

# 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

## H3CR-H

### ■ 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 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    |
| 8-pin     | Front Connecting | PCB terminal                          | PLE11-0   |
|           |                  | 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                                                                             |                     |                     |
| 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 *1, CSA C22.2 No.14, NK, Lloyds, CCC: GB/T 14048.5 *2<br>Conforms to EN61812-1 and IEC60664-1 (VDE0110) 4kV/2. |                     |                     |

**Note:** For details, refer to your OMRON website.

\*1. Surrounding air temperature: 0°C to 40°C

\*2. CCC certification requirements

|                                                             |                                                             |
|-------------------------------------------------------------|-------------------------------------------------------------|
| Recommended fuse                                            | 0216005 (250VAC, 5A), manufactured by Littelfuse            |
| Rated operating voltage Ue                                  | AC-15: Ue: 250 VAC, Ie: 3 A                                 |
| Rated operating current Ie                                  | AC-13: Ue: 250 VAC, Ie: 5 A<br>DC-13: Ue: 30 VDC, Ie: 0.5 A |
| Rated insulation voltage                                    | 250 V                                                       |
| Rated impulse withstand voltage<br>(altitude: 2,000 m max.) | 4 kV (at 240 VAC)                                           |
| Conditional short-circuit current                           | 1000 A                                                      |

## Time Ranges

| Time unit                       |                | S-series    | M-series  |
|---------------------------------|----------------|-------------|-----------|
| Scale number (max.)             |                | s (sec)     | 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.<br>ON residual voltage: 1 V max.<br>OFF impedance: 500 kΩ min.                                                                                                                                                                                |
| Power consumption                         | 100 to 120 VAC: approx. 0.23 VA (0.22 W) at 120 VAC<br>200 to 240 VAC: approx. 0.35 VA (0.3 W) at 240 VAC<br>24 VAC/DC: approx. 0.17 VA (0.15 W) at 24 VAC<br>approx. 1.0 W at 24 VDC<br>48 VDC: approx. 0.18 W at 48 VDC<br>100 to 125 VDC: approx. 0.5 W at 125 VDC |
| Control outputs                           | Contact output: 5 A at 250 VAC/30 VDC, resistive load ( $\cos\phi = 1$ )<br>The minimum applicable load is 10mA at 5VDC (P reference value).<br>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.

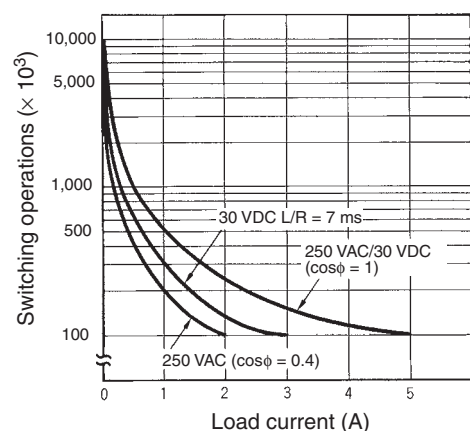
3. For contact input, use contacts which can adequately switch 1 mA at 5 V.

## ■ 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)<br>2,000 VAC, 50/60 Hz for 1 min (between control output terminals and operating circuit)<br>2,000 VAC, 50/60 Hz for 1 min (between contacts of different polarities)<br>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;<br>1 kV for 24 VAC/DC, 48 VDC<br>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;<br>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<br>Malfunction: 10 to 55 Hz with 0.5-mm single amplitude for 10 min each in three directions                                                                                                                                                                                     |
| Shock resistance           | Destruction: 980 m/s <sup>2</sup> three times each in six directions<br>Malfunction: 98 m/s <sup>2</sup> three times each in six directions                                                                                                                                                                                                                                |
| Ambient temperature        | Operating: -10°C to 55°C (with no icing),<br>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)<br>Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1,200 operations/h) (See note)                                                                                                                                                                                      |
| EMC                        | (EMI) EN61812-1<br>Emission Enclosure: EN55011 Group 1 class A<br>Emission AC Mains: EN55011 Group 1 class A<br>(EMS) EN61812-1<br>Immunity ESD: IEC61000-4-2<br>Immunity RF-interferenc: IEC61000-4-3<br>Immunity Burst: IEC61000-4-4<br>Immunity Surge: IEC61000-4-5<br>Immunity Conducted Disturbance: IEC61000-4-6<br>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)



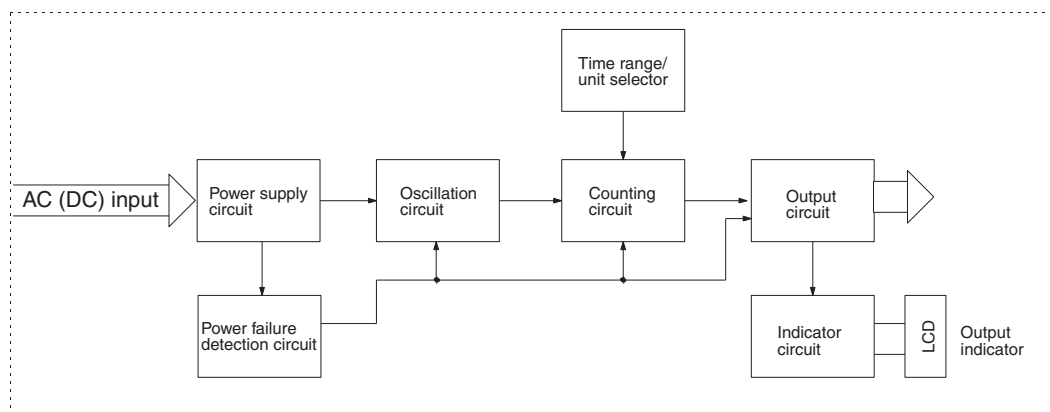
Reference: A maximum current of 0.15 A can be switched at 125 VDC ( $\cos\phi = 1$ ) and a maximum current of 0.1A can be switched at 125V DC and L/R = 7ms. In both cases, a life of 100,000 operations can be expected.

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).

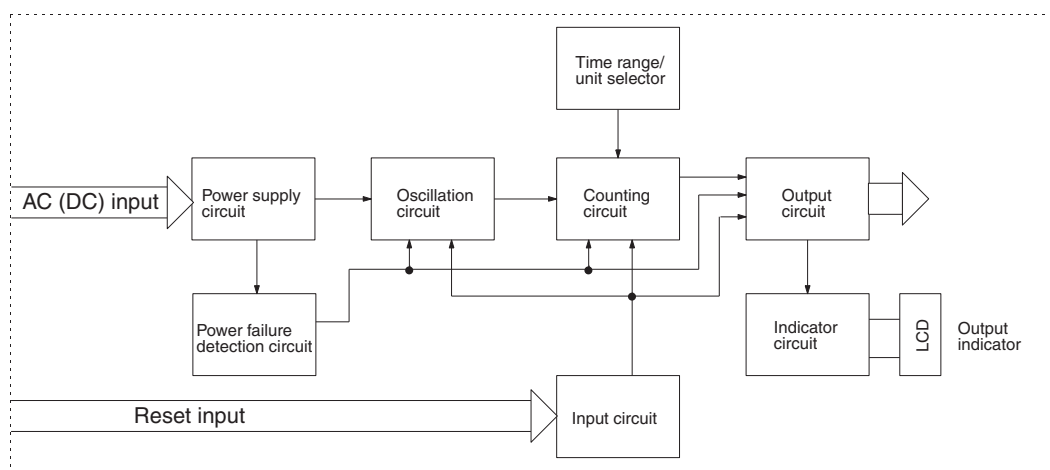
# Connections

## Block Diagrams

### Without Reset Input (H3CR-H8L)



### With Reset Input (H3CR-H8RL/HRL)



## I/O Functions

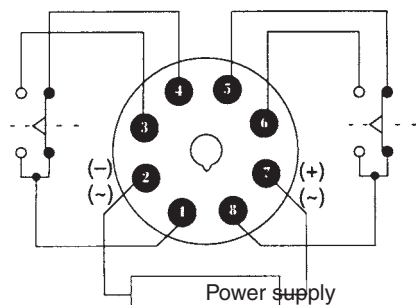
|                |                       |                                                                                                                                   |
|----------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Inputs</b>  | <b>Reset</b>          | Turns off the control output and resets the elapsed time.                                                                         |
| <b>Outputs</b> | <b>Control output</b> | 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

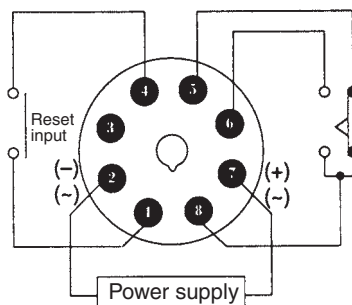
**Note:** DC models, including 24 VAC/DC models, have polarity.

### 8-pin Models

#### Without Reset Input (H3CR-H8L)



#### With Reset Input (H3CR-H8RL)

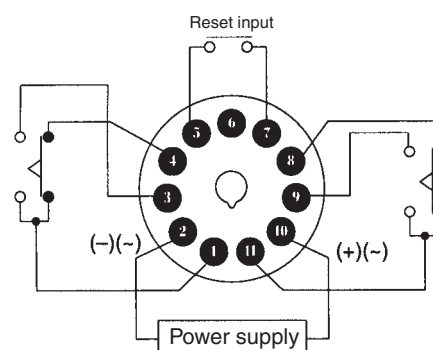


**Note1:** Leave terminal 3 open. Do not use them as relay terminals.

**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.

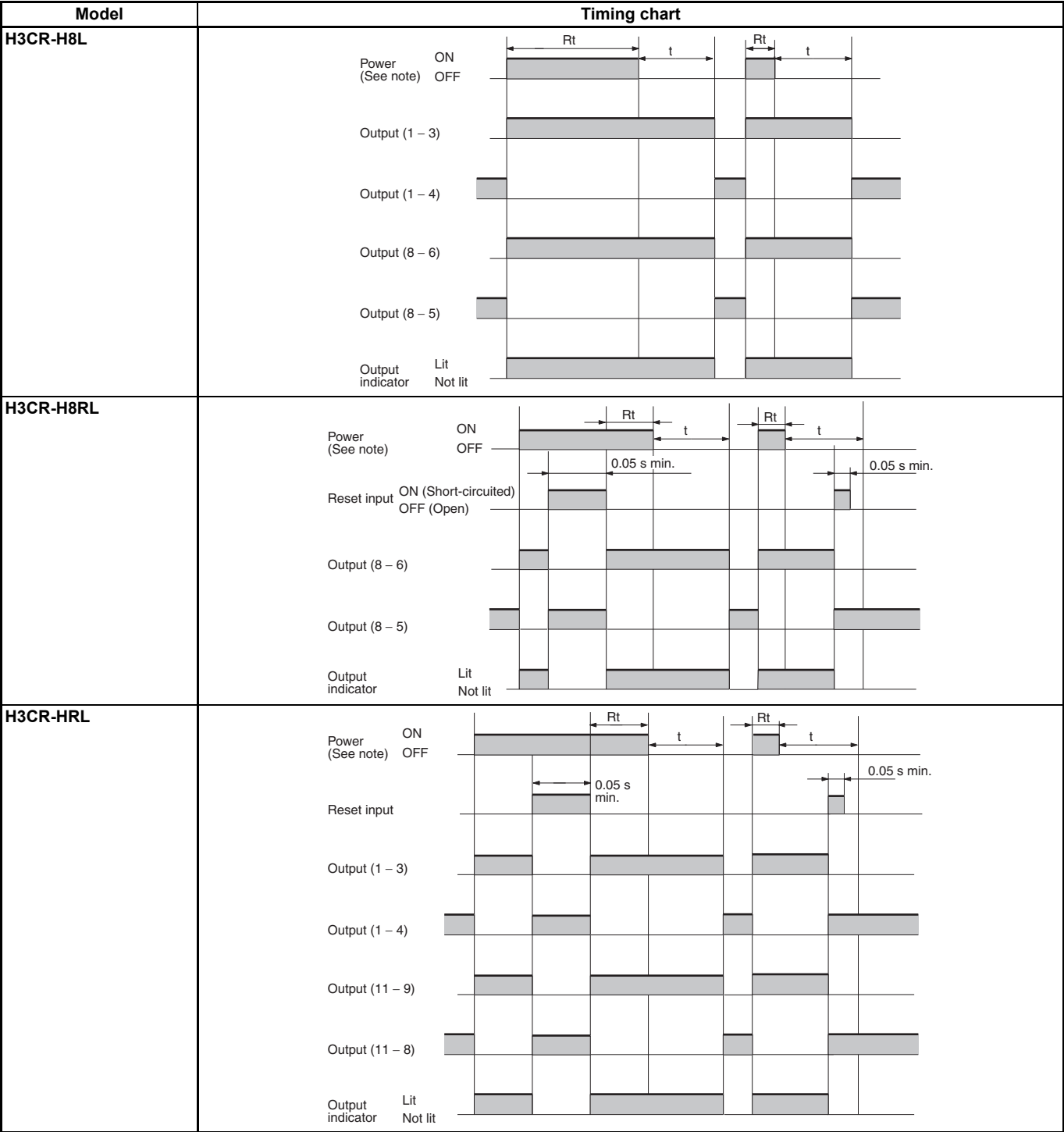
**Note2:** Do not apply voltage to reset input terminal.

# H3CR-H

## 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 retrigged.

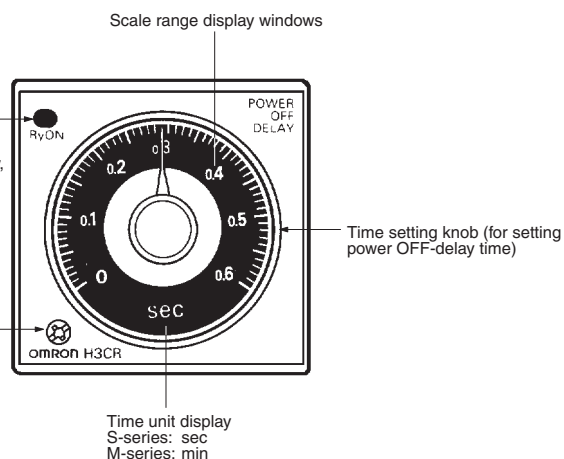
# Nomenclature

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  |

Output indicator (red)\*  
\* Not an LED or lamp indicator.  
The indicator is an LCD display,  
so no light is emitted.

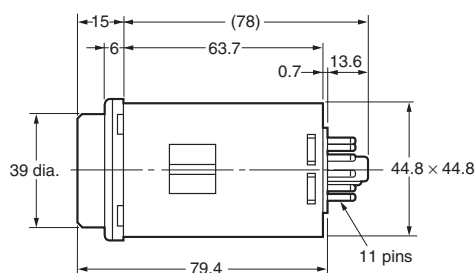
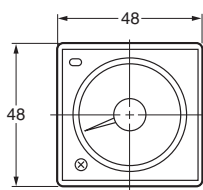
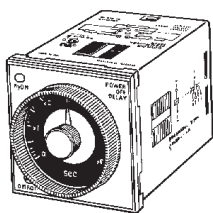
Time range selector (select one from 0.6, 1.2, 6, and 12 at full scale)



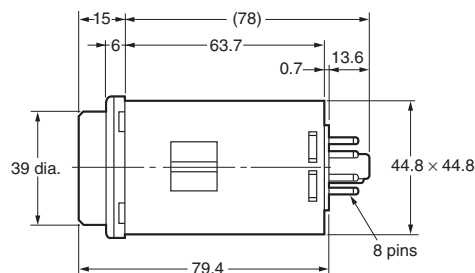
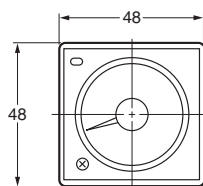
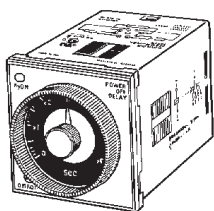
## Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

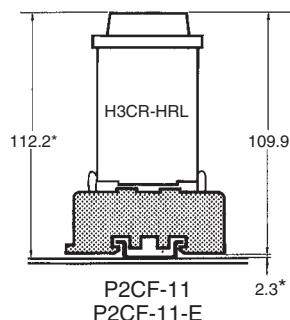
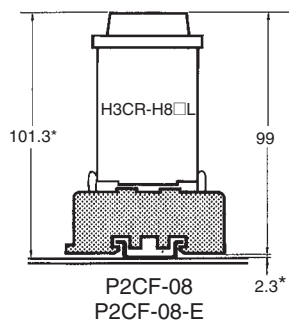
### H3CR-H8L H3CR-H8RL



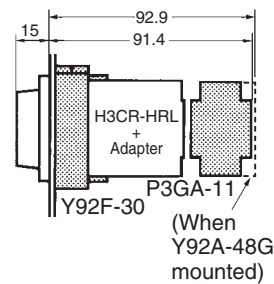
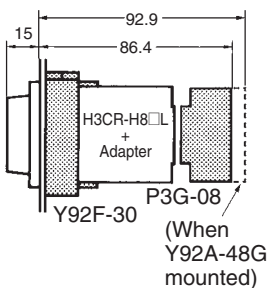
### H3CR-HRL



### 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).

## H3CR-H

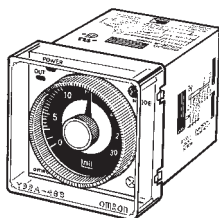
### ■ Accessories (Order Separately)

#### Protective Cover

##### Y92A-48B

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

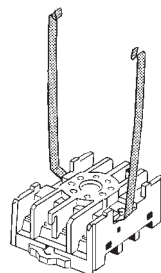
This Protective Cover cannot be used together with the Y92F-70/-71 flush mounting adaptor or the panel cover.



#### Hold-down Clip

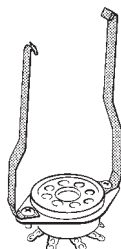
##### Y92H-2

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



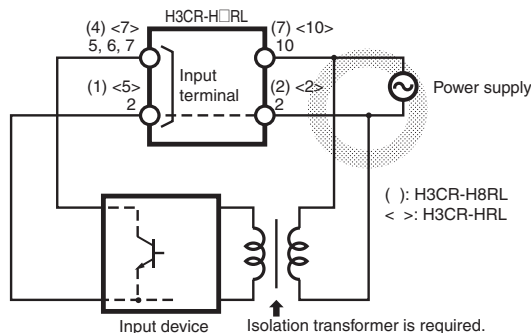
##### Y92H-1

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

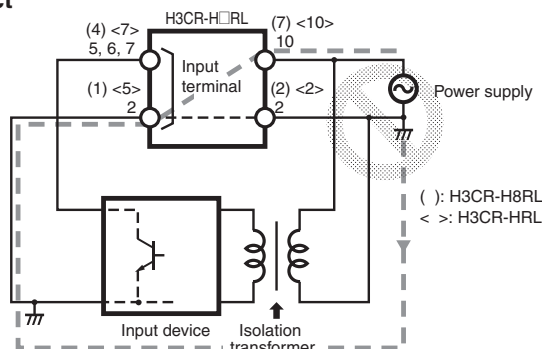


## ■ Power Supplies

**Correct**

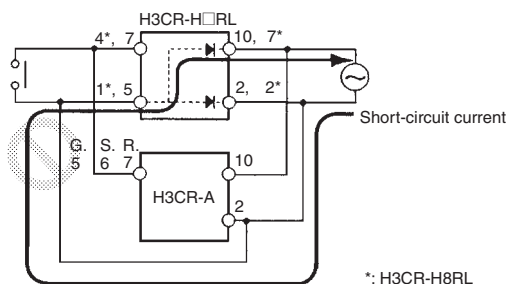


**Incorrect**



### ■ Input/Output (H3CR-H□RL)

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

## ■ Operation

The diagram shows three signals over time:

- Power:** A constant high signal.
- Reset input:** A periodic square wave. Each pulse has a duration of 3 s min. The period between the start of consecutive pulses is also 3 s min.
- Output:** A square wave that is high during the reset pulses and low otherwise.

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.

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.