

# Solid-state Timer H3M

CSM\_H3M\_DS\_E\_2\_1

## Solid-state Timer with Variable Time Ranges

- Four time ranges are selectable per timer unit.
- Wide timing range of 0.05 second to 30 hours can be covered by a combination of five timer units.
- Standard surface mounting type is easily convertible to flush mounting type with the use of a special adapter (Y92F-40).
- Requires only 40 x 50 mm for mounting space.
- Equipped with power-ON & time-out indicators.
- All standard models approved by UL, CSA, and LR.



## Ordering Information

Operation/resetting system	Time-limit contact	Instantaneous contact	Mounting	
			Surface mounting	Flush mounting
Time-limit operation/ self-resetting	DPDT	---	H3M	H3M with Y92F-40 adapter
	SPDT	SPDT	H3M-H	H3M-H with Y92F-40 adapter

- Note:** 1. Specify both the model number and supply voltage when ordering.  
 2. Sockets and adapters for surface/track mounting are available optionally and therefore, place the order for them as necessary.  
 Timer hold-down clips (F-hook and L-hook) are supplied with the timer.

## Accessories (Order Separately)









### Adapter









Y92F-40

## Specifications

### Time Ranges

Four time ranges are available for each timer by changing the time range selector switch positions to different combinations.

Time range code	Time range selector switch			
	× 1  s × 10  min	× 1  s × 10  min	× 1  s × 10  min	× 1  s × 10  min
<b>A</b>	0.05 to 0.5 s	0.5 to 5 s	0.05 to 0.5 min	0.5 to 5 min
<b>B</b>	0.1 to 1 s	1 to 10 s	0.1 to 1 min	1 to 10 min
<b>C</b>	0.3 to 3 s	3 to 30 s	0.3 to 3 min	3 to 30 min

Time range code	Time multiplying key			
	× 1  min × 10  h	× 1  min × 10  h	× 1  min × 10  h	× 1  min × 10  h
<b>D</b>	0.1 to 1 min	1 to 10 min	0.1 to 1 hrs	1 to 10 hrs
<b>E</b>	0.3 to 3 min	3 to 30 min	0.3 to 3 hrs	3 to 30 hrs

## ■ Ratings

<b>Rated supply voltage</b>	100/110/120 VAC (50/60 Hz), 200/220/240 VAC (50/60 Hz), 12, 24, 48, 100, 110 VDC (see note 2)
<b>Operating voltage range</b>	AC: 85% to 110% of rated supply voltage DC: 80% to 110% of rated supply voltage (see note 3)
<b>Power consumption</b>	AC: Approx. 5 VA/2 W DC: Approx. 2 W
<b>Control outputs</b>	5 A at 250 VAC, resistive load ( $\cos\phi = 1$ )

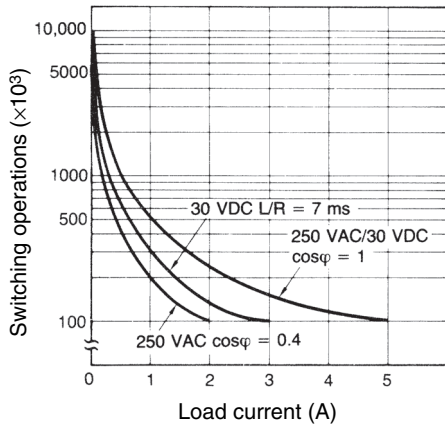
- Note:** 1. Color indicators for the rated voltage are provided on the front of the Timer.  
Blue: 100/110/120 VAC  
Red: 200/220/240 VAC  
None: Other voltages
2. With DC ratings, single-phase full-wave rectified power sources may be used.
3. 90% to 110% for 12-VDC models.

## ■ Characteristics

<b>Accuracy of operating time</b>	$\pm 1\%$ max. (see note)
<b>Setting error</b>	$\pm 10\%$ max.
<b>Reset time</b>	0.1 s max.
<b>Influence of voltage</b>	$\pm 1\%$ max. (see note)
<b>Influence of temperature</b>	$\pm 2\%$ max. (see note)
<b>Insulation resistance</b>	100 M $\Omega$ min. (at 500 VDC)
<b>Dielectric strength</b>	2,000 VAC, 50/60 Hz for 1 min (between current-carrying and non-current-carrying parts) 1,500 VAC, 50/60 Hz for 1 min (between contact and control circuit) 1,000 VAC, 50/60 Hz for 1 min (between non-continuous contacts)
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz with 0.75-mm double amplitude Malfunction: 10 to 55 Hz with 0.5-mm double amplitude
<b>Shock resistance</b>	Destruction: 1,000 m/s <sup>2</sup> (approx. 100G) Malfunction: 100 m/s <sup>2</sup> (approx. 10G)
<b>Ambient temperature</b>	Operating: $-10^{\circ}\text{C}$ to $50^{\circ}\text{C}$ Storage: $-25^{\circ}\text{C}$ to $65^{\circ}\text{C}$
<b>Ambient humidity</b>	Operating: 35% to 85%
<b>Life expectancy</b>	Mechanical: 20,000,000 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)
<b>Approved standards</b>	UL (File No. E41515), CSA (File No. LR22310)
<b>Weight</b>	Approx. 100 g

- Note:** For the timer with time range code A, add  $\pm 10$  ms to the respective characteristics when the time range selector switches are in the x 1 s (0.05 to 0.5 s) position.

# Engineering Data

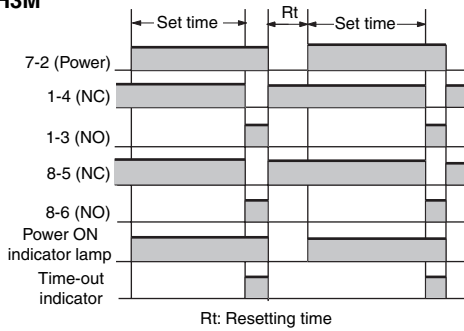


Reference: A maximum current of 0.15 A can be switched at 125 VDC (cosφ = 1). Maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected. The minimum applicable load is 10 mA at 5 VDC (failure level: P).

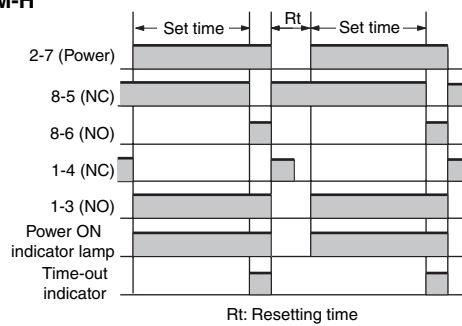
# Operation

## ■ Timing Chart

H3M



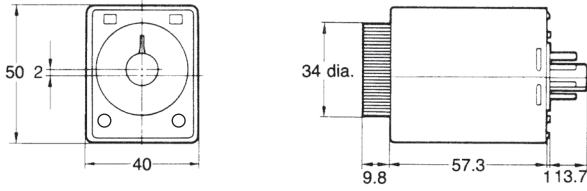
H3M-H



# Dimensions

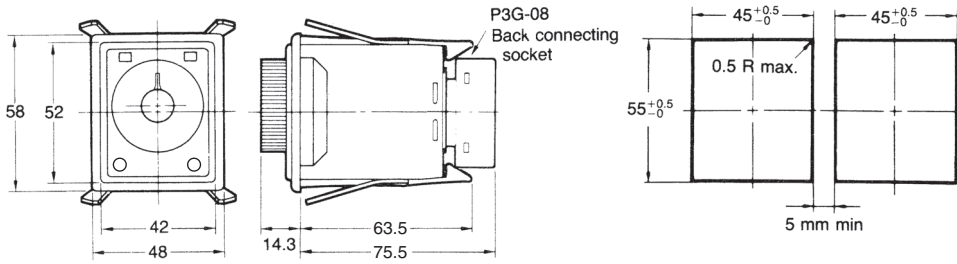
Note: All units are in millimeters unless otherwise indicated.

## H3M(-H)



## Accessories (Order Separately)

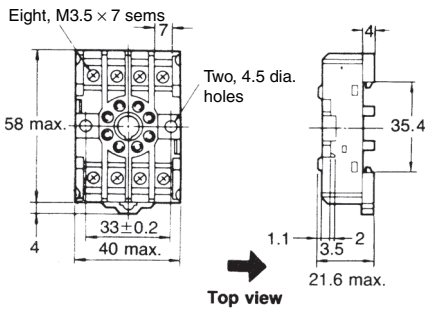
### Y92F-40 Adapter with Flush Mounting



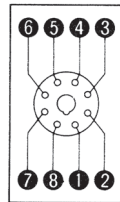
Note: When two or more timers mounted in line are to be continuously energized at the same time after the lapse of the set time, be sure to limit the carry current to less than 1 A. When using the timers at an ambient temperature of more than 40°C, be sure to reset the timers immediately after the set time has elapsed.

### Track Mounted/Front Connecting Socket

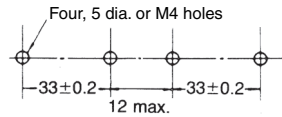
#### PF085A



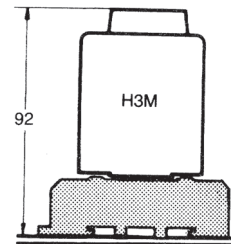
#### Terminal Arrangement (Top View)



#### Mounting Holes



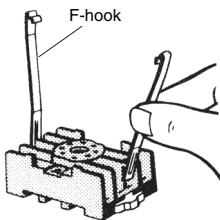
#### Mounting Height of Timer with Socket



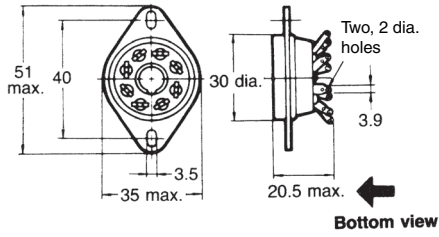
Note: PF085A can be used as a front connecting socket.

### Hold-down Clips (Attached)

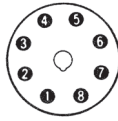
#### PHC-1 For PF085A



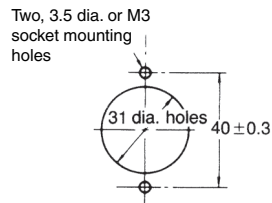
## Back Connecting Socket PL08



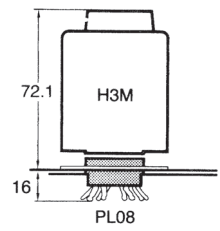
### Terminal Arrangement (Bottom View)



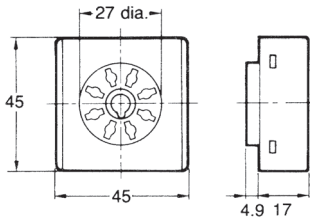
### Mounting Holes



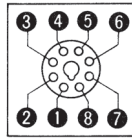
### Mounting Height of Timer with Socket



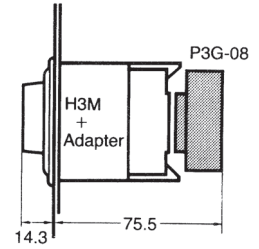
## P3G-08



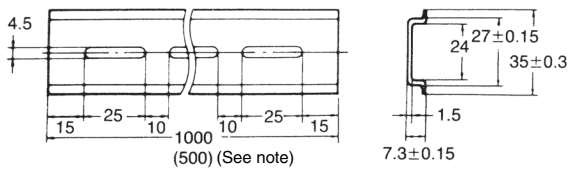
### Terminal Arrangement (Bottom View)



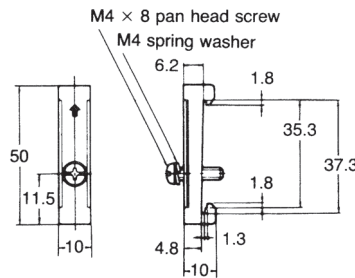
### Mounting Height of Timer with Socket



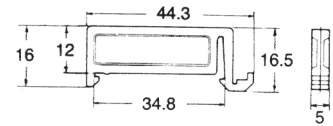
## Mounting Track PFP-100N/PFP-50N



## End Plate PFP-M



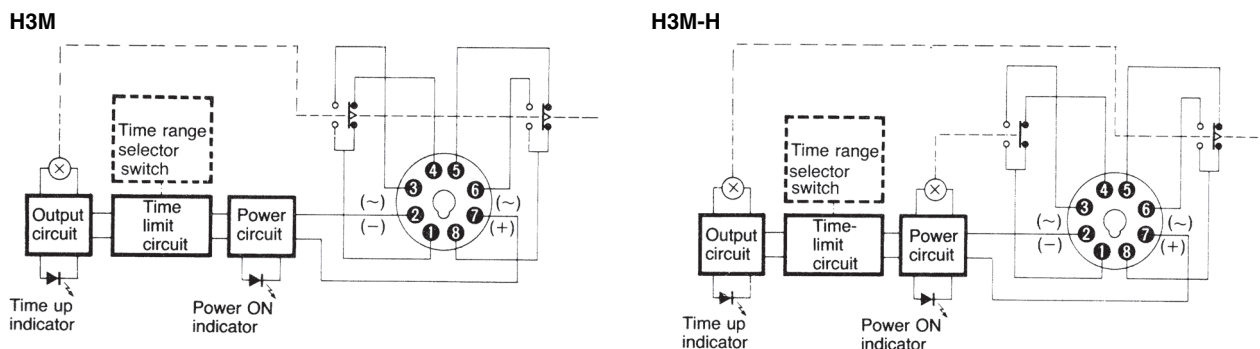
## Spacer PFP-S



**Note:** This dimension applies to PFP-50N.

# Installation

## ■ Connection



## Safety Precautions

Refer to *Safety Precautions for All Timers*.

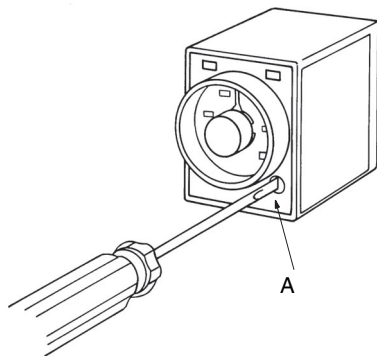
### Power Source Connection

Because the AC-operated version is a capacitive load, the solid-state relay to be used must be rated at a dielectric strength two times as that of the timer to switch the power source of the timer.

The H3M contains a capacitor-drop power circuit. Use a sinusoidal power supply with a commercial frequency. Do not use power supplies with a high frequency component (such as inverter power supplies) for Timers with 100 to 240-VAC specifications. Using these power supplies can damage internal circuits.

### How to Change the Time Range

The H3M is provided with two time range selector switches. One is on the lower right side A of the front panel and the other on the lower left side. Change the positional combination of the time range selector switches with a flat-blade screwdriver as desired.



### ⚠ CAUTION

Be sure to turn the power off before changing the time specification. Changing the time range while the timer is in operation may result in a malfunction.

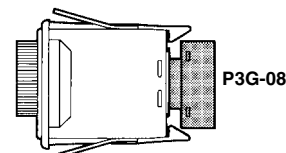
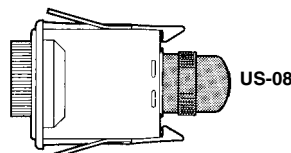
### Connections

#### Connecting the Operating Power Supply

If using an AC power supply, connect it between terminals 2 and 7. If using a DC power supply, connect the positive line to terminal 7 and the negative line to terminal 2. An AC power supply can be connected without considering polarity, but the DC power supply lines must be connected as specified.

### Other Precautions

- A DC power supply must have 50% or less ripple and the average voltage must be within the rated supply voltage specification.
- A P3G-08 Socket can be used instead of a US-08 Socket to reduce the depth. Also, the P3G-08 has screw terminals, making maintenance easier.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

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