal circuit 567 4 0V 8 9 10 3 2 1 11 CP2 Total reset Internal circuit 567 4 0V 8 9 10 3 2 1 11 (-) Sensor, etc. (-) Sensor, etc.

(+) 12 VDC (+) OUT (-) (+) 12 VDC External power supply External power supply OUT (-) (+) Note: Do not connect unused terminals as relay terminals. Multifunction Preset Counter H7CX-A 9 H7CX-AW/A4W/AWD1 2-stage Contact Output Reset 1 Reset 2 CP2 CP1 H7CX-AWS/AWSD1 2-stage Transistor Output Reset 1 Reset 2 10 13 OUT1 5 10 13 CP2 8 12 3 0V (-) Sensor, etc. 0V 7 8 9 10 (-) Sensor, etc. 6 6 7 (+) 12 VDC External power supply (+) 11 12 13 OUT1 12 VDC 11 External power supply 1 2 3 4 OUT2 5 1 2 OUT2 (-) (+) (-) (+) H7CX-AWSD/A4WSD 2-stage Transistor Output Reset 1 Reset 2 CP2 CP1 H7CX-AUSD1 1 or 2-stage Transistor Output Reset 1 Reset 2 OUT1 or 2 5 CP2 8 12 3 0V 0V 6 Unused 7 8 9 10 (-) Sensor, etc. 6 7 (+) 12 13 OUT1 12 VDC 11 11 External power supply 1 (-) 2 (+) 3 4 OUT2 5 1 2 OUT 1 or 2 (-) (+) Note: 1. Terminals 1 and 6 are connected internally. 2. Do not connect unused terminals as relay terminals. Note: Each output can be flexibly allocated to either stage 1 or 2 in function selection mode. H7CX-AU/AUD1 1-stage Contact, 1-stage Transistor Output Reset 1 Reset 2 CP2 CP1 0V (-) Sensor, etc.

6 7 8 9 10 (+) 12 VDC External power supply 11 12 13 OUT1 or 2 1 2 3 4 5 OUT 1 or 2 (-) (+) Note: Each output can be flexibly allocated to either stage 1 or 2 by setting in function selection mode. Input Circuits CP1, CP2, Reset/Reset 1, and Total Reset/Reset 2 Input +14 V 1 k IN Internal circuit Note: The circuit shown above is for no-voltage input (NPN input). 10 Multifunction Preset Counter H7CX-A CP1 9 4 CP1 9 4 Input Connections The inputs of the H7CX are no-voltage (short-circuit or open) inputs or voltage inputs. When using as a tachometer, CP2 input and total reset/reset 2 input are not available.

No-voltage Inputs (NPN Inputs) Open Collector PLC or sensor Total reset/reset 2 input Voltage Output Sensor Contact Input DC Two-wire Sensor Total reset/reset 2 input Total reset/reset 2 input Reset/reset 1 input Reset/reset 1 input Reset/reset 1 input 0V 0V 0V H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 Operates when the transistor turns ON. Operates when the transistor turns ON. Operates when the contact turns ON. Operates when the transistor turns ON. No-voltage Input Signal Levels No-contact input Short-circuit level Transistor ON Residual voltage: 3 V max. Impedance when ON: 1 k max.

(The leakage current is 5 to 20 mA when the impedance is 0 .) Open level Transistor OFF Impedance when OFF: 100 k min. Contact input Use contact which can adequately switch 5 mA at 10 V. Maximum applicable voltage: 30 VDC max. Applicable Two-wire Sensor Leakage current: 1.

5 mA max. Switching capacity: 5 mA min. Residual voltage: 3 VDC max. Operating voltage: 10 VDC Voltage Inputs (PNP Inputs) No-contact Input (NPN Transistor) Sensor No-contact Input (PNP Transistor) Sensor Contact Input Total reset/reset 2 input Total reset/reset 2 input Reset/reset 1 input Reset/reset 1 input 0V 0V 0V Reset/reset 1 input H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 H7CX-A@ H7CX-A11@ 6 3 7 7 8 5 9 6 10 4 Operates when the transistor turns OFF. Operates when the transistor turns ON.

Operates when the contact turns ON. Voltage Input Signal Levels High level (Input ON): Low level (Input OFF): Maximum applicable voltage: Input resistance: 4.5 to 30 VDC 0 to 2 VDC 30 VDC max. Approx. 4.7 k Total reset/reset 2 input CP2 input CP2 input CP1 input CP1 input CP2 input CP1 input Input Input Input Multifunction Preset Counter H7CX-A 11 Total reset/reset 2 input Reset/reset 1 input CP2 input CP1 input CP2 input CP2 input CP1 input CP1 input CP2 input CP1 input Input Input Input Input Input Nomenclature Indicators A Reset Indicator (Orange) Lit when the reset input (1) or reset key is ON. B

Key Protection Indicator (Orange) C Control Output Indicator (Orange) OUT: One stage OUT1, OUT2: Two stages D Total Count Indicator Lit when the total count value is displayed. E Batch Indicator Lit when the batch count value is displayed. F Set Value 1, 2 Stage Indicator G Present Value (Main Display) Character height: 11.5 mm (6-digit: 9mm) H Set Value (Sub-display) Character height: 6 mm 1 2 3 4 5 6 9 Operation Keys 7 8 11 12 10 Front view of 4-digit model I Mode Key Used to switch mode and setting items.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)

<http://yourpdfguides.com/dref/2888791>



*J Reset Key The operation of the reset function depends on the configuration selected as shown in the table below. K Up Keys: 1 to 4 (6-digit models: 1 to 6) L Down Keys: 1 to 4 Switches M Key Protect Switch 1 2 3 4 5 6 9 (Factory setting) OFF ON 7 8 DIP Switch 11 10 Front view of 6-digit model 13 14 Reset Operation by Reset Key Configuration 1-stage/2-stage counter Reset operation Resets the present value and outputs. Total and preset - Resets the present value and outputs. counter - When the total count value is displayed, resets the present value, the total count value, and outputs. Batch counter - Resets the present value and OUTPUT. - When the batch count value is displayed, resets the present value, the batch count value, and outputs. Resets the CP1 present value, CP2 present value, dual count value, and outputs. Maintains the measured value and outputs (hold function). Dual counter Tachometer 12 Multifunction Preset Counter H7CX-A Dimensions Note: All units are in millimeters unless otherwise indicated. Counter (without Flush Mounting Adapter) Screw-terminal Models with External Power Supplies (Flush Mounting) · H7CX-A · H7CX-AS · H7CX-A4 · H7CX-A4S · H7CX-AW · H7CX-AWS · H7CX-A4W · H7CX-AWD1 · H7CX-AWSD1 · H7CX-AU · H7CX-AUD1 · H7CX-AUSD1 48×48 6 100 44. 8×44.8 Note: M3.5 terminal screw (effective length: 6 mm) Screw-terminal Models without External Power Supplies (Flush Mounting) · H7CX-AD · H7CX-ASD · H7CX-A4D · H7CX-A4SD · H7CX-AWSD · H7CX-AWSD 48×48 6 64 44.8×44.8 Note: M3. 5 terminal screw (effective length: 6 mm) 11-pin Socket Models (Flush Mounting/Surface Mounting) · H7CX-A11 · H7CX-A11S · H7CX-A11D1 · H7CX-A11SD1 · H7CX-A114 · H7CX-A114S · H7CX-A114D1 48×48 6 72.5 14.4 44.8×44.8 Multifunction Preset Counter H7CX-A 13 Dimensions with Flush Mounting Adapter Screw-terminal Models with External Power Supplies (Provided with Adapter and Waterproof Packing) · H7CX-A · H7CX-AS · H7CX-A4 · H7CX-A4S · H7CX-AW · H7CX-AWS · H7CX-A4W · H7CX-AWD1 · H7CX-AWSD1 · H7CX-AU · H7CX-AUD1 · H7CX-AUSD1 Panel Cutouts Panel cutouts are as shown below. (according to DIN43700). Y92S-29 (provided) Waterproof Packing Panel Y92F-30 (provided) Flush Mounting Adapter 60 min. 45+0.6 -0 45+0.6 -0 60 min. 15 min. 58 (51) 48 7.5 98.5 Screw-terminal Models without External Power Supplies (Provided with Adapter and Waterproof Packing) · H7CX-AD · H7CX-ASD · H7CX-A4D · H7CX-A4SD · H7CX-AWSD · H7CX-A4WSD Y92S-29 (provided) Waterproof Packing Panel Y92F-30 (provided) Flush Mounting Adapter Note: 1. The mounting panel thickness should be 1 to 5 mm.*

*2. To allow easier operability, it is recommended that Adapters are mounted so that the gap between sides with hooks is at least 15 mm (i.e., so that the panel cutout interval is at least 60 mm). 3. It is possible to mount counters side by side, but only in the direction without the hooks. If they are mounted side-by-side, water-resistant specifications cannot be ensured. 58 (51) n side by side mounting A 48 7.5 62.5 A = (48n - 2.5) + 1 0 With Y92A-48F1 attached. A = {48n-2.5 + (n-1) x 4}+1 0 With Y92A-48 attached. A = (51n-5.5)+1 0 11-pin Socket Models (Adapter and Waterproof Packing Ordered Separately) · H7CX-A11 · H7CX-A11S · H7CX-A11D1 · H7CX-A11SD1 · H7CX-A114 · H7CX-A114S · H7CX-A114D1 Y92S-29 (order separately) Waterproof Packing Panel Y92F-30 (order separately) Flush Mounting Adapter 58 (51) P3GA-11 (order separately) Back Connecting Socket 48 7. 5 98.7 Dimensions with Front Connecting Socket H7CX -A11@ 112 109.7 P2CF-11 Note: These dimensions vary with the kind of DIN track (reference value). 14 Multifunction Preset Counter H7CX-A Accessories (Order Separately) Note: All units are in millimeters unless otherwise indicated. Track Mounting/Front Connecting Socket P2CF-11 Eleven, M3. 5 x 7.5 sems 7.8 3 4.5 70 max. Two, 4.5-dia. holes 4 50 max. 31.2 max. 35.*

*4 Terminal Arrangement/ Internal Connections (Top View) Surface Mounting Holes Two, 4.5 dia. or two, M4 40±0.2 Note: Track mounting is also possible. P2CF-11-E (Finger-safe Terminal Type) Conforming to VDE0106/P100 Eleven, M3.5 x 7.5 sems 7.8 5 3 70 max. 1.2 Two, 4. 5-dia. holes 4 40±0.2 50 max. 30 31.2 max. 35.4 4.5 Back Connecting Socket P3GA-11 27 dia. Terminal Arrangement/ Internal Connections (Bottom View) 25.6 45 45 4. 5 16.3 6.2 Note: Finger protection can be ensured by using in combination with the Y92A-48G Terminal Cover. Finger-safe Terminal Cover Conforming to VDE0106/P100 Y92A-48G (Attachment for P3GA-11 Socket) 34 Twelve, 6.4-dia. holes 47.7 x 47.7 48 x 48 16.5 24.6 27.*

*6 47.4 Multifunction Preset Counter H7CX-A 15 Hard Cover Y92A-48 Soft Cover Y92A-48F1 Note: 1. Depending on the operating environment, the condition of resin products may deteriorate, and may shrink or become harder. Therefore, it is recommended that resin products are replaced regularly. 2. The H7CX's panel surface is water-resistive (conforming to IP66) and so even if drops of water penetrate the gaps between the keys, there will be no adverse effect on internal circuits. If, however, there is a possibility of oil being present on the operator's hands, use the Soft Cover. The Soft Cover ensures protection equivalent to IP54F against oil. Do not, however, use the H7CX in locations where it would come in direct contact with oil. Flush Mounting Adapter (provided with screw-terminal models) Y92F-30 Waterproof Packing (provided with screw-terminal models) Y92S-29 When using the Y92S-29, the degree of protection for the H7CX's panel surface conforms to NEMA4, UL Type 4X, and IP66. (Depending on the operating environment, the condition of the panel may deteriorate, shrink, or become harder. Therefore, regular replacement is recommended.) Mounting Track PFP-100N, PFP-50N PFP-100N2 16 7.3±0.15 4. 5 35±0.3 15 25 10 25 25 \* 25 1,000 (500) 10 (See note.) 27±0.15 1 15 25 10 25 1,000 25 10 25 15 4.5 35±0. 3 27 24 1 29.2 1.5 Note: The values shown in parentheses are for the PFP-50N. End Plate PFP-M 10 6.2 1.8 Spacer PFP-S 5 16 12 1 50 1.8 35.5 35.3 44.3 34.*

*8 11.5 10 M4 x 8 pan head screw 1.3 4.8 16.5 16 Multifunction Preset Counter H7CX-A Operating Procedures Setting Procedure Guide Setting for Counter Operation (1-stage/2-stage Counter, Total and Preset Counter, Batch Counter, Dual Counter) When Using Basic Settings Only Basic Settings . . . . . Counting speed (30 Hz, 5 kHz) Input mode (UP, DOWN) Output mode (N, F, C, K-1) One-shot output time (0.*



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)  
<http://yourpdfguides.com/dref/2888791>



5 s, 0.05 s)(See note 2.) Reset input signal width (20 ms, 1 ms) NPN/PNP input mode (NPN, PNP) The settings can be performed easily with the DIP switch. For details on the setting methods, refer to page 18. 1 ON 2 3 4 5 6 7 8 OFF When Using Settings Other than the Above All the functions can be set with the operation keys.

For details on the setting methods, refer to page 19. Other Settings · Input mode (UP/DOWN A, UP/DOWN B, UP/DOWN C) · Output mode (R, P, Q, A, K-2, D, L, H) · One-shot output time (except for 0.5 s and 0.05 s) (See note 2.) When Using Advanced Functions Settings for advanced functions other than the basic settings above can be performed with the operation keys.

For details on the setting methods, refer to page 19. . . . . Advanced Functions Dual count calculating mode Output 1 time (for 2-stage counter) Decimal point position Prescale value Display color Output allocation Key protect level Note: 1. At the time of delivery, the H7CX is set to the 1-stage counter (2-stage counter for H7CX-AW@/-A4W@ models) configuration. 2. Set to output 2 time when using as a 2-stage counter or batch counter.

Setting for Tachometer Operation When Using Basic Settings Only Basic Settings . . . . Counting speed (30 Hz, 10 kHz) Output mode (HI-LO, AREA, HI-HI, LO-LO) Average processing (OFF, 2, 4, 8 times) NPN/PNP input mode (NPN, PNP) The settings can be performed easily with the DIP switch. For details on the setting methods, refer to page 30. 1 ON 2 3 4 5 6 7 8 OFF When Using Advanced Functions Settings for advanced functions other than the basic settings above can be performed with the operation keys. For details on the setting methods, refer to page 31. Advanced Functions . . . . . Decimal point position Prescale value Auto-zero time Startup time Display color Output allocation Key protect level Note: At the time of delivery, the H7CX is set to the 2-stage counter (1-stage counter for H7CX-AU@ models) configuration. Multifunction Preset Counter H7CX-A 17 Operating Procedures (Counter Function)

Settings for Basic Operations Settings for basic functions can be performed with just the DIP switch. Be sure to set pin 1 to ON. 1 ON 2 3 4 5 6 7 8 OFF Note: All of the pins are factory-set to OFF. Item 1 2 3 4 5 6 7 8 One-shot output time (See note.) Reset input signal width NPN/PNP input mode 0.

5 s DIP switch settings enable/disable Counting speed Input mode Output mode OFF Disabled 30 Hz ON Enabled 5 kHz UP (increment) DOWN (decrement) Refer to the table on the right. 0.05 s 1 ms PNP Pin 4 OFF ON OFF 20 ms NPN ON Pin 5 OFF OFF ON ON N F C K-1 Output mode Note: Set to one-shot output 2 time when using as a 2-stage counter or batch counter. Easy Confirmation of Switch Settings Using Indicators The ON/OFF status of the DIP switch pins can be confirmed using the front display. For details, refer to page 36. Note: 1. Be sure to set pin 1 of the DIP switch to ON. If it is set to OFF, the DIP switch settings will not be enabled. 2. Changes to DIP switch settings are enabled when the power is turned ON.

3. When setting input modes, output modes, or output times that cannot be set with the DIP switch, all of the settings have to be made using the operation keys. For details on the setting methods, refer to page 19. When making settings using the operation keys, be sure to set pin 1 of the DIP switch to OFF. Switching to Total and Preset Counter, Batch Counter, and Dual Counter Operation (See note.)

) The H7CX is factory-set to the 1-stage counter (2-stage counter for H7CX-AW@/A4W@ models) configuration. To change to a different configuration, use the procedure shown on the right. For details, refer to page 36. Note: This includes changing to the 2stage counter (or 1-stage counter) configuration. Power ON Configuration selection mode Run mode Hold down for 1 s min.

(See note.) MODE + 1 Note: The MODE key must be pressed before the Select the configuration using the and keys ( 1 key. key with 6-digit models). (1-stage counter) (2-stage (Total and counter) preset counter) (Batch counter) (Dual counter) (Tachometer) Note: The configurations that can be selected vary with the model. Advanced-Function Settings After making DIP switch settings for basic operations, advanced functions (see note) can be added using the operation keys. For details, refer to page 19. Note: Advanced functions consist of the dual count calculating mode, output 1 time (for 2-stage counter), decimal point position, prescale value, display color, output allocation, and key protect level. 18 Multifunction Preset Counter H7CX-A (Counter Function) Settings for All Functions Note: At the time of delivery, the H7CX is set to the 1-stage counter (2-stage counter for H7CX-AW@/-A4W@ models) configuration. When using as a 2-stage (or 1-stage) counter, total and preset counter, batch counter, or dual counter, switch to the configuration using the procedure given on page 36. Settings that cannot be performed with the DIP switch are performed with the operation keys.

Power ON Run mode For details on operations and display in run mode, refer to page 22. The display depends on the configuration used. Note: 1. If the mode is switched to the function setting mode during operation, operation will continue. 2. Changes made to settings in function setting mode are enabled for the first time when the mode is changed to run mode. Also, when settings are changed, the counter is reset (present value initialized and output turned OFF) on returning to run mode. See note 1. 3 s min. See note 2.

3 s min. The characters displayed in reverse video are the default settings. When performing settings with operation keys only, set pin1 of the DIP switch to OFF (factory setting). If pin 1 of the DIP switch is set to ON, the setting items indicated by will not be displayed. Set each setting item using the r r keys. ( r key only for 6-digit models) Note 3: See note 3. Input mode See note 4. (UP) See note 4. (DOWN) (UP/DOWN A) (UP/DOWN B) (UP/DOWN C) When using as a dual counter: Dual count calculating mode Note 4: Displayed for output modes other than K-2, D, L, and H only. Output mode See note 5. See note 5. See note 5. See note. (Addition) (Subtraction) Note: Displayed only when the output mode is K-2, D, L, or H. (N) (F) (C) (R) (K-1) (P) (Q) (A) (K-2) (D) (L) (H) See note 6. One-shot output time Note: 5. Display only when the input mode is UP/DOWN A, B, or C with 6-digit models (with H7CX-AU@/-AW@ models only for H). Note 6: When using as a 2-stage counter: Oneshot (0.01s) (0.

50s) (99.99s) output 2 time Note: Displayed only when the output mode is C, R, K-1, P, Q, A, or K-2. Oneshot (Outputs held) (0.01s) (99.99s) output If the output time is 0.



**You're reading an excerpt. Click here to read official OMRON H7CX user guide**  
<http://yourpdfguides.com/dref/2888791>

00, hold is 1 time When using as a batch counter: Function setting mode (0.01s) (0.50s) (99.99s) Note: Displayed only when the output mode is C, R, K-1, P, Q, A, or K-2. Counting speed (30Hz) (5kHz) displayed.

Note 1: Displayed for output modes other than D, L, and H. Note 2: HOLD cannot be set when the output mode is K-2. Reset input signal width (20ms) (1ms) Oneshot output 2 time (0.01s) (0.50s) (99.99s) Note: Displayed only when the output mode is C, R, K-1, P, Q, A, or K-2. Decimal point position See note 7. No decimal point Prescale value See note 7. One digit after decimal point Two digits after decimal point Three digits after decimal point (0.001) (1.000) (99.999) [9.999] Note 7: The displays for 4-digit models are shown inside parentheses. NPN/PNP input mode (NPN input) Display color (PNP input) (Red) (Green) (Red-green) (Green-red) Note: Displayed for terminal-block models (except H7CX-A11@) only. Output allocation Note: Displayed for H7CX-AU@ models only. Key protect level (KP-1) (KP-2) (KP-3) (KP-4) (KP-5) Multifunction Preset Counter H7CX-A (Counter Function) 19 Explanation of Functions Input Mode (cntm) (Setting possible using DIP switch.) Set increment mode (UP), decrement mode (DOWN), or one of the increment/decrement modes (UP/DOWN A, UP/DOWN B, or UP/DOWN C) as the input mode. Input modes other than UP or DOWN modes cannot be set using the DIP switch and so use the operation keys if other modes are required. (For details on the operation of the input modes, refer to Input Modes and Present Value on page 23.) Prescale Value (pscl) Pulses input to the counter are converted according to the specified prescale value.

(Setting range: 0.001 to 99.999 for 6-digit models and 0.001 to 9.999 for 4-digit models.) Example: To display the feed distance for systems that output 25 pulses for a feed length of 0.5 m in the form @@. m: 1. Set the decimal point position to 2 decimal places. 2. Set the prescale value to 0.02 (0.5÷25). 0.5 m Dual Count Calculating Mode (calm) When using as a dual counter, select either ADD (addition) or SUB (subtraction) as the calculation method for the dual count value.

SUB mode can be used only when K-2, D, L, or H is selected as the output mode with 6-digit models. ADD: SUB: Dual count value = CP1 PV + CP2 PV Dual count value = CP1 PV - CP2 PV Output Mode (outm) (Setting possible using DIP switch.) 25 pulses Set the way that control output for the present value is output. The possible settings are N, F, C, R, K-1, P, Q, A, K-2, D, L, and H. Output modes other than N, F, C, or K-1 cannot be set using the DIP switch and so use the operation keys if other modes are required.

The output modes that can be set vary with the model. (For details on the operation of the output modes, refer to Input/Output Mode Settings on page 24.) Encoder NPN/PNP Input Mode (imod) Select either NPN input (no-voltage input) or PNP input (voltage input) as the input format. The same setting is used for all external inputs. For details on input connections, refer to Input Connections on page 11. One-shot Output Time (otim) (Setting possible using DIP switch.) Set the one-shot output time (0.01 to 99.99 s) for control output. One-shot output can be used only when C, R, K-1, P, Q, A, or K-2 is selected as the output mode.

Output times other than 0.5 s or 0.05 s cannot be set with the DIP switch and so use the operation keys if other settings are required. Display Color (colr) Set the color used for the present value. Output OFF (See note.) red Red (fixed) Green (fixed) Red Green Green Red grn r-g g-r Output ON (See note.) One-shot Output 2 Time (otm2) (Setting possible using DIP switch.) When using as a 2-stage counter or batch counter, set the one-shot output time (0.01 to 99.99 s) for control output (OUT2).

One-shot output can be used only when C, R, K-1, P, Q, A, or K-2 is selected as the output mode. Output times other than 0.5 s or 0.05 s cannot be set with the DIP switch and so use the operation keys if other settings are required. Note: When using as a 2-stage counter, this is the status of output 2. Output Allocation (otst) When using H7CX-AU@ models as a 2-stage counter, the output can be flexibly allocated to either stage 1 or 2. Transistor output can be allocated to SV1 and contact output for SV2 or vice versa, as in the following table. One-shot Output 1 Time (otm1) When using as a 2-stage counter, set the one-shot output time (0.01 to 99.99 s) for control output (OUT1).

One-shot output can be used only when D, L, or H is selected as the output mode. If the output time is set to 0.00, hold is displayed, and outputs are held. HOLD cannot be set when the output mode is K-2. H7CX-AU/-AUD1 OUT1 off Transistor (12-13) Contact (3, 4, 5) on OUT2 Contact (3, 4, 5) Transistor (12-13) Counting Speed (cnts) (Setting possible using DIP switch.) Set the maximum counting speed (30 Hz/5 kHz) for CP1 and CP2 inputs together. If contacts are used for input signals, set the counting speed to 30 Hz. Processing to eliminate chattering is performed for this setting. H7CX-AUSD1 OUT1 off on Transistor (12-13) Transistor with diode (3, 4, 5) OUT2 Transistor with diode (3, 4, 5) Transistor (12-13) Reset Input Signal Width (ift) (Setting possible using DIP switch.) Set the reset input signal width (20 ms/1 ms) for reset/reset 1 and total reset/reset 2 inputs together.

If contacts are used for input signals, set the counting speed to 20 ms. Processing to eliminate chattering is performed for this setting. Decimal Point Position (dp) Decide the decimal point position for the present value, CP1/CP2 present values, set value (SV1, SV2), total count value, and dual count set value. 20 Multifunction Preset Counter H7CX-A (Counter Function) Key Protect Level (kypt) Set the key protect level. When the key-protect switch is set to ON, it is possible to prevent setting errors by prohibiting the use of certain operation keys by specifying the key protect level (KP-1 to KP-5). The key protect indicator is lit while the key-protect switch is set to ON. Confirm the ON/OFF status of the keyprotect switch after the H7CX is mounted to the panel. (See note) OFF ON Note: Factory-set to OFF Key protect indicator Level Meaning Changing mode (See note.) Details Switching display in run mode Yes Yes Reset key Up/down key (Up key for 6-digit models) Yes KP-1 (default setting) No KP-2 No Yes No Yes KP-3 No Yes Yes No KP-4 No Yes No No KP-5 No No No No Note: Changing mode to configuration selection mode (MODE + 1 1 s min.) or function setting mode (MODE 3 s min.)

. Multifunction Preset Counter H7CX-A (Counter Function) 21 Operation in Run Mode Set values for each digit as required using the and keys. (key only for 6-digit models.) 1-stage Counter Present value Set value Present Value Shows the present count value.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)

<http://yourpdfguides.com/dref/2888791>

Set Value (Set Value 1, Set Value 2) Set the set value.

When the present value reaches the set value, signals are output according to the specified output mode. 2-stage Counter Present value Set value 1 Present value Set value 2 Total and Preset Counter Present value Set value Present Value/Set Value Same as 1-stage counter. Total Count Value Shows the present total count value. Total count value Batch Counter Present Value/Set Value Same as 1-stage counter. Present value Set value Batch Count Value Shows the number of times the count has been completed for the present value.

Batch Count Set Value Set the batch count set value. When the batch count value reaches the batch count set value, batch output (OUT1) turns ON. Batch count value Batch count set value Dual Counter Dual Count Value Shows the sum of the CP1 present value and CP2 present value when the dual count calculating mode is ADD and shows the value obtained by subtracting the CP2 present value from the CP1 present value when the dual count calculating mode is SUB. Dual Count Set Value Set the dual count set value. When the dual count value reaches the dual count set value, signals are output according to the specified output mode. CP1/CP2 Present Value Show the present count values for CP1 and CP2 present values respectively. Dual count value Dual count set value CP1 present value CP2 present value 22 Multifunction Preset Counter H7CX-A (Counter Function) Input Modes and Present Value UP (Increment) Mode DOWN (Decrement) Mode CP1: Count input; CP2: Prohibit (gate) input H CP1 L A A CP1: Count input; CP2: Prohibit (gate) input H CP1 L A A H CP2 L Prohibit CP2 H L n 5 n-1 n-2 Prohibit Present value 2 1 0 0 4 3 Present value n-3 n-4 n-5 0 a must be greater than the minimum signal width. (See note 2.) CP1: Prohibit (gate) input; CP2: Count input H CP1 L (See note 3.) H CP2 L 5 A A a must be greater than the minimum signal width.

(See note 2.) CP1: Prohibit (gate) input; CP2: Present value H CP1 L (See note 3.) H CP2 L n n-1 n-2 n-3 A A Prohibit Prohibit Present value 2 1 4 3 Present value n-4 n-5 0 a must be greater than the minimum signal width. (See note 2.) UP/DOWN A Command Input Mode H CP1 L A A 0 0 a must be greater than the minimum signal width. (See note 2.) Note: 1. If the configuration selection is set to dual counter, CP1 and CP2 input will operate in the same way as the count input (CP1) of UP (increment) mode. 2. a must be greater than the minimum signal width and b must be at least 1/2 the minimum signal width.

If they are less, a count error of  $\pm 1$  may occur. Minimum signal width: 16.7 ms (when maximum counting speed = 30 Hz) 100  $\mu$ s (when maximum counting speed = 5 kHz) 3. Counting starts when the CP1 is turned ON after turning ON the power. 4.

The meaning of the H and L symbols in the tables is explained below. Input method Symbol H L No-voltage input (NPN input) Short-circuit Open Voltage input (PNP input) 4.5 to 30 VDC 0 to 2 VDC H CP2 L 3 2 1 0 0 2 1 2 3 Present value a must be greater than the minimum signal width. (See note 2.)

UP/DOWN B Individual Input Mode H CP1 L H CP2 L 3 2 1 0 0 2 1 1 2 3 Present value UP/DOWN C Quadrature Input Mode H CP1 L H L 3 3 2 1 2 BBBB CP2 Present value 1 0 2 0 b must be at least 1/2 the minimum signal width.

(See note 2.) Multifunction Preset Counter H7CX-A (Counter Function) 23 Input/Output Mode Settings Operation for 1-stage models is the same as that for OUT2. When using a 2-stage model as a 1-stage counter, total and preset counter, or dual counter, OUT1 and OUT2 turn ON and OFF simultaneously. Input mode UP Output mode setting N Reset/ reset 1 999999 Set value 2 Set value 1 One-shot output from OUT1 (The one-shot output time can be set in the range 0.01 to 99.99s.) Self-holding output Self-holding output One-shot output from OUT2 DOWN UP/DOWN A, B, C Operation after count completion The outputs and present value display are held until reset/reset 1 is input. 0 OUT1 OUT2 F Reset/ reset 1 999999 Set value 2 Set value 1 The present value display continues to increase/decrease. The outputs are held until reset/reset 1 is input. 0 OUT1 OUT2 C Reset/ reset 1 999999 Set value 2 Set value 1 0 OUT1 OUT2 As soon as the count reaches SV, the present value display returns to the reset start status.

The present value display does not show the present value upon count-up. The outputs repeat one-shot operation. OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 oneshot output time is independent of OUT2. The present value display returns to the reset start status after the one-shot output time. The outputs repeat one-shot operation. OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 oneshot output time is independent of OUT2. R Reset/ reset 1 999999 Set value 2 Set value 1 0 OUT1 OUT2 Note: 1. 2.

3. 4. 5. The full scale (FS) for H7CX 4-digit models is 9999. When the present value reaches 999999, it returns to 0.

Counting cannot be performed during reset/reset 1 input. If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF. If there is power failure while output is ON, output will turn ON again when the power supply has recovered. For one-shot output, output will turn ON again for the duration of the output time setting once the power supply has recovered. 6.

Do not use the counter function in applications where the count may be completed (again) while one-shot output is ON. 24 Multifunction Preset Counter H7CX-A (Counter Function) Input mode UP Output mode setting K-1 Reset/ reset 1 999999 Set value 2 Set value 1 DOWN UP/DOWN A, B, C Operation after count completion The present value display continues to increase/decrease. OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 one-shot output time is independent of OUT2. The present value display does not change during the one-shot output time period, but the actual count returns to the reset start status. The outputs return to the one-shot start state and repeat oneshot operation. OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 one-shot output time is independent of OUT2. The present value continues to increase/ decrease for the oneshot output time, but returns to the reset start status after the one-shot output time has elapsed. The outputs repeat one-shot operation.

OUT1 self-holding output turns OFF after the OUT2 one-shot output time. The OUT1 one-shot output time is independent of OUT2. The present value display and OUT1 selfholding output is held until reset/reset 1 is input. OUT1 and OUT2 are independent. 0 OUT1 OUT2 P Reset/ reset 1 999999 Set value 2 Set value 1 0 OUT1 OUT2 Q Reset/ reset 1 999999 Set value 2 Set value 1 0 OUT1 OUT2 A Reset/ reset 1 999999 Set value 2 Set value 1 0 OUT1 OUT2 Note: 1.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)  
<http://yourpdfguides.com/dref/2888791>

2. 3. 4. 5. The full scale (FS) for H7CX 4-digit models is 9999.

When the present value reaches 999999, it returns to 0. Counting cannot be performed during reset/reset 1 input. If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF. If there is power failure while output is ON, output will turn ON again when the power supply has recovered. For one-shot output, output will turn ON again for the duration of the output time setting once the power supply has recovered.

6. Do not use the counter function in applications where the count may be completed (again) while one-shot output is ON. Multifunction Preset Counter H7CX-A (Counter Function) 25 (The one-shot output time can be set in the range 0.01 to 99.99s.

) Self-holding Instantaneous One-shot output (equals) output output Input mode UP/DOWN A, B, C Output mode setting K-2 Reset/ reset 1 Operation after count completion The display continues to increase/decrease until the overflow or underflow value is reached. One-shot output only. 999999 Set value 2 Set value 1 0 -99999 OUT1 OUT2 D Reset/ reset 1 999999 Set value 2 Set value 1 0 -99999 The display continues to increase/decrease until the overflow or underflow value is reached. The outputs are ON while the count is equal. OUT1 OUT2 L Reset/ reset 1 999999 Set value 2 Set value 1 0 -99999 The display continues to increase/decrease until the overflow or underflow value is reached. OUT1 is held while the present value is less than or equal to set value 1. OUT2 is held while the present value is greater than or equal to set value 2. OUT1 OUT2 H Reset/ reset 1 999999 Set value 2 Set value 1 0 -99999 OUT1 OUT2 The display continues to increase/decrease until the overflow or underflow value is reached. OUT1 is held while the present value is greater than or equal to set value 1. OUT2 is held while the present value is greater than or equal to set value 2.

Note: H mode is available only when using a 6-digit model as a 2stage counter. Note: 1. Counting cannot be performed during reset/reset 1 input. 2. If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF. 3. If there is power failure while output is ON, output will turn ON again when the power supply has recovered. For one-shot output, output will turn ON again for the duration of the output time setting once the power supply has recovered. 4. Do not use the counter function in applications where the count may be completed (again) while one-shot output is ON.

26 Multifunction Preset Counter H7CX-A (Counter Function) Total and Preset Counter Operation The H7CX has a total counter, separate from the 1-stage preset counter, for counting the total accumulated value. Reset/reset 1 Total reset/reset 2 Present value 0 999999 Total count value 0 Note: The full scale (FS) for H7CX 4-digit models is 9999. The total counter continues to count the total accumulated value when the present value is reset using reset/reset 1 input (reset key). The total count value is reset when the total reset/reset 2 input is turned ON. If the reset key is pressed while the total count value is displayed, the total count value is reset.

The present value is also reset at this time. The counting range of the total counter is -99,999 to 999,999 (-999 to 9,999). The total count value returns to 0 when it reaches the full scale limit. Batch Counter Operation The H7CX has a batch counter, separate from the 1-stage preset counter, for counting the number of times the count has been completed. Reset 1 Reset 2 (batch counter reset) Set value Present value 0 OUT2 Batch count set value (Sub-display) Batch count value (Main display) 1 The batch counter continues after count completion.

Batch output is held until batch counter reset is input. When the batch counter reset input is turned ON, the batch count value is reset, and batch output turns OFF. If the reset key is pressed while the batch count value is displayed, the batch count value is reset and batch output turns OFF. The present value is also reset at this time. 2 0 OUT1 (batch output) Note: The above is for when the output mode is C. Note: 1. 2. 3. 4. 5.

6. The batch count value is held at 0 during batch counter reset input. If the batch count set value is 0, batch count will be performed but there will be no batch output. The batch count value returns to 0 when it reaches 999,999 (9,999 for 4-digit models). Once batch input has been turned ON, it will return to the ON state after power interruptions. If the batch count set value is changed from a value that is greater than the batch count value to one that is less, batch output will turn ON. @@@@ Counting is not possible for CP1 during reset 1 input. CP2 will not be affected. @@2. Counting is not possible for CP2 during reset 2 input.

CP1 will not be affected. @@3. @@@@ and output reset. @@@@ and output reset. total count value, and output reset.

batch count val- value, dual count value, and output reset. ue, output and and output reset. @@@@ Reset the power supply. @@2. 3.

4. The display for 4-digit models is given in parentheses. Display flashes (1-second cycles). @@@@ The H7CX is set for dual counter operation. 5. @@To switch to the tachometer configuration, use the procedure shown on the right. For details, refer to page 36. Power ON Configuration selection mode Run mode MODE + Hold down for 1 1 s min. (See note.) Switch to 2cnt to taco (tachometer operation) using the key.

Note: The MODE key must be pressed before the 1 key. Settings for Basic Operations Settings for basic functions can be performed with just the DIP switch. Be sure to set pin 1 to ON. 1 2 3 4 5 6 7 8 ON OFF Note: All of the pins are factory-set to OFF. Item 1 DIP switch settings enable/ disable OFF Disabled ON Enabled Pin 3 OFF ON 10 kHz OFF ON Pin 4 OFF OFF ON ON Tachometer output mode Upper and lower limit Area Upper limit Lower limit 2 3 4 5 6 7 8 Counting speed 30 Hz Tachometer out- Refer to the table on the right. put mode Average processing Not used Refer to the table on the right. ----PNP Pin 5 OFF ON OFF ON Pin 6 OFF OFF ON ON Average processing OFF (no average processing) 2 times 4 times 8 times NPN/PNP input NPN mode Easy Confirmation of Switch Settings Using Indicators The ON/OFF status of the DIP switch pins can be confirmed using the front display. For details, refer to page 36. Note: 1. Be sure to set pin 1 of the DIP switch to ON.

If it is set to OFF, the DIP switch settings will not be enabled. 2. Changes to DIP switch settings are enabled when the power is turned ON. Advanced-Function Settings After making DIP switch settings for basic operations, advanced-functions (see note) can be added using the operation keys. For details, refer to page 31.

Note: Advanced functions consist of decimal point position, prescale value, auto-zero time, startup time, display color, output allocation, and key protect level.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)  
<http://yourpdfguides.com/dref/2888791>



30 Multifunction Preset Counter H7CX-A (Tachometer Function) Settings for Advanced Functions Note: When using as a tachometer, switch to the tachometer configuration using the procedure given on page 36. Settings that cannot be performed with the DIP switch are performed with the operation keys.

Power ON Note: 1. If the mode is switched to the function setting mode during operation, operation will continue.

2. Changes made to settings in function setting mode are enabled for the first time when the mode is changed to run mode. Also, when settings are changed, the counter is reset (measured values initialized and output turned OFF) on returning to run mode. For details on operations in run mode, refer to page 34. Run mode (See note 1.) 3s min. (See note 2.) The characters displayed in reverse video are the initial values. 3s min. When performing settings with operation keys only, set pin1 of the DIP switch to OFF (factory setting).

If pin 1 of the DIP switch is set to ON, the setting items indicated by will not be displayed. Set each setting item using the Tachometer output mode (HI-LO) (AREA) (HI-HI) keys. (LO-LO) Counting speed (30Hz) (10kHz) Decimal point position (No decimal point) (One digit after decimal point) (Two digits after decimal point) (Three digits after decimal point) Prescale value Function setting mode (0.001) (1.000) (99.999) Average processing (No average processing) (Average of 2 measurements) (Average of 4 measurements) (Average of 8 measurements) Auto-zero time (0.1s) (99.9s) Startup time (0.0s) (99.9s) NPN/PNP input mode (NPN input) Display color (Red) (PNP input) (Green) (Red-green) (Green-red) Output allocation Note: Displayed for H7CX-AU@ models Key protect level (KP-1) (KP-2) (KP-3) (KP-4) (KP-5) Multifunction Preset Counter H7CX-A (Tachometer Function) 31 Explanation of Functions Tachometer Output Mode (totm) (Setting possible using DIP switch.

) Set the output method for control output based on the OUT1/OUT2 set value. Upper and lower limit (HI-LO), area (AREA), upper limit (HI-HI), and lower limit (LO-LO) can be set. (For details on the operation of the output modes, refer to Output Mode Settings on page 35.) Auto-zero Time (aut=) It is possible to set the H7CX so that if there is no pulse for a certain time the display is force-set to 0. This time is called the auto-zero time.

Note: Set the auto-zero time to a time slightly longer than the estimated interval between input pulses and within the setting range (0.1 to 99.9 s). It will not be possible to make accurate measurements if the auto-zero time is set to a time shorter than the input pulse cycle. Setting a time that is too long may also result in problems, such as a time-lag between rotation stopping and the alarm turning ON.

Counting Speed (cnts) (Setting possible using DIP switch.) Set the maximum counting speed (30 Hz/10 kHz) for CP1 input. If contacts are used for input signals, set the counting speed to 30 Hz. Processing to eliminate chattering is performed for this setting. Startup Time (stmr) In order to prevent undesired output resulting from unstable input immediately after the power supply is turned ON, it is possible to prohibit measurement for a set time (0.0 to 99.9 s), the startup time. It can also be used to stop measurement and disable output until the rotating body reaches the normal rate of rotation, after the power supply to the H7CX and rotating body are turned ON at the same time. Display Startup time Decimal Point Position (dp) Decide the decimal point position for the measurement value, OUT1 set value, and OUT2 set value. Prescale Value (pscl) It is possible to display the rate of rotation or the speed of a device or machine to which the H7CX is mounted by converting input pulses to a desired unit.

If this prescaling function is not used, the input frequency (Hz) will be displayed. The relationship between display and input is determined by the following equation. Set the prescale value according to the unit to be displayed. Displayed value =  $f \times a \div f$ : Input pulse frequency (number of pulses in 1 second) a: Prescale value 1. Displaying Rotation Rate Display unit rpm rps N: Number of pulses per revolution Example: In order to display the rate of rotation for a machine that outputs 5 pulses per revolution in the form @ @ . @ rpm: 1. Set the decimal point position to 1 decimal place. 2. Using the formula, set the prescale value to  $1/N \times 60 = 60/5 = 12$ .

Displaying Speed Display unit m/min m/s Prescale value (a)  $1/N$  Prescale value (a)  $1/N \times 60$  Comparison value (lower limit) Time Power supply Output (lower limit) NPN/PNP Input Mode (imod) Select either NPN input (no-voltage input) or PNP input (voltage input) as the input format. The same setting is used for all external inputs. For details on input connections, refer to Input Connections on page 11. Display Color (colr) Set the color used for the measurement value. Setting Control output OFF Red (fixed) Green (fixed) Measured value displayed in green when either control output 1 or control output 2 is ON.

Control output ON  $d \times 1/N \times 60$   $d \times 1/N$  red grn r-g N: Number of pulses per revolution d: Diameter of rotating body (m) d: Circumference (m) Measured value displayed in red when both control (See note outputs 1 and 2 are OFF. 1.) d: Diameter of rotating body Measured value displayed in green when both control in red when either control (See note output 1 or control output 2 outputs 1 and 2 are OFF. 2.) is ON. g-r Average Processing (aug) (Setting possible using DIP switch.) Flickering display and output chattering can be prevented using average processing (simple averaging). Average processing can be set to one of four levels: no average processing, 2 times (i.e., the average of 2 measurement values), 4 times, or 8 times. The measurement cycle will be equal to the sampling cycle (200 ms) multiplied by the average processing setting (i.e., the number of times). Average processing enables fluctuating input signals to be displayed stably. Set the optimum number of times for the application.

Note: 1. If the tachometer output mode is set to AREA, however, the measured value is displayed in red when control output 1 is OFF and in green when control output 1 is ON. 2. If the tachometer output mode is set to AREA, however, the measured value is displayed in green when control output 1 is OFF and in red when control output 1 is ON. 32 Multifunction Preset Counter H7CX-A (Tachometer Function) Output Allocation (otst) When using H7CX-AU@ models as 2-stage counter, each output can be flexibly allocated to either stage 1 or 2. Transistor output placed for SV1 and contact output for SV2 or vice versa, as in the following table. H7CX-AU/AUD1 OUT1 OUT2 Contact (3, 4, 5) Transistor (12-13) off on Transistor (12-13) Contact (3, 4, 5) H7CX-AUSD1 OUT1 OUT2 Transistor with diode (3, 4, 5) Transistor (12-13) off on Transistor (12-13) Transistor with diode (3, 4, 5) Key Protect Level (kpyt) Set the key protect level.



[You're reading an excerpt. Click here to read official OMRON H7CX user guide](http://yourpdfguides.com/dref/2888791)

<http://yourpdfguides.com/dref/2888791>