Solid-state Power OFF-delay Timers
H3CR-H

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.

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

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 42 for availability.

H3CR - H □ □ L □ □
1 2 3 4 5 6

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
R: With reset input

4. Dimensions
L: Long-body model

5. Supply Voltage
100-120AC: 100 to 120 VAC
200-240AC: 200 to 240 VAC
24AC/DC: 24VAC/DC
48DC: 48 VDC
100-125DC: 100 to 125 VDC

6. Time Range
S: 0.05 to 12 s
M: 0.05 to 12 min

■ List of Models

Input	Output	Supply voltage	S-series		M-series	
			11-pin models	8-pin models	11-pin models	8-pin models
Without reset input	DPDT	100 to 120 VAC	---	H3CR-H8L 100-120AC S	---	H3CR-H8L 100-120AC M
		200 to 240 VAC		H3CR-H8L 200-240AC S		H3CR-H8L 200-240AC M
		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 reset input		100 to 120 VAC	H3CR-HRL 100-120AC S	---	H3CR-HRL 100-120AC M	---
		200 to 240 VAC	H3CR-HRL 200-240AC S		H3CR-HRL 200-240AC M	
		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

■ Accessories (Order Separately)

Adapter, Protective Cover and Hold-down Clip

Name/specifications		Models
Flush Mounting Adapters		**Y92F-30**
		Y92F-70 ✻1
		Y92F-71 ✻1
Protective Cover		**Y92A-48B ✻2**
Hold-down Clips	**For PF085A Socket**	**Y92H-2**
	For PL08 or PL11 Sockets	**Y92H-1**

Note: Refer to Operation (Common) datasheet for details.

✻1. The Y92A-48B Protective Cover and the Y92F-70/-71 Flush Mounting Adapter cannot be used at the same time.

✻2. The Y92F-48B Protective Cover is made from hard plastic. Remove the Protective Cover to change the set value.

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 your OMRON website.

Terminal Cover

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

Note: For details, refer to your OMRON website.

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 input	
Output type	Relay output (DPDT)	Relay output (SPDT)	Relay output (DPDT)
Mounting method	DIN track mounting, surface mounting, and flush mounting		
Approved standards	UL508, CSA C22.2 No.14, NK, Lloyds, CCC: GB/T 14048.5 ✻ Conforms to EN61812-1 and IEC60664-1 (VDE0110) 4kV/2. Output category according to EN60947-5-1.		

Note: For details, refer to your OMRON website.

✻ CCC certification requirements

Recommended fuse	0216005 (250VAC, 5A), manufactured by Littelfuse
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

■ Time Ranges

Time unit / Scale number (max.)		S-series s (sec)	M-series min (min)
0.6	**Set time range**	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		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.
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 50 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 kΩ max. ON residual voltage: 1 V max. OFF impedance: 500 kΩ 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. 1.0 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) The minimum applicable load is 10mA at 5VDC (P reference value). Contact materials : Ag-alloy

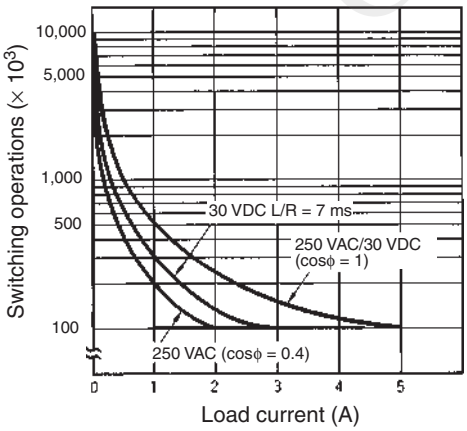
Note: 1. A power supply with a ripple of 20% max. (single-phase power supply with full-wave rectification) can be used with each DC Model.
2. Do not use an inverter output as the power supply. Refer to your OMRON website for details.
3. For contact input, use contacts which can adequately switch 1 mA at 5 V.

■ Characteristics

Accuracy of operating time	±0.2% FS max. (±0.2% FS ±10 ms max. in ranges of 0.6 and 1.2 s)
Setting error	±5% FS ±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	5 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 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 μs, 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/s^2 three times each in six directions Malfunction: 98 m/s^2 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 Immunity RF-interferenc: 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
Case color	Light Gray (Munsell 5Y7/1)
Degree of protection	IP40 (panel surface)
Weight	Approx. 120 g

Note: Refer to the *Life-test Curve(Reference)*.

■ Life-test Curve(Reference)



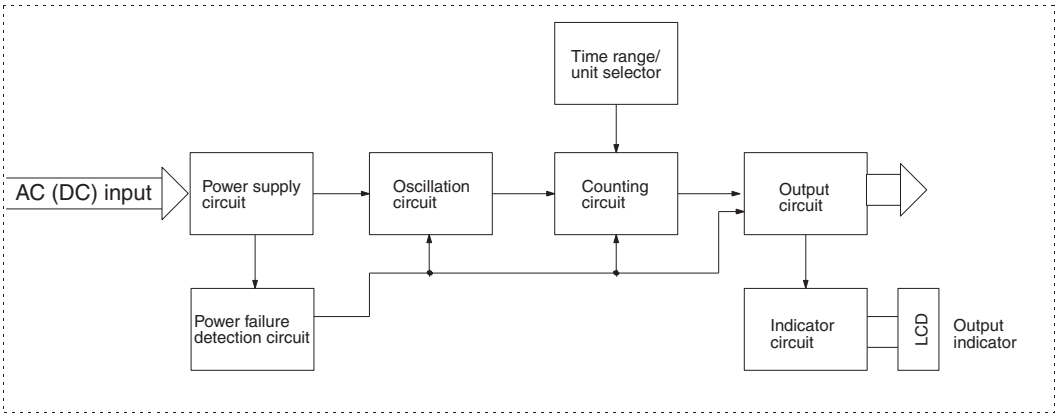
Reference: A maximum current of 0.15 A can be switched at 125 VDC (cosϕ = 1) and a maximum current of 0.1A can be switched at 125V DC and L/R = 7ms. In both cases, a life of 100,000 operations can be expected.

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).

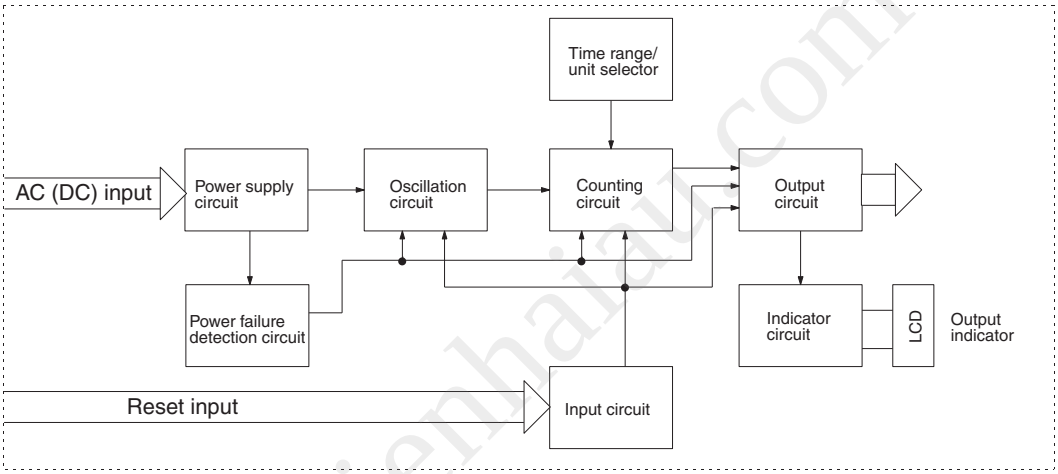
Connections

■ Block Diagrams

Without Reset Input (H3CR-H8L)



With Reset Input (H3CR-H8RL/-HRL)



■ I/O Functions

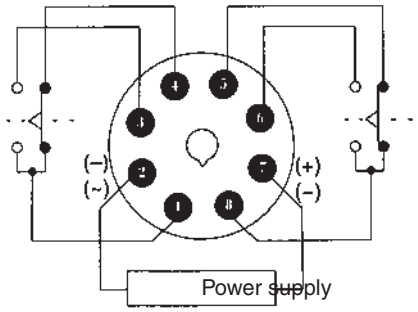
Inputs	**Reset**	Turns off the control output and resets the elapsed time.
Outputs	**Control output**	Operates instantaneously when the power is turned on and time-limit resets when the set time is up after the power is turned off.

■ Terminal Arrangement

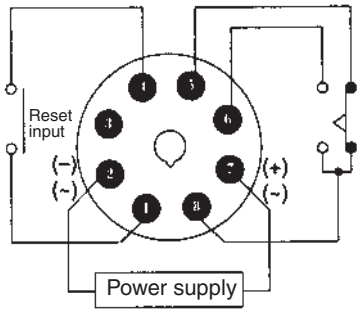
Note: DC models, including 24 VAC/DC models, have polarity.

8-pin Models

Without Reset Input (H3CR-H8L)



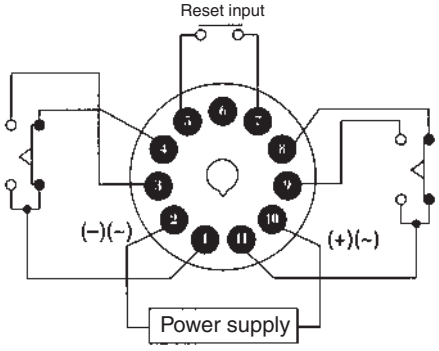
With Reset Input (H3CR-H8RL)



Note1: Leave terminal 3 open. Do not use them as relay terminals.
Note2: Do not apply voltage to reset input terminal.

11-pin Model

With Reset Input (H3CR-HRL)

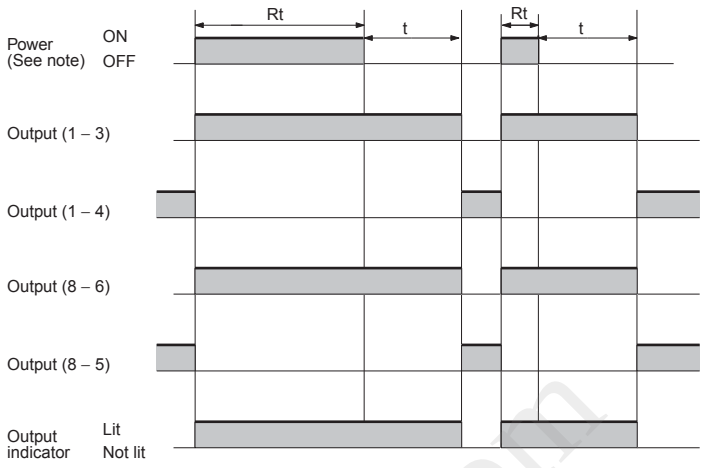
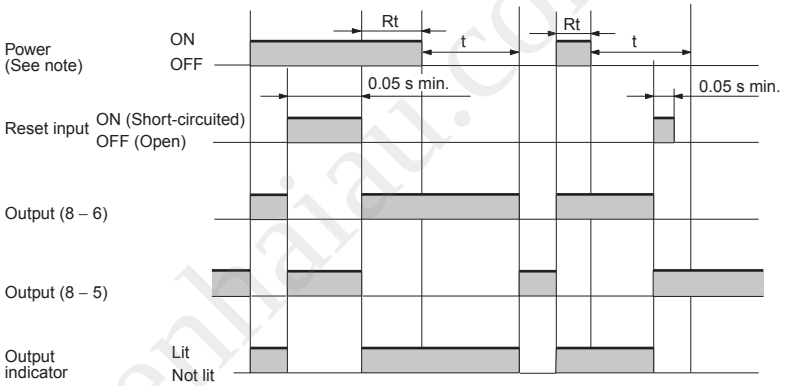
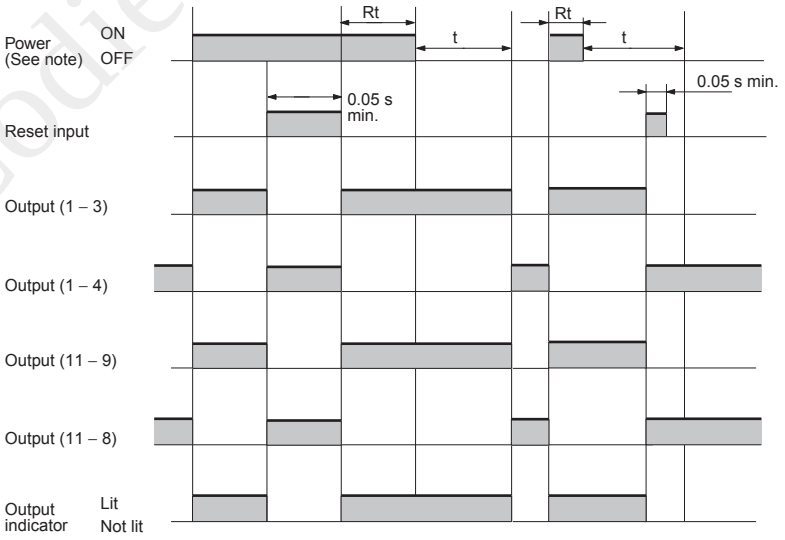


Note1: Leave terminal 6 open. Do not use them as relay terminals.
Note2: Do not apply voltage to reset input terminal.

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).

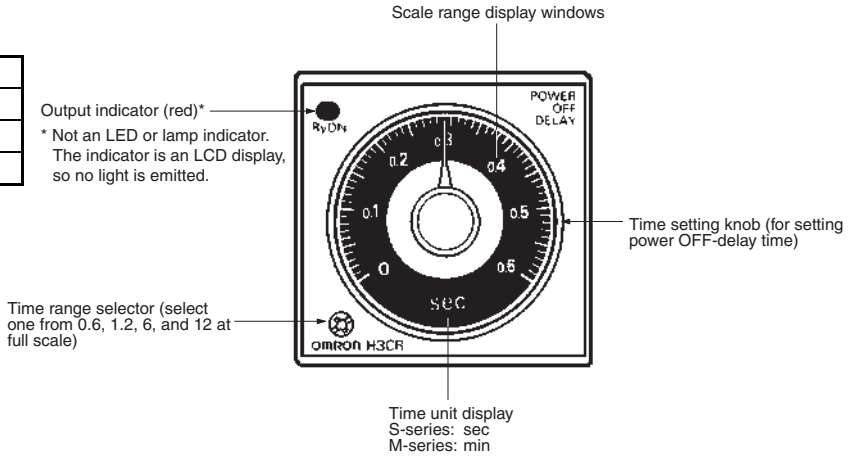
Model	Timing chart
H3CR-H8L	
H3CR-H8RL	
H3CR-HRL	

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

Nomenclature

Scale range display windows changes as below by turning the Time range selector clockwise.

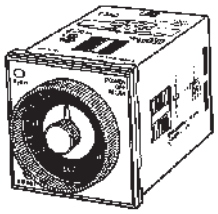
0	0.1	0.2	0.3	0.4	0.5	0.6
0	0.2	0.4	0.6	0.8	1.0	1.2
0	1	2	3	4	5	6
0	2	4	6	8	10	12

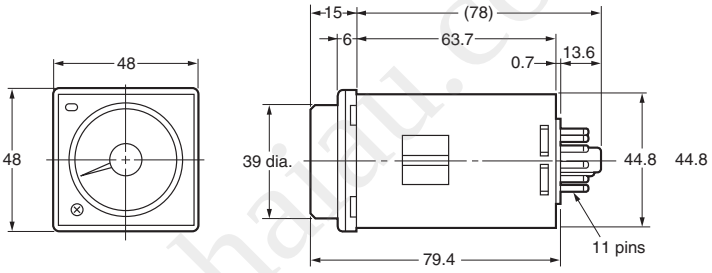


Dimensions

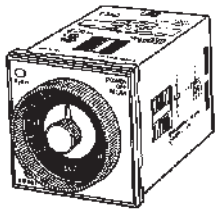
Note: All units are in millimeters unless otherwise indicated.

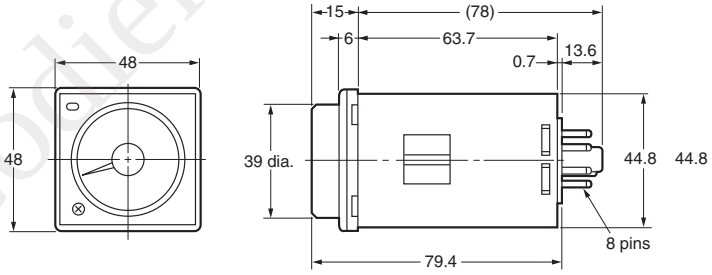
H3CR-H8L
H3CR-H8RL



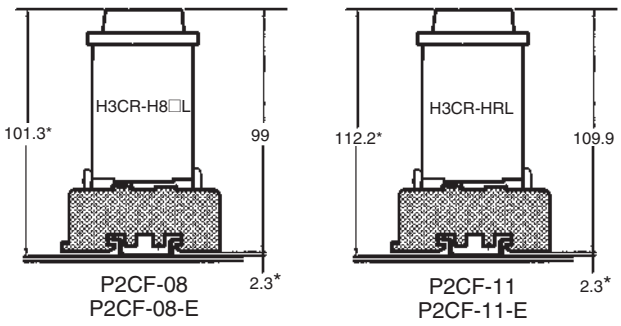


H3CR-HRL

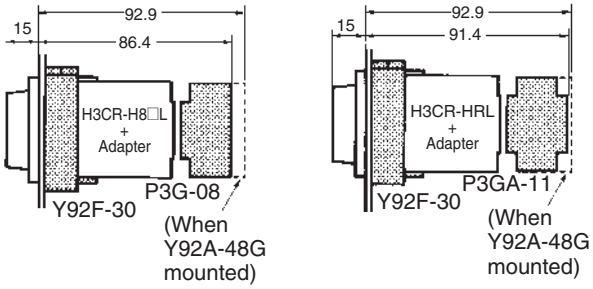




Dimensions with Front Connecting Socket
P2CF-08-□/P2CF-11-□



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



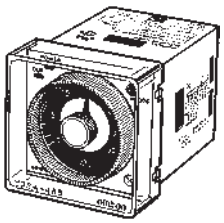
Note: There are no restrictions to the mounting direction.
***** These dimensions vary with the kind of DIN track (reference value).

■ Accessories (Order Separately)

Protective Cover
Y92A-48B

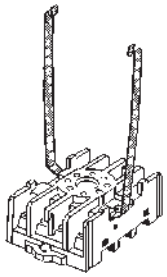
To use the Protective Cover with a flush mounting, use the Y92F-30 flush mounting adaptor.

This Protective Cover cannot be used together with the Y92F-70/-71 flush mounting adaptor or the panel cover.



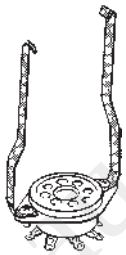
Hold-down Clip
Y92H-2

The Y92H-2 Hold-down Clip is attached to the PF085A socket.



Y92H-1

Y92H-1 Hold-down Clip is attached with screws together with the PL08.



Safety Precautions (H3CR-H)

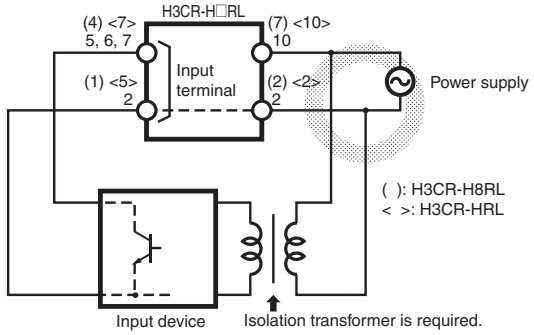
Note: The undermentioned is common for all H3CR-H models.

■ Power Supplies

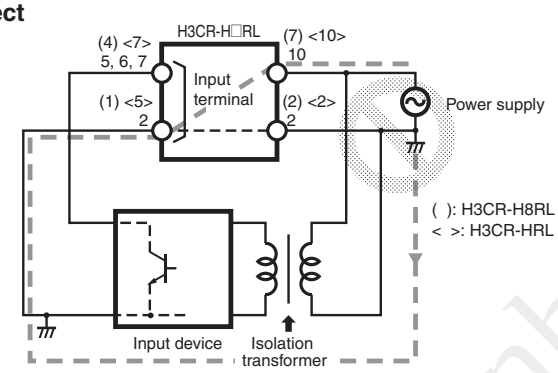
The H3CR-H has a large inrush current; provide sufficient power supply capacity. If the power supply capacity is too small, there may be delays in turning ON the output.

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

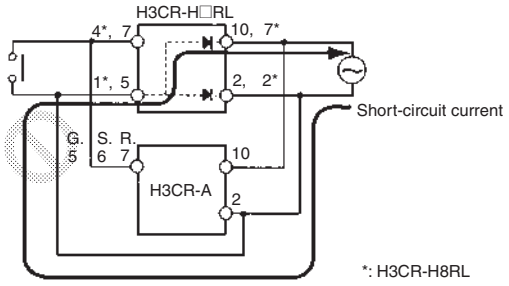


■ Input/Output (H3CR-H□RL)

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.

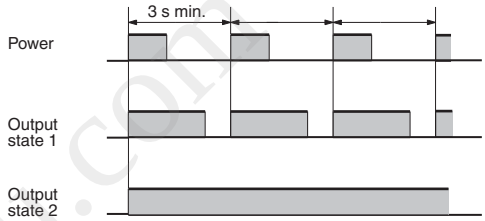


■ Wiring

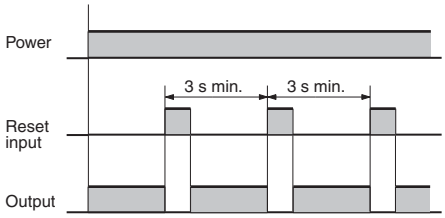
The H3CR-H has a high impedance circuit. Therefore, the H3CR-H may not be reset if the H3CR-H is influenced by inductive voltage. In order to eliminate any influence of inductive voltage, the wires connected to the H3CR-H must be as short as possible and should not be installed alongside power lines. 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).

On the H3CR-F□, do not set both the ON set dial and OFF set dial to the lowest settings. Doing so may damage the contacts.

■ 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.