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Solid-State Repeat-Cycle Timer

H3CR-F

1/16 DIN Solid-State Repeat-Cycle Timer

- Wide power supply ranges of 100 to 240 VAC 24 VAC/VDC, 12VDC
- Combinations of independent long or short ON/OFF time settings are possible
- Fourteen time ranges from 0.05 s to 30 h or 1.2 s to 300 h
- Repeat cycle models with either ON start or OFF start operating functions
- Easy sequence checks through instantaneous outputs for a zero set value at any time range
- 11-pin and 8-pin models are available



Ordering Information

Part number	Repeat cycle OFF start	H3CR-F	H3CR-F8	H3CR-F-300	H3CR-F8-300
	Repeat cycle ON start	H3CR-FN	H3CR-F8N	H3CR-FN-300	H3CR-F8N-300
Timing units	0.05 s to 30 h			1.2 s to 300 h	
Terminal form	11-pin models		8-pin models	11-pin models	8-pin models
Supply voltages	100 to 240 VAC, 24 VAC/DC, 12 VDC				
Operating mode	Repeat cycle				

Note: Specify both the model number and supply voltage when ordering.
Example: H3CR-F 24 VAC/DC

□ Supply voltage

MODEL NUMBER LEGEND

H3CR - □ □ □ - □
 1 2 3 4

1. Classification

F: Repeat cycle timers

2. Configuration

None: 11-pin socket

8: 8-pin socket

3. Repeat cycle mode

None: OFF start

N: ON start

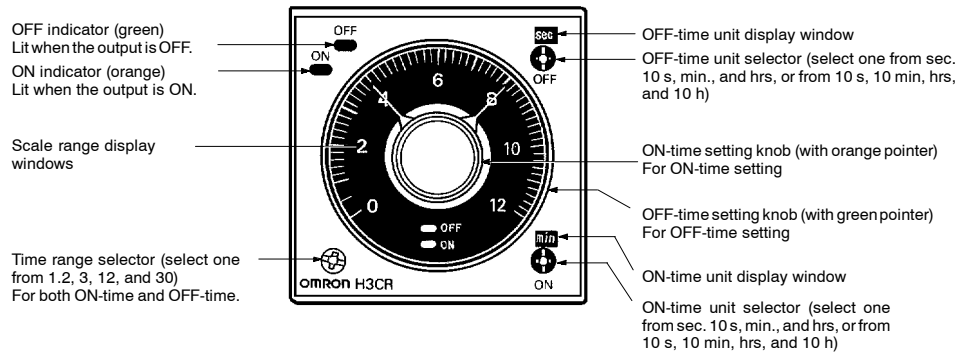
4. Specified Type

300: Long time range (1.2 s to 300 h) type

■ ACCESSORIES

Description		Part number	
Sockets	11-pin	Bottom surface or track mounting, top screw terminals	P2CF-11
		Bottom surface or track mounting, top screw terminals, finger-safe terminal conforms to VDE0106/P100	P2CF-11-E
		Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals	P3GA-11
	8-pin	Bottom surface or track mounting, top screw terminals	P2CF-08
		Bottom surface or track mounting, top screw terminals, finger-safe terminal conforms to VDE0106/P100	P2CF-08-E
		Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals	P3G-08
		Terminal cover for P3G sockets, conforms to VDE0106/P100	Y92A-486
Panel mounting adapter	Fits behind panel, ideal for side-by-side installation. Use P3G _ _ sockets		Y92F-30
	Panel-mounting adapter (88 mm x 58 mm x 66 mm)		Y92F-73
	Panel-mounting adapter (58 mm x 50 mm x 66 mm)		Y92F-74
Protective cover	Hard plastic cover protects against dust, dirt and water; not for use with panel covers		Y92A-48B
NEMA 4 cover	Waterproof front cover		Y92A-48N
Colored panel covers	Light gray (Munsell No. 5Y7/1) to match case		Y92P-48GL
	Medium gray (Munsell No. 5Y5/1)		Y92P-48GM
	Black (Munsell No. N1.5)		Y92P-48GB
Mounting track	DIN rail, 50 cm (1.64 ft) length; 7.3 mm thick		PFP-50N
	DIN rail, 1 m (3.28 ft) length; 7.3 mm thick		PFP-100N
	DIN rail, 1 m (3.28 ft) length; 16 mm thick		PFP-100N2
End plate			PFP-M
Spacer			PFP-S

■ RANGE SELECTION



0.05 s to 30 h Models

Time range	Time units			
	s (sec)	x 10 s (10 s)	min	h (hrs)
1.2	0.05 to 1.2	1.2 to 12	0.12 to 1.2	
3	0.3 to 3	3 to 30	0.3 to 3	
12	1.2 to 12	12 to 120	1.2 to 12	
30	3 to 30	30 to 300	3 to 30	

Note: Instantaneous output is available at any time range. To obtain instantaneous output, set to below 0.

1.2 s to 300 h Models

Time range	Time units			
	x 10 s (10 s)	x 10 min (10 min)	h (hrs)	x 10 h (10 h)
1.2	1.2 to 12	1.2 to 12	0.12 to 1.2	1.2 to 12
3	3 to 30	3 to 30	0.3 to 3	3 to 30
12	12 to 120	12 to 120	1.2 to 12	12 to 120
30	30 to 300	30 to 300	3 to 30	30 to 300

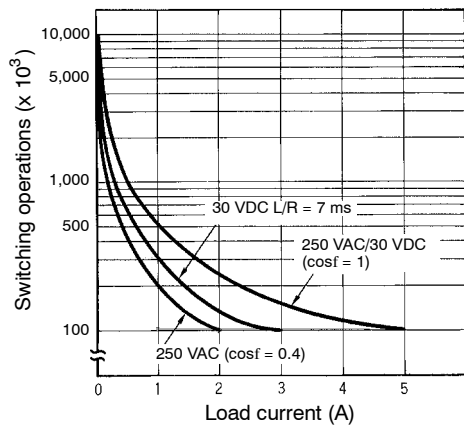
Note: Instantaneous output is available at any time range. To obtain instantaneous output, set to below 0.

Specifications

Part number		H3CR-F/-F-300	H3CR-F8/-F8-300	H3CR-FN/-FN-300	H3CR-F8N/-F8N-300
Operating mode		OFF start		ON start	
Supply voltage (see note)	AC	100 to 240 VAC (50/60 Hz)			
	AC/DC	24 VAC/DC (50/60 Hz)			
	DC	12 VDC			
Operating voltage range		85% to 110% of rated supply voltage, 90% to 110% with 12-VDC models			
Power consumption	AC	100 to 240 VAC: 10 VA (100 VAC applied)			
	AC/DC	24 VAC/DC: 2 VA (24 VAC applied)/1 W (24 VDC applied)			
	DC	12 VDC: 1 W			
Start, Reset, Gate inputs		ON-impedance: 1 k Ω max. ON residual voltage: 1 V max OFF impedance: 500 k Ω min.			
Control outputs	Type	DPDT relay			
	Max. load	5 A at 250 VAC, p.f. = 1			
	Min. load	10mA at 5 VDC			
Repeat accuracy		\pm 0.3% full scale max. (\pm 0.3% full scale max. \pm 10 ms in ranges of 1.2 and 3 s)			
Setting error		\pm 5% full scale max \pm 0.05 s max.			
Resetting system		Time-limit operation/time-limit reset or self-reset			
Resetting time		Minimum power-opening time: 0.1 sec			
Indicators		Output ON indicator (orange LED), output OFF indicator (green LED)			
Materials		Plastic case (light gray Munsell 5Y7/1)			
Mounting		Panel, DIN track, or surface depending on socket selected			
Connections		11-pin round socket	8-pin round socket	11-pin round socket	8-pin round socket
Weight		Approx. 100 g (4.23 oz.)			
Approvals		UL, CSA, CE			
Ambient temperature	Operating	-10° to 55°C (14° to 131°F) with no icing			
	Storage	-25° to 65°C (-13° to 149°F) with no icing			
Humidity		35% to 85%			
Vibration	Mechanical durability	10 to 55 Hz with 0.75-mm single amplitude each in three directions			
	Malfuction durability	10 to 55 Hz with 0.5-mm single amplitude each in three directions			
Shock	Mechanical durability	980 m/s ² (100G) each in three directions			
	Malfuction durability	98 m/s ² (10G) each in three directions			
Variation due to voltage change		\pm 0.5% full scale max. (\pm 0.5% full scale max. \pm 10 ms in ranges of 1.2 and 3 s)			
Variation due to temperature change		\pm 2% full scale max. (\pm 2% full scale max. \pm 10 ms in ranges of 1.2 and 3 s)			
Service life	Mechanical	20 million operations min. (under no load at 1,800 operations/h)			
	Electrical	100,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h)			
Insulation resistance		100 M Ω min. (at 500 VDC)			

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

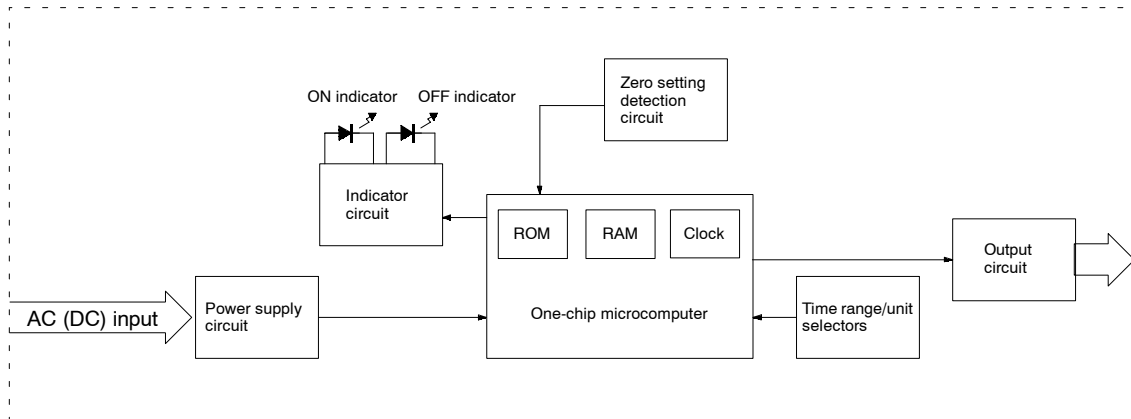
Engineering Data



Note: A maximum current of 0.15 A can be switched at 125 VDC (cosf = 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 (failure level: P).

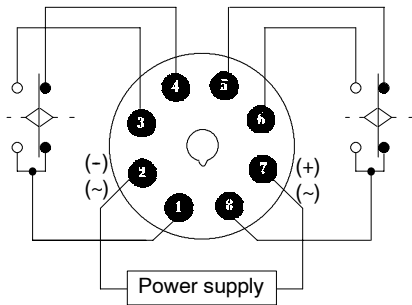
Operation

■ BLOCK DIAGRAMS

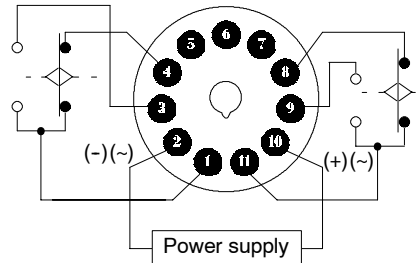


Timing Charts

H3CR-F8
H3CR-F8N
H3CR-F8-300
H3CR-F8N-300



H3CR-F
H3CR-FN
H3CR-F-300
H3CR-FN-300



Note: Leave terminals 5, 6, and 7 open.
Do not use them as relay terminals.

Note: Part numbers with an "N" included are Repeat cycle ON start timers. All others are Repeat cycle OFF start timers.

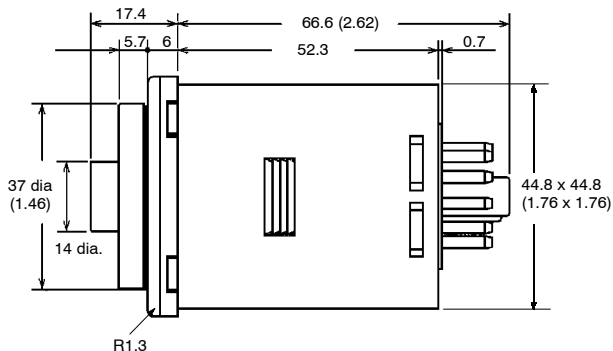
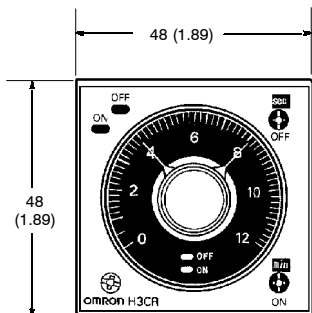
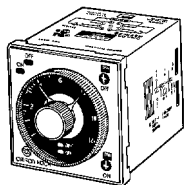
Operating mode	Timing chart
Repeat cycle OFF start	<p>t_{ON}: ON set time t_{OFF}: OFF set time</p>
Repeat cycle ON start	<p>t_{ON}: ON set time t_{OFF}: OFF set time</p>

Dimensions

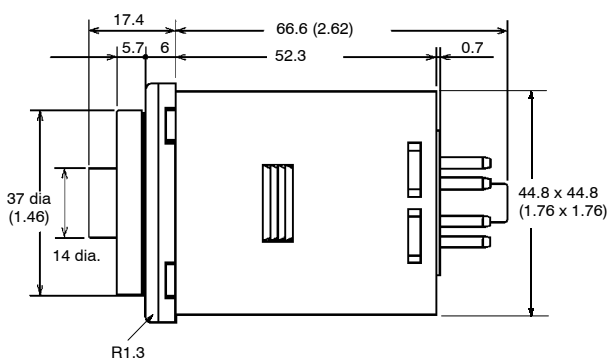
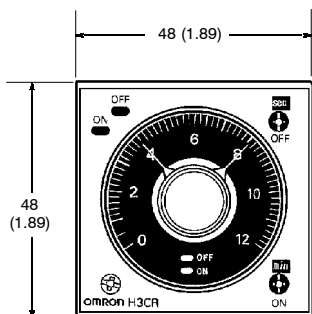
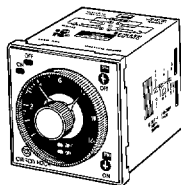
TIMERS

Unit: mm (inch)

H3CR-F
H3CR-FN
H3CR-F-300
H3CR-FN-300



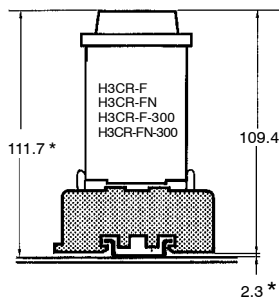
H3CR-F8
H3CR-F8N
H3CR-F8-300
H3CR-F8N-300



TRACK MOUNTING

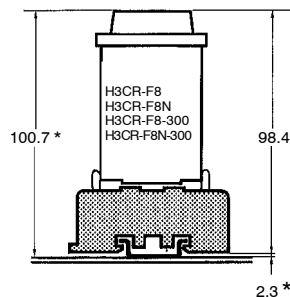
11-Pin Models

P2CF-11/P2CF-11-E



8-Pin Models

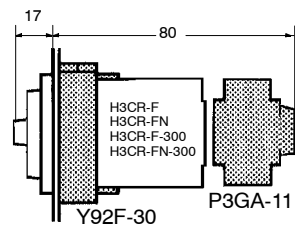
P2CF-08/P2CF-08-E



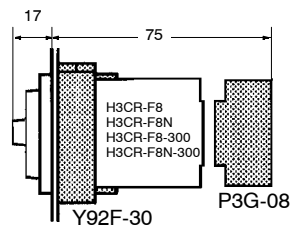
* These dimensions vary with the kind of DIN track (reference value).

PANEL MOUNTING

11-Pin Models



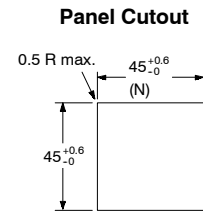
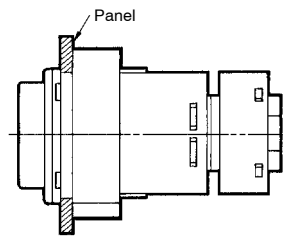
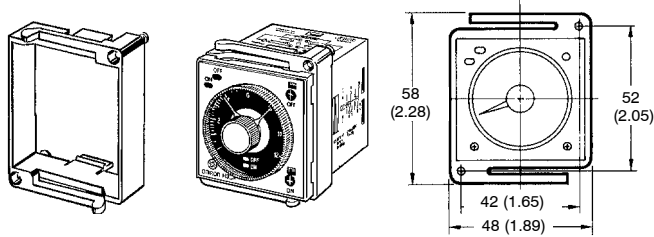
8-Pin Models



■ PANEL-MOUNTING ADAPTERS

Unit: mm (inch)

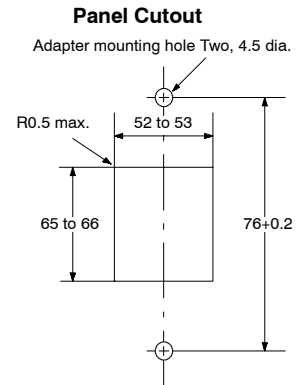
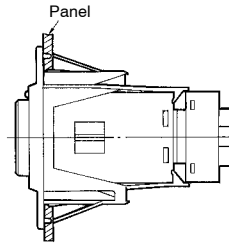
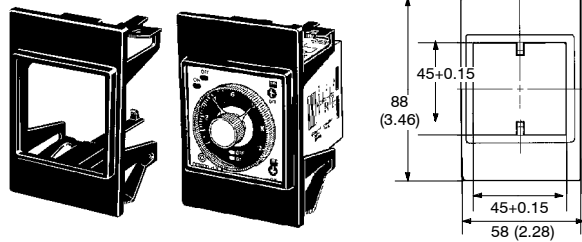
Y92F-30



Note: Recommended panel thickness is 1 to 3.2 mm.

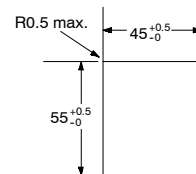
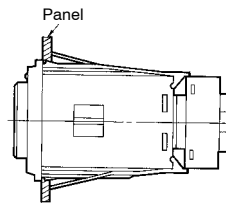
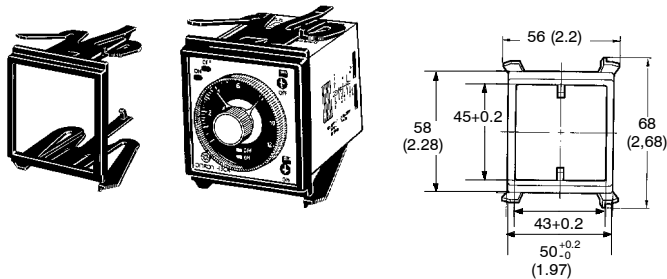
Note: Adapter installs behind the panel. It is ideal for side by side installation. Use P3G-11 or P3G-08 sockets.

Y92F-73



Note: The mounting panel thickness should be 1 to 3.2 mm.

Y92F-74

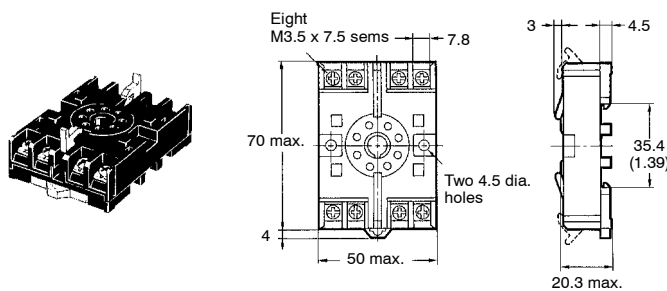


Note: The mounting panel thickness should be 1 to 3.2 mm.

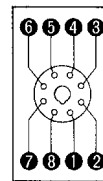
■ SOCKETS

Track-Mounting/Front-Connecting Socket

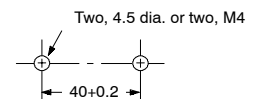
P2CF-08



Terminal Arrangement/
Internal Connections
(Top View)

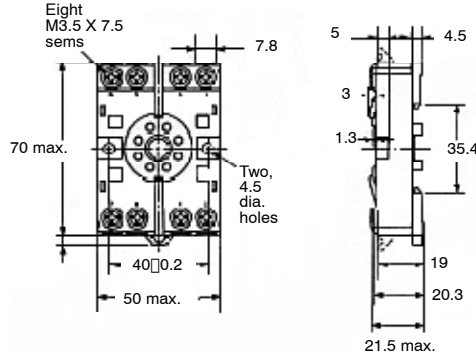
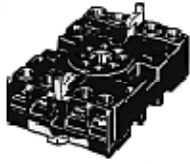


Surface Mounting Holes

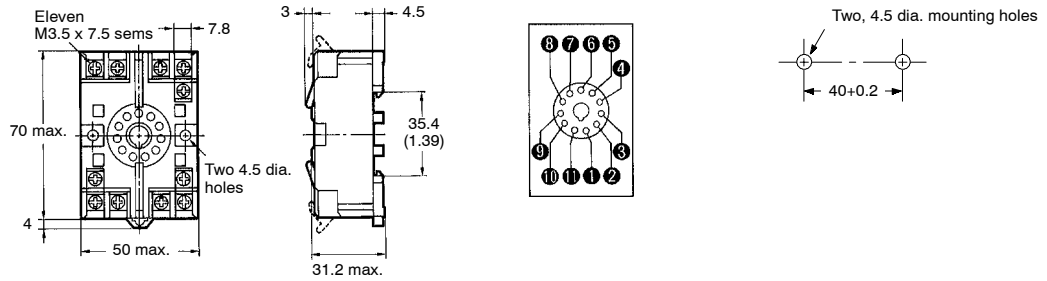
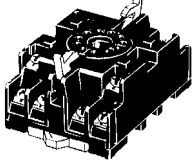


P2CF-08-E (Finger-Safe Terminal Type)

Conforming to VDE0106/P100

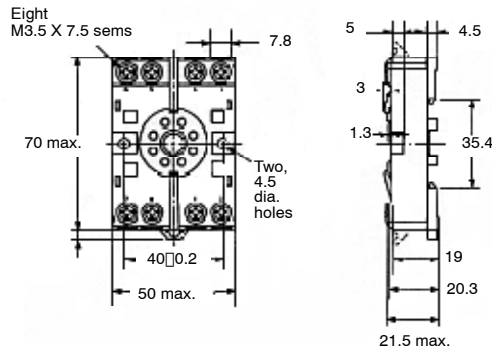
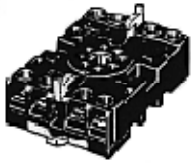


P2CF-11



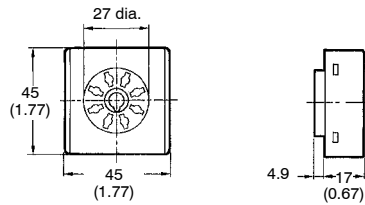
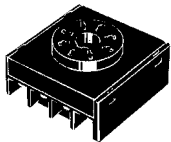
P2CF-08-E (Finger-Safe Terminal Type)

Conforming to VDE0106/P100

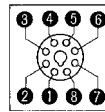


Back-Mounting Socket

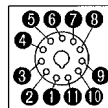
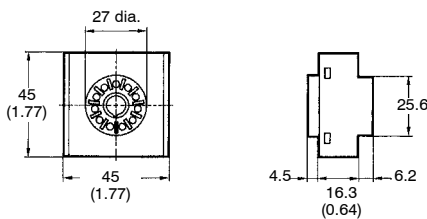
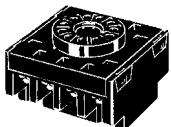
P3G-08



**Terminal Arrangement/
Internal Connections
(Bottom View)**



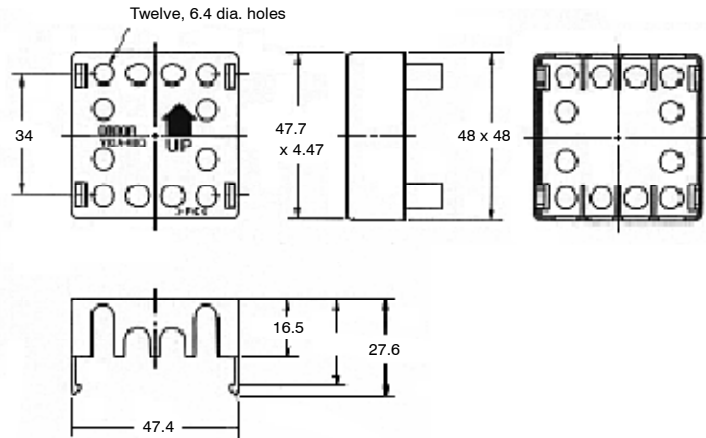
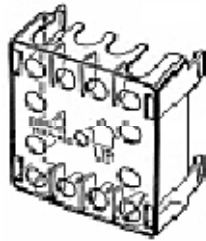
P3GA-11



Finger-Safe Terminal Cover for P3G(A)

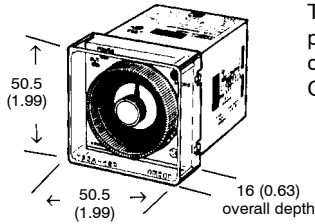
Conforming to VDE0106/P100

Y92A-48G



PROTECTIVE COVER

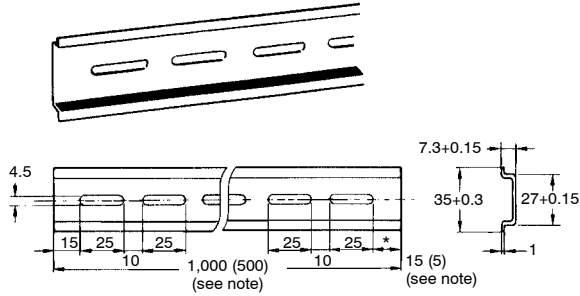
Y92A-48B



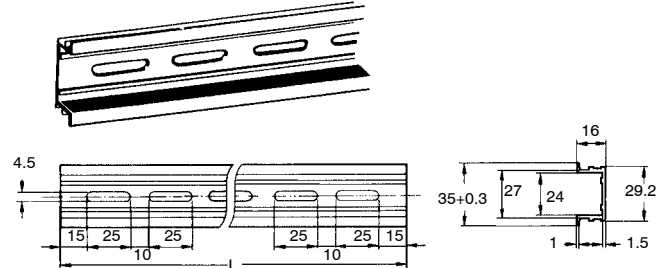
The hard plastic protective cover prevents accidental resetting. It also shields the front panel from dirt and water. The cover is intended for use in areas where unusual service conditions do not exist. The Y92A-48B cover cannot be used with the Y92P Panel Covers below.

MOUNTING TRACK AND ACCESSORIES

PFP-100N/PFP-50N

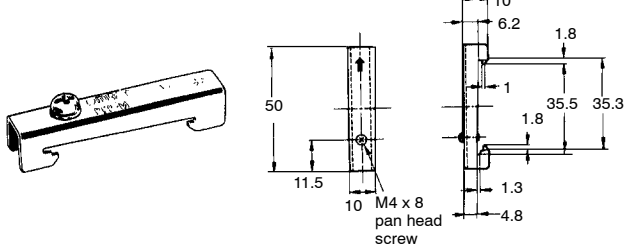


PFP-100N2

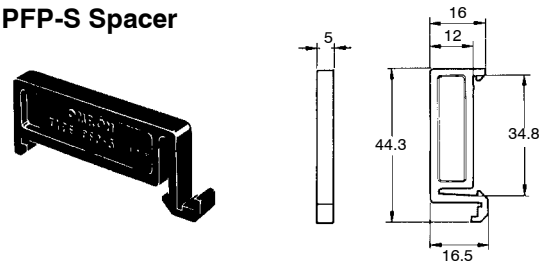


Note: The values shown in parentheses are for the PFP-50N.

PFP-M End Plate



PFP-S Spacer



Connections

Part number	Input terminal number		Power supply terminal numbers		Output terminal numbers		
	COM	Reset	AC (common), DC -	AC (hot), DC+	COM	NC	NO
H3CR-F8 H3CR-F8N H3CR-F8-300 H3CR-F8N-300	—	—	2	7	1 8	4 5	3 6
H3CR-F H3CR-FN H3CR-F-300 H3CR-FN-300	—	—	2	10	1 11	4 8	3 9

Installation

INPUT CONNECTIONS

The neutral or common of the power supply is connected to terminal 2. Terminal 7 of H3CR-F 8-pin terminals and terminal 10 of H3CR-F 11-pin terminals should be connected to the "hot" or positive of the power supply.

OUTPUT CONNECTIONS

Design your control circuit using the relay contacts to switch the load.

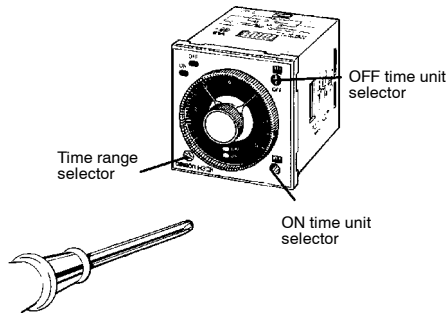
Note: Never switch a load with the contact that is being used as an input signal. The timer's circuitry may be damaged.

SELECTING TIME RANGES

A time range (0 to 1.2, 0 to 3, 0 to 12, or 0 to 30) is selected for ON- and OFF-time using the time range selector at the lower left corner of the front panel, and the selected time range appears within the plastic frame of the time setting knob (= scale range display windows).

For ON-time, the desired time unit (sec, 10 s, min, and hrs, or 10 s, 10 min, hrs, and 10 h) is indicated in the ON-time unit display window at the lower right corner of the front panel and can be changed by turning the ON-time unit selector located below the ON-time unit display window.

For OFF-time, the desired time unit (sec, 10 s, min, and hrs, or 10 s, 10 min, hrs, and 10 h) is indicated in the OFF-time unit display window at the upper right corner of the front panel and can be changed by turning the OFF-time unit selector located below the OFF-time unit display window.

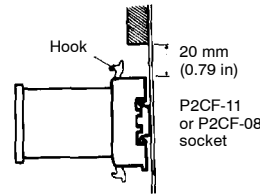


TRACK MOUNTING

Using P2CF-□□ Socket

Mounting

The P2CF-□□ socket has two hooks that secure the timer to the socket. Be sure to allow at least 20 mm (0.79 in) clearance above and below the socket to gain access to release the hooks for servicing and maintenance. Then clip rear of the socket to the track. Push the bottom onto the track until the latch hooks securely.



Removal

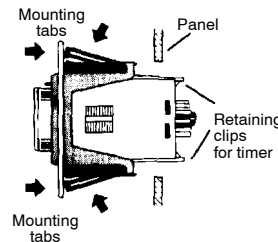
Pull the latch on the socket with a flat-blade screwdriver and remove the timer and socket as one unit.

Using Y92F-73 and Y92F-74 Adapters

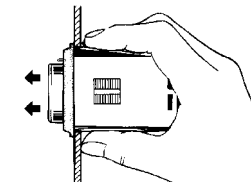
Install the H3CR-H timer, face first, into the back side of the Y92F-73 or Y92F-74 adapter so the bezel fits snugly. Be sure the retaining clips at the back of the adapter fit into the slots on either side of the timer. Compress the top and bottom tabs of the adapter then push the adapter through the front side of the panel cutout. Be sure the tabs extend after the installation for a secure fit.

To remove the timer from the adapter, unclip the two retaining clips at the back of the adapter. To remove the adapter and timer from the panel as a unit, compress the tabs behind the panel and push the unit out the front of the panel.

Installation



Removal



Precautions

To avoid malfunction or damage, do not change the time unit or time range while the timer is in operation. Be sure to turn off the power supply to the timer before changing any of the selections.

Operating Environment

Do not use the Timer in the following locations.

- Locations with radical temperature changes.
- Locations with high humidity that may result in condensation.
- Locations with excessive vibration or shock.
- Locations with corrosive gas or dust.
- Locations where the Timer is exposed to sprayed water, oil, or chemicals.

Organic solvents (such as paint thinner) as well as strong acid or alkali solutions will damage the outer casing of the Timer.

If the Timer is used in an area with excessive electrical noise, be sure to separate the Timer, wires, and input device as far as possible from the noise sources. Furthermore, it is recommended that the input signal wiring be shielded to prevent electrical interference.

■ PRECAUTIONS FOR EN (VDE) CONFORMANCE

The H3CR-A Series, installed as a built-in timer, conforms to EN61812-1 (VDE0435/P2021) provided that the following conditions are satisfied.

Make sure that no voltage is applied to any terminals before removing the Timer from the Socket.

The output section of the H3CR-A is provided only with basic isolation. Provide supplementary basic isolation on the load side connected to the output so that reinforced isolation required by the EN (VDE) standards will be ensured.

The H3CR-A Was Designed to Meet the Following Conditions

- Overvoltage category III
- Pollution degree 2
- Isolation

Operation parts: Reinforced isolation

- With clearance of 5.5 mm and creepage distance of 5.5 mm at 230 VAC

Output: Basic isolation (See Note.)

- With clearance of 3 mm and creepage distance of 3 mm at 230 VAC

Note: The 11-pin model ensures basic isolation by itself and also ensures basic isolation with the 11-pin model mounted to the OMRON P2CF-11 or P3GA-11 Socket.

Connect the two output contacts different in polarity to the loads, so that they will be the same in potential.

■ VOLTAGE WITHSTAND TEST

If the Timer is mounted to a control board, remove the Timer from the control board or short-circuit the control board circuitry before carrying out a voltage withstand test between the electric circuitry and non-charged metal part of the Timer. This protects the internal circuitry of the Timer from damage.

NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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