

# Digital Timer H5CX

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to *Safety Precautions (Common)* on page 47.

## DIN 48 × 48-mm Multifunction Digital Timer/2-stage Digital Timer

- Highly visible display with backlit negative transmissive LCD.
- Finger-safe terminals (screw terminal block models).
- Complies with IP66, NEMA4, and UL Type 4X (when using the Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter).

### H5CX Series

#### H5CX-A/-L



**Multifunction Digital Timer  
with 4-digit display**  
H5CX-A (standard type)  
H5CX-L (economy type)

#### H5CX-B



**2-stage Digital Timer  
with 6-digit display**  
H5CX-B

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# Multifunction Digital Timer H5CX-A/-L

## DIN 48 × 48-mm Multifunction Digital Timer with a Bright, Easy-to-view, Negative Transmissive LCD.

- Programmable PV color to visually alert when output status changes (screw terminal block models).
- Intuitive setting enabled using DIP switch (H5CX-A/-A11 models) and ergonomic up/down digit keys.
- Twin timer in one body to meet a broader range of cyclic control application requirements as well as ON/OFF duty adjustable flicker mode.
- PNP/NPN switchable DC-voltage input (H5CX-A/-A11 models).
- Meet a variety of mounting requirements: Screw terminal block models, and pin-style terminal models.
- Six-language instruction manual.



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## Model Number Structure

### Model Number Legend

H5CX-

|   |   |   |   |   |
|---|---|---|---|---|
| □ | □ | □ | □ | □ |
| 1 | 2 | 3 | 4 | 5 |

#### 1. Type classifier

- A: Standard type
- L: Economy type

#### 2. External connection

- None: Screw terminals
- 8: 8-pin socket
- 11: 11-pin socket

#### 3. Output type

- None: Contact output
- S: Transistor output

#### 4. Supply voltage

- None: 100 to 240 VAC 50/60 Hz
- D: 12 to 24 VDC/24 VAC 50/60 Hz

#### 5. Case color

- None: Black
- G: Light gray (Munsell 5Y7/1): Produced upon request.

## Ordering Information

### List of Models

| Output type       | Supply voltage      | Models          |               |              |
|-------------------|---------------------|-----------------|---------------|--------------|
|                   |                     | Standard type   |               | Economy type |
|                   |                     | Screw terminals | 11-pin socket | 8-pin socket |
| Contact output    | 100 to 240 VAC      | H5CX-A          | H5CX-A11      | H5CX-L8      |
|                   | 12 to 24 VDC/24 VAC | H5CX-AD         | H5CX-A11D     | H5CX-L8D     |
| Transistor output | 100 to 240 VAC      | H5CX-AS         | H5CX-A11S     | H5CX-L8S     |
|                   | 12 to 24 VDC/24 VAC | H5CX-ASD        | H5CX-A11SD    | H5CX-L8SD    |

**Note:** Depending on the wiring, unwanted current from the AC power supply may occasionally burn out internal parts. H5CX-A/-L (except for H5CX-A11/-A11S) models do not have a transformer. Therefore, the power supply and input circuit are not insulated. Refer to *Safety Precautions (H5CX-A/-L)* on page 49 for wiring details. The power supply and input circuit for H5CX-A11/-A11S models have basic insulation.

### Accessories (Order Separately)

| Name                                       | Models                   |                                     |
|--|--------------------------|-------------------------------------|
| Flush Mounting Adapter (See note 1.)       | Y92F-30                  |                                     |
| Waterproof Packing (See note 1.)           | Y92S-29                  |                                     |
| Track Mounting/<br>Front Connecting Socket | 8-pin                    | P2CF-08                             |
|  | 8-pin, finger-safe type  | P2CF-08-E                           |
|  | 11-pin                   | P2CF-11                             |
|  | 11-pin, finger-safe type | P2CF-11-E                           |
| Back Connecting Socket                     | 8-pin                    | P3G-08                              |
|  | 8-pin, finger-safe type  | P3G-08 with Y92A-48G (See note 2.)  |
|  | 11-pin                   | P3GA-11                             |
|  | 11-pin, finger-safe type | P3GA-11 with Y92A-48G (See note 2.) |
| Hard Cover                                 | Y92A-48                  |                                     |
| Soft Cover                                 | Y92A-48F1                |                                     |
| Mounting Track                             | 50 cm (l) × 7.3 mm (t)   | PFP-50N                             |
|  | 1 m (l) × 7.3 mm (t)     | PFP-100N                            |
|  | 1 m (l) × 16 mm (t)      | PFP-100N2                           |
| End Plate                                  | PFP-M                    |                                     |
| Spacer                                     | PFP-S                    |                                     |

**Note 1.** Supplied with H5CX-A□ models (except for H5CX-A11□ and H5CX-L8□ models).

**2.** Y92A-48G is a finger-safe terminal cover attached to the P3G-08 or P3GA-11 Socket.

# Specifications

## ■ Ratings

| Item                             | H5CX-A□   | H5CX-A11□  | H5CX-L8□   |
|----------------------------------|---|--|--|
| Classification                   | Digital timer   |  |  |
| Rated supply voltage             | 100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC (permissible ripple: 20% (p-p) max.)  |  |  |
| Operating voltage range          | 85% to 110% rated supply voltage (12 to 24 VDC: 90% to 110%)  |  |  |
| Power consumption (See note 1.)  | Approx. 6.2 VA at 264 VAC<br>Approx. 5.1 VA at 26.4 VAC<br>Approx. 2.4 W at 12 VDC  |  |  |
| Mounting method                  | Flush mounting  | Flush mounting, surface mounting, DIN track mounting   |  |
| External connections             | Screw terminals   | 11-pin socket  | 8-pin socket   |
| Terminal screw tightening torque | 0.5 N·m max.  | ---  |  |
| Display (See note 2.)            | 7-segment, negative transmissive LCD;<br>Present value:<br>11.5-mm-high characters,<br>red or green (programmable)<br>Set value: 6-mm-high characters, green  | 7-segment, negative transmissive LCD<br>Present value:<br>11.5-mm-high characters, red<br>Set value: 6-mm-high characters, green |  |
| Digits                           | 4 digits  |  |  |
| Time ranges                      | 9.999 s (0.001-s unit), 99.99 s (0.01-s unit), 999.9 s (0.1-s unit), 9999 s (1-s unit), 99 min 59 s (1-s unit)<br>999.9 min (0.1-min unit), 9999 min (1-min unit), 99 h 59 min (1-min unit), 999.9 h (0.1-h unit), 9999 h (1-h unit)  |  |  |
| Timer mode                       | Elapsed time (Up), remaining time (Down) (selectable)   |  |  |
| Input signals                    | Signal, reset, gate   |  | Signal, reset  |
| Input method                     | No-voltage input/voltage input (switchable)<br><u>No-voltage Input</u><br>ON impedance: 1 kΩ max. (Leakage current: 5 to 20 mA when 0 Ω)<br>ON residual voltage: 3 V max.<br>OFF impedance: 100 kΩ min.<br><u>Voltage Input</u><br>High (logic) level: 4.5 to 30 VDC<br>Low (logic) level: 0 to 2 VDC<br>(Input resistance: approx. 4.7 kΩ)   |  | <u>No-voltage Input</u><br>ON impedance: 1 kΩ max. (Leakage current: 5 to 20 mA when 0 Ω)<br>ON residual voltage: 3 V max.<br>OFF impedance: 100 kΩ min. |
| Signal, reset, gate              | Minimum input signal width: 1 or 20 ms (selectable, same for all input)   |  |  |
| Reset system                     | Power resets (except for A-3, b-1, and F modes), external and manual reset  |  |  |
| Power reset                      | Minimum power-opening time: 0.5 s (except for A-3, b-1, and F mode)   |  |  |
| Reset voltage                    | 10% max. of rated supply voltage  |  |  |
| Sensor waiting time              | 250 ms max. (Control output is turned OFF and no input is accepted during sensor waiting time.)   |  |  |
| Output modes                     | A, A-1, A-2, A-3, b, b-1, d, E, F, Z, ton or toff   |  |  |
| One-shot output time             | 0.01 to 99.99 s   |  |  |
| Control output                   | SPDT contact output: 5 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 max.<br>residual voltage: 1.5 VDC max. (Approx. 1 V)<br>Leakage current: 0.1 mA max.<br>Output category according to EN60947-5-1 for Timers with Contact Outputs (AC-15; 250 V 3 A/AC-13; 250 V 5 A/DC-13; 30 V 0.5 A)<br>Output category according to EN60947-5-2 for Timers with Transistor Outputs (DC-13; 30 V 100 mA)<br>NEMA B300 Pilot Duty, 1/4 HP 5-A resistive load at 120 VAC, 1/3 HP 5-A resistive load at 240 VAC |  |  |
| Key protection                   | Yes   |  |  |
| Memory backup                    | EEPROM (overwrites: 100,000 times min.) that can store data for 10 years min.   |  |  |
| Ambient temperature              | Operating: -10 to 55°C (-10 to 50°C if timers are mounted side by side) (with no icing or condensation)<br>Storage: -25 to 65°C (with no icing or condensation)   |  |  |
| Ambient humidity                 | 25% to 85%  |  |  |
| Case color                       | Black (N1.5)  |  |  |
| Attachments                      | Waterproof packing,<br>flush mounting adapter,<br>label for DIP switch settings   | Label for DIP switch settings  | None   |

**Note 1.** Inrush current will flow for a short time when the power supply is turned ON. Refer to *Inrush Current (Reference Values)* on page 6.  
**2.** The display is lit only when the power is ON.

## ■ Characteristics

| Item  | H5CX-A□/-A11□/-L8□   |
|---|--|
| Accuracy of operating time and setting error (including temperature and voltage influences) (See note 1.) | Power-ON start: $\pm 0.01\% \pm 50$ ms max. Rated against set value<br>Signal start: $\pm 0.005\% \pm 30$ ms max. Rated against set value<br>Signal start for transistor output model: $\pm 0.005\% \pm 3$ ms max. (See note 2.)<br>If the set value is within the sensor waiting time at startup the control output of the H5CX will not turn ON until the sensor waiting time passes.  |
| Insulation resistance   | 100 M $\Omega$ min. (at 500 VDC) between current-carrying terminal and exposed non-current-carrying metal parts, and between non-continuous contacts   |
| Dielectric strength   | 2,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and non-current-carrying metal parts<br>1,000 VAC (for H5CX-□SD), 50/60 Hz for 1 min between control output, power supply, and input circuit (2,000 VAC for models other than H5CX-□SD)<br>1,000 VAC, 50/60 Hz for 1 min between non-continuous contacts  |
| Impulse withstand voltage   | 3 kV (between power terminals) for 100 to 240 VAC, 1 kV for 24 VAC/12 to 24 VDC<br>4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 240 VAC<br>1.5 kV for 24 VAC/12 to 24 VDC  |
| Noise immunity  | $\pm 1.5$ kV (between power terminals) and $\pm 600$ V (between input terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 $\mu$ s, 1-ns rise)  |
| Static immunity   | Destruction: 15 kV<br>Malfunction: 8 kV  |
| Vibration resistance  | Destruction: 10 to 55 Hz with 0.75-mm single amplitude each in three directions, 2 hours each<br>Malfunction: 10 to 55 Hz with 0.35-mm single amplitude each in three directions, 10 min each  |
| Shock resistance  | Destruction: 294 m/s <sup>2</sup> each in three directions<br>Malfunction: 196 m/s <sup>2</sup> each in three directions   |
| Life expectancy   | Mechanical: 10,000,000 operations min. (under no load at 18,000 operations/h)<br>Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h)<br>See <i>Life-test Curve</i> on page 6.   |
| Approved safety standards (See notes 3 and 4.)  | UL508/Listing, UL50 Type 4X for indoor use (enclosure rating), CSA C22.2 No. 14, conforms to EN61812-1 (Pollution degree 2/overvoltage category III)<br>Conforms to VDE0106/P100 (finger protection).  |
| EMC   | (EMI) EN61812-1<br>Emission Enclosure: EN55011 Group 1 class A<br>Emission AC mains: EN55011 Group 1 class A<br>(EMS) EN61812-1<br>Immunity ESD: EN61000-4-2: 6 kV contact discharge (level 2)<br>8 kV air discharge (level 3)<br>Immunity RF-interference: EN61000-4-3: 10 V/m (Amplitude-modulated, 80 MHz to 1 GHz) (level 3);<br>10 V/m (Pulse-modulated, 900 MHz $\pm 5$ MHz) (level 3)<br>Immunity Conducted<br>Disturbance: EN61000-4-6: 10 V (0.15 to 80 MHz) (level 3)<br>Immunity Burst: EN61000-4-4: 2 kV power-line (level 3);<br>1 kV I/O signal-line (level 4)<br>Immunity Surge: EN61000-4-5: 1 kV line to lines (power and output lines) (level 3);<br>2 kV line to ground (power and output lines) (level 3)<br>Immunity Voltage Dip/Interruption EN61000-4-11: 0.5 cycle, 100% (rated voltage) |
| Degree of protection  | Panel surface: IP66 and NEMA4 (indoors), and UL Type 4X (indoors) (See note 4.)  |
| Weight  | H5CX-A□: Approx. 135 g, H5CX-A11□/-L8□: Approx. 105 g  |

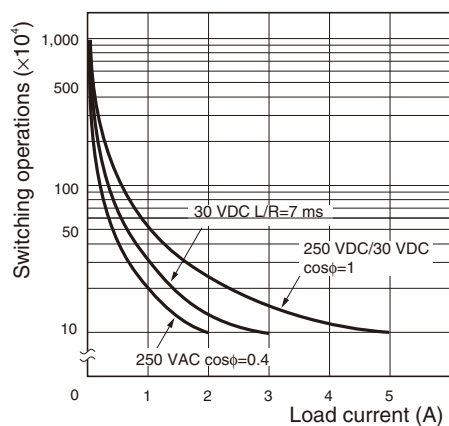
**Note 1.** The values are based on the set value.

**2.** The value is applied for a minimum pulse width of 1 ms.

**3.** To meet UL listing requirements with H5CX-L8□/-A11□ models, an OMRON P2CF-08-□ or P3G-08 Socket must be mounted on the Timer. Otherwise, H5CX-L8□/-A11□ models are considered to meet UL508 recognition requirements.

**4.** The Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter are necessary to ensure IP66, NEMA4, and UL Type 4X water-proofing between the H5CX and installation panel.

## Life-test Curve (Reference Values)



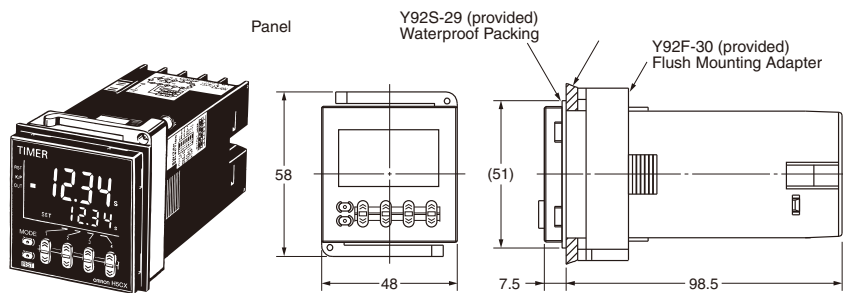
Reference: A maximum current of 0.15 A can be switched at 125 VDC ( $\cos\phi=1$ ) and a maximum current of 0.1 A can be switched if  $L/R$  is 7 ms. In both cases, a life of 100,000 operations can be expected. The minimum applicable load is 10 mA at 5 VDC (failure level: P).

## Inrush Current (Reference Values)

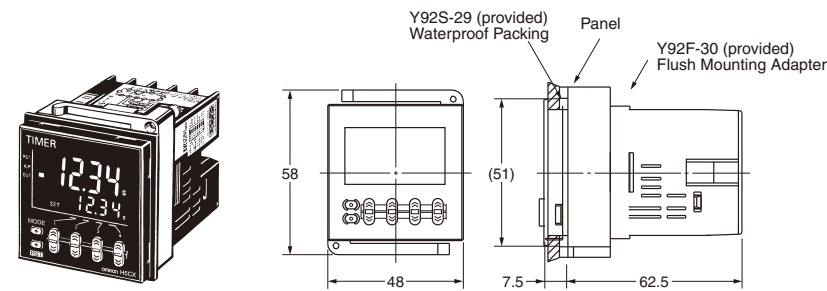
| Voltage                 | Applied voltage | Inrush current (peak value) | Time   |
|-------------------------|-----------------|-----------------------------|--------|
| 100 to 240 VAC          | 264 VAC         | 5.3 A                       | 0.4 ms |
| 24 VAC/<br>12 to 24 VDC | 26.4 VAC        | 6.4 A                       | 1.4 ms |
|                         | 26.4 VDC        | 4.4 A                       | 1.7 ms |

## ■ Dimensions with Flush Mounting Adapter

### H5CX-A/-AS (Provided with Adapter and Waterproof Packing)

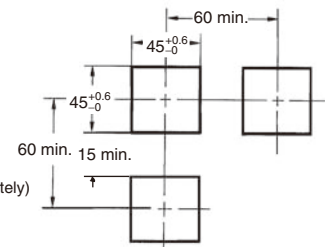


### H5CX-AD/-ASD (Provided with Adapter and Waterproof Packing)

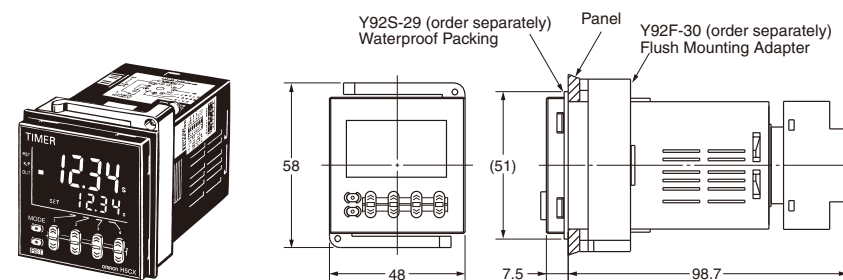


#### Panel Cutouts

Panel cutouts areas shown below. (according to DIN43700).

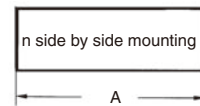
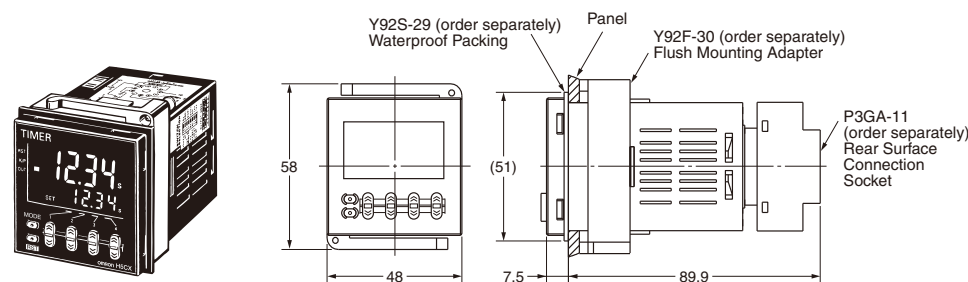


### H5CX-A11/-A11S (Adapter and Waterproof Packing Ordered Separately)



- Note**
1. The mounting panel thickness should be 1 to 5 mm.
  2. To allow easier operability, it is recommended that Adapters are mounted so that the gap between sides with hooks is at least 15 mm.
  3. It is possible to mount timers side by side, but only in the direction without the hooks.

### H5CX-A11D/-A11SD (Adapter and Waterproof Packing Ordered Separately)



$$A = (48n - 2.5) \begin{matrix} +1 \\ 0 \end{matrix}$$

With Y92A-48F1 attached.  

$$A = \{48n - 2.5 + (n-1) \times 4\} \begin{matrix} +1 \\ 0 \end{matrix}$$

With Y92A-48 attached.  

$$A = (51n - 5.5) \begin{matrix} +1 \\ 0 \end{matrix}$$

### H5CX-L8 (Adapter and Waterproof Packing Ordered Separately)

