Solid-state Power OFF-delay Timers

H3CR-H

CSM_H3CR-H_DS_E_1_4

DIN 48 × 48-mm Power OFF-delay Timer

Long power OFF-delay times;
 S-series: up to 12 seconds,
 M-series: up to 12 minutes.

- Models with forced-reset input are available.
- 11-pin and 8-pin models are available.





6. Time Range

M:

0.05 to 12 s

0.05 to 12 min

Model Number Structure

■ Model Number Legend

Note: This model number legend includes combinations that are not available. Before ordering, please check the List of Models on page 1 for availability.

H3CR - $\frac{H}{1} \stackrel{\square}{=} \frac{L}{3} \stackrel{\square}{=} \frac{L}{5} \stackrel{\square}{=} \frac{\text{Note: Specify the model}}{\text{Note: Specify the model}}$

Note: Specify the model number, supply voltage, and time range (S or M) when ordering.

1. Classification

H: Power OFF-delay timer

2. Configuration

None: 11-pin socket 8: 8-pin socket 3. Input
None: Without reset input

Long-body model

R: With reset input

4. Dimensions

5. Supply Voltage

100-120AC: 100 to 120 VAC 200-240AC: 200 to 240 VAC 48DC: 48 VDC

48DC: 48 VDC 100-125DC: 100 to 125 VDC

■ List of Models

Input	Output	Supply voltage	S-series		M-s	eries
			11-pin models	8-pin models	11-pin models	8-pin models
Without	DPDT	100 to 120 VAC		H3CR-H8L 100-120AC S		H3CR-H8L 100-120AC M
reset		200 to 240 VAC		H3CR-H8L 200-240AC S		H3CR-H8L 200-240AC M
input		24 VAC/DC		H3CR-H8L 24AC/DC S		H3CR-H8L 24AC/DC M
		48 VDC		H3CR-H8L 48DC S		H3CR-H8L 48DC M
		100 to 125 VDC		H3CR-H8L 100-125DC S		H3CR-H8L 100-125DC M
With		100 to 120 VAC	H3CR-HRL 100-120AC S		H3CR-HRL 100-120AC M	
reset		200 to 240 VAC	H3CR-HRL 200-240AC S		H3CR-HRL 200-240AC M	
input		24 VAC/DC	H3CR-HRL 24AC/DC S		H3CR-HRL 24AC/DC M	
		48 VDC	H3CR-HRL 48DC S		H3CR-HRL 48DC M	
		100 to 125 VDC	H3CR-HRL 100-125DC S		H3CR-HRL 100-125DC M	
	SPDT	100 to 120 VAC		H3CR-H8RL 100-120AC S		H3CR-H8RL 100-120AC M
		200 to 240 VAC		H3CR-H8RL 200-240AC S		H3CR-H8RL 200-240AC M
		24 VAC/DC		H3CR-H8RL 24AC/DC S		H3CR-H8RL 24AC/DC M
		48 VDC		H3CR-H8RL 48DC S		H3CR-H8RL 48DC M
		100 to 125 VDC		H3CR-H8RL 100-125DC S		H3CR-H8RL 100-125DC M

Note: Specify the model number, supply voltage, and time range (S or M) when ordering.

Example: H3CR-H8L 100-120AC S

Time range

Supply voltage

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■ Accessories (Order Separately)

Adapter, Protective Cover and Hold-down Clip

Name/specifications		Models
Flush Mounting Adapter		Y92F-30
Protective Cover		Y92A-48B
Hold-down Clip	For PF085A Socket	Y92H-2
	For PL08 and PL11 Sockets	Y92H-1

Note: Refer to H3CR-A datasheet for details.

Sockets

Timer		Round Sockets	
Pin	Connection	Terminal	Models
11-pin	Front Connecting	DIN track mounting	P2CF-11
		DIN track mounting (Finger-safe type)	P2CF-11-E
	Back Connecting	Screw terminal	P3GA-11
		Solder terminal	PL11
		Wrapping terminal	PL11-Q
		PCB terminal	PLE11-0
8-pin	Front Connecting	DIN track mounting	P2CF-08
		DIN track mounting (Finger-safe type)	P2CF-08-E
		DIN track mounting	PF085A
	Back Connecting	Screw terminal	P3G-08
		Solder terminal	PL08
		Wrapping terminal	PL08-Q
		PCB terminal	PLE08-0

- Note: 1. The P2CF-□□-E has a finger-protection structure. Round crimp terminals cannot be used. Use forked crimp terminals.
 - 2. The P3GA-11 and P3G-08 Socket can be used together with the Y92A-48G Terminal Cover to implement finger protection.
 - 3. For details, refer to Socket and DIN Track Products.

Terminal Cover

Application	Model	Remarks
For back connecting socket	Y92A-48G	For P3G-08 and P3GA-11

Note: For details, refer to Socket and DIN Track Products.

Specifications

■ General

Item	H3CR-H8L	H3CR-H8RL	H3CR-HRL
Operating/Reset method Instantaneous operation/Time-limit reset		Instantaneous operation/Time-limit reset/Forced reset	
Pin type	8-pin		11-pin
Input type		No-voltage	
Output type	Relay output (DPDT)	Relay output (SPDT)	Relay output (DPDT)
Mounting method	DIN track mounting, surface mounti	ng, and flush mounting	
Approved standards	UL508, CSA C22.2 No.14, NK, Lloyds Conforms to EN61812-1 and IEC60664-1 (VDE0110) 4kV/2. Output category according to EN60947-5-1.		

■ Time Ranges

Time unit		S-series	M-series
		s (sec)	min (min)
Setting	0.6	0.05 to 0.6	
	1.2	0.12 to 1.2	
	6	0.6 to 6	
	12	1.2 to 12	
Min. power ON time	е	0.1 s min.	2 s min.
Time-up operation repeat period		3 s min.	
Forced-reset repeat period		3 s min.	

Note: 1. If the above minimum power ON time is not secured, the H3CR may not operate. Be sure to secure the above minimum power ON time.

^{*} The Y92F-48B Front Cover is made from hard plastic. Remove the Front Cover to change the set value.

^{2.} Do not use the Timer with a repeat period of less than 3 s. Doing so may result in abnormal heating or burning. Refer to Safety Precautions (H3CR-H) on page 8 for details.

■ Ratings

Rated supply voltage (See notes 1 and 2.)	100 to 120 VAC (50/60 Hz), 200 to 240 VAC (50/60 Hz), 24 VAC/VDC (50/60 Hz), 48 VDC, 100 to 125 VDC
Operating voltage range	85% to 110% of rated supply voltage
No-voltage input (See note 3.)	ON-impedance: 1 k Ω max. ON residual voltage: 1 V max. OFF impedance: 500 k Ω min.
Power consumption	100 to 120 VAC: approx. 0.23 VA (0.22 W) at 120 VAC 200 to 240 VAC: approx. 0.35 VA (0.3 W) at 240 VAC 24 VAC/DC: approx. 0.17 VA (0.15 W) at 24 VAC approx. 0.1 W at 24 VDC 48 VDC: approx. 0.18 W at 48 VDC 100 to 125 VDC: approx. 0.5 W at 125 VDC
Control outputs	Contact output: 5 A at 250 VAC/30 VDC, resistive load (cosφ = 1)

Note: 1. A power supply with a ripple of 20% max. (single-phase power supply with full-wave rectification) can be used with each DC Model.

- 2. Do not use an inverter output as the power supply. Refer to Safety Precautions for All Timers for details.
- 3. For contact input, use contacts which can adequately switch 1 mA at 5 $\rm V.$

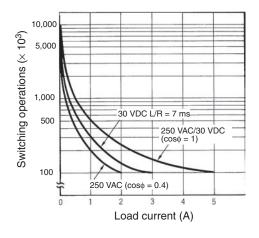
■ Characteristics

A	10.00/ 50 mm (10.00/ 50 Mo mm mm in mm mm (10.0 mm)			
Accuracy of operating time	$\pm 0.2\%$ FS max. ($\pm 0.2\%$ FS ± 10 ms max. in ranges of 0.6 and 1.2 s)			
Setting error	\pm 5% FS \pm 50 ms max.			
Operation start voltage	30% max. of rated voltage			
Influence of voltage	±0.2% FS max. (±0.2% FS ±10 ms max. in ranges of 0.6 and 1.2 s)			
Influence of temperature	:1% FS max. (±1% FS ±10 ms max. in ranges of 0.6 and 1.2 s)			
Insulation resistance	100 MΩ min. (at 500 VDC)			
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between current-carrying metal parts and exposed non-current-carrying metal parts) 2,000 VAC, 50/60 Hz for 1 min (between control output terminals and operating circuit) 2,000 VAC, 50/60 Hz for 1 min (between contacts of different polarities) 1,000 VAC, 50/60 Hz for 1 min (between contacts not located next to each other)			
Impulse withstand voltage	3 kV (between power terminals) for 100 to 120 VAC, 200 to 240 VAC, 100 to 125 VDC; 1 kV for 24 VAC/DC, 48 VDC 4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 120 VAC, 200 to 240 VAC, 100 to 125 VDC; 1.5 kV for 24 VAC/DC, 48 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); ± 1 kV (between power terminals) for 48 VDC			
Static immunity	Malfunction: 8 kV, Destruction:15 kV			
Vibration resistance	Destruction: 10 to 55 Hz with 0.75-mm single amplitude for 2 hrs each in three directions Malfunction: 10 to 55 Hz with 0.5-mm single amplitude for 10 min each in three directions			
Shock resistance	Destruction: 980 m/s² three times each in six directions Malfunction: 98 m/s² three times each in six directions			
Ambient temperature	Operating: -10°C to 55°C (with no icing), Storage: -25°C to 65°C (with no icing)			
Ambient humidity	Operating: 35% to 85%			
Life expectancy	Mechanical: 10 million operations min. (under no load at 1,200 operations/h) Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1,200 operations/h) (See note)			
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: 6 kV contact discharge (level 3) 8 kV air discharge (level 3) 1 EC61000-4-3: 10 V/m (80 MHz to 1 GHz) (level 3) 1 Immunity RF-interference from AM Radio Waves: IEC61000-4-3: 10 V/m (900±5 MHz) (level 3) 1 Immunity Conducted Disturbance: IEC61000-4-6: 10 V (0.15 to 80 MHz) (level 3) 1 Immunity Burst: IEC61000-4-4: 2 kV power-line (level 3) 2 kV I/O signal-line (level 4) 1 Immunity Surge: IEC61000-4-5: 1 kV line to line (level 3) 2 kV line to ground (level 3)			
Case color	Light Gray (Munsell 5Y7/1)			
Degree of protection	IP40 (panel surface)			
Weight	Approx. 120 g			

Note: Refer to the $\it Life-test\ Curve$.

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■ Life-test Curve



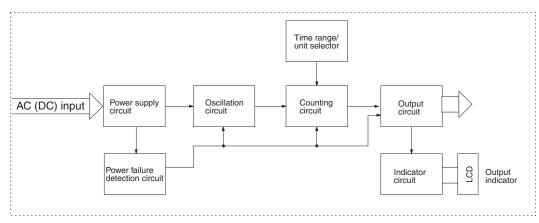
Reference: A maximum current of 0.15 A can be switched at 125 VDC $(\cos \phi = 1)$ and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected.

The minimum applicable load is 10 mA at 5 VDC for H3CR-H8L/-HRL and 100 mA at 5 VDC for H3CR-H8RL (failure level: P).

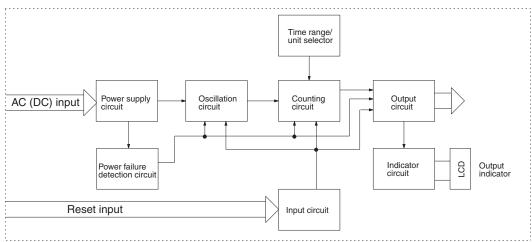
Connections

■ Block Diagrams

Without Reset Input (H3CR-H8L)



With Reset Input (H3CR-H8RL/-HRL)



■ I/O Functions

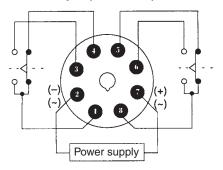
Inputs	Reset	Turns off the control output and resets the elapsed time.
Outputs	•	Operates instantaneously when the power is turned on and time-limit resets when the set time is up after the power is turned off.

■ Terminal Arrangement

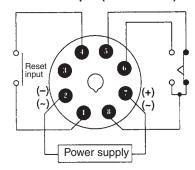
Note: DC models, including 24 VAC/DC models, have polarity.

8-pin Models

Without Reset Input (H3CR-H8L)

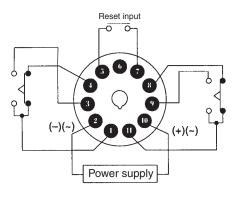


With Reset Input (H3CR-H8RL)



Note: Leave terminal 3 open. Do not use them as relay terminals.

11-pin Model With Reset Input (H3CR-HRL)

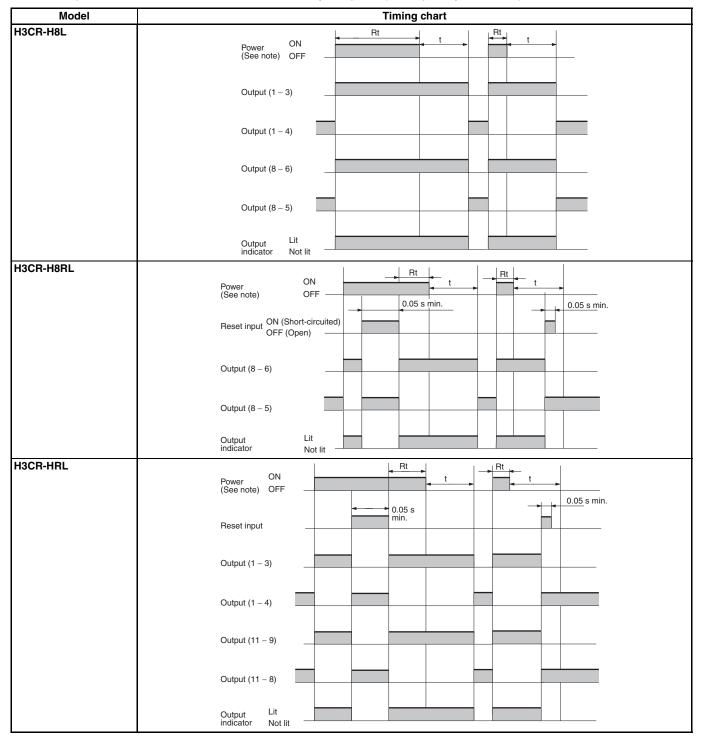


Note: Leave terminal 6 open. Do not use them as relay terminals.

Operation

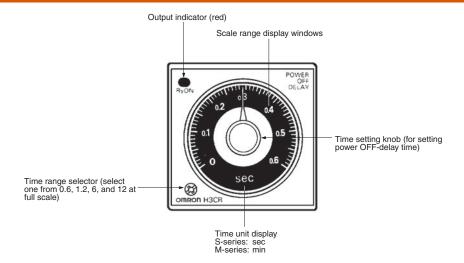
■ Timing Chart

- t: Set time
- Rt: Minimum power ON time (S-series: 0.1 s min.; M-series: 2 s min.)
 - If the power ON time is less than this value, the Timer may not operate (i.e., output may not turn ON).



Note: If the power is turned ON until the set time is up, the timer will be retriggered.

Nomenclature

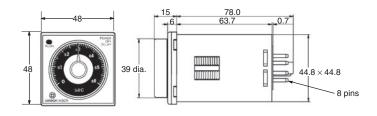


Dimensions

Note: All units are in millimeters unless otherwise indicated.

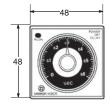
H3CR-H8L H3CR-H8RL

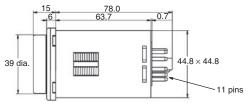




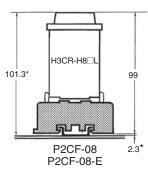
H3CR-HRL

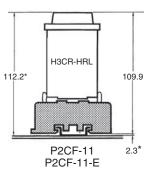




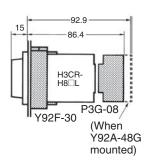


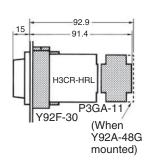
Dimensions with Front Connecting Socket P2CF-08-□/P2CF-11-□





Dimensions with Back Connecting Socket P3G-08/P3GA-11





^{*}These dimensions vary with the kind of DIN track (reference value).

Safety Precautions (H3CR-H)

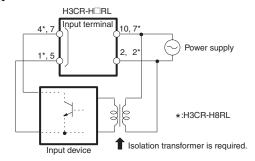
Note: The undermentioned is common for all H3CR-H models.

■ Power Supplies

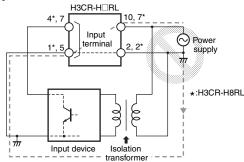
The H3CR-H has a large inrush current; provide sufficient power supply capacity. If the power supply capacity is too small, there may be delays in turning ON the output.

With the H3CR-H□RL, for the power supply of an input device, use an isolating transformer, of which the primary and secondary windings are mutually isolated and the secondary winding is not grounded.

Correct



Incorrect

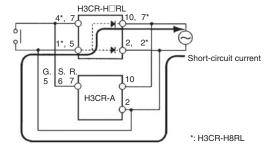


■ Input/Output (H3CR-H□RL)

An appropriate input is applied to the input signal terminal of the Timer when the input terminal for the input signal is short-circuited. Do not attempt to connect any input terminal to any terminal other than the input terminal or to apply voltage across other than the specified input terminals or the internal circuits of the Timer may be damaged.

The H3CR-H□RL uses transformerless power supply. When connecting a relay or transistor as an external signal input device, pay attention to the following points to prevent short-circuiting due to a sneak current to the transformerless power supply.

If input is made simultaneously from one input contact or a transistor to the H3CR-H and a Timer whose common input terminals are used as power terminals, such as the H3CR-A, a short-circuit current will be generated. Either input through isolated contacts, or isolate the power supply for one of the Timers.

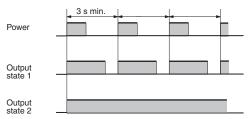


■ Wiring

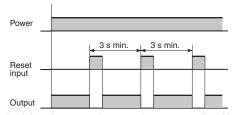
The H3CR-H has a high impedance circuit. Therefore, the H3CR-H may not be reset if the H3CR-H is influenced by inductive voltage. In order to eliminate any influence of inductive voltage, the wires connected to the H3CR-H must be as short as possible and should not be installed alongside power lines. If the H3CR-H is influenced by inductive voltage that is 30% or more of the rated voltage, connect a CR filter with a capacitance of approximately 0.1 μF and a resistance of approximately 120 Ω or a bleeder resistor between the power supply terminals. If there is any residual voltage due to current leakage, connect a bleeder resistor between the power supply terminals.

■ Operation

An interval of 3 s minimum is required to turn on the H3CR-H after the H3CR-H is turned off. If the H3CR-H is turned on and off repeatedly with an interval of shorter than 3 s, abnormal heating or burning may occur in internal elements.



After the forced reset function of the H3CR-H is activated, an interval of 3 s minimum is required to activate the forced reset function again. If the forced reset function is activated repeatedly with an interval of shorter than 3 s, the internal parts of the H3CR-H may deteriorate and the H3CR-H may malfunction.



If it is required that the output be turned on repeatedly with an interval of shorter than 3 s, consider use of the H3CR-A in mode D (signal OFF-delay).

■ Others

If the H3CR-H is dropped or experiences some other kind of shock, because a latching relay is used for output, contacts may be reversed or go into a neutral state. If the H3CR-H is dropped, reconfirm correct operation.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

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- Systems, machines, and equipment that could present a risk to life or property.

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