**PRODUCT NEWS**

# Product Discontinuation Notices

**Counters**

OMRON

**Issue Date**
**September 1, 2021**

**No. 2021061CE**

## Discontinuation Notice of Digital Counter/Tachometer H7CX-A[]-N series, Digital Tachometer H7CX-R[]-N series and Optional Front Panels Y92P-CXC series

| Product Discontinuation | Recommended Replacement |
|---|---|
| Digital Counter<br>**H7CX-A[]-N series** | Digital Counter<br>**H7CC-A[] series** |
| Digital Tachometer<br>**H7CX-R[]-N series** | Digital Tachometer<br>**H7CC-R[] series** |
| Optional Front Panel (Replacement Part)<br>**Y92P-CXC series** | **No recommended replacement** |

### [ Final order entry date ]

The end of March 2023.

### [ Date of The Last Shipping ]

The end of June 2023.

### [ Caution on recommended replacement ]

- 6 digits display only, and case colored black only. No optional Front Panel (Y92P-CXC series).
- Parameters setting will be changed to only using of keys on the front panel.
  Setting must be set after turning ON the power supply. Also, RST key and MODE key will be changed to two designated keys that to be pressed simultaneously. Refer to [ Operation Methods ] on page 34 and 38 for the details.
- All models are equipped with power supply to external devices so that careful wiring is required. Refer to [ Terminal Arrangement／Wire Connection ] on page 4 to 6 for the details.
- H7CX-A-N/-AS-N/-AW-N/-AWS-N/-AWD1-N/-AWSD1-N/-A4-N/-A4S-N/-A4W-N/-AU-N/-AUD1-N/-AUSD1 have shorter body among H7CC series and their body depth is reduced.
- H7CC-R11D/R11, which are replacement models of H7CX-R11D1-N-301/-R11-N-302, cannot start AMD compatible mode by turning ON power supply, so parameter setting is required. Refer to [ Operation Methods ] on page 38 to 39 for the details.

### [ Difference from discontinued product ]

| Recommended replacement Model | Body Color | Dimen-sions | Wire connection | Mounting Dimensions | Charac-teristics | Operation ratings | Operation methods |
|---|---|---|---|---|---|---|---|
| H7CC series | ** | * | ** | ** | ** | ** | * |

** : Compatible
* : The change is a little/Almost compatible
-- : Not compatible
- : No corresponding specification

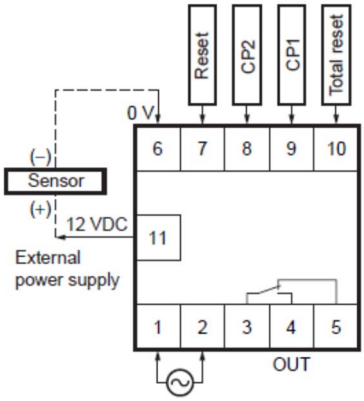
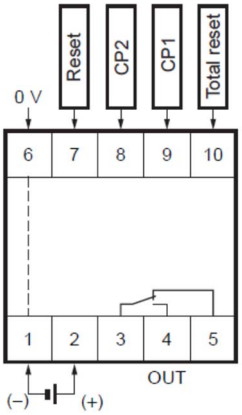
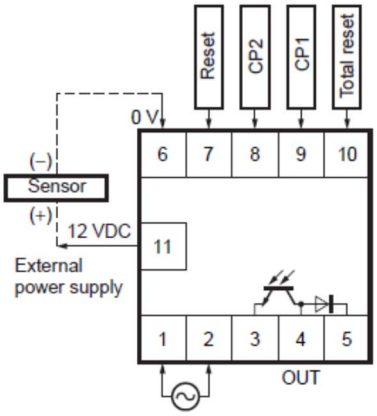
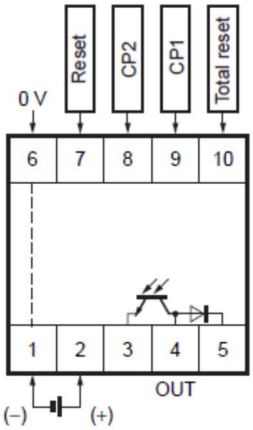
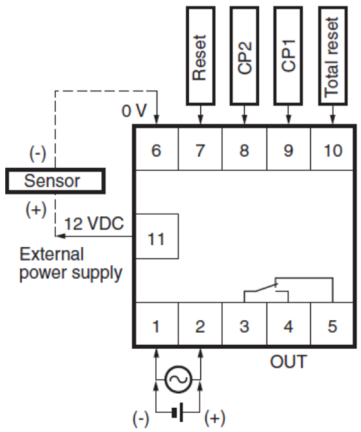
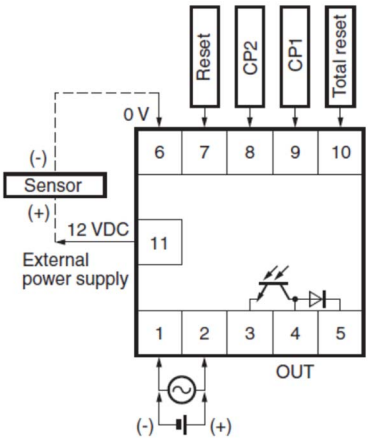
## [ Product discontinuation and Recommended replacement ]

| Product discontinuation | Recommended replacement |
|---|---|
| H7CX-A114-N | H7CC-A11 |
| H7CX-A114S-N | H7CC-A11S |
| H7CX-A114D1-N | H7CC-A11D |
| H7CX-A11-N | H7CC-A11 |
| H7CX-A11S-N | H7CC-A11S |
| H7CX-A11D1-N | H7CC-A11D |
| H7CX-A11SD1-N | H7CC-A11SD |
| H7CX-A4-N | H7CC-A |
| H7CX-A4S-N | H7CC-AS |
| H7CX-A4D-N | H7CC-AD |
| H7CX-A4SD-N | H7CC-ASD |
| H7CX-A-N | H7CC-A |
| H7CX-AS-N | H7CC-AS |
| H7CX-AD-N | H7CC-AD |
| H7CX-ASD-N | H7CC-ASD |
| H7CX-A4W-N | H7CC-AW |
| H7CX-A4WSD-N | H7CC-AWSD |
| H7CX-AW-N | H7CC-AW |
| H7CX-AWS-N | H7CC-AWS |
| H7CX-AWD1-N | H7CC-AWD |
| H7CX-AWSD1-N | H7CC-AWSD |
| H7CX-AWSD-N | H7CC-AWSD |
| H7CX-R11-N | H7CC-R11 |
| H7CX-R11D1-N | H7CC-R11D |
| H7CX-R11W-N | H7CC-R11W |
| H7CX-R11WD1-N | H7CC-R11WD |
| H7CX-AU-N | H7CC-AU |
| H7CX-AUD1-N | H7CC-AUD |
| H7CX-AUSD1-N | H7CC-AWSD |
| H7CX-R11D1-N-301 | H7CC-R11D |
| H7CX-R11-N-302 | H7CC-R11 |
| Y92P-CXC4B | No recommended replacement |
| Y92P-CXC4G | |
| Y92P-CXC4S | |
| Y92P-CXC6B | |
| Y92P-CXC6G | |
| Y92P-CXC6S | |

## [ Body color ]

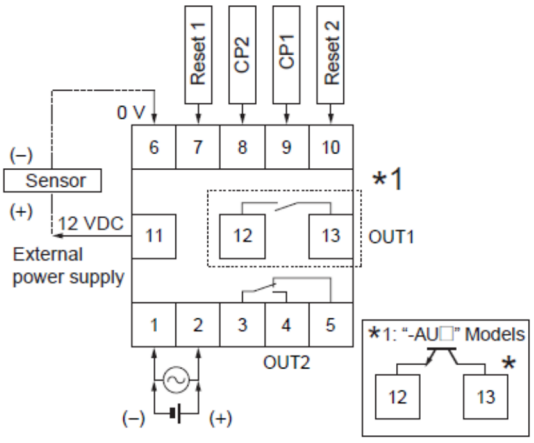
| Product discontinuation | Recommendable replacement |
|---|---|
| **H7CX-A[]-N series**<br>Black (N1.5)<br> <br>**H7CX-R[]-N series**<br>Black (N1.5)<br> <br>**Accessories (Optional front panel)**<br>**Y92P-CXC series**<br>Y92P-CXC[]G Light gray (5Y7/1)<br>Y92P-CXC[]S Black (N1.5)<br>Y92P-CXC[]S White (5Y9.2/0.5)<br> <br>Light gray Black White | **H7CC-A[] series**<br>Black (N1.5)<br> <br>**H7CC-R[] series**<br>Black (N1.5)<br> <br>No recommended replacement |

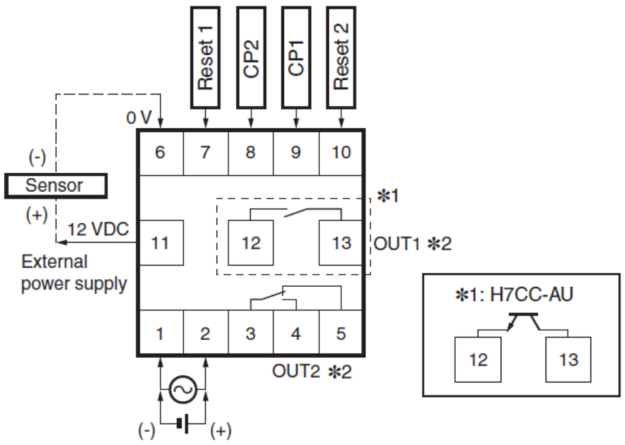
## [ Terminal Arrangement／Wire Connection ]

| Discontinued product<br>H7CX-[]-N series | Recommendable replacement<br>H7CC series |
|---|---|
| **H7CX-A[]-N series**<br>**H7CX-A-N/-A4-N 1-stage Contact Output**<br>  <br><br>**H7CX-AD-N/-A4D-N 1-stage Contact Output**<br>  <br><br>**H7CX-AS-N/-A4S-N 1-stage Transistor Output**<br>  <br><br>**H7CX-ASD-N/-A4SD-N 1-stage Transistor Output**<br>  <br> | **H7CC-A[] series**<br>**H7CC-A/-AD 1-stage Contact Output**<br>  <br><br>**H7CC-AS/-ASD 1-stage Transistor Output**<br>  <br> |

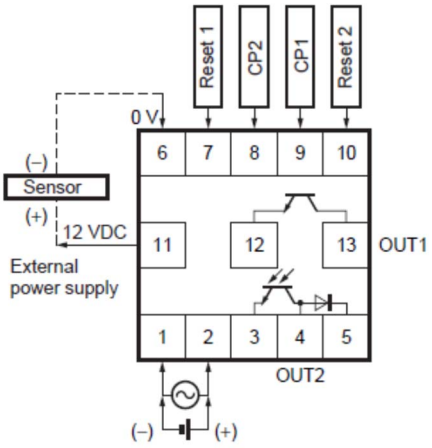
## [ Terminal Arrangement／Wire Connection ]

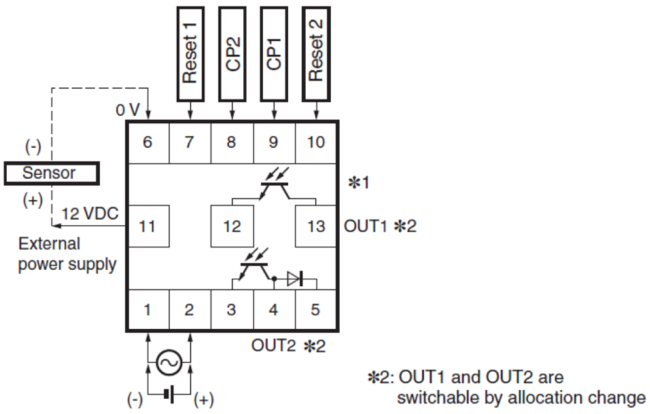
| Discontinued product<br>H7CX-[]-N series | Recommendable replacement<br>H7CC series |
|---|---|
| **H7CX-AW-N/-A4W-N/-AWD1-N**<br>**2-stage Contact Output**<br>**H7CX-AU-N/-AUD1-N** | **H7CC-AW/-AWD/-AU/-AUD**<br>**2-stage Contact Output** |
| **H7CX-AWS-N/-AWSD1-N**<br>**2-stage Transistor Output**<br>**H7CX-AUSD1** | **H7CC-AWS/-AWSD 2-stage Transistor Output** |
| **H7CX-AWSD-N/-A4WSD-N**<br>**2-stage Transistor Output** | |

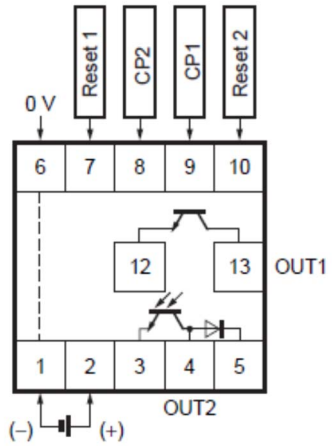



*OUT1/OUT2 can be switched during output allocation.

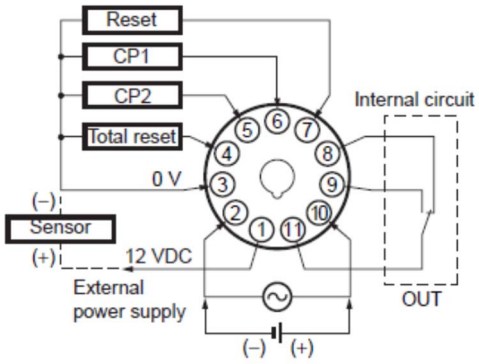


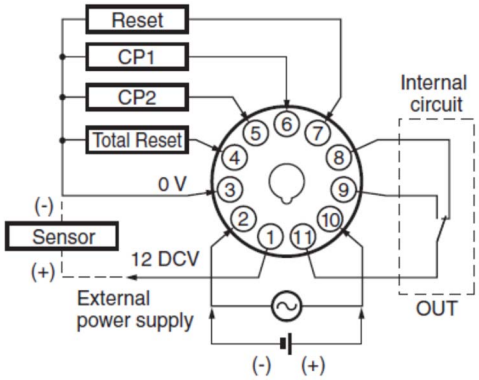



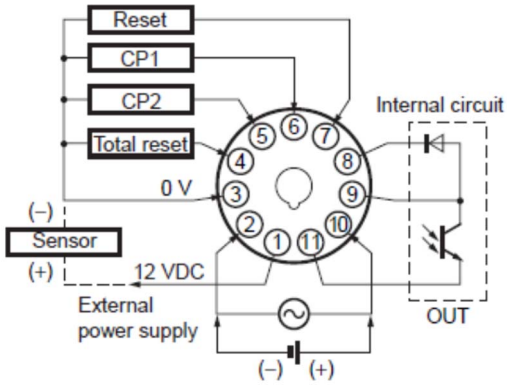



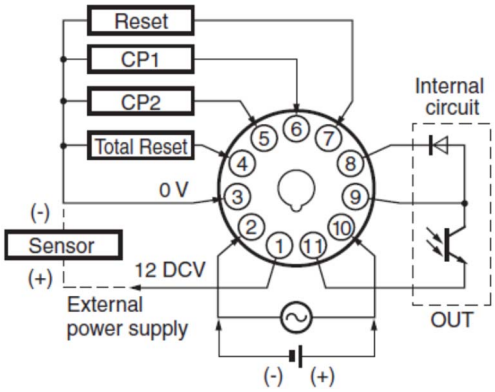
## [ Terminal Arrangement／Wire Connection ]

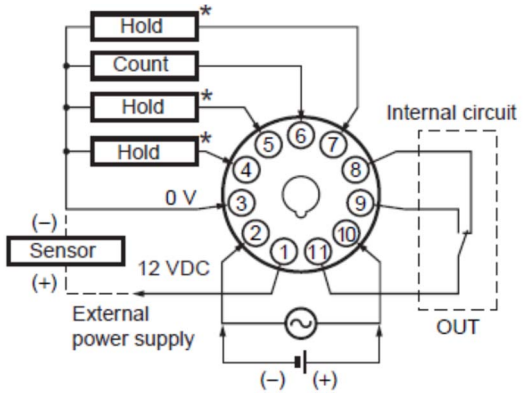
| Discontinued product<br>H7CX-[]-N series | Recommendable replacement<br>H7CC series |
|---|---|
| **H7CX-A11-N/-A114-N/-A11D1-N/-A114D1-N**<br>**1-stage Contact Output** | **H7CC-A11/-A11D 1-stage Contact Output** |
| **H7CX-A11S-N/-A114S-N/-A11SD1-N**<br>**1-stage Transistor Output** | **H7CC-A11S/-A11SD 1-stage Transistor Output** |
| **H7CX-R[]-N series**<br>**H7CX-R11-N/-R11D1-N/-R11D1-N-301/-R11-N-302** | **H7CC-R[] series**<br>**H7CC-R11/-R11D** |
| **H7CX-R11W-N/-R11WD1-N** | **H7CC-R11W/-R11WD** |

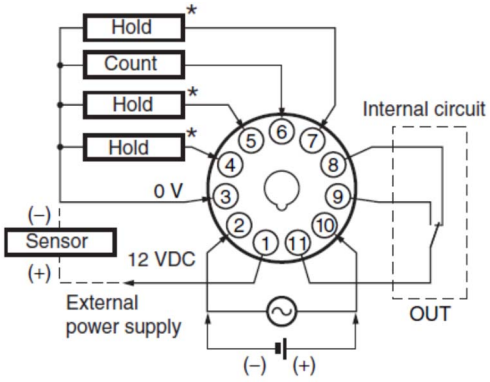


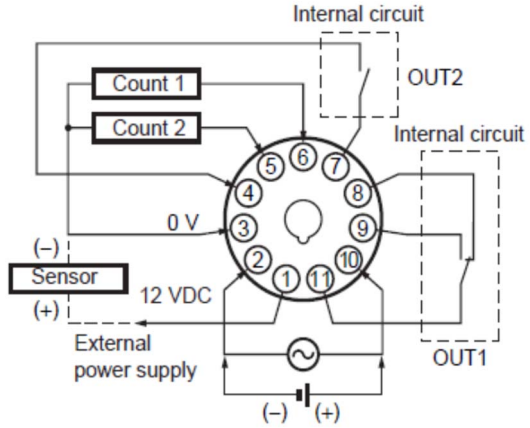



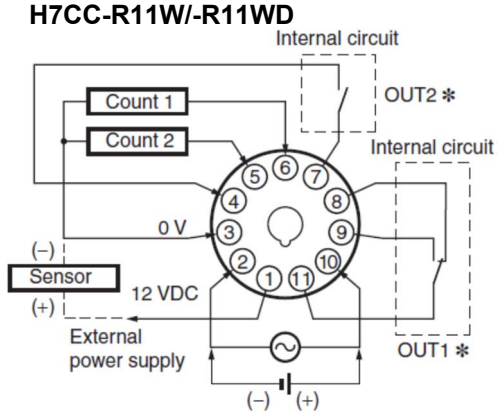



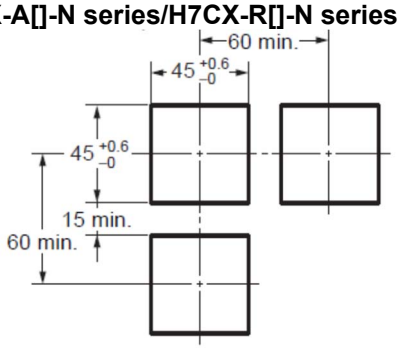



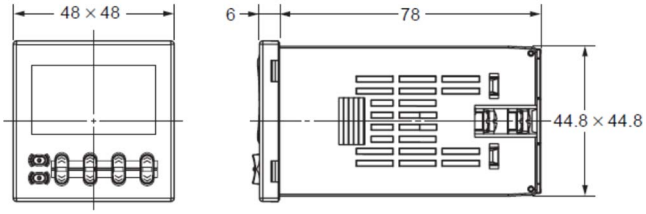
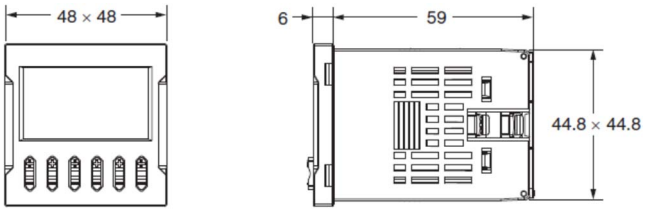
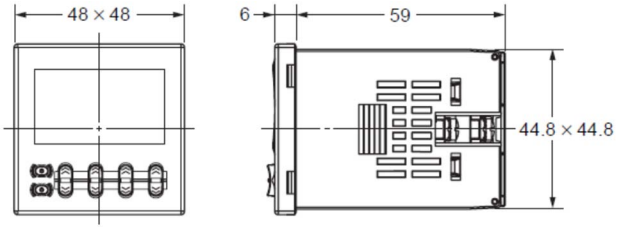
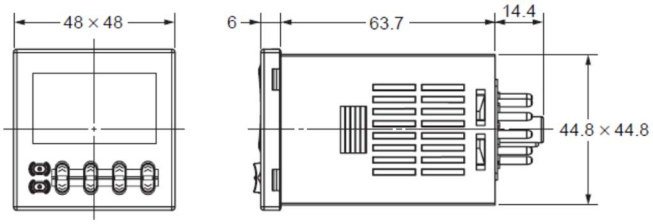
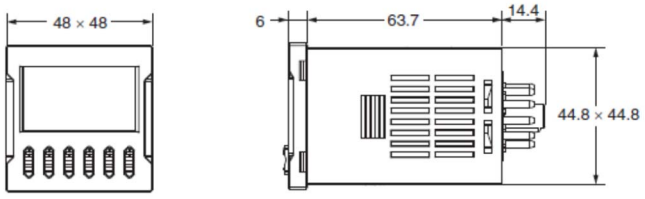
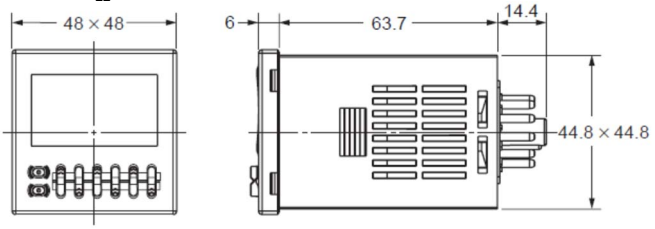
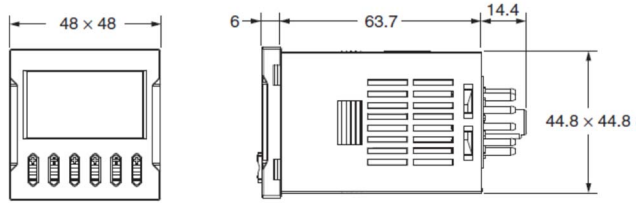




*OUT1/OUT2 can be switched during output allocation.

## [ Mounting dimensions ]

| Discontinued product<br>H7CX-[]-N series | Recommendable replacement<br>H7CC series |
|---|---|
| **H7CX-A[]-N series/H7CX-R[]-N series**<br>  <br> | **H7CC-A[] series/H7CC-R[] series**<br><br>Same as on the left |

## [ Dimensions ]

| Discontinued product<br>H7CX-[]-N series | Recommended replacement<br>H7CC series |
|---|---|
| **H7CX-A[]-N series**<br>**H7CX-A-N/-AS-N/-AW-N/-AWS-N/-AWD1-N/ -AWSD1-N/-A4-N/-A4S-N/-A4W-N/ -AU-N/-AUD1-N/-AUSD1-N**<br>  <br> | **H7CC-A[] series**<br>**H7CC-A/-AS/-AW/-AWS/-AWD/-AWSD/-AU/-AUD**<br>  <br> |
| **H7CX-AD-N/-ASD-N/-AWSD-N/-A4D-N/-A4SD-N/ -A4WSD-N**<br>  <br> | |
| **H7CX-A11-N/-A11S-N/-A11D1-N/-A11SD1-N/ -A114-N/-A114S-N/-A114D1-N**<br>  <br> | **H7CC-A11/-A11S/-A11D/-A11SD**<br>  <br> |
| **H7CX-R[]-N series**<br>  <br> | **H7CC-R[] series**<br>  <br> |

## [ Ratings／Specifications ] (H7CX-A[]-N／H7CC-A[])

| Item | | Discontinued product H7CX-A[]-N series | Recommended replacement H7CC-A[] series |
|---|---|---|---|
| **Configuration** | | <Other than H7CX-AW/AU[]><br>1-stage preset counter; 1-stage preset counter with total counter (selectable)<br><H7CX-AW/AU[]><br>1-stage/2-stage preset counter, total and preset counter, batch counter, dual counter, twin counter, tachometer* (selectable)*Tachometer: 6 digits only | Same as on the left |
| **Input signals** | | <Other than H7CX-AW/AU[]><br>CP1, CP2, reset, total reset<br><H7CX-AW/AU[]><br>CP1, CP2, reset 1, reset 2 | Same as on the left |
| **Counter** | **Maximum counting speed** | 30 Hz (minimum pulse width: 16.7 ms) or 10 kHz (minimum pulse width: 0.05 ms) (ON/OFF ratio 1：1) | Same as on the left |
| | **Input mode** | Increment, decrement, increment/decrement (UP/DOWN A (command input), UP/DOWN B (individual input), UP/DOWN C (quadrature input)) | Increment, decrement, increment/decrement (UP/DOWN A (command input), UP/DOWN B (individual input), UP/DOWN C (quadrature input), UP/DOWN D (command input), UP/DOWN E (individual input), UP/DOWN F (quadrature input)) |
| | **Output mode** | <Other than H7CX-AW/AU[]><br>N, F, C, R, K-1, P, Q, A, K-2, D, L<br><H7CX-AW/AU[]><br>N, F, C, R, K-1, P, Q, A, K-2, D, L, H | Same as on the left |
| | **One-shot output time** | 0.01 to 99.99 s | Same as on the left |
| | **Reset system** | External (minimum signal width:1 ms or 20 ms, selectable), manual, automatic reset (internal according to C, R, P, Q mode operation) | Same as on the left |
| **Tachometer** | | Refer to the separate table for tachometer function ratings. | |
| **Prescaling function** | | Yes (4 digits：0.001 to 9.999/6 digits： 0.001 to 99.999) | Same as on the left |
| **Decimal point adjustment** | | Yes (rightmost 3 digits) | Same as on the left |
| **Separate table：Tachometer Function ratings** | | | |
| **Input mode** | | 1 inputs, independent measurements for 2 inputs, differential input for 2 inputs, absolute ratio for 2 inputs, error ratio for 2 inputs (selectable) | Same as on the left |
| **Pulse measurement method** | | Periodic measurement/pulse width measurement | Same as on the left |
| **Maximum counting speed** | | ・30 Hz (minimum pulse width: 16.7 ms)<br>・1-input mode: 10 kHz<br>(minimum pulse width: 0.05 ms)<br>・Other modes: 5 kHz<br>(minimum pulse width: 0.1 ms) | Same as on the left |
| **Minimum input signal width** | | <Periodic measurement><br>—<br><Pulse width measurement><br>・30 ms* An input OFF period of at least 20 ms is required.<br>・1-input mode: 0.2 ms<br>・Other modes: 0.4 ms | Same as on the left |

## [ Ratings／Specifications ] (H7CX-A[]-N／H7CC-A[])

| Item | Discontinued product<br>H7CX-A[]-N series | Recommended replacement<br>H7CC-A[] series |
|---|---|---|
| **Measuring ranges** | <Periodic measurement><br>・0.001 Hz to 30.00 Hz<br>・1-input mode: 0.001 Hz to 10 kHz<br>・Other modes: 0.01 to 5 kHz<br><Pulse width measurement><br>0.030 to 999999 s<br>1-input mode: 0.0002 to 999999 s<br>Other modes: 0.0004 to 999999 s | Same as on the left |
| **Sampling period** | <Periodic measurement><br>200 ms min. or continuous (minimum interval of 10 ms)(selectable)<br><Pulse width measurement><br>Continuous (minimum interval of 10 ms) | Same as on the left |
| **Measuring accuracy** | ±0.1% F.S. ±1 digit max. (at 23±5°C) | Same as on the left |
| **Output mode** | Input mode:<br>・Not 2-input independent measurement:<br>HI-LO, AREA, HI-HI, LO-LO<br>・2-input independent measurement:<br>HI-HI, LO-LO | Same as on the left |
| **Auto-zero time** | 0.1 to 999.9 s | Same as on the left |
| **Setup time** | 0.0 to 99.9 s | Same as on the left |
| **Averaging** | Simple averaging/moving averaging (selectable)<br>Processing: OFF, 2, 4, 8, 16 times | Same as on the left |
| **Hold input** | Minimum input signal width: 20 ms | Same as on the left |

## [ Ratings／Specifications ] (H7CX-R[]-N series／H7CC-R[] series)

| Item | Discontinued product<br>H7CX-R[]-N series | Recommended replacement<br>H7CC-R[] series |
|---|---|---|
| **Input mode** | H7CX-R11[]-N<br>1 input only<br>H7CX-R11W[]-N<br>2 input only | Same as on the left |
| **Input signals** | H7CX-R11[]-N<br>Count and hold<br>H7CX-R11W[]-N<br>Count 1 and count 2 | Same as on the left |
| **Pulse measurement method** | H7CX-R11[]-N<br>Tachometer mode (cycle measurement)<br>AMD-compatible mode<br>(continuous measurement)<br>H7CX-R11W[]-N<br>Tachometer mode (cycle measurement) | Same as on the left |
| **Maximum counting speed** | Tachometer mode (cycle measurement)<br>H7CX-R11[]-N<br>・30 Hz (minimum pulse width: 16.7 ms)<br>・10 kHz (minimum pulse width: 0.05 ms)<br>H7CX-R11W[]-N<br>・30 Hz (minimum pulse width: 16.7 ms)<br>・5 kHz (minimum pulse width: 0.1 ms) | Same as on the left |
| **Minimum input signal width** | AMD-compatible mode<br>(continuous measurement)<br>H7CX-R11[]-N<br>10 ms/1 ms | Same as on the left |

## [ Ratings／Specifications ] (H7CX-R[]-N series／H7CC-R[] series)

| Item | Discontinued product<br>H7CX-R[]-N series | Recommended replacement<br>H7CC-R[] series |
|---|---|---|
| **Measuring range** | Tachometer mode (cycle measurement)<br>H7CX-R11[]-N<br>・0.001 to 30.00Hz<br>・0.001Hz to 10kHz<br>H7CX-R11W[]-N<br>・0.01 to 5kHz<br>AMD-compatible mode (continuous measurement)<br>H7CX-R11[]-N<br>・0.026 to 999999 s<br>・0.003 to 999999 s | Same as on the left |
| **Sampling cycle** | Tachometer mode (cycle measurement)<br>200 ms min.<br>AMD-compatible mode (continuous measurement) minimum interval of 10 ms | Same as on the left |
| **Display refresh cycle** | ・Input pulse of 5 Hz min.<br>Averaging not used: 200 ms<br>Averaging used: 200 multiplied by the averaging setting (ms)<br>・Input pulse of less than 5 Hz<br>Averaging not used: Two times the maximum input pulse cycle<br>Averaging used: Two times the maximum of the input pulse cycle multiplied by the averaging setting. | Same as on the left |
| **Measuring accuracy** | ±0.1% F.S.±1digit max. (at 23±5°C) | Same as on the left |
| **Output mode** | H7CX-R11[]-N<br>HI-LO, AREA, HI-HI, LO-LO<br>H7CX-R11W[]-N<br>HI-HI, LO-LO | Same as on the left |
| **Auto-zero time** | 0.1 to 999.9 s (in Tachometer Mode) | Same as on the left |
| **Setup time** | 0.0 to 99.9 s | Same as on the left |
| **Averaging** | Simple averaging/moving averaging (selectable)<br>Number of times: OFF, 2, 4, 8 time | Simple averaging/moving averaging (selectable)<br>Number of times: OFF, 2, 4, 8, 16 time |
| **Prescaling function** | 0.001 to 99.999 (in Tachometer Mode) | Same as on the left |
| **Decimal point adjustment** | Rightmost 3 digits | Same as on the left |
| **Hold input** | H7CX-R11[]-N<br>Minimum input signal width: 20 ms<br>H7CX-R11W[]-N<br>― | Same as on the left |

## [ Ratings／Specifications ] (Common Rating/Specifications of Counter/Tachometer)

| Item | Discontinued product<br>H7CX-[]-N series | Recommended replacement<br>H7CC series |
|---|---|---|
| **Supply voltage** | ・AC 100 to 240 V 50/60 Hz<br>・AC 24 V 50/60 Hz/DC12 to 24 V<br>・DC 12 to 24 V (H7CX-A[]-N only) | ・AC 100 to 240 V 50/60 Hz<br>・AC 24 V 50/60 Hz/DC 12 to 48 V |
| **Operation voltage fluctuation range** | 85% to 110% of rated supply voltage<br>(12 to 48 VDC: 90% to 110%) | Same as on the left |
| **Power consumption** | Approx. 9.4 VA at 100 to 240 VAC,<br>Approx. 7.2 VA/4.7 W at 24 VAC/12 to 24 VDC,<br>Approx. 3.7 W at 12 to 24 VDC | Approx. 6.8 VA at 100 to 240 VAC,<br>Approx. 5.5 VA/3.3 W at 24 VAC/12 to 48 VDC |

## [ Ratings／Specifications ] (Common Rating/Specifications of Counter/Tachometer)

| Item | Discontinued product<br>H7CX-[]-N series | Recommended replacement<br>H7CC series |
|---|---|---|
| **Mounting method** | Flush mounting or surface mounting | Same as on the left |
| **External connection** | 11-pin socket, screw terminals | Same as on the left |
| **Degree of protection** | IEC IP66, UL508 Type 4X (indoors) for panel surface only and only when Y92S-29 Waterproof Packing is used. | IEC IP66, UL508 Type 4X (indoors) for panel surface only and only when Y92S-29 Waterproof Packing is used. |
| **Sensor waiting time** | 290 ms max. (Control output is turned OFF and no input is accepted during sensor waiting time.) | Same as on the left |
| **Input method** | No-voltage (NPN) input/Voltage (PNP)input (selectable)<br>No-voltage input<br>Impedance when ON: 1 kΩ max.<br>(Leakage current: 12 mA when 0 Ω)<br>ON residual voltage: 3 V max.<br>Impedance when OFF: 100 kΩ min.<br>Voltage Input<br>High (logic) level: 4.5 to 30 VDC<br>Low (logic) level: 0 to 2 VDC<br>(Input resistance: approx. 4.7 kΩ) | Same as on the left |
| **External power supply** | 12 VDC (±10%),100mA<br>(Other than H7CX-A[]D) | 12 VDC (±10%),100 mA<br>(All models are equipped with power supply to external devices.) |
| **Control output** | ・Contact output: 3 A at 250 VAC/30 VDC, resistive load (cosφ=1)<br>Minimum applied load:10 mA at 5 VDC (failure level: P, reference value)<br>・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 | Same as on the left |
| **Display** | 7-segment, negative transmissive LCD<br>4 digits Character height<br>Count value: 10 mm (red, green, or orange selectable)*<br>Set value: 6 mm (green)<br>6 digits Character height<br>Count value: 10 mm (red, green, or orange selectable)*<br>Set value: 6 mm (green)<br>*H7CX-A/R11[]: red only | 7-segment, negative transmissive LCD<br>6 digits Character height Character height<br>Count value: 10 mm (white)<br>Set value: 6 mm (green) |
| **Digits** | H7CX-A[]-N<br>4 digits －999 to 9999<br>(－3 digits to +4 digits)<br>6 digits －99999 to 999999<br>(－5 digits to +6 digits)<br>6 digits 0 to 999999 (in Tachometer)<br>H7CX-R[]-N<br>6 digits 0 to 999999 | Same as on the left |
| **Memory backup** | Yes<br>EPROM (overwrites: 100,000 times min.) that can store data for 10 years min. | None/Yes (selectable)<br>Non-volatile memory (overwrites: 100,000 times min.) that can store data for 10 years min. |
| **Operating temperature range** | −10 to 55°C (−10 to 50°C if Counter/Tachometers are mounted side by side) (with no icing or condensation) | Same as on the left |
| **Storage temperature range** | −25 to 70°C (with no icing or condensation) | Same as on the left |
| **Operating humidity range** | 25 to 85% | Same as on the left |

## [ Ratings／Specifications ] (Common Rating/Specifications of Counter/Tachometer)

| Item | | Discontinued product H7CX-[]-N series | Recommended replacement H7CC series |
|---|---|---|---|
| **Insulation resistance** | | 100 MΩ min. (at 500 VDC) between current-carrying terminals and exposed noncurrent-carrying metal parts, and between non-continuous contacts | Same as on the left |
| **Dielectric strength** | | Between current-carrying metal parts and noncurrent-carrying metal parts:<br>2,000 VAC, 50/60 Hz for 1 min<br>Between power supply and input circuit for all models: 2,000 VAC, 50/60 Hz for 1 min (Other than H7CX-[]D[])<br>(1,000 VAC for 24 VAC/12 to 24 VDC)<br>Between control output, power supply, and input circuit:<br>1,000 VAC (for H7CX-[]SD[]), 50/60 Hz for 1 min (2,000 VAC for models other than H7CX-[]SD[])<br>Between non-continuous contacts:<br>1,000 VAC, 50/60 Hz for 1 min | Same as on the left |
| **Impulse withstand voltage** | | Between power terminals:<br>3.0 kV (1.0 kV for models with 24 VAC/12 to 24 VDC or 12 to 24 VDC)<br>Between current-carrying terminals and exposed non-current-carrying metal Parts: 4.5 kV (1.5 kV for models with 24 VAC/12 to 24 VDC or 12 to 24 VDC) | Between power terminals: 6.0 kV (1.0 kV for models with 24 VAC/12 to 48 VDC)<br>Between current-carrying terminals and exposed non-current-carrying metal parts: 6.0 kV (1.5 kV for models with 24 VAC/12 to 48 VDC) |
| **Static immunity** | | 8 kV (malfunction), 15 kV (destruction) | Same as on the left |
| **Vibration resistance** | **Destruction** | 10 to 55 Hz with 0.75-mm single amplitude each in three directions for 2 h each | Same as on the left |
| | **Malfunction** | 10 to 55 Hz with 0.35-mm single amplitude each in three directions for 10 min each | Same as on the left |
| **Shock resistance** | **Destruction** | 300 $m/s^2$ each in three directions | Same as on the left |
| | **Malfunction** | 100 $m/s^2$ each in three directions | Same as on the left |
| **Life expectancy** | | Mechanical: 10,000,000 operations min.<br>Electrical: 100,000 operations min. (3 A at 250 VAC, resistive load, ambient temperature condition: 23°C) | Same as on the left |
| **Weight** | | Approx. 130 g (H7CX-A[]-N)<br>Approx. 110 g (H7CX-R[]-N) | Approx. 120 g (H7CC-A[])<br>Approx. 100 g (H7CC-R[]) |
| **Approved safety standards** | | cULus (or cURus): UL508/CSA C22.2 No. 14, EN 61010-1 (IEC 61010-1): Pollution degree 2/overvoltage category II, EN61326-1, EAC, RCM, B300 PILOT DUTY 1/4 HP 120 VAC, 1/3 HP, 240 VAC, 3 A 250 VAC/30 VDC resistive load VDE0106/part100 | Same as on the left |
| **Attachments** | | <Socket type><br>None<br><Screw terminal type><br>Flush mounting adapter, waterproof packing, terminal cover | Same as on the left<br>*Waterproof packing will be changed from Y92S-29 to Y92S-P6. |
| **Accessories** | | Soft cover／Hard cover／Flush mounting adapter／Optional Front panels／Waterproof packing／Connection sockets／Terminal cover | Soft cover／Hard cover／Flush mounting adapter／Waterproof packing／Connection sockets／Terminal cover<br>*Accessories other than waterproof packing and optional panels, those listed on the left can be used. Waterproof packing will be changed from Y92S-29 to Y92S-P6. Optional front panel (Y92P-CXC series) will be not provided. |

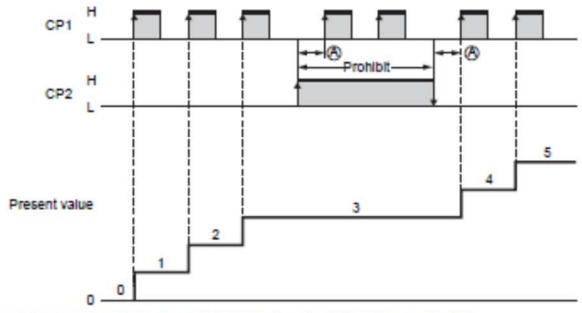
# [ Operating Characteristics ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**

## ■Input Modes and Count Value〈when using as a Counter〉

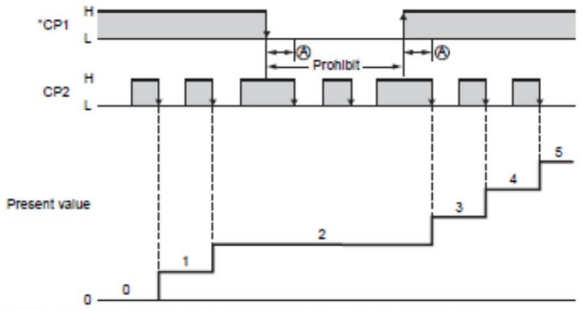
### UP (Increment) Mode

CP1: Count input; CP2: Prohibit (gate) input




Ⓐ must be greater than the minimum signal width. (See note 2.)

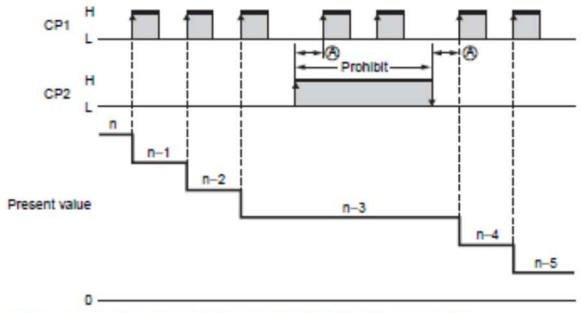
CP1: Prohibit (gate) input; CP2: Count input




Ⓐ must be greater than the minimum signal width. (See note 2.)

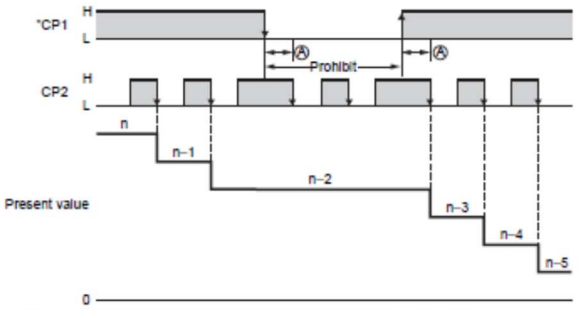
### DOWN (Decrement) Mode

CP1: Count input; CP2: Prohibit (gate) input




Ⓐ must be greater than the minimum signal width. (See note 2.)

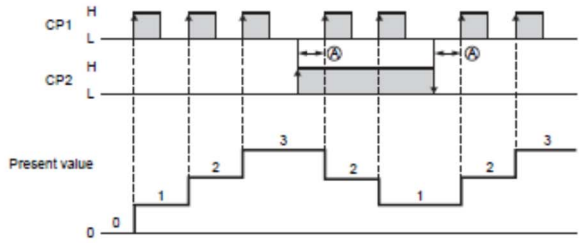
CP1: Prohibit (gate) input; CP2: Count input




Ⓐ must be greater than the minimum signal width. (See note 2.)

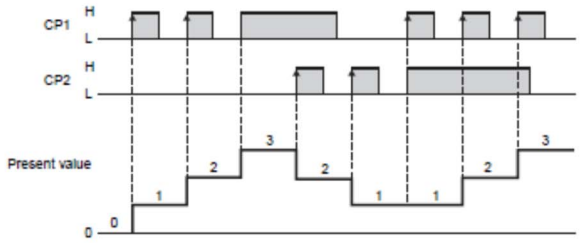
* Counting starts when the CP1 is turned ON after turning ON the power.

### UP/DOWN A Command Input Mode

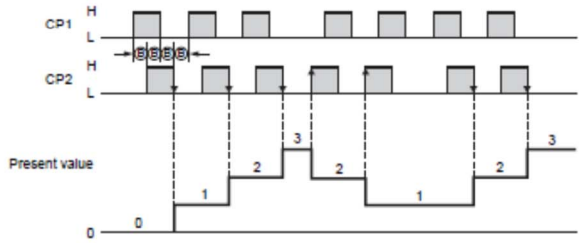



Ⓐ must be greater than the minimum signal width. (See note 2.)

### UP/DOWN B Individual Input Mode




### UP/DOWN C Quadrature Input Mode




Ⓑ must be at least 1/2 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.** Ⓐ must be greater than the minimum signal width and Ⓑ must be at least 1/2 the minimum signal width.
If they are less, a count error of ±1 may occur.
Minimum signal width: 16.7 ms (when maximum counting speed = 30 Hz)
100 µs (when maximum counting speed = 5 kHz)

**3.** The meaning of the H and L symbols in the tables is explained below.

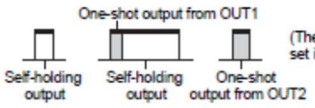
| Symbol<br>Input method | No-voltage input (NPN input) | Voltage input (PNP input) |
|---|---|---|
| H | Short-circuit | 4.5 to 30 VDC |
| L | Open | 0 to 2 VDC |

# [ Operating Characteristics ] H7CX-A[]-N series

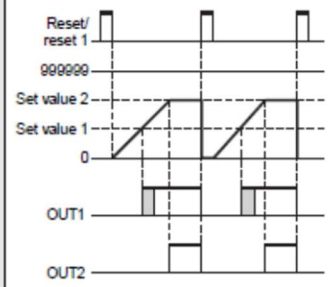
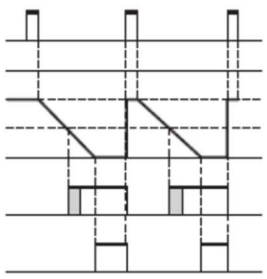
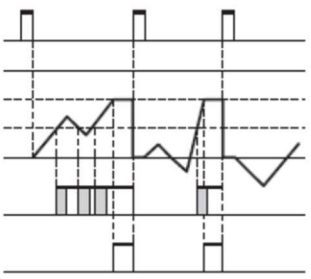
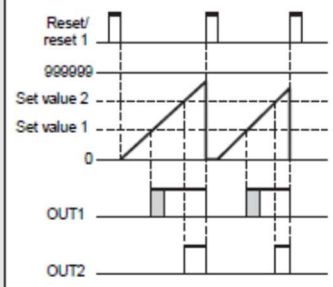
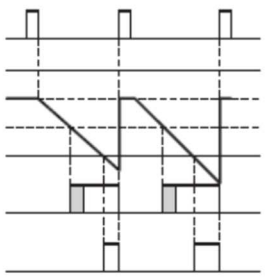
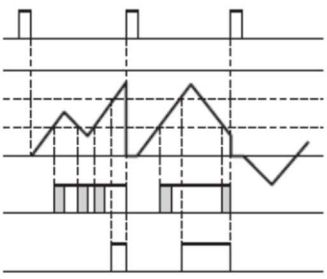
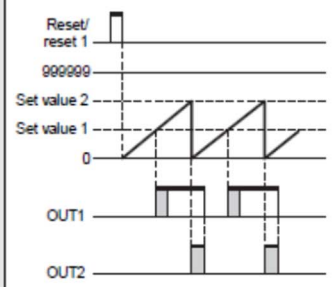
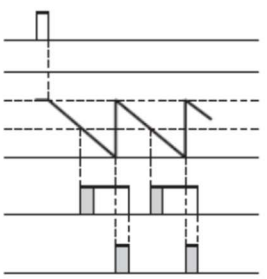
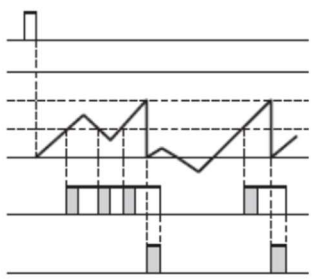
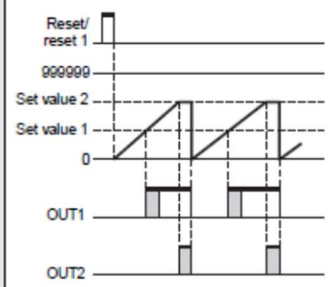
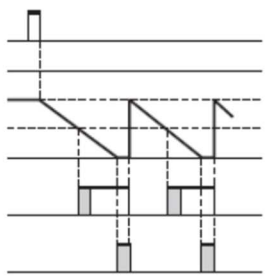
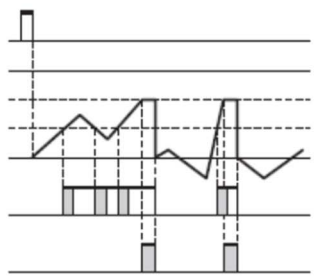
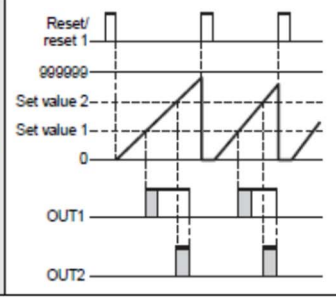
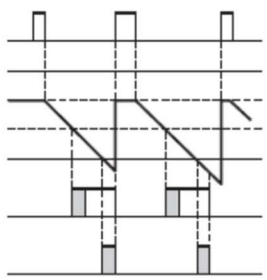
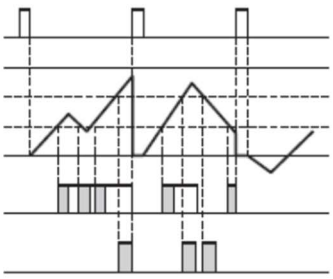
**Discontinued product**
**H7CX-A[]-N series**

## ■I/O Mode and Operation〈when using as a Counter〉

If a 1-stage model or 2-stage model is incorrectly used as twin counter, the operation for output 2 will be performed. When using a 2-stage model as a 1-stage preset counter, total and preset counter, or dual counter, OUT1 and OUT2 turn ON and OFF simultaneously.

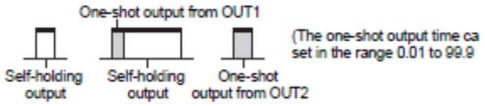


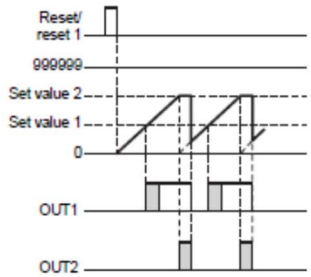
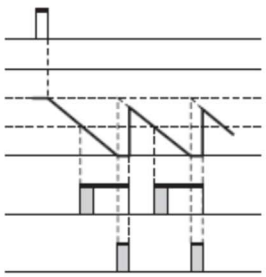
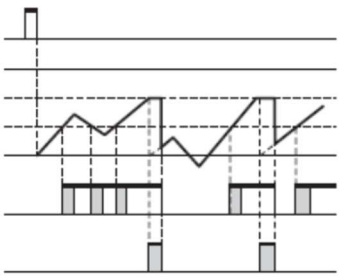
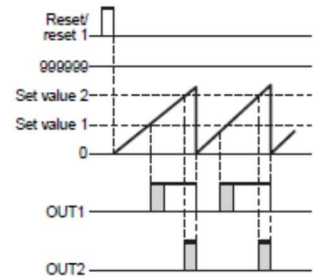
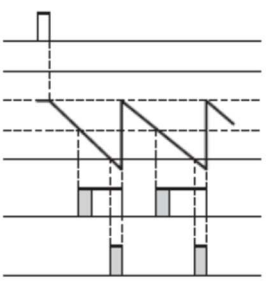
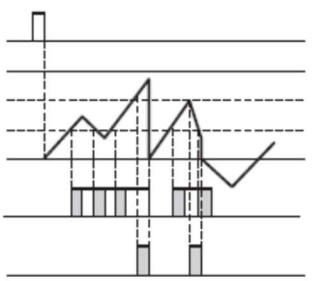
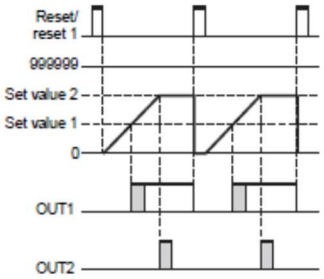
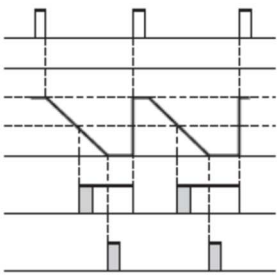
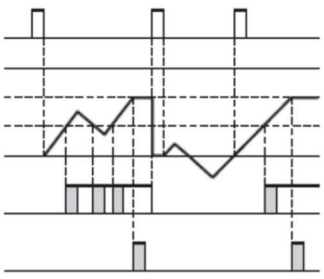

(The one-shot output time can be set in the range 0.01 to 99.99s.)

| | | Input mode | | | Operation after count completion |
|---|---|---|---|---|---|
| | | UP | DOWN | UP/DOWN A, B, C | |
| Output mode setting | N |  |  |  | The outputs and present value display are held until reset/reset 1 is input. |
| | F |  |  |  | The present value display continues to increase/decrease. The outputs are held until reset/reset 1 is input. |
| | C |  |  |  | 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 one-shot output time is independent of OUT2. |
| | R |  |  |  | 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 one-shot output time is independent of OUT2. |
| | K-1 |  |  |  | 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. |

## [ Operating Characteristics ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**



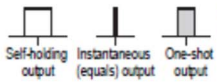

| | | Input mode | | | Operation after count completion |
|---|---|---|---|---|---|
| | | UP | DOWN | UP/DOWN A, B, C | |
| Output mode setting | P |  |  |  | The present value display does not change during the one-shot output time period, but the actual count returns to the reset start status. The output will return to one-shot mode. 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. |
| | Q |  |  |  | The present value continues to increase/ decrease for the one-shot 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. |
| | A |  |  |  | The present value display and OUT1 self-holding output is held until reset/reset 1 is input. OUT1 and OUT2 are independent. |



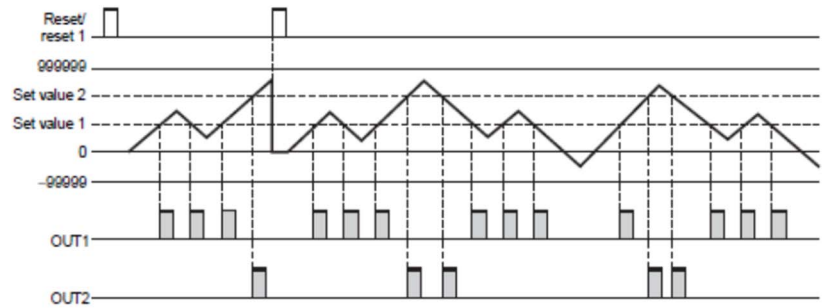
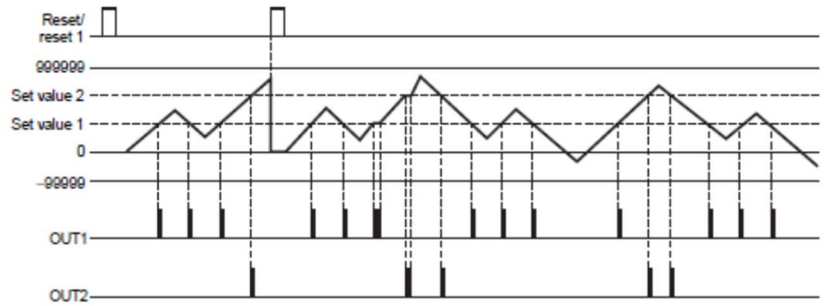
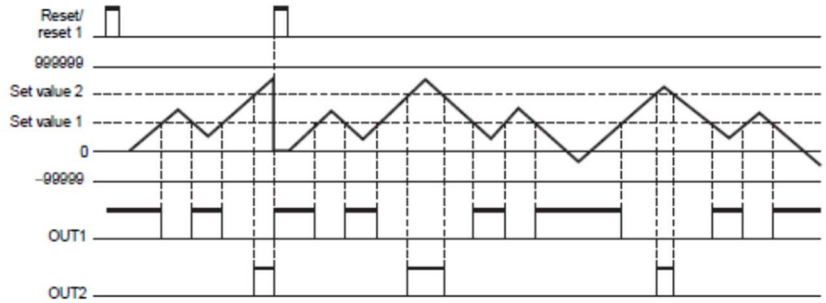
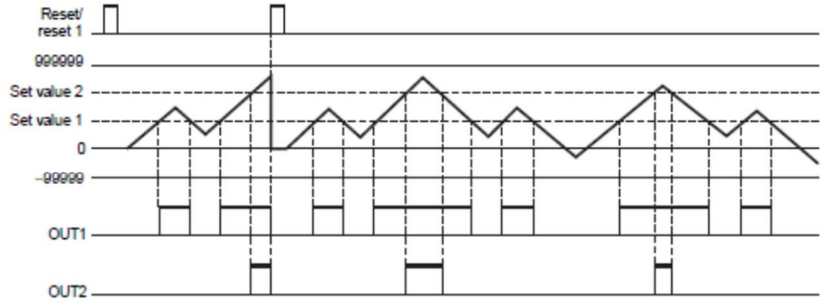
**Note: 1.** The full scale (FS) for H7CX 4-digit models is 9999.
**2.** When the present value reaches 999999, it returns to 0.
**3.** Counting cannot be performed during reset/reset 1 input.
**4.** If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF.
**5.** If there is 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.
**7.** The setting range is 0 to 999999 (0 to 9999 for 4-digit models).

## [ Operating Characteristics ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**




(The one-shot output time can be set in the range 0.01 to 99.99s.)

| | | Input mode<br>UP/DOWN A, B, C | Operation after count completion |
|---|---|---|---|
| Output mode setting | K-2 |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>One-shot output only. |
| | D |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>The outputs are ON while the count is equal. |
| | L |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>OUT1 is held while the present value is less than or equal to set value 1.<br>OUT2 is held while the present value is greater than or equal to set value 2. |
| | H |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>OUT1 is held while the present value is greater than or equal to set value 1.<br>OUT2 is held while the present value is greater than or equal to set value 2.<br>* H mode is available only when using a model as a 2-stage counter. |



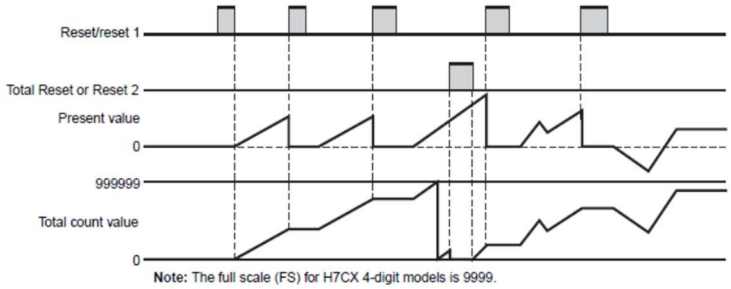
**Note:** 1. Counting cannot be performed during reset/reset 1 input.
2. If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF.
3. If there is power failure while output is ON, output will turn ON again when the power supply has recovered.
For one-shot output, output will turn 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.
5. The set value is from –99999 to 999999 (–999 to 9999 for 4-digit models).

# [ Operating Characteristics ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**

## Total and Preset Counter Operation

The H7CX has a total counter, separate from the 1-stage preset counter, for counting the total accumulated value.

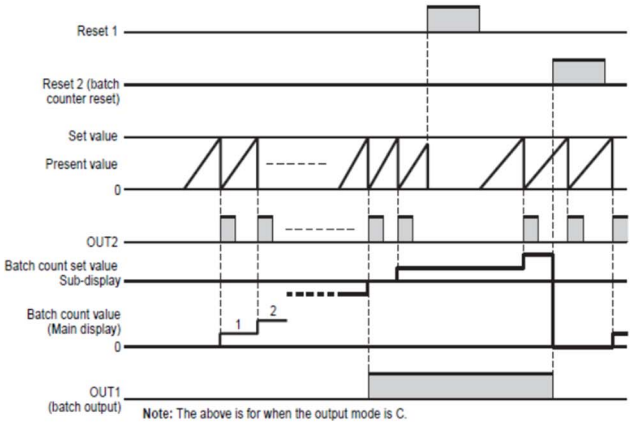



**Note:** The full scale (FS) for H7CX 4-digit models is 9999.

- 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.




**Note:** The above is for when the output mode is C.

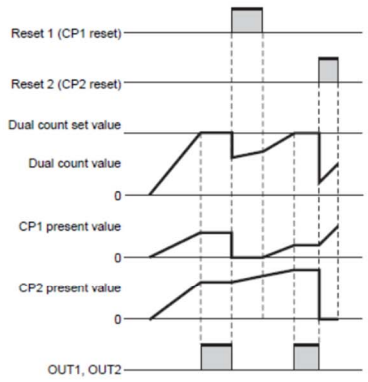
- The batch counter continues after count completion.
- Batch output is held until batch counter reset is input.
- When the batch counter reset input is turned ON, the batch count value is reset, and batch output turns OFF.
- If the Reset Key is pressed while the batch count value is displayed, the batch count value is reset and batch output turns OFF. The present value is also reset at this time.
- The count value can be incremented and decremented.
  The batch count is only incremented.
- The maximum counting speed for batch counter operation is 5 kHz. The batch counter counts the number of times the count reaches the set value.

**Note:**
1. The batch count value is held at 0 during batch counter reset input.
2. If the batch count set value is 0, batch count will be performed but there will be no batch output.
3. The batch count value returns to 0 when it reaches 999,999 (9,999 for 4-digit models).
4. Once batch input has been turned ON, it will return to the ON state after power interruptions.
5. 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.
6. After batch output turns ON, the ON state will be held even if the batch count set value is changed to a value greater than the batch count value.

## Dual Counter Operation

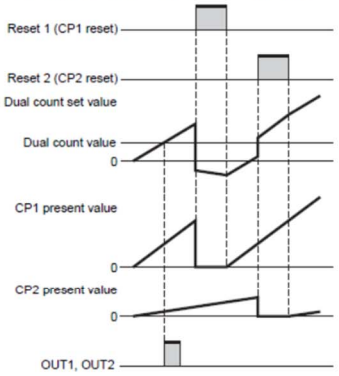
Using the dual counter allows the count from 2 inputs to be added or subtracted and the result displayed. It is possible to specify a set value for which output turns ON when the set value matches the added or subtracted result.

**(1) Dual Count Calculating Mode = ADD**
Dual count value = CP1 PV + CP2 PV




**Note:** The above is for when the output mode is N.

(2) Dual Count Calculating Mode = SUB
Dual count value = CP1 PV – CP2 PV




**Note:** The above is for when the output mode is K-2. SUB mode can be used only when K-2, D, L, or H is selected as the output mode with 6-digit models.

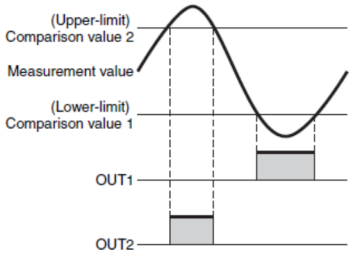
- The operation after count completion for the dual counter value is determined by the output mode.
- The CP1 present value is reset when reset 1 input is turned ON.
  The CP2 present value is reset when reset 2 input is turned ON.
- If the Reset Key is pressed while the dual count value, CP1 present value, or CP2 present value is displayed, all of the present values are reset and outputs turn OFF. At this time, counting is not possible for CP1 or CP2 inputs.

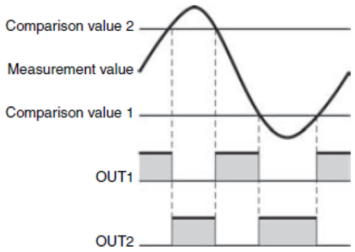
**Note:**
1. Counting is not possible for CP1 during reset 1 input. CP2 will not be affected. The dual count value will be calculated based on a CP1 present value of 0.
2. Counting is not possible for CP2 during reset 2 input. CP1 will not be affected. The dual count value will be calculated based on a CP2 present value of 0.
3. The counting range for the dual count value is –99,999 to 999,999 (0 to 9,999 for 4-digit models).
   The counting ranges for the CP1 present value and CP2 present value are 0 to 999,999 (0 to 9,999 for 4-digit models).
   If a present value exceeds 999,999 (9,999 for 4-digit models), FFFFFF (FFFF for 4-digit models) will be displayed to indicate an overflow, and all counting will stop.

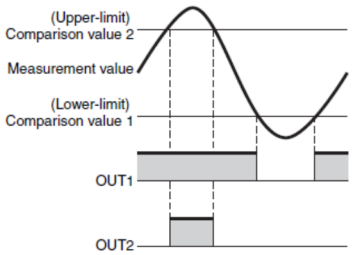
# [ Operating Characteristics ] H7CX-A[]-N series

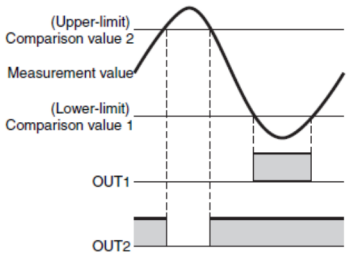
**Discontinued product**
**H7CX-A[]-N series**

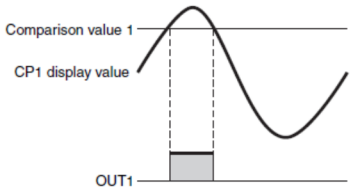
## ■Output Mode and Operation〈when using as a Tachometer〉

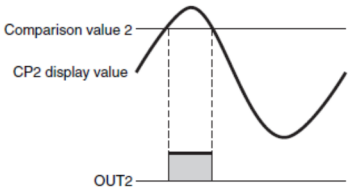
<table>
<tr><th>Input mode setting</th><th>Output mode setting</th><th>Operation</th></tr>
<tr><td rowspan="4">1 input<br>Error<br>Absolute ratio<br>Error ratio</td><td>Upper and lower limit (HI-LO)</td><td> 

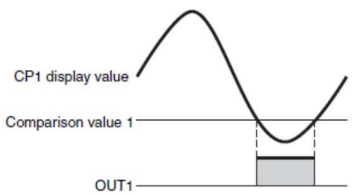
ON condition for OUT1: Measurement value ≤ Comparison value 1<br>ON condition for OUT2: Measurement value ≥ Comparison value 2</td></tr>
<tr><td>Area (AREA)</td><td> 

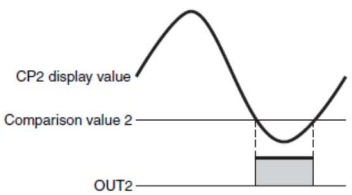
<table>
<tr><th>Condition</th><th>Comparison value 1 ≤ Comparison value 2</th><th>Measurement value 1 > Comparison value 2</th></tr>
<tr><td>ON condition for OUT1</td><td>Comparison value 1 ≤ Measurement value ≤ Comparison value 2</td><td>Comparison value 2 ≤ Measurement value ≤ Comparison value 1</td></tr>
<tr><td>ON condition for OUT2</td><td>Measurement value < Comparison value 1 or Measurement value > Comparison value 2</td><td>Measurement value < Comparison value 2 or Measurement value > Comparison value 1</td></tr>
</table></td></tr>
<tr><td>Upper limit (HI-HI)</td><td> 

ON condition for OUT1: Measurement value ≥ Comparison value 1<br>ON condition for OUT2: Measurement value ≥ Comparison value 2</td></tr>
<tr><td>Lower limit (LO-LO)</td><td> 

ON condition for OUT1: Measurement value ≤ Comparison value 1<br>ON condition for OUT2: Measurement value ≤ Comparison value 2</td></tr>
<tr><td rowspan="2">2 inputs</td><td>Upper limit (HI)</td><td>Output 1<br> 

Output 2<br> 

ON condition for output 1: CP1 present value (display value) ≥ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≥ Comparison value 2</td></tr>
<tr><td>Lower limit (LO)</td><td>Output 1<br> 

Output 2<br> 

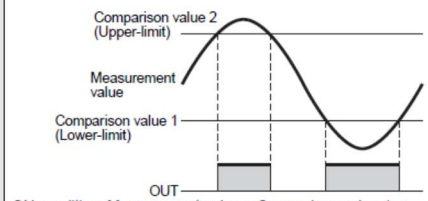
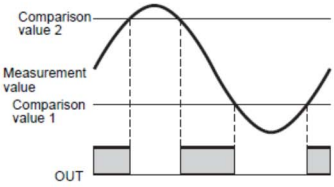
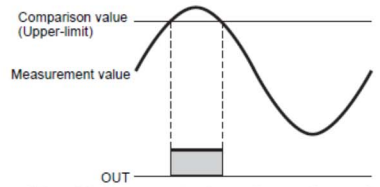
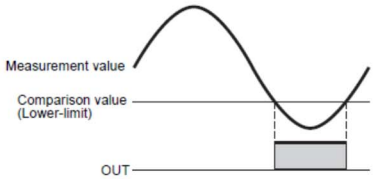
ON condition for output 1: CP1 present value (display value) ≤ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≤ Comparison value 2</td></tr>
</table>

# [ Operating Characteristics] H7CX-R[]-N series

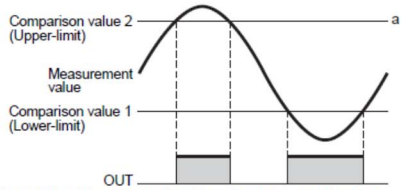
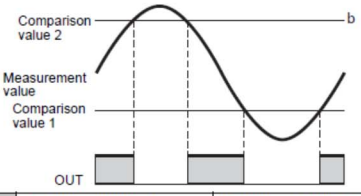
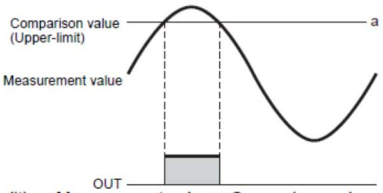
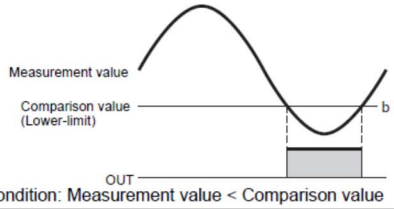
**Discontinued product**
**H7CX-R[]-N series**

## ■Output Mode Setting and Operation

### Models Other Than H7CX-R11W□ in Tachometer Mode

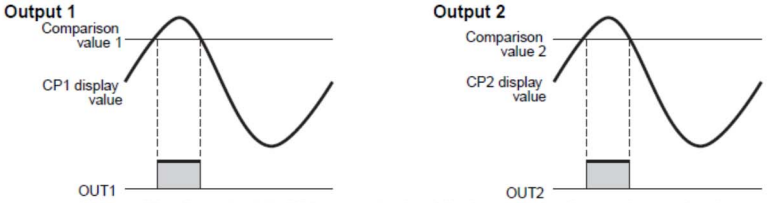
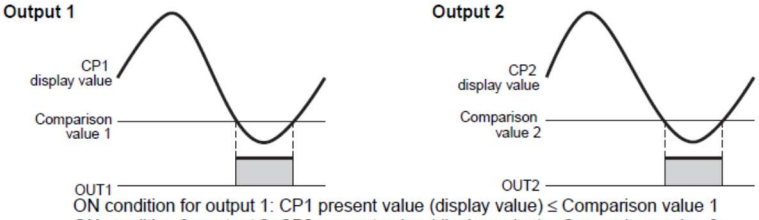
| Output mode setting | Operation |
|---|---|
| Upper and lower limit |  <br>ON condition: Measurement value ≤ Comparison value 1 or Measurement value ≥ Comparison value 2<br>**Note:** When comparison value 1 ≥ Comparison value 2, the output isalways ON regardless of the comparison value. |
| Area |  <br>**Condition:** Comparison value 1 ≤ Comparison value 2 / Comparison value 1 > Comparison value 2<br>**ON condition:** Comparison value 1 ≤ measurement value ≤ Comparison value 2 / Comparison value 2 ≤ measurement value ≤ Comparison value 1 |
| Upper limit |  <br>ON condition: Measurement value ≥ Comparison value |
| Lower limit |  <br>ON condition: Measurement value ≤ Comparison value |

### Models Other Than H7CX-R11W□ in AMD-compatible Mode

| Output mode setting | Operation |
|---|---|
| Upper and lower limit |  <br>ON condition: Measurement value < Comparison value 1 or Measurement value ≥ Comparison value 2<br>**Note:** When comparison value 1 ≥ comparison value 2, the output isalways ON regardless of the comparison value. |
| Area |  <br>**Condition:** Comparison value 1 ≤ Comparison value 2 / Comparison value 1 > Comparison value 2<br>**ON condition:** Comparison value 1 ≤ measurement value < Comparison value 2 / Comparison value 2 ≤ measurement value < Comparison value 1 |
| Upper limit |  <br>ON condition: Measurement value ≥ Comparison value |
| Lower limit |  <br>ON condition: Measurement value < Comparison value |

**Note:** If time "a" is exceeded during operation, the output will turn ON. If time "b" is exceeded during operation, the output will turn OFF. (If average processing is enabled, the output operation will be performed when the time is exceeded once.)

### H7CX-R11W□

| Output mode setting | Operation |
|---|---|
| Upper limit (HI) |  <br>ON condition for output 1: CP1 present value (display value) ≥ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≥ Comparison value 2 |
| Lower limit (LO) |  <br>ON condition for output 1: CP1 present value (display value) ≤ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≤ Comparison value 2 |

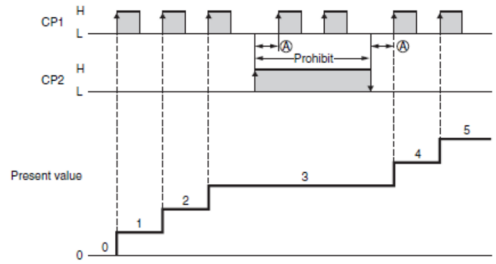
# [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## Input Mode and Counter Value〈when using as a Counter〉

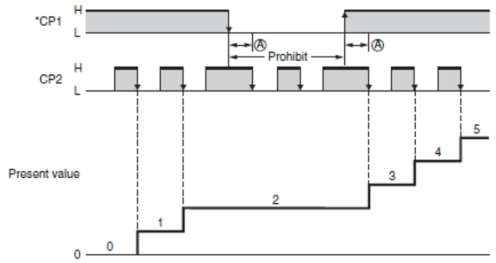
### UP (Increment) Mode

CP1: Count input; CP2: Prohibit (gate) input




Ⓐ must be greater than the minimum signal width. (See note 2.)

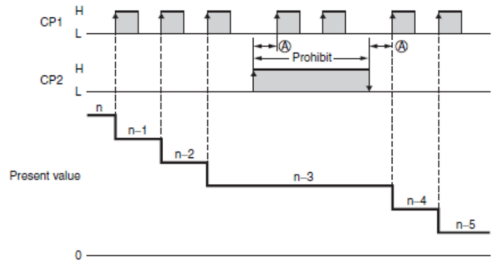
CP1: Prohibit (gate) input; CP2: Count input




Ⓐ must be greater than the minimum signal width. (See note 2.)

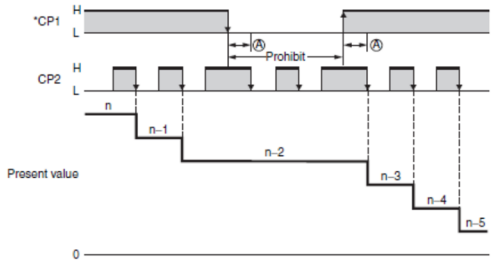
### DOWN (Decrement) Mode

CP1: Count input; CP2: Prohibit (gate) input




Ⓐ must be greater than the minimum signal width. (See note 2.)

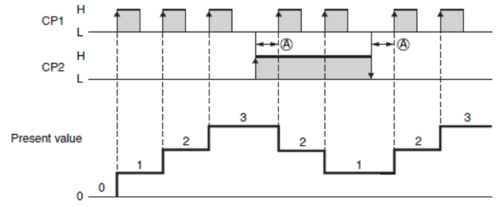
CP1: Prohibit (gate) input; CP2: Count input




Ⓐ must be greater than the minimum signal width. (See note 2.)

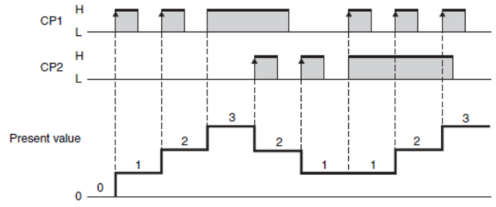
✻Counting starts when the CP1 is turned ON after turning ON the power.

### UP/DOWN A Command Input Mode

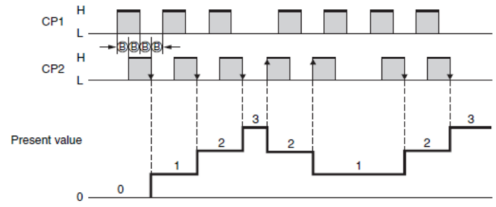



Ⓐ must be greater than the minimum signal width. (See note 2.)

### UP/DOWN B Individual Input Mode

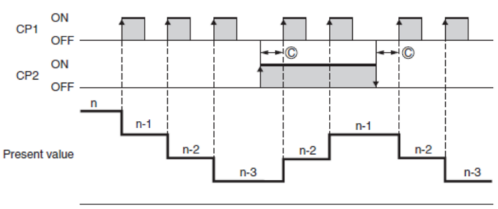



### UP/DOWN C Quadrature Input Mode



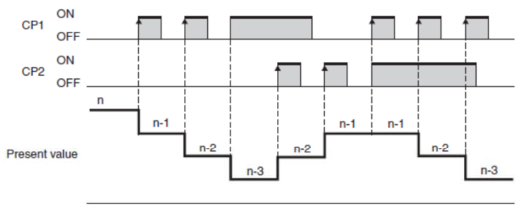

Ⓑ must be at least 1/2 the minimum signal width. (See note 2.)

### UP/DOWN D Command Input Mode

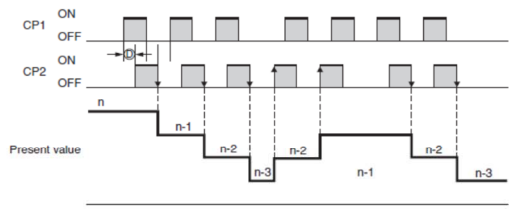



Ⓒ must be at least 1/2 the minimum signal width. (See note 2.)

### UP/DOWN E Individual Input Mode




### UP/DOWN F Quadrature Input Mode




Ⓓ must be at least 1/2 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.** Ⓐ must be greater than the minimum signal width and Ⓑ must be at least 1/2 the minimum signal width. If they are less, a count error of ±1 may occur.

**3.** Minimum signal width: 16.7 ms (when maximum counting speed = 30 Hz)
100 µs (when maximum counting speed = 5 kHz)

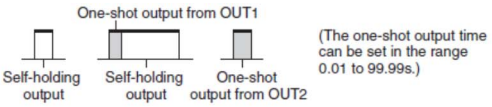
**4.** The meaning of the H and L symbols in the tables is explained below.

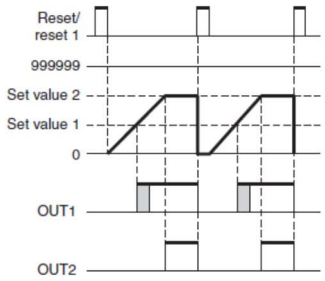
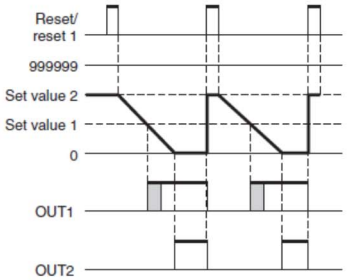
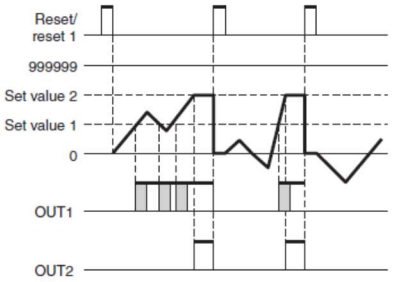
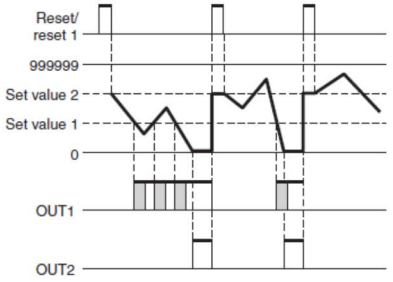
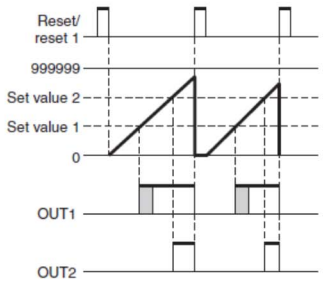
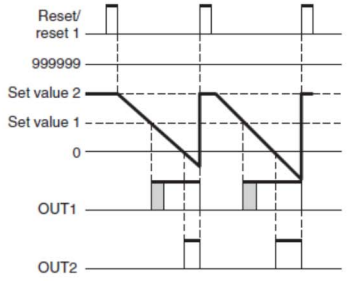
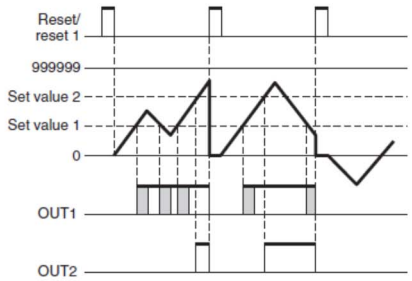
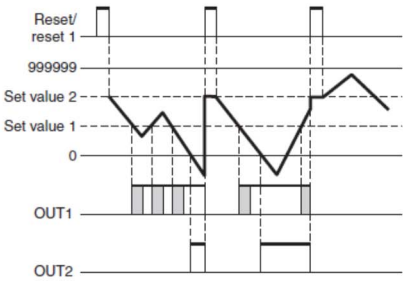
| Symbol / Input method | No-voltage input (NPN input) | Voltage input (PNP input) |
|---|---|---|
| H | Short-circuit | 4.5 to 30 VDC |
| L | Open | 0 to 2 VDC |

# [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## I/O Mode and Operation〈when using as a Counter〉

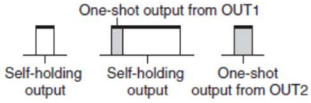



| | | Input mode | | Operation after count completion |
|---|---|---|---|---|
| | | UP | DOWN | |
| Output mode setting | N |  |  | The outputs and present value display are held until reset/reset 1 is input. |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |
| | F | UP | DOWN | The present value display continues to increase/ decrease. The outputs are held until reset/reset 1 is input. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |

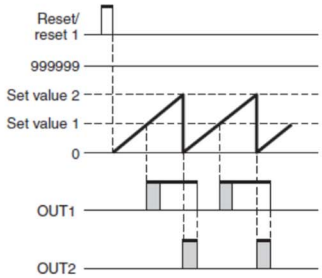
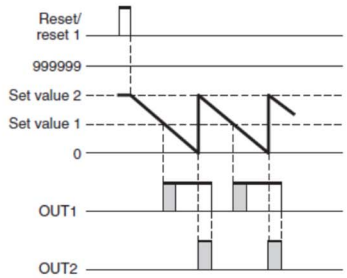
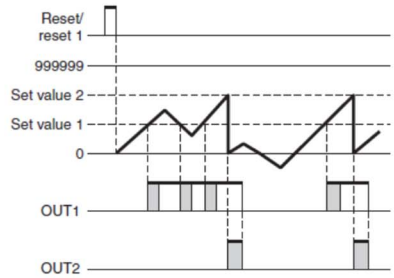
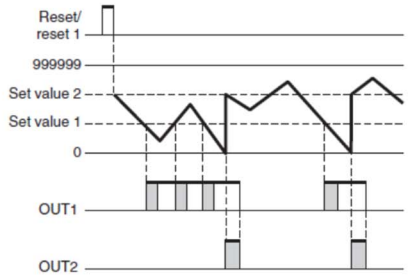
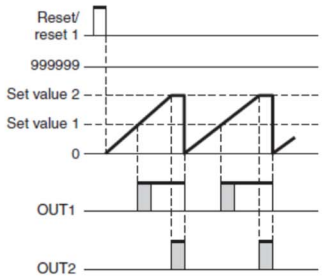
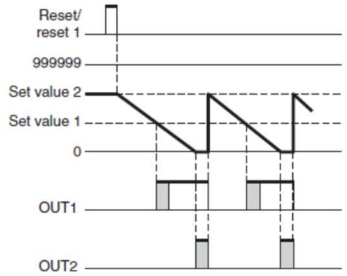
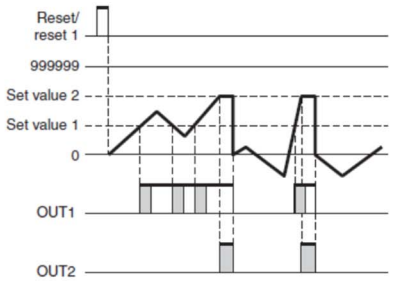
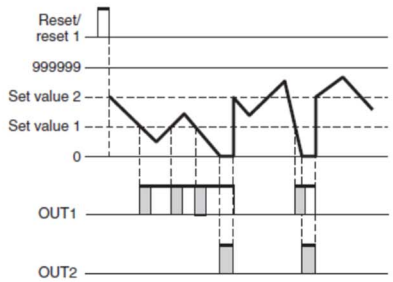
## [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

One-shot output from OUT1

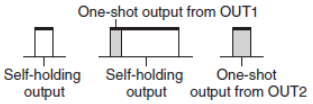



(The one-shot output time can be set in the range 0.01 to 99.99s.)

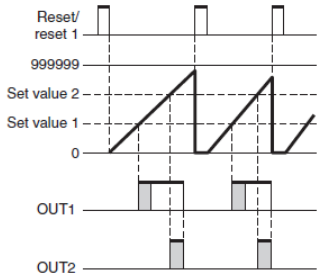
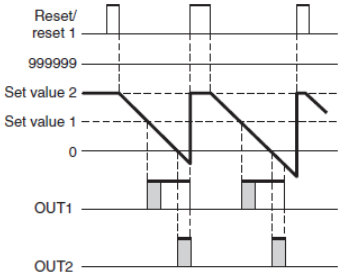
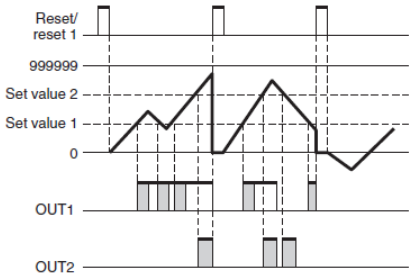
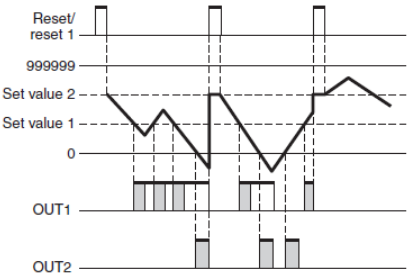
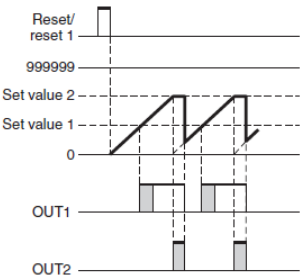
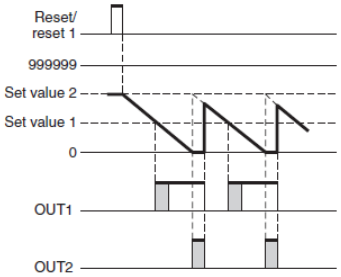
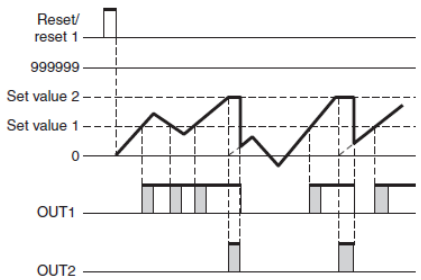
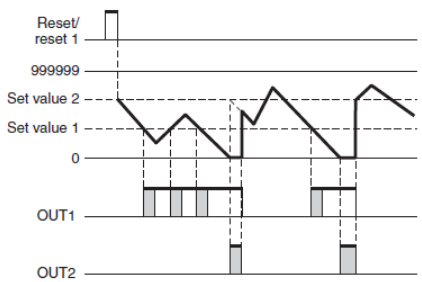
| | | Input mode | | Operation after count completion |
|---|---|---|---|---|
| Output mode setting | C | UP | DOWN | As soon as the count reaches SV, the present value display returns to the reset start status.<br>The present value display does not show the present value upon count-up.<br>The outputs repeat one-shot operation.<br>OUT1 self-holding output turns OFF after the OUT2 one-shot output time.<br>The OUT1 one-shot output time is independent of OUT2. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |
| | R | UP | DOWN | The present value display returns to the reset start status after the one-shot output time.<br>The outputs repeat one-shot operation.<br>OUT1 self-holding output turns OFF after the OUT2 one-shot output time.<br>The OUT1 one-shot output time is independent of OUT2. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |

## [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**



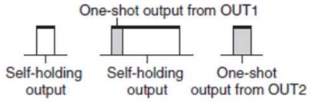

(The one-shot output time can be set in the range 0.01 to 99.99s.)

| | | Input mode | | Operation after count completion |
|---|---|---|---|---|
| Output mode setting | K-1 | UP | DOWN | The present value display continues to increase/decrease.<br>OUT1 self-holding output turns OFF after the OUT2 one-shot output time.<br>The OUT1 one-shot output time is independent of OUT2. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |
| | P | UP | DOWN | The present value display does not change during the one-shot output time period, but the actual count returns to the reset start status.<br>The output will return to one-shot mode.<br>The outputs repeat one-shot operation.<br>OUT1 self-holding output turns OFF after the OUT2 one-shot output time.<br>The OUT1 one-shot output time is independent of OUT2. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |

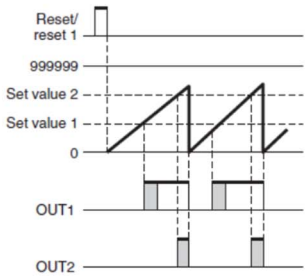
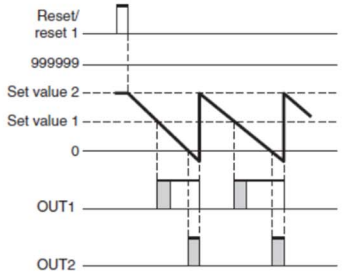
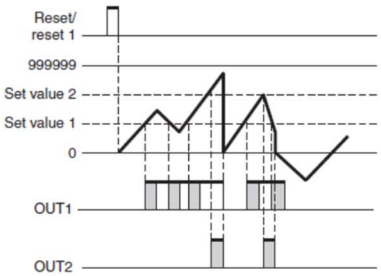
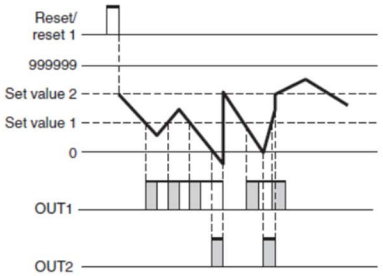
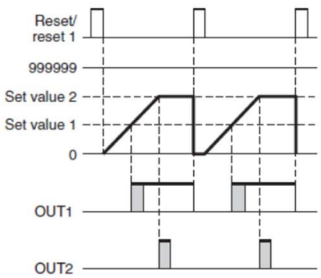
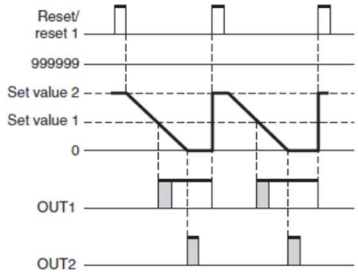
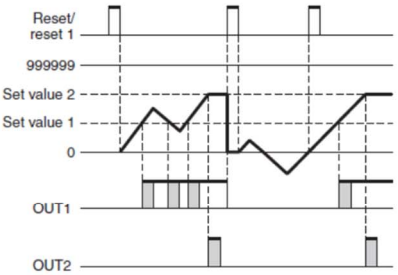
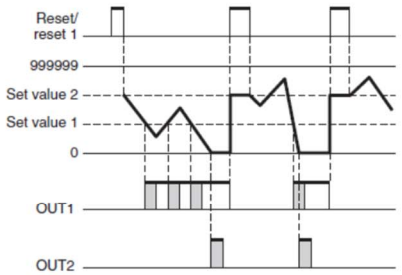
## [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

One-shot output from OUT1



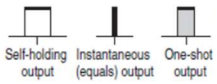

(The one-shot output time can be set in the range 0.01 to 99.99s.)

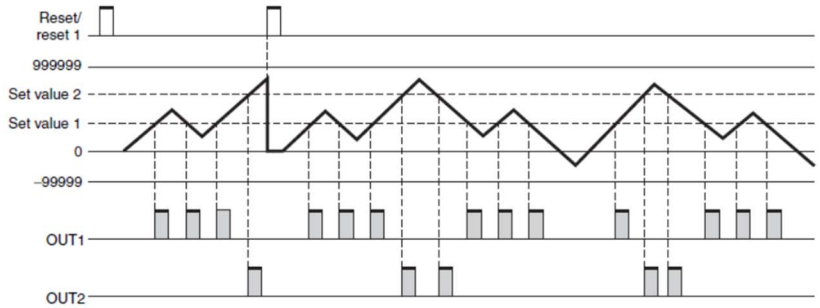
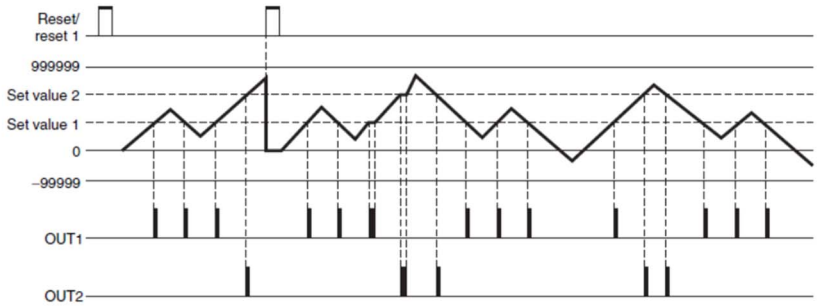
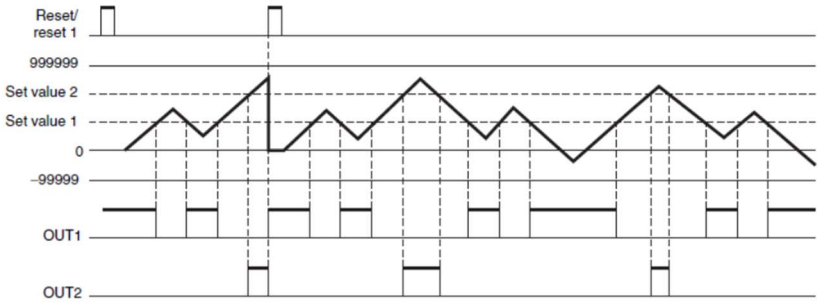
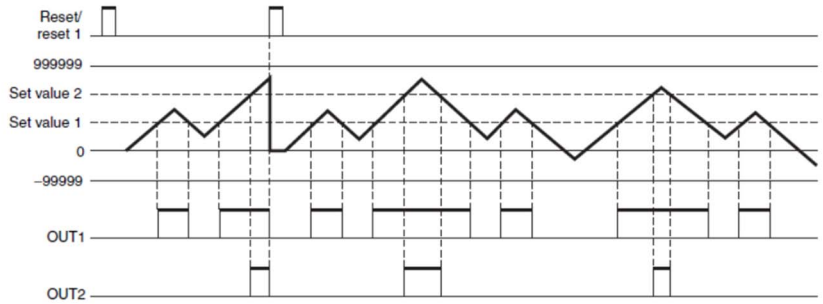
| | | Input mode | | Operation after count completion |
|---|---|---|---|---|
| Output mode setting | Q | UP | DOWN | The present value continues to increase/decrease for the one-shot output time, but returns to the reset start status after the one-shot output time has elapsed.<br>The outputs repeat one-shot operation.<br>OUT1 self-holding output turns OFF after the OUT2 one-shot output time.<br>The OUT1 one-shot output time is independent of OUT2. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |
| | A | UP | DOWN | The present value display and OUT1 self-holding output is held until reset/reset 1 is input.<br>OUT1 and OUT2 are independent. |
| | |  |  | |
| | | UP/DOWN A, B, C | UP/DOWN D, E, F | |
| | |  |  | |

**Note:** 1. When the present value reaches 999999, it returns to 0.
2. Counting cannot be performed during reset/reset 1 input.
3. If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF.
4. If there is power interruption while output is ON, output will turn ON again when the power supply has recovered, if memory backup is enabled.
For one-shot output, output will turn ON again for the duration of the output time setting once the power supply has recovered.
5. Do not use the counter function in applications where the count may be completed (again) while one-shot output is ON.
6. The setting range is 0 to 999999.

## [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**




| | | Input mode | Operation after count completion |
|---|---|---|---|
| | | UP/DOWN A, B, C | |
| Output mode setting | K-2 |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>One-shot output only. |
| | D |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>The outputs are ON while the count is equal. |
| | L |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>OUT1 is held while the present value is less than or equal to set value 1.<br>OUT2 is held while the present value is greater than or equal to set value 2. |
| | H |  | The display continues to increase/decrease until the overflow or underflow value is reached.<br>OUT1 is held while the present value is greater than or equal to set value 1.<br>OUT2 is held while the present value is greater than or equal to set value 2.<br>✻H mode is available only when using a model as a 2-stage counter. |



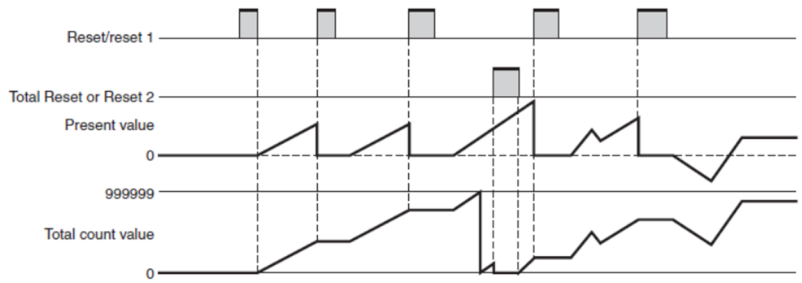
**Note: 1.** Counting cannot be performed during reset/reset 1 input.
**2.** If reset/reset 1 is input while one-shot output is ON, one-shot output turns OFF.
**3.** If there is power interruption while output is ON, output will turn ON again when the power supply has recovered, if memory backup is enabled.
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.
**5.** The set value is from –99999 to 999999.

# [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## Total and Preset Counter Operation

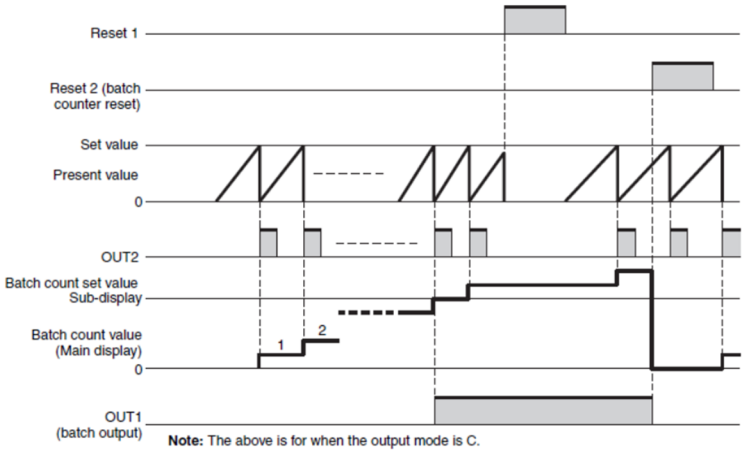
The H7CC has a total counter, separate from the 1-stage preset counter, for counting the total accumulated value.




- The total counter continues to count the total accumulated value when the present value is reset using reset/reset 1 input (reset operation).
- The total count value is reset when the total reset/reset 2 input is turned ON.
  If reset operation is performed 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. The total count value returns to 0 when it reaches 999,999.

## Batch Counter Operation

The H7CC has a batch counter, separate from the 1-stage preset counter, for counting the number of times the count has been completed.




**Note:** The above is for when the output mode is C.

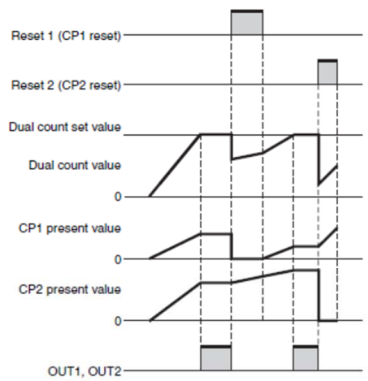
- The batch counter continues after count completion.
- Batch output is held until batch counter reset is input.
- When the batch counter reset input is turned ON, the batch count value is reset, and batch output turns OFF.
- If reset operation is performed while the batch count value is displayed, the batch count value is reset and batch output turns OFF. The present value is also reset at this time.
- The count value can be incremented and decremented.
  The batch count is only incremented.
- The maximum counting speed for batch counter operation is 5 kHz. The batch counter counts the number of times the count reaches the set value.

**Note:**
1. The batch count value is held at 0 during batch counter reset input.
2. If the batch count set value is 0, batch count will be performed but there will be no batch output.
3. The batch count value returns to 0 when it reaches 999,999.
4. Once batch output has been turned ON, it will return to the ON after power interruptions, if memory backup is enabled.
5. 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.
6. After batch output turns ON, the ON state will be held even if the batch count set value is changed to a value greater than the batch count value.

## Dual Counter Operation

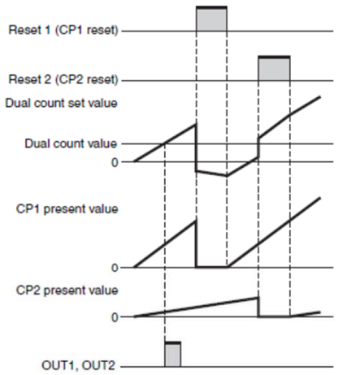
Using the dual counter allows the count from 2 inputs to be added or subtracted and the result displayed. It is possible to specify a set value for which output turns ON when the set value matches the added or subtracted result.

**(1) Dual Count Calculating Mode = ADD**
Dual count value = CP1 PV + CP2 PV




**Note:** The above is for when the output mode is N.

(2) Dual Count Calculating Mode = SUB
Dual count value = CP1 PV – CP2 PV




**Note:** The above is for when the output mode is K-2. SUB mode can be used only when K-2, D, L, or H is selected as the output mode with 6-digit models.

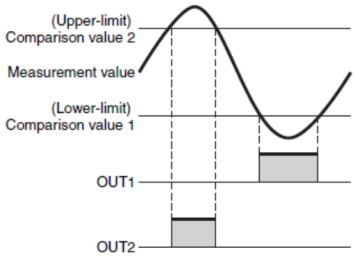
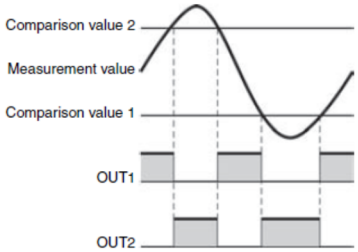
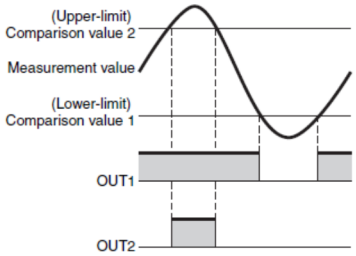
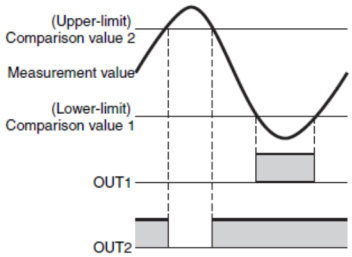
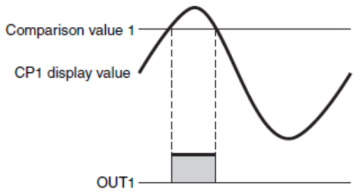
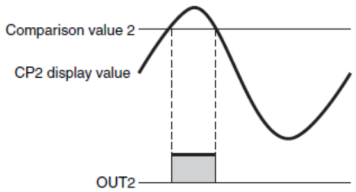
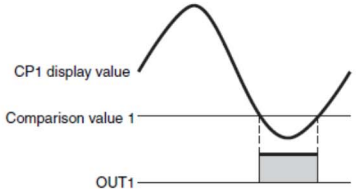
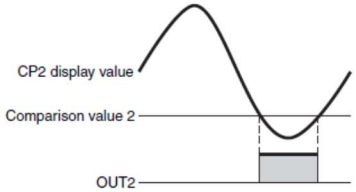
- The operation after count completion for the dual counter value is determined by the output mode.
- The CP1 present value is reset when reset 1 input is turned ON.
  The CP2 present value is reset when reset 2 input is turned ON.
- If reset operation is performed while the dual count value, CP1 present value, or CP2 present value is displayed, all of the present values are reset and outputs turn OFF. At this time, counting is not possible for CP1 or CP2 inputs.

**Note:**
1. Counting is not possible for CP1 during reset 1 input. CP2 will not be affected. The dual count value will be calculated based on a CP1 present value of 0.
2. Counting is not possible for CP2 during reset 2 input. CP1 will not be affected. The dual count value will be calculated based on a CP2 present value of 0.
3. The counting range for the dual count value is –99,999 to 999,999.
   The counting ranges for the CP1 present value and CP2 present value are 0 to 999,999.
   If a present value exceeds 999,999, FFFFFF will be displayed to indicate an overflow, and all counting will stop.

# [ Operating Characteristics ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## Output Mode and Operation〈using as a Tachometer〉

| Input mode setting | Output mode setting | Operation |
|---|---|---|
| 1 input<br>Error<br>Absolute ratio<br>Error ratio | Upper and lower limit (HI-LO) |  <br>ON condition for OUT1: Measurement value ≤ Comparison value 1<br>ON condition for OUT2: Measurement value ≥ Comparison value 2 |
| | Area (AREA) |  |
| | Upper limit (HI-HI) |  <br>ON condition for OUT1: Measurement value ≥ Comparison value 1<br>ON condition for OUT2: Measurement value ≥ Comparison value 2 |
| | Lower limit (LO-LO) |  <br>ON condition for OUT1: Measurement value ≤ Comparison value 1<br>ON condition for OUT2: Measurement value ≤ Comparison value 2 |
| 2 inputs | Upper limit (HI) | **Output 1**<br>  <br>**Output 2**<br>  <br>ON condition for output 1: CP1 present value (display value) ≥ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≥ Comparison value 2 |
| | Lower limit (LO) | **Output 1**<br>  <br>**Output 2**<br>  <br>ON condition for output 1: CP1 present value (display value) ≤ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≤ Comparison value 2 |

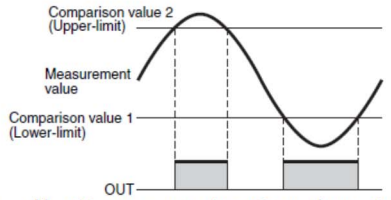
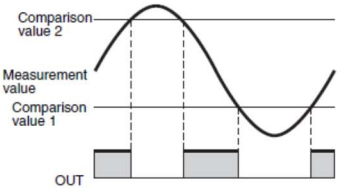
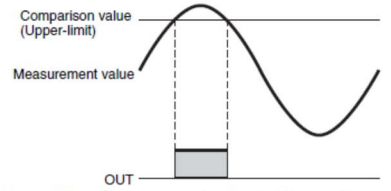
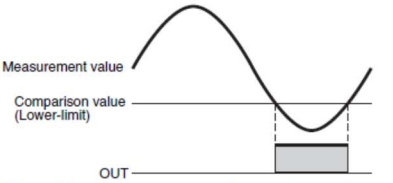
| Condition | Comparison value 1 ≤ Comparison value 2 | Measurement value 1 > Comparison value 2 |
|---|---|---|
| ON condition for OUT1 | Comparison value 1 ≤ Measurement value ≤ Comparison value 2 | Comparison value 2 ≤ Measurement value ≤ Comparison value 1 |
| ON condition for OUT2 | Measurement value < Comparison value 1 or Measurement value > Comparison value 2 | Measurement value < Comparison value 2 or Measurement value > Comparison value 1 |

# [ Operating Characteristics ] H7CC-R[] series

**Recommended replacement**
**H7CC-R[] series**

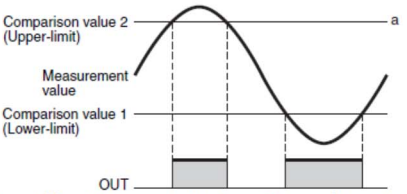
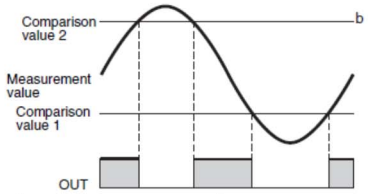
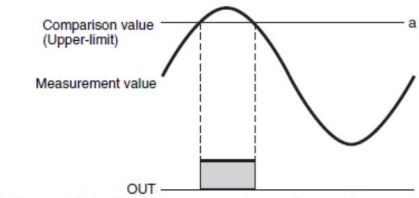
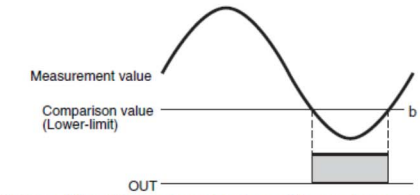
## Output Mode and Operation

### Models Other Than H7CC-R11W□ in Tachometer Mode

| Output mode setting | Operation |
|---|---|
| Upper and lower limit |  ON condition: Measurement value ≤ Comparison value 1 or Measurement value ≥ Comparison value 2<br>**Note:** When comparison value 1 ≥ Comparison value 2, the output is always ON regardless of the comparison value. |
| Area |  |
| Upper limit |  ON condition: Measurement value ≥ Comparison value |
| Lower limit |  ON condition: Measurement value ≤ Comparison value |

| Condition | Comparison value 1 ≤ Comparison value 2 | Comparison value 1 > Comparison value 2 |
|---|---|---|
| ON condition | Comparison value 1 ≤ measurement value ≤ Comparison value 2 | Comparison value 2 ≤ measurement value ≤ Comparison value 1 |

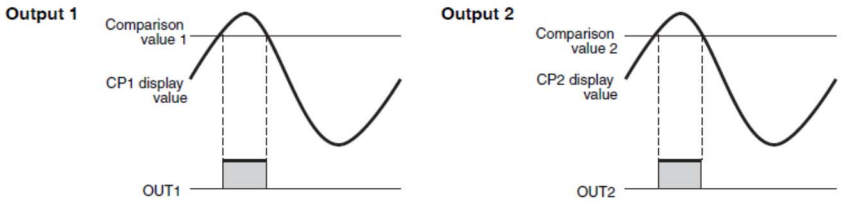
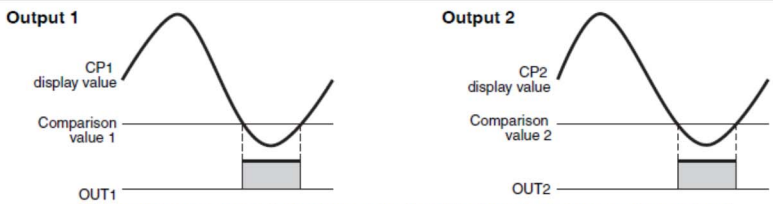
### Models Other Than H7CC-R11W□ in AMD-compatible Mode

| Output mode setting | Operation |
|---|---|
| Upper and lower limit |  ON condition: Measurement value < Comparison value 1 or Measurement value ≥ Comparison value 2<br>**Note:** When comparison value 1 ≥ comparison value 2, the output is always ON regardless of the comparison value. |
| Area |  |
| Upper limit |  ON condition: Measurement value ≥ Comparison value |
| Lower limit |  ON condition: Measurement value < Comparison value |

| Condition | Comparison value 1 ≤ Comparison value 2 | Comparison value 1 > Comparison value 2 |
|---|---|---|
| ON condition | Comparison value 1 ≤ measurement value < Comparison value 2 | Comparison value 2 ≤ measurement value < Comparison value 1 |

**Note:** If time "a" is exceeded during operation, the output will turn ON. If time "b" is exceeded during operation, the output will turn OFF. (If average processing is enabled, the output operation will be performed when the time is exceeded once.)

### H7CC-R11W□

| Output mode setting | Operation |
|---|---|
| Upper limit (HI) |  ON condition for output 1: CP1 present value (display value) ≥ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≥ Comparison value 2 |
| Lower limit (LO) |  ON condition for output 1: CP1 present value (display value) ≤ Comparison value 1<br>ON condition for output 2: CP2 present value (display value) ≤ Comparison value 2 |

# [ Operation Methods ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**

## Display Section

**1. Key Protect Indicator** (orange)

**2. Control Output Indicator** (orange)
OUT: (One-stage)
OUT: 1 2 (Two-stage)

**3. Reset Indicator** (orange)
(Lit when the reset input (1) or Reset Key is ON.)
Displayed only when the configuration selection mode is not tachometer mode.

**4. Total Count Indicator**
(Lit when the total count value is displayed.)

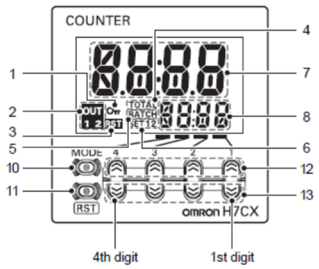
**5. Batch Indicator**
(Lit when the batch count value is displayed.)

**6. Set Value 1, 2 Stage Indicator**

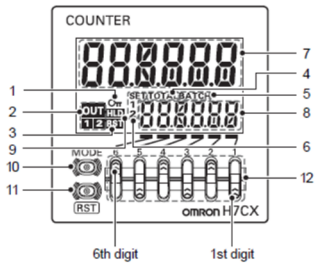
**7. Present Value (Main Display)**
(Character height: 12 mm (6-digit: 10 mm), red*)
* Characters on models with screw terminals (H7CX-A11□) can be switched between red, green, and orange.

**8. Set value (Sub-display)**
(Character height: 6 mm, green)

**9. Hold Display (orange)**
Displayed only when the configuration selection mode is not tachometer mode.



(Front view of 4-digit model)



(Front view of 6-digit model)

## Operation Keys

**10. Mode Key**
(Changes modes and setting items.)

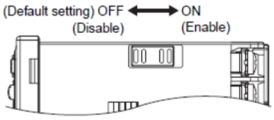
**11. Reset Key (See note.)**

**12. Up Keys 1 to 4**
(6-digit models: 1 to 6)

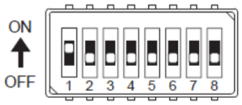
**13. Down Keys 1 to 4**

## Switches

**14. Key-protect Switch**



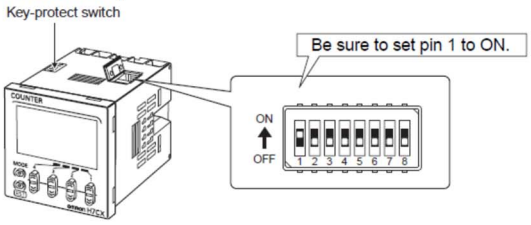

**15. DIP Switch**




**Note:** The reset functions depends on the selected configuration.

| Configuration | Reset operation |
|---|---|
| 1-stage/2-stage preset counter | Resets the present value and outputs. |
| Total and preset counter | • Resets the present value and outputs.<br>• When the total count value is displayed, resets the present value, the total count value, and outputs. |
| Batch counter | • Resets the present value and OUT2.<br>• When the batch count value is displayed, resets the present value, the batch count value, and outputs. |
| Dual counter | Resets the CP1 present value, CP2 present value, dual count value, and outputs. |
| Twin counter | Resets the CP1 present value and output 1 when the CP1 present value is displayed.<br>Resets the CP2 present value and output 2 when the CP2 present value is displayed. |
| Tachometer | Holds the measurement value and outputs (hold function).<br>(When the input mode is 2-input independent measurement, the CP1 measurement value display will hold the CP1 measurement value and output 1 and the CP2 measurement value display will hold the CP2 measurement value and output 2.) |

〈when using as a Counter〉

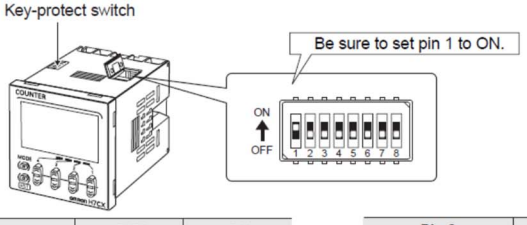



| | Item | OFF | ON |
|---|---|---|---|
| 1 | DIP switch settings | Disabled | Enabled |
| 2 | Counting speed | 30 Hz | 5 kHz |
| 3 | Input mode | UP | DOWN |
| 4 | Output mode | Refer to the table on the right. | |
| 5 | | | |
| 6 | Output time | 0.5 s | 0.05 s |
| 7 | Minimum reset signal | 20 ms | 1 ms |
| 8 | Input selection | NPN | PNP |

| Pin 4 | Pin 5 | Output mode |
|---|---|---|
| OFF | OFF | N |
| ON | OFF | F |
| OFF | ON | C |
| ON | ON | K-1 |

**Note:** All pins are factory-set to OFF.

〈when using as a Tachometer〉




| | Item | OFF | ON |
|---|---|---|---|
| 1 | DIP switch settings | Disabled | Enabled |
| 2 | Counting speed | 30 Hz | 10 kHz |
| 3 | Tachometer output mode | Refer to the table on the right. | |
| 4 | | | |
| 5 | Average processing | Refer to the table on the right. | |
| 6 | | | |
| 7 | --- | --- | --- |
| 8 | Input selection | NPN | PNP |

| Pin 3 | Pin 4 | Tachometer output mode |
|---|---|---|
| OFF | OFF | Upper/lower limit output |
| ON | OFF | Range output |
| OFF | ON | Upper limit output |
| ON | ON | Lower limit output |

| Pin 5 | Pin 6 | Average processing |
|---|---|---|
| OFF | OFF | OFF |
| ON | OFF | 2 times |
| OFF | ON | 4 times |
| ON | ON | 8 times |

**Note:** All pins are factory-set to OFF.

# [ Operation Methods ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**

## ■Function Setting Mode／DIP switch monitor

The H7CX is a Counter that contains more than one functional counter.
When using the Counter in any modes other than the default modes listed in Table 2, use the following chart to enter configuration selection mode and then refer to Table 1 and set the functions that are suitable to the application.

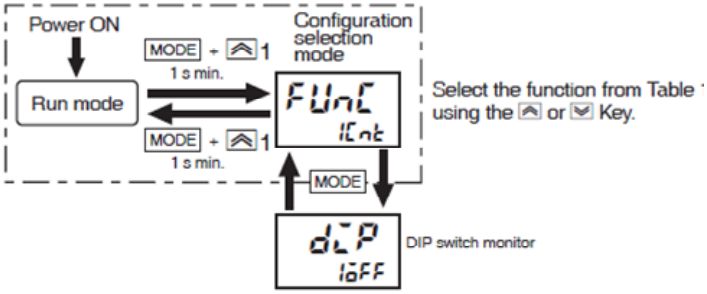



Table 1 Configuration Selection Mode Settings

| Display | Function |
|---|---|
| 1Cnt | 1-stage preset counter |
| 2Cnt | 2-stage preset counter |
| tCnt | Total and preset counter |
| bCnt | Batch counter |
| dCnt | Dual counter |
| twn | Twin counter |
| tACo | Tachometer |

Table 2 Default Modes and Selectable Functions

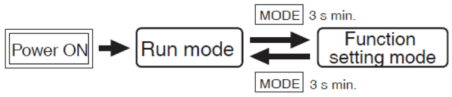
| Model | Default mode | Selectable mode |
|---|---|---|
| H7CX-A4W | 2-stage preset counter | Any mode but Tachometer |
| H7CX-AW□ | | Any mode |
| H7CX-AU□ | 1-stage preset counter | |
| Other models | | 1-stage preset or total preset counter only |

**Note:** The modes that can be selected depend on the model. (Refer to Table 2.)

## ■Function Setting Mode〈when using as a Counter〉

- Change from RUN Mode to Function Setting Mode.
- Set the parameters using the ↑ and ↓ Keys.

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. Displays for 4-digit models are given in parentheses.

Note: Refer to the datasheet (Cat. No. M079) for detailed parameter settings.

| | Display | Parameter name | Set value | Comments |
|---|---|---|---|---|
| Function setting mode | InPt | Input mode*2 | UP, dOwn, Ud-A, Ud-b, Ud-C | Displayed only when Twin Counter Mode is not selected.<br>UP, dOwn: Displayed for output modes other than H-2, d, L, and H only. |
| | oUtM | Output mode | n, F, C, r, H-1, P, 9, A, H-2 d, L, H *1 | H is displayed only for 2-stage models.<br>H-2, d, L, and H are displayed only when the input mode is Ud-A, Ud-b, or Ud-C. |
| | otiM | Output time*3 | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, H-1, P, 9, A, or H-2. Unit: second |
| | CntS | Counting speed | 30Hz, 5kHz *1 | --- |
| | rSTt | Reset input signal width | 20mS, 1mS *1 | --- |
| | dP | Decimal point position | ------[----], -----.-[---.-], ----.--[--.--], ---.---[-.---] *1 | --- |
| | PSCL | Prescale value | 0.001 to 1000 to 99.999 [9.999] | --- |
| | inod | NPN/PNP input mode | nPn, PnP *1 | --- |
| | CoLr | Display color | rED, Grn, orG, r-G, G-r, r-o, o-r, G-o, o-G *1 | Displayed for models with terminal blocks (except H7CX-A11□) only. |
| | SEtM | Absolute value setting/ forecast value setting | Abs, oFSt *1 | Displayed only when the configuration selection mode is set to the 2-stage counter (2Cnt). |
| | SL-H | Set value upper limit | 1 to 999999 [9999] | --- |
| | PL-H | Forecast setting upper limit | 1 to 999999 [9999] | Displayed only when the configuration selection mode is set to the 2-stage counter (2Cnt) and there is a forecast value setting. |
| | bL-H | Batch set value upper limit | 1 to 999999 [9999] | Displayed only when the configuration selection mode is bCnt. |
| | otSt | OUT allocation change | oFF, on *1 | Displayed only for "-AU□" models.<br>oFF: OUT1 = 12, 13, OUT2 = 3, 4, 5 on: OUT1 = 3, 4, 5, OUT2 = 12, 13<br>The numbers are the terminals numbers. |
| | KYPt | Key protect level | KP-1, KP-2, KP-3, KP-4, KP-5, KP-6, KP-7 *1 | --- |
| | ● Models other than "-□W□/-AU□" Models | | | |
| | on-A | Output ON count alarm set value | 0 to 9999 | × 1,000 |
| | on-C | Output ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | ● "-□W□/-AU□" Models | | | |
| | on1A | Output 1 (OUT1) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on2A | Output 2 (OUT2) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on1C | Output 1 (OUT1) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 (OUT2) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |

# [ Operation Methods ] H7CX-A[]-N series

**Discontinued product**
**H7CX-A[]-N series**

## ■Function Setting Mode〈when using as a Counter〉continued

*1: After reaching the last set value, the ▲ Key will return to the first set value.
*2: When using Dual Counter operation

| | | | |
|---|---|---|---|
| CALC | Dual count calculating mode | Add, Sub *1 | Displayed only when the output mode is K-2, d, L, or H. |

*3: Set each digit using the individual ▲ and ▼ Keys for the following configuration selection modes.

| | | | |
|---|---|---|---|
| ● 2-stage Preset Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, K-1, P, 9, R, or K-2.Unit: second |
| otm1 | One-shot output 1 time | HoLd/0.01 to 99.99 | If the output time is 0.00, HoLd is displayed. Displayed for output modes other than d, L, and H. HoLd cannot be set when the output mode is K-2. Unit: second |
| ● Batch Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, K-1, P, 9, R, or K-2. Unit: second |
| ● Twin Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, K-1, P, 9, or R. Unit: second |
| otm1 | One-shot output 1 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, K-1, P, 9, or R. Unit: second |

## ■Function Setting Mode〈when using as a Tachometer〉

| | Display | Parameter name | Set value | Comments |
|---|---|---|---|---|
| Function Setting Mode | tInP | Tachometer input mode | F1, F2, F3, F4, F5*1 | --- |
| | toto | Tachometer output mode*2 | HiLo, ArEA, HiHi, LoLo*1 | --- |
| | CntS | Counting speed | 30Hz, 10kHz *1 *3 | --- |
| | dP | Decimal point position | ------, -----.-, ----.--, ---.---, --.----- *1 | "--.----" will be displayed when pulse width measurement is set or when the display unit is set to seconds. |
| | PSCL | Prescale value | 0.001 to 1.000 to 99.999 | --- |
| | AvGt | Averaging method | Smp, Mov*1 | --- |
| | AvGn | Averaging processing | oFF, 2, 4, 8, 16*1 | --- |
| | AUtO | Auto-zero time | 0.1 to 99.9 | Unit: second |
| | Stmr | Startup time | 00 to 99.9 | Unit: second |
| | inod | NPN/PNP input mode | nPn, PnP*1 | --- |
| | CoLr | Display color | rED, Grn, orG, r-G, G-r, r-o, o-r, G-o, o-G*1 | --- |
| | dHLd | Peak/bottom hold enabled | oFF, on*1 | --- |
| | HYS | Output hysteresis | 0 to 99999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. |
| | oFFd | Output OFF delay | 000 to 19.99 | Unit: second |
| | SL-H | Set value upper limit | 1 to 99999 | --- |
| | otSt | OUT allocation change | oFF, on*1 | Displayed only for "-AU□" models. oFF: OUT1 = 12, 13, OUT2 = 3, 4, 5 on: OUT1 = 3, 4, 5, OUT2 = 12, 13 The numbers are the terminals numbers. |
| | KYPt | Key protect level | KP-1, KP-2, KP-3, KP-4, KP-5, KP-6, KP-7*1 | --- |
| | CALC | Pulse cycle measurement/ pulse width measurement | PHAS, CYCLE*1 | --- |
| | Unit | Display unit | Hz, S*1 | Displayed only when pulse cycle measurement is used. |
| | intv | Measurement cycle | 200ms, Cont | Displayed only if the measurement speed is 10 kHz when pulse cycle measurement is used. |
| | on1A | Output 1 (OUT1) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on2A | Output 2 (OUT2) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on1C | Output 1 (OUT1) ON count alarm monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 (OUT2) ON count alarm monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |

*1: After reaching the last set value, the ▲ Key will return to the first set value.
*2: When the tachometer input mode is F2 (2 inputs), set tachometer output modes 1 and 2 using the ▲ Key.

| | | | |
|---|---|---|---|
| to1m | Tachometer output mode 1 | Hi, Lo*1 | --- |
| to2m | Tachometer output mode 2 | Hi, Lo*1 | --- |

*3: Even if 10 kHz is selected when the tachometer input mode is F2 to F5, the counting speed will be 5 kHz.

## [ Operation Methods ] H7CX-R[]-N series

**Discontinued product**
**H7CX-R[]-N series**

### Display Section

1. **Hold Indicator** (orange)
(Lit when the hold input or hold key is ON. )

2. **Key Protect Indicator** (orange)
Lit when the key protect switch is ON.

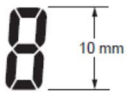
3. **Control Output Indicator** (orange)
OUT (1-output models)
OUT 1 2 (2-output models)

4. **Comparison Value 1, 2 Stage Indicator**

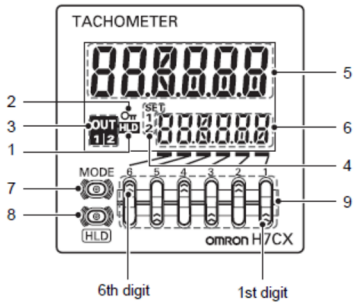
5. **Present Value (Main Display)**
Character height: 10 mm (red)

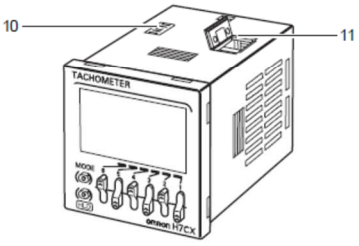
6. **Comparison Value (Sub-display)**
Character height: 6 mm (green)

Character Size for Main Display




Character Size for Sub-display




### Operation Keys

7. **Mode Key**
(Used to switch mode and setting items.)

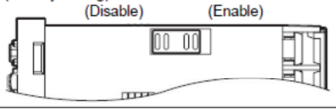
8. **Hold Key**
(Used to sustain the measurement value and output.)

9. **Up Keys** 1 **to** 6

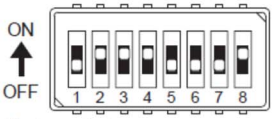
### Switches

10. **Key-protect Switch**

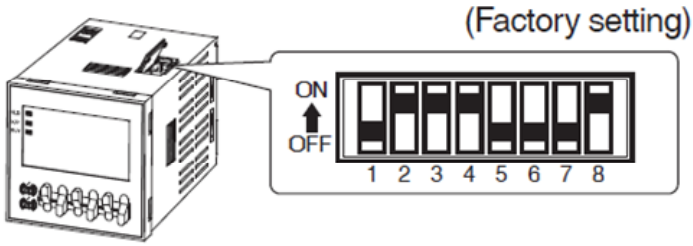
(Factory setting) OFF ⟷ ON
(Disable) (Enable)



11. **DIP Switch**




(Factory setting)




| | Item | OFF | ON |
|---|---|---|---|
| 1 | Input mode *1 | Refer to the table on the right. | |
| 2 | Counting speed/Minimum input signal width | | |
| 3 | Output mode *3 | Refer to the table on the right. | |
| 4 | | | |
| 5 | Average processing | Refer to the table on the right. | |
| 6 | | | |
| 7 | --- | --- | --- |
| 8 | NPN/PNP input mode | NPN | **PNP** |

* The characters displayed in reverse video are the default settings.

| Pin 1 | Pin 2 | Input mode | Counting speed/ minimum input signal width |
|---|---|---|---|
| OFF | OFF | Tachometer | 30 Hz |
| ON | OFF | AMD compatible | 10 ms |
| OFF | ON | Tachometer | **10 kHz *2** |
| ON | ON | AMD compatible | 1 ms |

| Pin 3 | Pin 4 | Output mode |
|---|---|---|
| OFF | OFF | Upper and lower limit |
| ON | OFF | Area |
| OFF | ON | Upper limit |
| ON | ON | **Lower limit** |

| Pin 5 | Pin 6 | Average processing |
|---|---|---|
| OFF | OFF | **OFF (no average processing)** |
| ON | OFF | 2 times |
| OFF | ON | 4 times |
| ON | ON | 8 times |

The settings made using the DIP switch can be checked in the DIP switch monitor mode.

*1. The setting is disabled (OFF) for the H7CX-R11W□.
*2. The value is 5 KHz for the H7CX-R11W□.
*3. For the H7CX-R11W□.

| | Item | OFF | ON |
|---|---|---|---|
| 3 | Output 1 mode | Refer to the table on the right. | |
| 4 | Output 2 mode | Refer to the table on the right. | |

| Pin 3 | Output mode |
|---|---|
| OFF | Upper limit |
| ON | **Lower limit** |

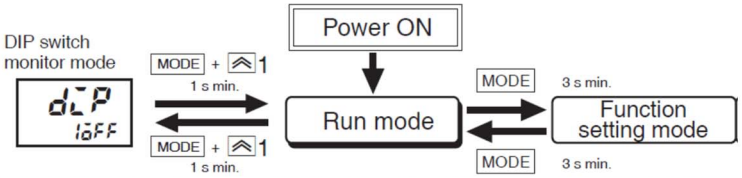
| Pin 4 | Output mode |
|---|---|
| OFF | Upper limit |
| ON | **Lower limit** |

## [ Operation Methods ] H7CX-R[]-N series

**Discontinued product**
**H7CX-R[]-N series**

### ■Function Setting Mode／DIP switch monitor

Change to Function Setting Mode.




Note: Refer to the datasheet (Cat. No. M079) for detailed parameter settings.

Set the parameters that cannot be set with the DIP switch.

Set the parameters using the ↑ Key.

The characters displayed in reverse video are the default settings.

| | Display | Parameter name | Set value | Set value |
|---|---|---|---|---|
| Function setting mode | dP | Decimal point position | ------, -----.-, ----.--, ---.--- *1 | --- |
| | PSCL | Prescale value | 0.001 to 1.000 to 99.999 | Displayed only when the mode is not AMD compatible mode. |
| | AvGt | Averaging method | SmP, mv *1 | --- |
| | AUtO | Auto-zero time | 0.1 to 999.9 | Displayed only when the mode is not AMD compatible mode. Unit: second |
| | Stmr | Startup time | 00 to 99.9 | Unit: second |
| | dHLd | Peak/bottom hold enabled | oFF, on *1 | --- |
| | HYS | Output hysteresis | 0 to 99999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. |
| | oFFd | Output OFF delay | 0.00 to 19.99 | Unit: Second |
| | SL-H | Set value upper limit | 1 to 999999 | --- |
| | KYPt | Key protect level | KP-1, KP-2, KP-3, KP-4, KP-5, KP-6, KP-7 *1 | --- |
| | Models other than "-R11W□" Models | | | |
| | on-A | Output ON count alarm set value | 0 to 9999 | × 1,000 |
| | on-C | Output ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | "-R11W□" Models | | | |
| | on1A | Output 1 OUT1) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on2A | Output 2 OUT2) ON count alarm set value | 0 to 9999 | × 1,000 |
| | on1C | Output 1 OUT1) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 OUT2) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |

*1: After reaching the last set value, the ↑ Key will scroll to the first set value.

# [ Operation Methods] H7CC-A[] series

## Recommended replacement
## H7CC-A[] series

### Display Section

**1. Key Protect Indicator** (yellow)

**2. Control Output Indicator** (yellow)
OUT: (One-stage)
OUT: 1 2 (Two-stage)

**3. Reset Indicator** (yellow)
(Lit when the reset input (1) is ON or reset operation is performed.)
Displayed only when the configuration selection mode is not tachometer mode.

**4. Total Count Indicator**
(Lit when the total count value is displayed.)

**5. Batch Indicator**
(Lit when the batch count value is displayed.)

**6. Set Value 1, 2 Stage Indicator**

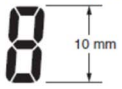
**7. Present Value (Main Display)**
(Character height: 10 mm, white ✻)

**8. Set value (Sub-display)**
(Character height: 6 mm, green)

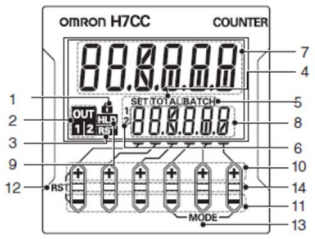
**9. Hold Display (yellow)**
Displayed only when the configuration selection mode is not tachometer mode.

**Model with 6 Digits**

Character Size for Main Display




Character Size for Sub-display




### Operation Keys

**10. Up Keys (UP1 to UP6)**
(UP1, 2, 3, 4, 5, 6 from right to left)

**11. Down Keys (DW1 to DW6)**
(DW1, 2, 3, 4, 5, 6 from right to left)

**12. Reset Operation (UP6+DW6) ✻**

1. Press RST keys (UP6+DW6) simultaneously for at least one second.
2. LED on each key starts blinking.
   Do not release the keys until the LED starts blinking. Otherwise the setting value may change. If not blink, that is because the keys are not pressed simultaneously. In this case, release the keys after pressing for at least 1 second, and restart from 1.
3. Press and hold until the LED turns off.
   If you release the keys while blinking, the reset operation will be interrupted.

**13. Mode Operation (UP1+UP3 or DW1+DW3)**

<Change of setting item>
1. Press MODE keys (UP1+UP3 or DW1+DW3) simultaneously to switch setting items.

<Move to Function Setting Mode>
1. Press MODE key (UP1+UP3 or DW1+DW3) for at least 2 seconds simultaneously.
2. LEDs on UP1 (DW1) and UP3 (DW3) key start blinking.
   Do not release the keys until the LEDs start blinking. Otherwise the setting value may change. If not blink, that is because the keys are not pressed simultaneously. In this case, release the keys after pressing for at least one second, and restart from 1.
3. Press and hold until the LED turns off. If you release the keys during blinking, the mode will not be moved to Function Setting Mode.

DW1+DW3

**14. Status indicator**

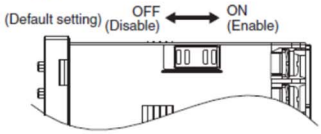
<When Run mode is not selected.>
· When the indicator display mode is ON
When used as a counter, the ratio of the present value to the set value is displayed from 0 to 100%.
When used as a tachometer, if "Upper and lower limit" or "Area" is selected in the tachometer output mode, the ratio of the measurement value to the comparison value is displayed from 0 to 100%.
· When the indicator display mode is all off or all lit
All off or all lit display.

**Note.** When you press the Up Key or the Down Key, the status indicator display goes off, and the pressed key lights up or blinks.

<When Function Setting Mode is not selected>
· The keys that can be set light up for notification.

### Switches

**15. Key-protect Switch**




**Note:** The reset functions depends on the selected configuration.

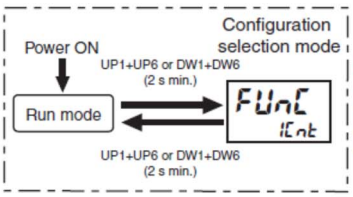
| Configuration | Reset operation ✻ |
|---|---|
| 1-stage/2-stage preset counter | Resets the present value and outputs. |
| Total and preset counter | • Resets the present value and outputs.<br>• When the total count value is displayed, resets the present value, the total count value, and outputs. |
| Batch counter | • Resets the present value and OUT2.<br>• When the batch count value is displayed, resets the present value, the batch count value, and outputs. |
| Dual counter | Resets the CP1 present value, CP2 present value, dual count value, and outputs. |
| Twin counter | Resets the CP1 present value and output 1 when the CP1 present value is displayed.<br>Resets the CP2 present value and output 2 when the CP2 present value is displayed. |
| Tachometer | Holds the measurement value and outputs (hold function).<br>(When the input mode is 2-input independent measurement, the CP1 measurement value display will hold the CP1 measurement value and output 1 and the CP2 measurement value display will hold the CP2 measurement value and output 2.) |

# [ Operation Methods ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## ■Function Setting Mode

The H7CC is a Counter that contains more than one functional counter.
When using the Counter in any modes other than the default modes listed in Table 2, use the following chart to enter configuration selection mode and then refer to Table 1 and set the functions that are suitable to the application.




Select the function from Table 1 using the UP1 or DW1 Key.

Table 1 Configuration Selection Mode Settings

| Display | Function |
|---|---|
| iCnt | 1-stage preset counter |
| 2Cnt | 2-stage preset counter |
| tCnt | Total and preset counter |
| bCnt | Batch counter |
| dCnt | Dual counter |
| twn | Twin counter |
| tACo | Tachometer |

Note: The modes that can be selected depend on the model. (Refer to Table 2.)

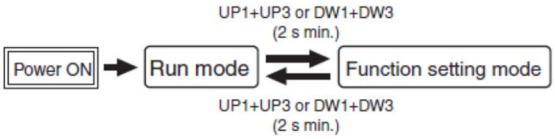
Table 2 Default Modes and Selectable Functions

| Model | Default mode | Selectable mode |
|---|---|---|
| H7CC-AW | 2-stage preset counter | Any mode |
| H7CC-AU | 1-stage preset counter | Any mode |
| Other models | 1-stage preset counter | 1-stage preset or total preset counter only |

## ■Function Setting Mode〈when using as a Counter〉

Change from RUN Mode to Function Setting Mode.

Set the parameters using the UP Key or DOWN Key.
The characters displayed in reverse video are the default settings.
Note: Refer to the datasheet for detailed parameter settings.




| | Display | Parameter name | Set value | Comments |
|---|---|---|---|---|
| Function setting mode | InPt | Input mode *1 | UP, down, Ud-A, Ud-b, Ud-C, Ud-d, Ud-E, Ud-F | Displayed only when Twin Counter Mode is not selected. UP, down, Ud-d, Ud-E, Ud-F: Displayed for output modes other than P-2, d, L, and H only. |
| | oUtM | Output mode | n, F, C, r, P-1, P, 9, A, P-2, d, L, H | H is displayed only for 2-stage models. P-2, d, L or H is displayed only when H7AN compatible function is oFF or the input mode is Ud-A, Ud-b or Ud-C. |
| | otim | Output time *2 | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, P-1, P, 9, A, or P-2. Unit: second |
| | InPS | Counting speed | 30Hz, 5kHz | --- |
| | cFLt | Reset input signal width | 20mS, 1mS | --- |
| | dP | Decimal point position | ------, -----.-, ----.--, ---.--- | Not displayed when H7AN compatible function is ON. |
| | PSCL | Prescale value | 0.001 to 1000 to 99.999 | Not displayed when H7AN compatible function is ON. |
| | inMod | NPN/PNP input mode | nPn, PnP | --- |
| | SEtM | Absolute value setting/ forecast value setting | Abs, oFSt | Displayed only when the configuration selection mode is set to the 2-stage counter (2Cnt). |
| | SL-H | Set value upper limit | 1 to 999999 | --- |
| | PL-H | Forecast setting upper limit | 1 to 999999 | Displayed only when the configuration selection mode is set to the 2-stage counter (2Cnt) and there is a forecast value setting. |
| | bL-H | Batch set value upper limit | 1 to 999999 | Displayed only when the configuration selection mode is bCnt. |
| | otSt | OUT allocation change | oFF, on | Displayed only when 2-stage preset counter, Batch counter, or Twin counter is selected for H7CC-□W(U)□. (oFF: OUT1=12, 13 OUT2=3, 4, 5 / on: OUT1=3, 4, 5 OUT2=12, 13 (The numbers are the terminals numbers.)) |
| | kYPt | Key protect level | kP-1, kP-2, kP-3, kP-4, kP-5, kP-6, kP-7 | --- |
| | ● Models other than "-□W(U)□" Models | | | |
| | ot-C | Output inversion | n-o, n-C | --- |
| | bPUP | Memory back up | on, oFF | --- |
| | H7AM | H7AN compatible function | oFF, on | When it is ON, the count will shift from 0 to 999999. Disable the H7AN compatible function when replacing from the H7CX, or H7CX-N. |
| | indC | Indicator display mode | on, AtoF, Atit | --- |
| | on-A | Output ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on-C | Output ON count monitor value | --- | The monitored value is only displayed. It cannot be set. × 1,000 |
| | ot-A | Total run time alarm set value | 0.0 to 100 to 99.9 | Unit: year |
| | ot-C | Total run time monitor value | --- | The Total run time monitor value is only displayed. It cannot be set. |
| | uEr | Software version | --- | The software version is only displayed. It cannot be set. |
| | ● "-□W(U)□" Models | | | |
| | ot1C | Output 1 inversion | n-o, n-C | --- |
| | ot2C | Output 2 inversion | n-o, n-C | --- |
| | bPUP | Memory back up | on, oFF | --- |
| | H7AM | H7AN compatible function | oFF, on | When it is ON, the count will shift from 0 to 999999. Disable the H7AN compatible function when replacing from the H7CX, or H7CX-N. |
| | indC | Indicator display mode | on, AtoF, Atit | --- |
| | on1A | Output 1 (OUT1) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on2A | Output 2 (OUT2) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on1C | Output 1 (OUT1) ON count monitor value | --- | The monitored value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 (OUT2) ON count monitor value | --- | The monitored value is only displayed. It cannot be set. × 1,000 |
| | ot-A | Total run time alarm set value | 0.0 to 100 to 99.9 | Unit: year |
| | ot-C | Total run time monitor value | --- | The Total run time monitor value is only displayed. It cannot be set. |
| | uEr | Software version | --- | The software version is only displayed. It cannot be set. |

# [ Operation Methods ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

## ■Function Setting Mode〈when using as a Counter〉Continued

*1: When using Dual Counter operation

| | | | |
|---|---|---|---|
| CALm | Dual count calculating mode | Add, SUb | The subtraction counter (sub) is displayed only when the output mode is P-2, d, L or H. |

*2: Set each digit using the individual UP and DOWN Keys for the following configuration selection modes.

| | | | |
|---|---|---|---|
| ● 2-stage Preset Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, P-1, P, 9, R, or P-2. Unit: second |
| otm1 | One-shot output 1 time | HoLd/0.01 to 99.99 | If the output time is 0.00, HoLd is displayed. Unit: second<br>Displayed for output modes other than d, L, and H.<br>HoLd cannot be set when the output mode is P-2. |
| ● Batch Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, P-1, P, 9, R, or P-2. Unit: second |
| ● Twin Counter | | | |
| otm2 | One-shot output 2 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, P-1, P, 9, or R. Unit: second |
| otm1 | One-shot output 1 time | 0.01 to 0.50 to 99.99 | Displayed only when the output mode is C, r, P-1, P, 9, or R. Unit: second |

## ■Function Setting Mode〈when using as a Tachometer〉

| | Display | Parameter name | Set value | Comments |
|---|---|---|---|---|
| Function setting mode | tInm | Tachometer input mode | F1, F2, F3, F4, F5 | --- |
| | totm | Tachometer output mode *1 | HLo, ArEA, HcHc, LoLo | The indicator display is disabled during the upper or lower limit setting. |
| | CntS | Counting speed | 30Hz, 10kHz *2 | --- |
| | dP | Decimal point position | ------, -----.-, ----.--, ---.---, --.---- | "--.----" will be displayed when pulse width measurement is set or when the display unit is set to seconds. |
| | PSCL | Prescale value | 0.001 to 1.000 to 99.999 | --- |
| | AuCt | Averaging method | SmP, mu | --- |
| | AuCn | Averaging processing | oFF, 2, 4, 8, 16 | --- |
| | AUtoO | Auto-zero time | 0.1 to 999.9 | Unit: second |
| | Stmr | Startup time | 0.0 to 99.9 | Unit: second |
| | InMod | NPN/PNP input mode | nPn, PnP | --- |
| | dHLd | Peak/bottom hold enabled | oFF, on | --- |
| | HYS | Output hysteresis | 0 to 99999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. Unit: second |
| | oFFd | Output OFF delay | 0.00 to 19.99 | --- |
| | SL-H | Set value upper limit | 1 to 999999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. |
| | otSt | OUT allocation change | oFF, on | oFF: OUT1=12, 13 OUT2=3, 4, 5 /<br>on: OUT1=3, 4, 5 OUT2=12, 13<br>(The numbers are the terminals numbers.) |
| | kYPt | Key protect level | kP-1, kP-2, kP-3, kP-4, kP-5, kP-6, kP-7 | --- |
| | ot1i | Output 1 inversion | n-o, n-C | --- |
| | ot2i | Output 2 inversion | n-o, n-C | --- |
| | CALm | Pulse cycle measurement/ pulse width measurement | PHAS, ycdE | --- |
| | Unit | Display unit | Hz, S | Displayed only when pulse cycle measurement is used. |
| | Intu | Measurement cycle | 200mS, Cont | Displayed only if the measurement speed is 10 kHz when pulse cycle measurement is used. |
| | IndC | Indicator display mode | on, RLoF, RLLt | --- |
| | on1R | Output 1 (OUT1) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on2R | Output 2 (OUT2) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on1C | Output 1 (OUT1) ON count monitor value | --- | The monitored value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 (OUT2) ON count monitor value | --- | The monitored value is only displayed. It cannot be set. × 1,000 |
| | ot-R | Total run time alarm set value | 0.0 to 100.0 to 99.9 | Unit: year |
| | ot-C | Total run time monitor value | --- | The Total run time monitor value is only displayed. It cannot be set. |
| | uEr | Software version | --- | The software version is only displayed. It cannot be set. |

## [ Operation Methods ] H7CC-A[] series

**Recommended replacement**
**H7CC-A[] series**

### ■Function Setting Mode〈when using as a Tachometer〉Continued

*1: When the tachometer input mode is F2 (2 inputs), set tachometer output modes 1 and 2 using the UP or DOWN Key.

| | | | |
|---|---|---|---|
| to 1m | Tachometer output mode 1 | Hz, Lo | --- |
| to2m | Tachometer output mode 2 | Hz, Lo | --- |

*2: Even if 10 kHz is selected when the tachometer input mode is F2 to F5, the counting speed will be 5 kHz.

# [ Operation Methods ] H7CC-R[] series

**Recommended replacement**
**H7CC-R[] series**

## Display Section

**1. Hold Indicator** (yellow)
(Lit when hold operation is performed. )

**2. Key Protect Indicator** (yellow)
Lit when the key protect switch is ON.

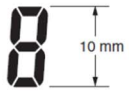
**3. Control Output Indicator** (yellow)
OUT (1-output models)
OUT 1 2 (2-output models)

**4. Comparison Value 1, 2 Stage Indicator**

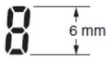
**5. Present Value (Main Display)**
Character height: 10 mm (white)

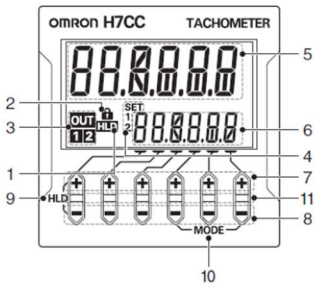
**6. Comparison Value (Sub-display)**
Character height: 6 mm (green)

Character Size for Main Display




Character Size for Sub-display




## Operation Keys

**7. Up Keys (UP1 to UP6)**
(UP1, 2, 3, 4, 5, 6 from right to left)

**8. Down Keys (DW1 to DW6)**
(DW1, 2, 3, 4, 5, 6 from right to left)

**9. Hold Operation (UP6+DW6)**

1. Press HLD keys (UP6+DW6) simultaneously for at least one second.
2. LED on each key starts blinking.
   Do not release the keys until the LED starts blinking. Otherwise the setting value may change. If not blink, that is because the keys are not pressed simultaneously. In this case, release the keys after pressing for at least 1 second, and restart from 1.
3. Press and hold until the LED turns off. If you release the keys while blinking, the hold operation will be interrupted.

**10. Mode Operation (UP1+UP3 or DW1+DW3)**

<Change of setting item>

1. Press MODE keys (UP1+UP3 or DW1+DW3) simultaneously to switch setting items.

<Move to Function Setting Mode>

1. Press MODE key (UP1+UP3 or DW1+DW3) for at least 2 seconds simultaneously.
2. LEDs on UP1 (DW1) and UP3 (DW3) key start blinking.
   Do not release the keys until the LEDs start blinking. Otherwise the setting value may change. If not blink, that is because the keys are not pressed simultaneously. In this case, release the keys after pressing for at least one second, and restart from 1.
3. Press and hold until the LED turns off. If you release the keys during blinking, the mode will not be moved to Function Setting Mode.

DW1+DW3

**11. Status indicator**

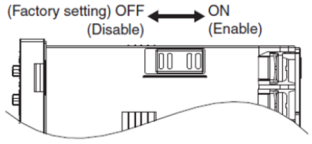
<When Run mode is not selected.>
· When the indicator display mode is ON
If "Upper and lower limit" or "Area" is selected in the tachometer output mode, the ratio of the measurement value to the comparison value is displayed from 0 to 100%.
· When the indicator display mode is all off or all lit
All off or all lit display.

**Note.** When you press the Up Key or the Down Key, the indicator display or all-lit display goes off, and the pressed key lights up or blinks.

<When Function Setting Mode is not selected>
· The keys that can be set light up for notification.

## Switches

**12. Key-protect Switch**

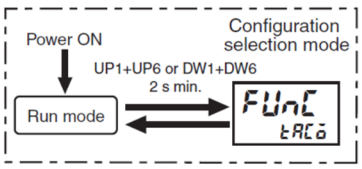


# [ Operation Methods ] H7CC-R[] series

**Recommended replacement**
**H7CC-R[] series**

## ■Function Setting Mode

The H7CC-R is a Tachometer that contains more than one functional tachometer.
When using the Tachometer in any modes other than the default modes, use the following chart to enter configuration selection mode and set the functions that are suitable to the application.
(Default mode: Tachometer)




Select Tachometer or AMD Compatible by UP1 Key or DW1 Key (H7CC-R11□ only).

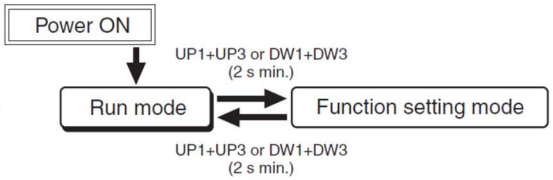
(Tachometer) (AMD Compatible)

## ■Function Setting Mode〈when using as a Counter〉

### Change to Function Setting Mode.

Set the parameters using the UP Key or DOWN Key.
The characters displayed in reverse video are the default settings

Note: Refer to the datasheet for detailed parameter settings.




| | Display | Parameter name | Set value | Comments |
|---|---|---|---|---|
| Function setting mode | toto | Tachometer output mode *1 | HCLo, ArEA, HCHC, LoLo | The indicator display is disabled during the upper or lower limit setting. |
| | CntS | Counting speed | 30Hz, 10kHz (10mS, 1mS: AMD Compatible) | --- |
| | dP | Decimal point position | ------, -----.-, ----.--, ---.--- | --- |
| | PSCL | Prescale value | 0.001 to 1000 to 99.999 | Not displayed in AMD compatibility mode. |
| | AuGt | Averaging method | SAP, Au | --- |
| | AuGn | Average processing | oFF, 2, 4, 8, 16 | --- |
| | AUtoO | Auto-zero time | 0.1 to 999.9 | Unit: second Not displayed in AMD compatibility mode. |
| | Stmr | Startup time | 0.0 to 99.9 | Unit: second |
| | inMod | NPN/PNP input mode | nPn, PnP | --- |
| | dHLd | Peak/bottom hold enabled | oFF, on | --- |
| | HYS | Output hysteresis | 0 to 99999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. |
| | oFFd | Output OFF delay | 0.00 to 19.99 | Unit: second |
| | SL-H | Set value upper limit | 1 to 999999 | The position of the decimal point for the value after prescaling will be set according to the decimal point position setting. |
| | otSt | OUT allocation change | oFF, on | Displayed only for "-R11W□" models (oFF: OUT1=8, 9, 11 OUT2=4, 7 / on: OUT1=4, 7 OUT2=8, 9, 11 (The numbers are the terminals numbers.)) |
| | KYPt | Key protect level | KP-0, KP-2, KP-3, KP-4, KP-5, KP-6, KP-7 | --- |
| | Models other than "-R11W□" Models | | | |
| | ot-i | Output inversion | n-o, n-C | --- |
| | indC | Indicator display mode | on, RLoF, RLLt | --- |
| | on-A | Output ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on-C | Output ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | ot-A | Total run time alarm set value | 0.0 to 10.0 to 99.9 | Unit: year |
| | ot-C | Total run time monitor value | --- | The Total run time monitor value is only displayed. It cannot be set. |
| | uEr | Software version | --- | The software version is only displayed. It cannot be set. |
| | "-R11W□" Models | | | |
| | ot1i | Output 1 inversion | n-o, n-C | --- |
| | ot2i | Output 2 inversion | n-o, n-C | --- |
| | indC | Indicator display mode | on, RLoF, RLLt | --- |
| | on1A | Output 1 (OUT1) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on2A | Output 2 (OUT2) ON count alarm set value | 0 to 100 to 9999 | × 1,000 |
| | on1C | Output 1 (OUT1) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | on2C | Output 2 (OUT2) ON count monitor value | --- | The monitor value is only displayed. It cannot be set. × 1,000 |
| | ot-A | Total run time alarm set value | 0.0 to 10.0 to 99.9 | Unit: year |
| | ot-C | Total run time monitor value | --- | The Total run time monitor value is only displayed. It cannot be set. |
| | uEr | Software version | --- | The software version is only displayed. It cannot be set. |

*1. "-R11W□" Models can set tachometer output mode 1 or 2 with the UP or DOWN Key.

| Display | Parameter name | Set value | Comments |
|---|---|---|---|
| to1m | Tachometer output mode 1 | HC, Lo | --- |
| to2m | Tachometer output mode 2 | HC, Lo | --- |

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Only main changes in specifications are described in this document. Please be sure to read the relevant catalogs, datasheets, product specifications, instructions, and manuals for precautions and necessary information when using products.