

Digital Timer H5CZ

Easy to Use and Easy to Read.



Basic Features

- Character height of 10 mm for better readability.
- Operation is simplified by the Up/Down Keys for each digit on 4-digit.

Safety and Reliability

- Power supply circuit and input circuits are isolated for safety and reliability.
- Set value limit function prevents unexpected operation of output devices caused by setting mistakes.
- Output counter function helps in managing the service life of the Timer or the load.

Other Features

- Models with instantaneous contact output.
- Waterproof, dust-proof structure (UL508 Type 4X and IP66).
- Key protection.



Refer to *Safety Precautions* on page 31.

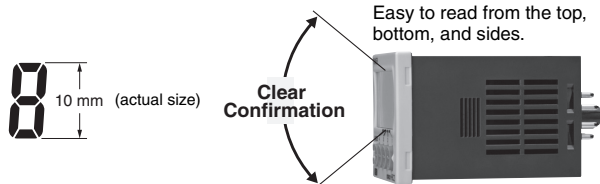
For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Features

Basic Features

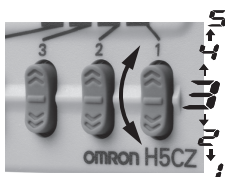
Better Readability

Character Height of 10 mm with a Wide Viewing Angle.



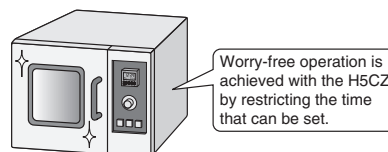
The Easiest Operation

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



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

The output counter counts the number of times the output turns ON (alarm display, count monitoring, count in increments of 1,000). This counter is useful in managing the service life of the Timer or the load.

Other Features

Models with Instantaneous Contact Output

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

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

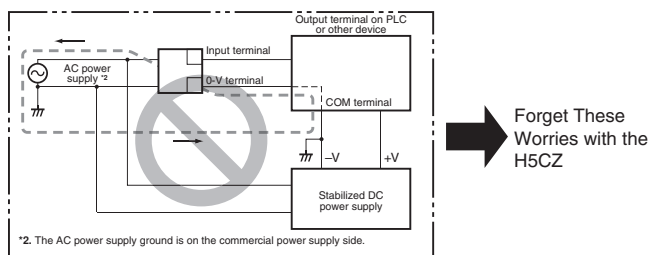
Modes, such as a stopwatch mode (Mode S), have been added. Select any of 15 modes.

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 H5CZ removes these worries.



*1. H5CZ with 100 to 240-VAC specifications.

H5CZ

Model Number Structure

Model Number Legend

H5CZ-L

1	2	3

1. External Connections

Symbol	Meaning
8	8-pin socket

2. Output type

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

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

3. Supply voltage

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

Ordering Information

List of Models

Type	Time specifications	Operating modes	External connections	Inputs	Outputs	Supply voltage	Models
H5CZ	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	8-pin socket	Signal, Reset (NPN inputs)	Contact output (time-limit SPDT)	100 to 240 VAC	H5CZ-L8
		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				12 to 24 VDC/24 VAC	H5CZ-L8D
		Timer Mode A-2: Power ON Delay I b: Repeat cycle 1 E: Interval Z: ON/OFF-duty-adjustable flicker		None	Contact output (time-limit SPDT + instantaneous SPDT) Models with instantaneous contact outputs *	100 to 240 VAC	H5CZ-L8E
		Twin Timer Mode toff: Flicker OFF Start 1 ton: Flicker ON Start 1				12 to 24 VDC/24 VAC	H5CZ-L8ED

Note: The functions that are provided depend on the model. Check detailed specifications before ordering.

* A time-limit DPDT output can also be used.

Accessories (Order Separately)

Soft Cover

Models	Page
Y92A-48F1	9

Hard Cover

Models	Page
Y92A-48	9

Flush Mounting Adapter

Models	Page
Y92F-30	9

Waterproof Packing

Models	Page
Y92S-29	9

Connection Sockets

Models	Type	Remarks	Page
P2CF-08	Front Connecting Socket	---	10
P2CF-08-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	A Y92A-48G Terminal Cover can be used with the Socket to create a finger-safe construction.	

Terminal Covers for P3G-08 Back-connecting Sockets

Models	Page
Y92A-48G	10

H5CZ Digital Timers

Specifications

Ratings

Item		Models	H5CZ-L8□	
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, Surface mounting, DIN track mounting		
External connections		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 to 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 (no inputs on models with instantaneous contact outputs)		
	Input method	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	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	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		
Display method *3		LCD; Present value: 10-mm-high characters Set value: 6-mm-high characters		
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%		
Front panel color		Light gray (5Y7/1)		

*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
	26.4 VAC	6.4 A	1.4 ms
12 to 24 VDC/24 VAC	26.4 VDC	4.4 A	1.7 ms

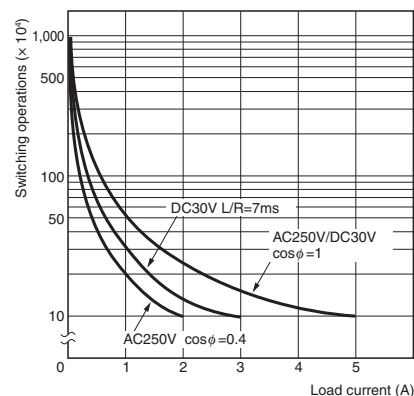
*3. The display is lit only when the power is ON. Settings and changes are not possible if the power supply is not ON.

Characteristics

Accuracy of operating time and setting error (including temperature and voltage influences)		Power-ON start: $\pm 0.01\%$ ± 50 ms max. (See note) Signal start: $\pm 0.005\%$ ± 0.03 ms max. (See note) If the set value is within the sensor waiting time at startup the control output of the H5CZ will not turn ON until the sensor waiting time passes. Note: The values are based on the set value.
Insulation resistance		100 M Ω 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 all models except H5CZ-□D 2,000 VAC, 50/60 Hz for 1 min between control output, power supply, and input circuits 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 μ s, 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. 105 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 ($\cos\phi = 1$) 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.

Applicable Standards

Approved safety standards	UL508/Listing, UL50 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	
EMC	(EMI) Emission Enclosure: Emission AC mains: (EMS) Immunity ESD: Immunity RF-interference: Immunity Burst: Immunity Surge: Immunity Conducted Disturbance: Immunity Voltage Dip/Interruption:	EN61812-1 EN55011 Group 1 class A EN55011 Group 1 class A EN61812-1 IEC61000-4-2 IEC61000-4-3 IEC61000-4-4 IEC61000-4-5 IEC61000-4-6 IEC61000-4-11

- *1. The following safety standards apply to H5CZ.
cUL (Listing): Applicable when an OMRON P2CF (-E) Socket is used.
cUR (Recognition): Applicable when any other socket is used.

- *2. CCC certification requirements

Rated operating voltage Ue Rated operating current Ie	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
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

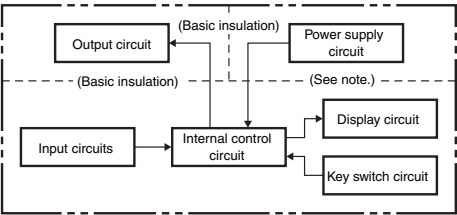
For details, refer to the timing charts on **page 17** and **page 27**.

Inputs *	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.

H5CZ

Connections

Block Diagram



Note: Basic insulation is provided between the power supply circuit and the input circuits. However, basic insulation is not provided in the H5CZ-□D.

Terminal Arrangement

Confirm that the power supply meets specifications before use.

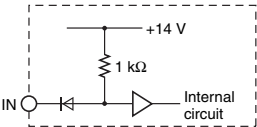
H5CZ-L8/-L8D	H5CZ-L8E/-L8ED
Terminals 1 and 2 of the H5CZ-L8D are connected internally.	OUT1 can also be used as a time-limit contact output.

Note: Do not connect unused terminals as relay terminals.

Input Circuits

Signal and Reset Input

No-voltage Inputs (NPN Inputs)

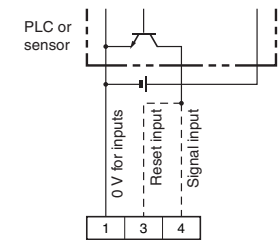


Input Connections

The inputs are no-voltage (closed or open). (The H5CZ-L8E□ does not have an input.)

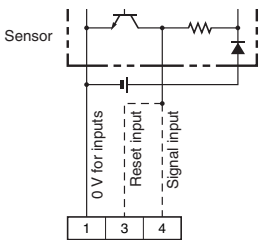
No-voltage Inputs (NPN Inputs)

Open Collector



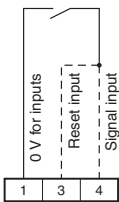
Note: Operate with transistor ON

Voltage Output



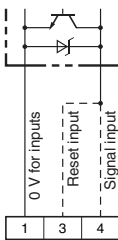
Note: Operate with transistor ON

Contact Input



Note: Operate with contacts ON.

DC Two-wire Sensor



Note: Operate with transistor ON

No-voltage Input Signal Levels

No-contact input	Short-circuit level Transistor ON - Residual voltage: 3 V max. - Impedance when ON: 1 kΩ max. (The leakage current is approx. 12 mA when the impedance is 0 Ω.)
	Open level Transistor OFF Impedance when OFF: 100 kΩ min.
Contact input	Use contacts which can adequately switch 5 mA at 10 V

Note: The DC voltage must be 30 VDC max.

Applicable Two-wire Sensor

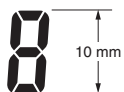
- Leakage current: 1.5 mA max.
- Switching capacity: 5 mA min.
- Residual voltage: 3.0 VDC max.
- Operating voltage: 10 VDC

Nomenclature

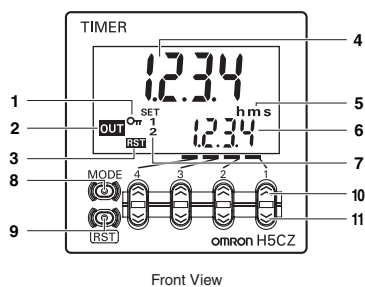
Display Section

1. Key Protect Indicator
2. Control Output Indicator
3. Reset Indicator
4. Present Value Display (Main display)
(Character height: 10 mm)
5. Time Unit Indicators
(If the time range is 0 min, 0 h, 0.0 h, or 0 h 0 min, these indicators flash to indicate timing operation.)
6. Set Value Display (Sub-display)
(Character height: 6 mm)
7. Set Value 1, 2 Indicator

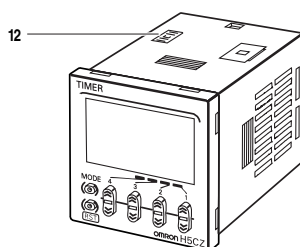
Character Size
for Present
Value Display



Character Size
for Set Value
Display



Front View



Operation Key

8. Mode Key
(Changes modes and setting items)
9. Reset Key
(Resets present value and output)
10. Up Keys 1 to 4
11. Down Keys 1 to 4

Switches

12. Key-protect Switch

(Default setting) OFF (Disabled) ↔ ON (Enabled)



H5CZ

Dimensions

(unit: mm)

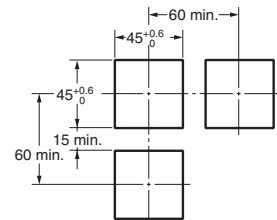
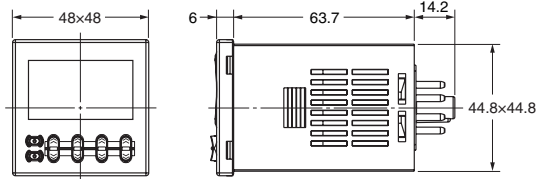
Digital Timers

Digital Timers

H5CZ-L8□ (Flush Mounting/Surface Mounting Models)

Panel Cutouts

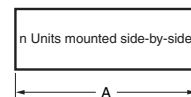
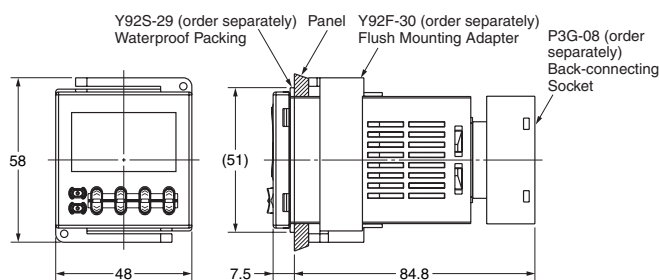
Panel cutouts areas shown below. (according to DIN43700).



- Note:**
1. The mounting panel thickness should be 1 to 5 mm.
 2. To allow easier operation, it is recommended that Adapters be mounted so that the gap between sides with hooks is at least 15 mm (i.e., with the panel cutouts separated by at least 60 mm).
 3. It is possible to horizontally mount Timers side by side. Attach the Flush Mounting Adapters so that the surfaces without hooks are on the sides of the Timers. (However, if Timers are mounted side by side, water resistance will be lost.)

Dimensions with Flush Mounting Adapter

H5CZ-L8□ (Adapter and Waterproof Packing Ordered Separately)



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

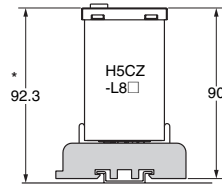
With Y92A-48F1 attached.

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

With Y92A-48 attached.

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

Dimensions with Front Connecting Socket



P2CF-08(-E) (order separately)
Front Connecting Socket

* These dimensions vary with the type of DIN track (reference value).