

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.



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 - 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

48DC: 48 VDC

100-125DC: 100 to 125 VDC

6. Time Range

S: 0.05 to 12 s

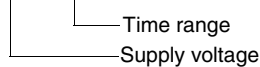
M: 0.05 to 12 min

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	DPDT	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



■ 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.

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

■ Sockets

Timer Pin	Round Sockets		
	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 mounting, 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	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 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 ($\cos\phi = 1$)

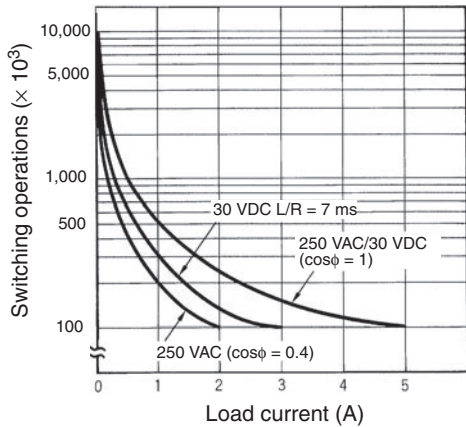
- Note:** 1. A power supply with a ripple of 20% max. (single-phase power supply with full-wave rectification) can be used with each DC Model.
2. Do not use an inverter output as the power supply. Refer to *Safety Precautions for All Timers* for details.
3. For contact input, use contacts which can adequately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

■ Characteristics

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 ± 50 ms max.
Operation start voltage	30% max. of rated voltage
Influence of voltage	$\pm 0.2\%$ FS max. ($\pm 0.2\%$ FS ± 10 ms max. in ranges of 0.6 and 1.2 s)
Influence of temperature	$\pm 1\%$ FS max. ($\pm 1\%$ FS ± 10 ms max. in ranges of 0.6 and 1.2 s)
Insulation resistance	100 M Ω 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/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: 6 kV contact discharge (level 3) 8 kV air discharge (level 3) Immunity RF-interference from AM Radio Waves: IEC61000-4-3: 10 V/m (80 MHz to 1 GHz) (level 3) Immunity RF-interference from Pulse-modulated Radio Waves: IEC61000-4-3: 10 V/m (900 \pm 5 MHz) (level 3) Immunity Conducted Disturbance: IEC61000-4-6: 10 V (0.15 to 80 MHz) (level 3) Immunity Burst: IEC61000-4-4: 2 kV power-line (level 3) 2 kV I/O signal-line (level 4) 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 *Life-test Curve*.

Life-test Curve

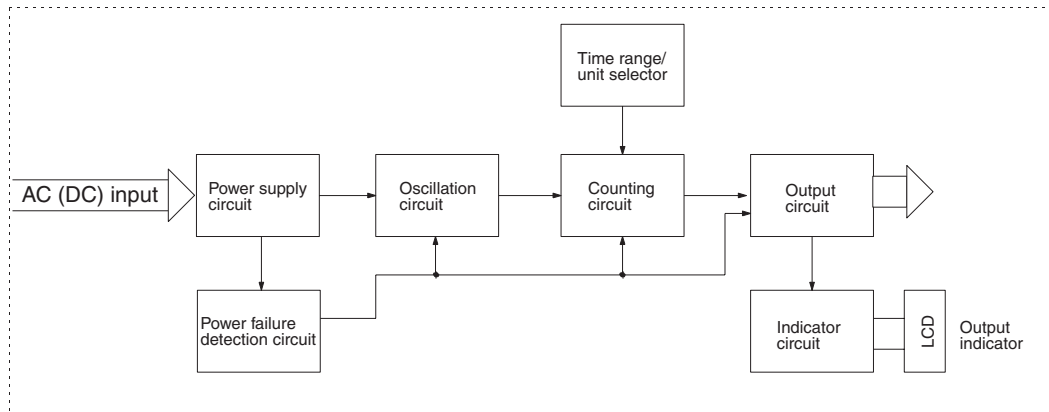


Reference: A maximum current of 0.15 A can be switched at 125 VDC (cosφ = 1) and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected. The minimum applicable load is 10 mA at 5 VDC for H3CR-H8L/H8RL and 100 mA at 5 VDC for H3CR-H8RL (failure level: P).

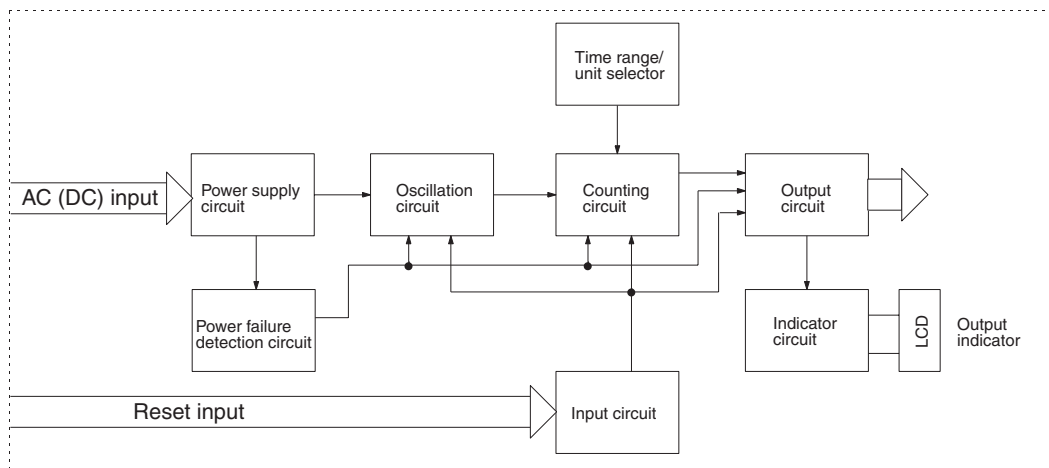
Connections

Block Diagrams

Without Reset Input (H3CR-H8L)



With Reset Input (H3CR-H8RL/H8RL)



I/O Functions

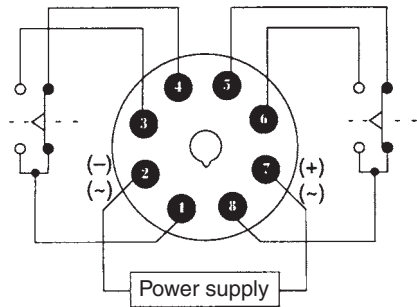
Inputs	Reset	Turns off the control output and resets the elapsed time.
Outputs	Control output	Operates instantaneously when the power is turned on and time-limit resets when the set time is up after the power is turned off.

Terminal Arrangement

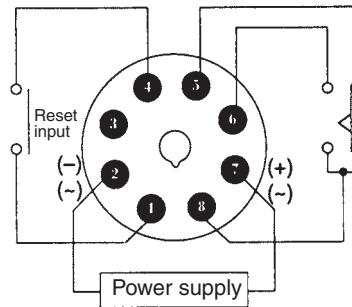
Note: DC models, including 24 VAC/DC models, have polarity.

8-pin Models

Without Reset Input (H3CR-H8L)



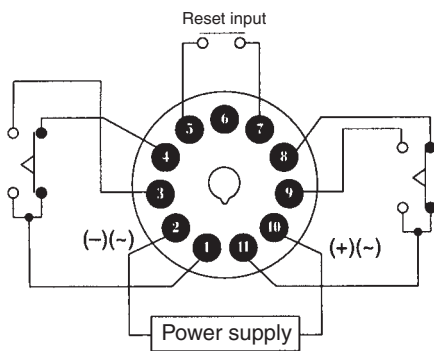
With Reset Input (H3CR-H8RL)



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.

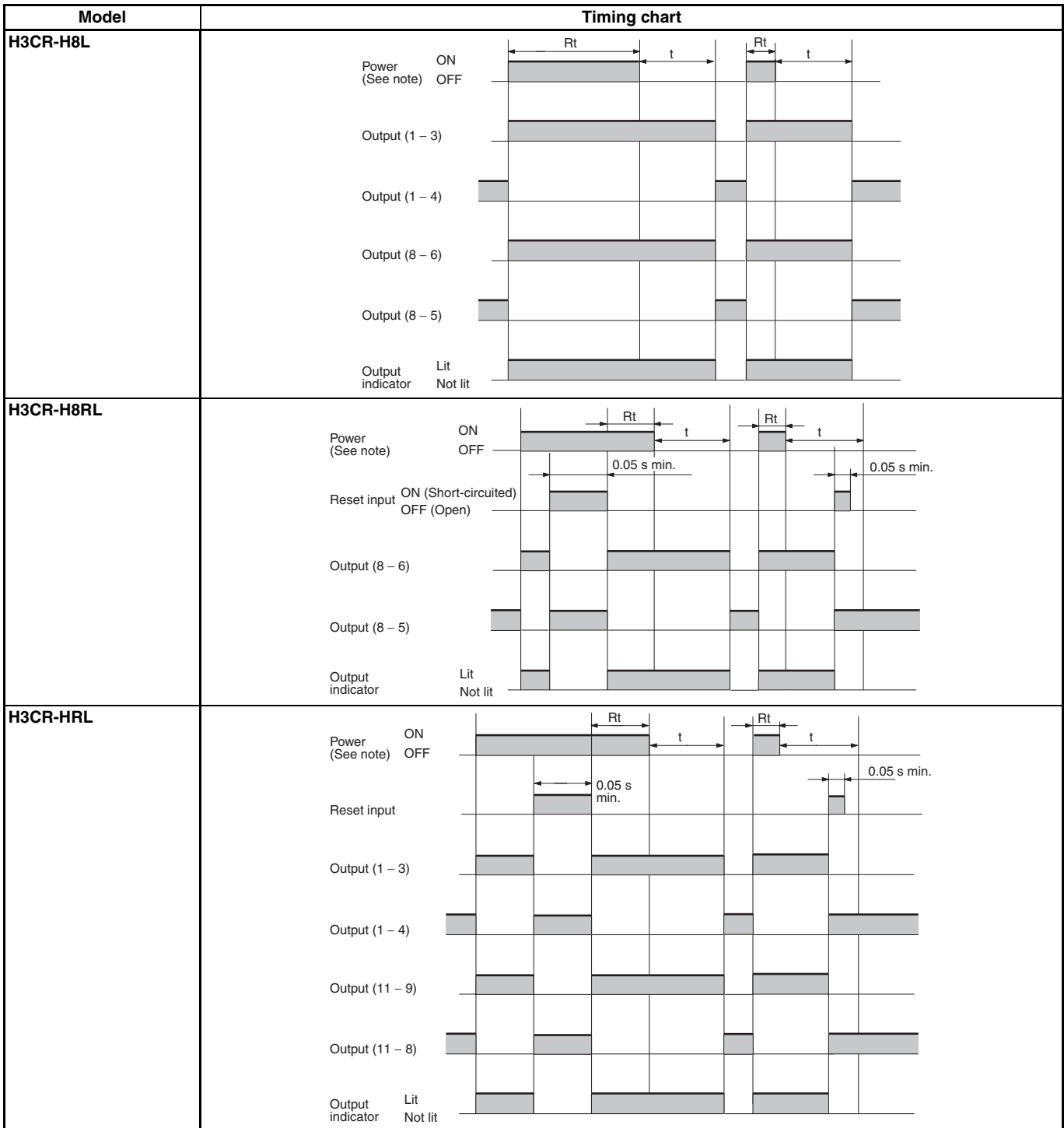
Operation

■ Timing Chart

t: Set time

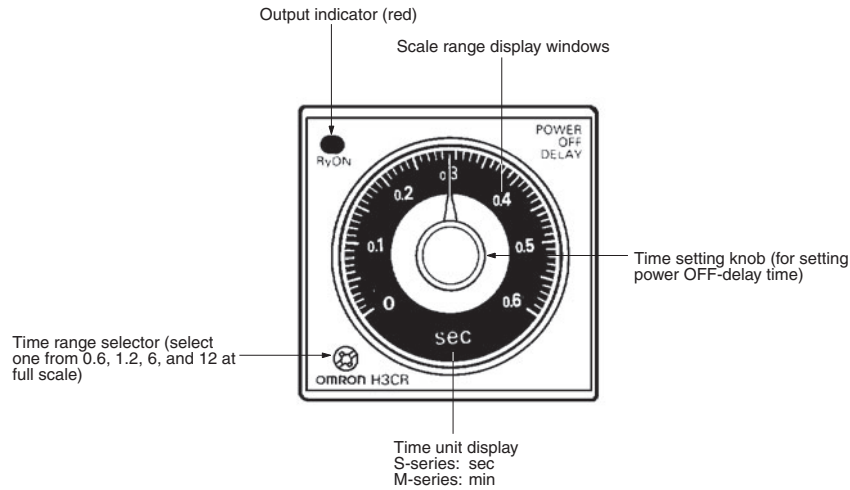
Rt: Minimum power ON time (S-series: 0.1 s min.; M-series: 2 s min.)

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.

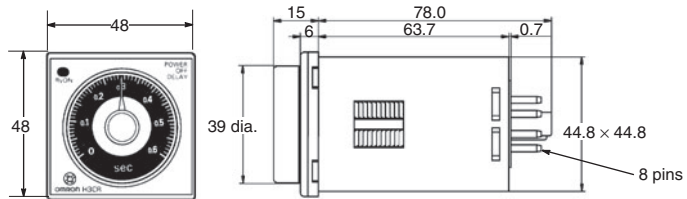
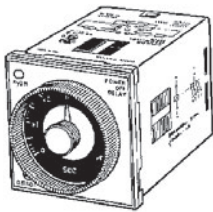
Nomenclature



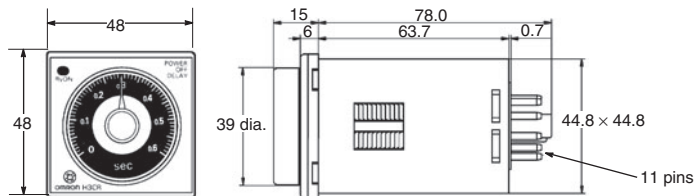
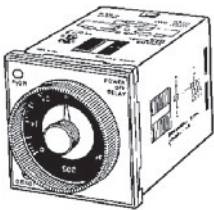
Dimensions

Note: All units are in millimeters unless otherwise indicated.

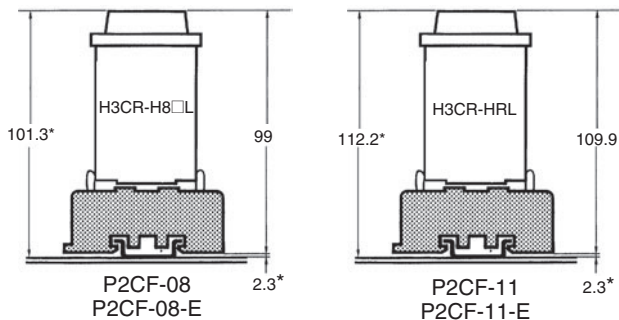
H3CR-H8L H3CR-H8RL



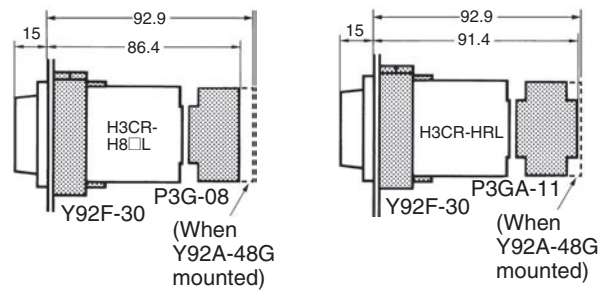
H3CR-HRL



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)

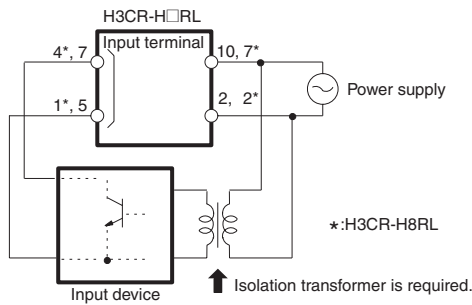
Note: The undermentioned is common for all H3CR-H models.

Power Supplies

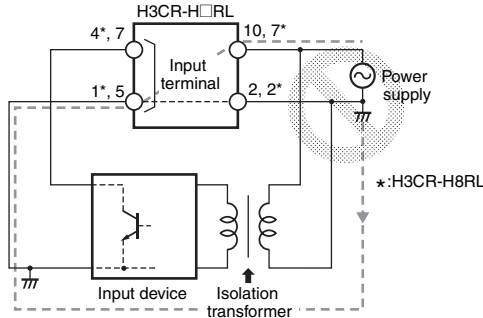
The H3CR-H has a large inrush current; provide sufficient power supply capacity. If the power supply capacity is too small, there may be delays in turning ON the output.

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

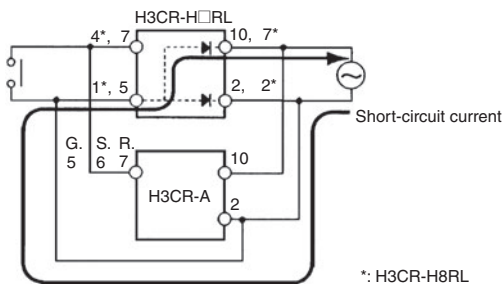


Input/Output (H3CR-H□RL)

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.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

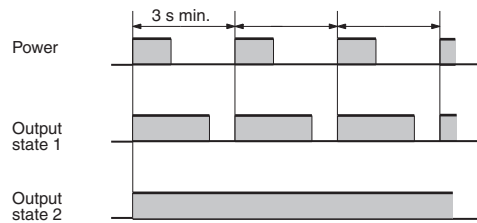
In the interest of product improvement, specifications are subject to change without notice.

Wiring

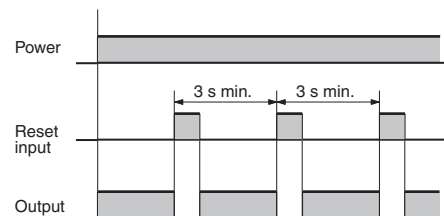
The H3CR-H has a high impedance circuit. Therefore, the H3CR-H may not be reset if the H3CR-H is influenced by inductive voltage. In order to eliminate any influence of inductive voltage, the wires connected to the H3CR-H must be as short as possible and should not be installed alongside power lines.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

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

2010.10

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

OMRON Corporation
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2010 All Right Reserved.