OMRON

Digital Timer
H5CX-□-N

Ultra-compact Timer Provides Advanced Functions and Security Settings.

Basic Features

- Short body with depth of only 59 mm (for 24-VAC / 12 to 24-VDC Models with Screw Terminals). ✻1
- Character height of 12 mm for better readability (on models with 4 digits).
- The present value display characters can be switched between red, green, and orange. ✻2

Safety and Reliability

- Power supply circuit and input circuits are isolated for safety and reliability. ✻3
- New set value limit and output counter functions have been added. ✻4

Other Features

- Front Panel can be changed to white or light gray. ✻5
- Models with instantaneous contact output added to the series.

✻1. For 100 to 240 VAC Models with Screw Terminals 78 mm, Models with Sockets: 63.7 mm (case dimension).
✻2. The H5CX-A11, H5CX-L8 and H5CX-B Timers have only red characters.
✻3. Specifications: 100 to 240 VAC
✻4. The value of the output counter can only be monitored. It cannot be reset.
✻5. Replacement Front Panels sold separately.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Refer to "**Safety Precautions**" on **page 41**.

Features

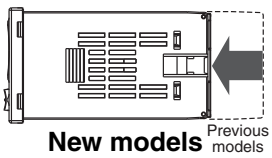
Basic Features

Ultra Short Body

The body depth has been greatly reduced. Helps in making thinner control panels. (Models with Screw Terminals)

24-VAC / 12 to 24-VDC Models with Screw Terminals: 59 mm
100 to 240-VAC / VDC Models with Screw Terminals: 78 mm ✻
Models with Sockets: 63.7 mm (case dimension)

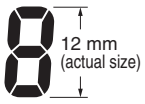
✻ The shortest body for a timer with isolated power supply and input circuits and a maximum ambient temperature of 55°C (according to OMRON investigation in June 2009).



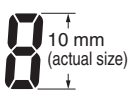
Easier to Read

For better readability, the character height for the present value display is 12 mm (on models with 4 digits), the largest class in the industry. The wide viewing angle and brightness provide excellent visibility.
The number of display segments has also been increased to make settings easier to understand, and the present value display can be switched between red, green and orange so that output status can be seen from a distance.

Model with 4 Digits



Model with 6 Digits



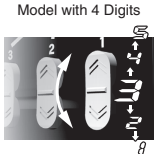
(Display example)

Note: The H5CX-A11 and H5CX-L8 Timers have only red characters.

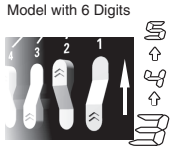
The Easiest Operation

Operation is simplified by the Up/Down Keys for each digit on 4-digit models and Up Keys for each digit on 6-digit models.

Model with 4 Digits



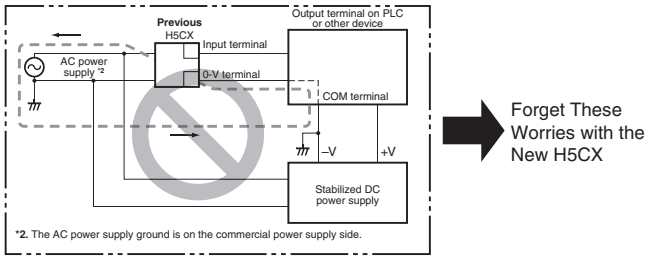
Model with 6 Digits



Safety and Reliability

Isolated Power Supply and Input Circuits ✻1

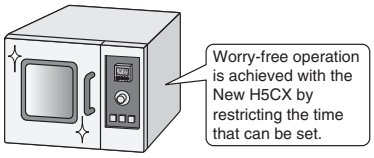
Power supply circuit and input circuits are isolated for safety and reliability.
Previous non-isolated timers had wiring restrictions and could be damaged if wired incorrectly. The New H5CX removes these worries.



✻1. New Models (H5CX-□-N) with 100 to 240-VAC specifications.

Set Value Limit

You can set an upper limit for the set value to prevent unexpected operation of output devices caused by setting mistakes.



Output Counter

An output counter counts the number of times that the output turns ON. (An alarm can be set and the value of the output counter can be monitored, Unit: 1,000 operations.) This counter is useful in managing the service life of the Timrrer or the load.

Other Features

Change the Front Panel Color

The Front Panel can be replaced with an optional Front Panel (order separately) with a different color to match the installation site. Select from black, white, and light gray.

Black (standard) | White | Light gray

You can replace the Front Panel.

Models with Instantaneous Contact Output

Models with instantaneous contact outputs have been added to the lineup for use with self-holding circuits and as auxiliary relays. These models are also convenient when replacing analog timers.

Universal NPN/PNP Input

DC 2-wire sensors can be connected for a wide range of input devices.

Waterproof, Dust-proof Structure (UL508 Type 4X and IP66)

Worry-free application is possible in locations subject to water.
Note: When the Y92S-29 Waterproof Packing is used.

Key Protection

Select from any of seven protection patterns. Use the best one for the application.

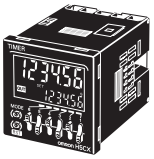
New Modes

Modes, such as a stopwatch mode (Mode S), have been added. Select any of 15 modes.

Model Number Structure

Model Configuration

H5CX Series

Type		Standard Type H5CX-A Series		Economy Type H5CX-L Series		Six-digit Type
						
Model		**H5CX-A□-N**	**H5CX-A11□-N**	**H5CX-L8□-N**	**H5CX-L8E□-N**	**H5CX-BWSD-N**
Function	**Timer**	Yes		Yes		No
	Twin timer	Yes		Yes		No
	Two-stage settings/ forecast output	No		No		Yes
Operating modes		Timer Mode: 11 modes Twin Timer Mode: 4 modes			Timer Mode : 4 modes Twin Timer Mode : 2 modes	Timer Mode: 2 modes
Input		NPN/PNP input		NPN input	None	NPN/PNP input
External connections		Screw terminal block	11-pin socket	8-pin socket		Screw terminal block
Present value display character color		Red, green, or orange	Red			
Number of display digits		4				6
Instantaneous contacts		None			Provided	None
Gate input		Supported		Not supported		Supported
DIP switch settings		Provided		None		Provided
Power supply voltage		100 to 240 VAC or 24 VAC/12 to 24 VDC				12 to 24 VDC

Model Number Legend (Not all possible combinations of functions are available.)

H5CX-□□□□□-N
1 2 3 4 5

1. Type Classifier

Symbol	Meaning
A	Standard type
B	6-digit type
L	Economy type

2. External Connections

Symbol	Meaning
None	Screw terminals
8	8-pin socket
11	11-pin socket

3. Settings

Symbol	Meaning
None	One stage
W	Two stages

4. Output type

Symbol	Meaning
None	Contact output (time-limit SPDT)
E	Contact output (time-limit SPDT + instantaneous SPDT) *
S	Transistor output

* Can be used as a time-limit DPDT output.

5. Supply voltage

Symbol	Meaning
None	100 to 240 VAC 50/60 Hz
D	12 to 24 VDC/24 VAC 50/60 Hz *

* The H5CX-BWSD-N is available only for 12 to 24 VDC.

Note: Estimates can be provided for coatings and other specifications that are not given in the datasheet. Ask your OMRON representative for details.

Ordering Information

List of Models

Type	Time specifications	Operating modes	External connections	Inputs	Outputs	Supply voltage	Models
H5CX-A	0.001 to 9.999 s 0.01 to 99.99 s 0.1 to 999.9 s 1 to 9999 s 1 s to 99 min 59 s 0.1 to 999.9 min 1 to 9999 min 1 min to 99 h 59 min 0.1 to 999.9 h 1 to 9999 h	Timer Mode A: Signal ON Delay I A-1: Signal ON Delay II A-2: Power ON Delay I A-3: Power ON Delay II b: Repeat cycle 1 b-1: Repeat cycle 2 d: Signal OFF Delay E: Interval F: Cumulative Z: ON/OFF-duty-adjustable flicker S: Stopwatch	Screw terminals	Signal, Reset, Gate (NPN/ PNP inputs)	Contact output (time-limit SPDT)	100 to 240 VAC	**H5CX-A-N**
						12 to 24 VDC/ 24 VAC	**H5CX-AD-N**
					Transistor output (SPST)	100 to 240 VAC	**H5CX-AS-N**
						12 to 24 VDC/ 24 VAC	**H5CX-ASD-N**
			11-pin socket		Contact output (time-limit SPDT)	100 to 240 VAC	**H5CX-A11-N**
						12 to 24 VDC/ 24 VAC	**H5CX-A11D-N**
					Transistor output (SPST)	100 to 240 VAC	**H5CX-A11S-N**
						12 to 24 VDC/ 24 VAC	**H5CX-A11SD-N**
H5CX-L		Twin Timer Mode toff: Flicker OFF Start 1 ton: Flicker ON Start 1 toff-1: Flicker OFF Start 2 ton-1: Flicker ON Start 2	8-pin socket	Signal, Reset (NPN inputs)	Contact output (time-limit SPDT)	100 to 240 VAC	**H5CX-L8-N**
						12 to 24 VDC/ 24 VAC	**H5CX-L8D-N**
					Transistor output (SPST)	100 to 240 VAC	**H5CX-L8S-N**
						12 to 24 VDC/ 24 VAC	**H5CX-L8SD-N**
		Timer Mode A-2: Power ON Delay I b: Repeat cycle 1 E: Interval Z: ON/OFF-duty-adjustable flicker Twin Timer Mode toff: Flicker OFF Start 1 ton: Flicker ON Start 1		None	Contact output (time-limit SPDT + instantaneous SPDT) Models with instantaneous contact outputs	100 to 240 VAC	**H5CX-L8E-N**
						12 to 24 VDC/ 24 VAC	**H5CX-L8ED-N**
H5CX-B	0.01 to 9999.99 s 1 s to 99 h 59 min 59 s 0.1 to 99999.9 min 0.1 to 99999.9 h	A: Signal ON Delay I F-1: Cumulative	Screw terminals	Signal, Reset, Gate (NPN/ PNP inputs)	Transistor output (DPST)	12 to 24 VDC	**H5CX-BWSD-N**

Note: 1. The functions that are provided depend on the model. Check detailed specifications before ordering.
2. Refer to **page 33** and later for information on H5CX-B Timers (6-digit display).

Accessories (Order Separately)

Front Panels (Replacement Parts)

Models	Color	Applicable Timers	Page
Y92P-CXT4G	Light gray (5Y7/1)	Four-digit models	12
Y92P-CXT4S	White (5Y9.2 / 0.5)		
Y92P-CXT4B	Black (N1.5)		

Note: 1. You can change the color of the front panel when mounting the Timer. The Timer is shipped with a black (N1.5) Front Panel.
2. "TIMER" is printed on the front of Replacement Front Panels.

Soft Cover

Models	Remarks	Page
Y92A-48F1	---	12

Hard Cover

Models	Remarks	Page
Y92A-48	---	12

Flush Mounting Adapter

Models	Remarks	Page
Y92F-30	Included with models with terminal blocks.	12
Y92F-45	Use this Adapter to install the Timer in a cutout previously made for a DIN 72 x 72 mm device (panel cutout: 68 x 68 mm).	
Y92F-38	Use for replacement of the 81-dia. hole device (H3AM).	

Waterproof Packing

Models	Remarks	Page
Y92S-29	Included with models with terminal blocks.	12

Connection Sockets

Models	Type	Connectable Timers	Remarks	Page
P2CF-08	Front Connecting Socket	H5CX-L8□		13
P2CF-08-E	Front Connecting Socket (Finger-safe Type)		Round crimp terminals cannot be used on Finger-safe Sockets. Use forked crimp terminals.	
P2CF-11	Front Connecting Socket	H5CX-A11□		
P2CF-11-E	Front Connecting Socket (Finger-safe Type)		Round crimp terminals cannot be used on Finger-safe Sockets. Use forked crimp terminals.	
P3G-08	Back Connecting Socket	H5CX-L8□	A Y92A-48G Terminal Cover can be used with the Socket to create a finger-safe construction.	
P3GA-11		H5CX-A11□		

Terminal Covers for P3G-08 and P3GA-11 Back-connecting Sockets

Models	Remarks	Page
Y92A-48G	---	14

H5CX-A□-N/-L□-N Digital Timers

- Switch the display color✻ between red, green, and orange to see the output status from a distance.
- Up/Down Keys for each digit enable easy operation.
- Cyclic control is easy with the Twin Timer and Variable ON/OFF Duty modes.

✻ Not supported by the H5CX-A11□ or H5CX-L8□.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Specifications

Ratings

Item	Models	H5CX-A□-N	H5CX-A11□-N	H5CX-L8□-N
Classification		Standard Type		Economy Type
Ratings	Power supply voltage ✻1	• 100 to 240 VAC 50/60 Hz • 12 to 24 VDC/24 VAC 50/60 Hz		
	Operating voltage fluctuation range	85% to 110% of rated supply voltage (90% to 110% at 12 to 24 VDC)		
	Power consumption	Approx. 6.2 VA at 100 to 240 VAC, Approx. 5.1 VA/2.4 W at 24 VAC/12 to 24 VDC ✻2		
Mounting method		Flush mounting	Flush mounting, surface mounting, DIN track mounting	
External connections		Screw terminals	11-pin socket	8-pin socket
Degree of protection		IEC IP66, UL508 Type 4X (indoors) for panel surface only and when Y92S-29 Waterproof Packing is used		
Digits		4 digits		
Time ranges		0.001 s to 9.999 s, 0.01 s to 99.99 s, 0.1 s to 999.9 s, 1 s to 9999 s, 1 s ti 99 min 59 s 0.1 m to 999.9 min, 1 min to 9999 min, 1 min to 99 h 59 min, 0.1 h to 999.9 h, 1 h to 9999 h		
Timer mode		Elapsed time (Up), remaining time (Down) (selectable)		
Inputs	Input signals	Signal, Reset, Gate		Signal, Reset (no inputs on models with instantaneous contact outputs)
	Input method	No-voltage (NPN) input/voltage (PNP) input (switchable) No-voltage Input ON impedance: 1 kΩ max. (Leakage current: 12 mA when 0 Ω) ON residual voltage: 3 V max. OFF impedance: 100 kΩ min. Voltage Input High (logic) level: 4.5 to 30 VDC Low (logic) level: 0 to 2 VDC (Input resistance: approx. 4.7 kΩ)		No-voltage Input ON impedance: 1 kΩ max. (Leakage current: 12 mA when 0 Ω) ON residual voltage: 3 V max. OFF impedance: 100 kΩ min.
	Signal, reset, gate	Minimum input signal width: 1 or 20 ms (selectable, same for all input)		
Reset system		Power reset (depending on output mode), external reset, manual reset, automatic reset (depending on output mode)		
Power reset		Minimum power-opening time: 0.5 s (except for A-3, b-1, F, ton-1, and toff-1 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	Output modes	A: Signal ON Delay I, A-1: Signal ON Delay II, A-2: Power ON Delay I, A-3: Power ON Delay II, b: Repeat Cycle 1, b-1: Repeat Cycle 2, d: Signal OFF Delay, E: Interval, F: Cumulative, Z: ON/OFF-duty-adjustable flicker, S: Stopwatch, toff: Flicker OFF Start 1, ton: Flicker ON Start 1, toff-1: Flicker OFF Start 2, ton-1: Flicker ON Start 2		Models with Instantaneous Contact Outputs A-2: Power ON Delay I, b: Repeat Cycle 1, E: Interval, Z: ON/OFF-duty-adjustable flicker, toff: Flicker OFF Start 1, ton: Flicker ON Start 1
	One-shot output time	0.01 to 99.99 s		
	Control output	• Models with Contact Outputs 5 A at 250 VAC/30 VDC, resistive load (cos =1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) Contact materials : AgSnIn • Transistor output: NPN open collector, 100 mA at 30 VDC max., residual voltage: 1.5 VDC max. (Approx. 1 V), Leakage current: 0.1 mA max.		
Display method ✻3		7-segment, negative transmissive LCD; Present value: 12-mm-high characters, (switchable between red, green, and orange) Set value: 6-mm-high characters, green	7-segment, negative transmissive LCD; Present value: 12-mm-high characters, red Set value: 6-mm-high characters, green	
Memory backup		EEPROM (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 counters are mounted side by side) (with no icing or condensation)		
Storage temperature range		-25 to 70°C (with no icing or condensation)		
Operating humidity range		25% to 85%		
Case color		Black (N1.5) (Optional Front Panels are available to change the Front Panel color to light gray or white.)		
Attachments		Waterproof packing, flush mounting adapter, label for DIP switch settings	Label for DIP switch settings	---

✻1. Do not use the output from an inverter as the power supply. The ripple must be 20% maximum for DC power.
✻2. Inrush current will flow for a short time when the power supply is turned ON.
Inrush Current (Reference Values)

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

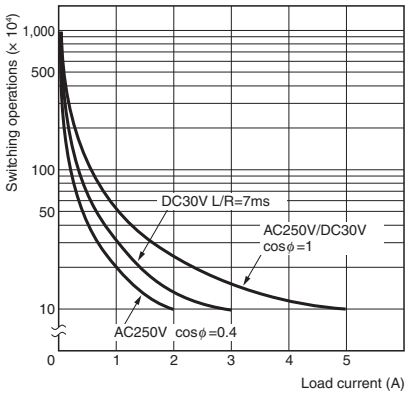
✻3. The display is lit only when the power is ON. Nothing is displayed when power is OFF.

Characteristics

Accuracy of operating time and setting error (including temperature and voltage influences)		Power-ON start: ±0.01% ±50 ms max. (See note 1.) Signal start: ±0.005%±30 ms max. (See note 1.) Signal start for transistor output model: ±0.005%±3 ms max. (See note 1 and 2.) 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. **Note: 1.** The values are based on the set value. **2.** The value is applied for a minimum pulse width of 1 ms.
Insulation resistance		100 MΩ 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 2,000 VAC, 50/60 Hz for 1 min between power supply and input circuits for the models other than H5CX-□D-N and H5CX-L8E□-N 1,000 VAC, 50/60 Hz for 1 min between control output, power supply, and input circuits (for the models other than H5CX-L8E□-N) for H5CX-□SD-N 2,000 VAC, 50/60 Hz for 1 min between control output, power supply, and input circuits (for the models other than H5CX-L8E□-N) for other models 1,000 VAC, 50/60 Hz for 1 min between non-continuous contacts
Impulse withstand voltage		5 kV (between power terminals) for 100 to 240 VAC, 1 kV for 24 VAC/12 to 24 VDC 5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 240 VAC 1.5 kV for 24 VAC/12 to 24 VDC
Noise immunity		±1.5 kV (between power terminals) and ±600 V (between input terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)
Static immunity		Malfunction: 8 kV Destruction: 15 kV
Vibration resistance	**Destruction**	10 to 55 Hz with 0.75-mm single amplitude each in three directions for 2 h each
	Malfunction	10 to 55 Hz with 0.35-mm single amplitude each in three directions for 10 min each
Shock resistance	**Destruction**	300 m/s^2 in three directions, three cycles
	Malfunction	100 m/s^2 in three directions, three cycles
Life expectancy	**Mechanical**	10,000,000 operations min. (under no load at 1,800 operations/h and ambient temperature of 23°C)
	Electrical	100,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h and ambient temperature of 23°C) ✱
Weight		Approx. 115 g (Timer only)

✱ Refer to Life-test Curve.

Life-test Curve (Reference Values)



A maximum current of 0.15 A can be switched at 125 VDC (cosϕ =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.

Applicable Standards

Approved safety standards	UL508/Listing, UL508 Type 4X for indoor use (enclosure rating), CSA C22.2 No. 14 ✱1, conforms to EN61812-1 (Pollution degree 2/overvoltage category III) B300 PILOT DUTY 1/4 HP 120 VAC, 1/3 HP, 240 VAC, 5 A resistive load VDE0106/P100 CCC: GB/T 14048.5 Pollution degree 2, Overvoltage category III ✱2,✱3
EMC	(EMI) EN61812-1 Emission Enclosure: EN55011 Group 1 class A Emission AC mains: EN55011 Group 1 class A (EMS) EN61812-1 Immunity ESD: IEC61000-4-2 Immunity RF-interference: IEC61000-4-3 Immunity Burst: IEC61000-4-4 Immunity Surge: IEC61000-4-5 Immunity Conducted Disturbance: IEC61000-4-6 Immunity Voltage Dip/Interruption: IEC61000-4-11

✱1. The following safety standards apply to models with sockets (H5CX-A11□ or H5CX-L8□).
cUL (Listing): Applicable when an OMRON P2CF (-E) Socket is used.
cUR (Recognition): Applicable when any other socket is used.
✻2. Excluding the H5CX-ASD-N/-A11SD-N/-L8SD-N.
✻3. CCC certification requirements

Rated operating voltage Ue Rated operating current Ie	Contact Output: AC-15: Ue: 250 VAC, Ie: 3 A AC-13: Ue: 250 VAC, Ie: 5 A DC-13: Ue: 30 VDC, Ie: 0.5 A Transistor Output: DC-13: Ue: 30 VDC, Ie: 0.1 A
Rated insulation voltage	250 V
Rated impulse withstand voltage (altitude: 2,000 m max.)	4 kV (at 240 VAC)
Conditional short-circuit current	1000 A

I/O Functions

For details, refer to the timing charts on **page 20 and page 29**.

Inputs ✱1	**Start signal**	Normally functions to start timing. In modes A-2 and A-3, disable timing. In mode S, starts and stops timing.
	Reset	• Resets present value. (In elapsed time mode, the present value returns to 0; in remaining time mode, the present value returns to the set value.) • Count inputs are not accepted and control output turns OFF while reset input is ON. • Reset indicator is lit while reset input is ON.
	Gate ✱2	Disables timing. (If a reset occurs while the gate input is ON, a reset will be performed.)
Outputs	**Control output (OUT)**	Outputs take place according to designated operating mode when timer reaches corresponding set value.

✱1. The H5CX-L8E□ does not have an input.
✻2. The H5CX-L□ does not have a gate input.

Response Delay Time When Resetting (Transistor Output)

The following table shows the delay from when the reset signal is input until the output is turned OFF.

(Reference value)

Minimum reset signal width	Output delay time
1 ms	0.8 to 1.2 ms
20 ms	15 to 25 ms