

## Digital Timer

## H5CN

1/16 DIN, Quartz Timer with  
Four-Digit LED Display

- Five wide ranges to choose from
- Wide-range AC or DC supply voltages
- Elapsed time (UP) or time remaining (DOWN) display available
- Selectable no-voltage reset and gate inputs expand capabilities
- Memory protection circuit available on AC/DC models; order back-up battery separately from accessories
- Easy-to-read 8 mm-high LED display
- Panel mounting adapter, sockets, and accessories may be ordered separately



## Ordering Information

### ■ TIMERS

**NOTE:** The complete part numbers shown here are the only H5CN timers currently available. Some time ranges and supply voltages have been discontinued.

| Timing functions  |                      | ON-delay                                                |                                            |                                                         |                                               |
|-------------------|----------------------|---------------------------------------------------------|--------------------------------------------|---------------------------------------------------------|-----------------------------------------------|
| Contact type      |                      | SPDT relay                                              |                                            |                                                         | Solid-state open collector                    |
| Display type      |                      | Elapsed time (UP)                                       |                                            | Time remaining (DOWN)                                   | Elapsed time (UP)                             |
| Memory protection |                      | Not provided                                            | Provided                                   | Not provided                                            | Not provided                                  |
| Terminal form     |                      | 8-pin round socket                                      | 11-pin round socket                        | 8-pin round socket                                      | 8-pin round socket                            |
| Part number       | 0.001 to 9.999 sec   | —                                                       | —                                          | —                                                       | H5CN-XZNS-AC100-240<br>H5CN-XZNS-DC12-48      |
|                   | 0.01 to 99.9 sec     | H5CN-XAN-AC24<br>H5CN-XAN-AC100-240<br>H5CN-XAN-DC12-48 | —<br>H5CN-XANM-AC100-240<br>—              | —<br>H5CN-YAN-AC100-240<br>H5CN-YAN-DC12-48             | —<br>H5CN-XANS-AC100-240<br>H5CN-XANS-DC12-48 |
|                   | 0.1 to 999.9 sec     | H5CN-XBN-AC24<br>H5CN-XBN-AC100-240<br>H5CN-XBN-DC12-48 | —<br>H5CN-XBNM-AC100-240<br>H5CN-XBNM-DC24 | —<br>H5CN-YBN-AC100-240<br>H5CN-YBN-DC12-48             | —<br>—<br>—                                   |
|                   | 1 s to 99 min 59 s   | H5CN-XCN-AC24<br>H5CN-XCN-AC100-240<br>H5CN-XCN-DC12-48 | —<br>H5CN-XCNM-AC100-240<br>—              | H5CN-YCN-AC24<br>H5CN-YCN-AC100-240<br>H5CN-YCN-DC12-48 | —<br>—<br>—                                   |
|                   | 1 min to 99 h 59 min | H5CN-XDN-AC24<br>H5CN-XDN-AC100-240<br>H5CN-XDN-DC12-48 | —<br>H5CN-XDNM-AC100-240<br>—              | —<br>H5CN-YDN-AC100-240<br>H5CN-YDN-DC12-48             | —<br>—<br>—                                   |

## ■ ACCESSORIES

| Description               |        |                                                                                                      | Part number      |
|---------------------------|--------|------------------------------------------------------------------------------------------------------|------------------|
| Sockets                   | 11-pin | Bottom surface or track mounting, top screw terminals                                                | <b>P2CF-11</b>   |
|                           |        | Bottom surface or track mounting, top screw terminals, finger safe terminal conforms to VDE0106/P100 | <b>P2CF-11-E</b> |
|                           |        | Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals                         | <b>P3GA-11</b>   |
|                           | 8-pin  | Bottom surface or track mounting, top screw terminals                                                | <b>P2CF-08</b>   |
|                           |        | Bottom surface or track mounting, top screw terminals, finger safe terminal conforms to VDE0106/P100 | <b>P2CF-08-E</b> |
|                           |        | Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals                         | <b>P3G-08</b>    |
|                           |        | Terminal cover for P3G sockets, conforms to VDE0106/P100                                             | <b>Y92A-48G</b>  |
| Panel mounting adapter    |        | Fits behind panel, ideal for side by side installation. Use P3G□-□ sockets                           | <b>Y92F-30</b>   |
| Battery for memory backup |        | Use with H5CN-□□□M timers                                                                            | <b>Y92S-20</b>   |
| Protective cover          |        | Hard plastic cover protects against dust, dirt and water; not for use with panel covers              | <b>Y92A-48B</b>  |
|                           |        | Soft plastic cover protects against dust, dirt and water; not for use with panel covers              | <b>Y92A-48D</b>  |
| NEMA 4 cover              |        | Waterproof front cover                                                                               | <b>Y92A-48N</b>  |
| Mounting track            |        | DIN rail, 50 cm (1.64 ft) length; 7.3 mm thick                                                       | <b>PFP-50N</b>   |
|                           |        | DIN rail, 1 m (3.28 ft) length; 7.3 mm thick                                                         | <b>PFP-100N</b>  |
|                           |        | DIN rail, 1 m (3.28 ft) length; 16 mm thick                                                          | <b>PFP-100N2</b> |
| End plate                 |        |                                                                                                      | <b>PFP-M</b>     |
| Spacer                    |        |                                                                                                      | <b>PFP-S</b>     |

## Specifications

| Part number                   |                 |               | H5CN-X□N                                                                     | H5CN-X□NM           | H5CN-Y□N                             | H5CN-X□NS                          |
|-------------------------------|-----------------|---------------|------------------------------------------------------------------------------|---------------------|--------------------------------------|------------------------------------|
| Supply voltage                |                 | AC            | 24 V, 100 to 240 V; 50/60 Hz                                                 |                     |                                      | 100 to 240 V; 50/60 Hz             |
|                               |                 | DC            | 12 to 48 V (permissible ripple factor; 20% max.)                             |                     |                                      |                                    |
| Operating voltage             |                 |               | 85 to 110% of the rated voltage                                              |                     |                                      |                                    |
| Power consumption             |                 | AC            | 12 VA at 240 VAC, 50/60 Hz                                                   |                     |                                      | —                                  |
|                               |                 | DC            | 2.5 W at 48 VDC                                                              |                     |                                      | 2.5 W at 48 VDC                    |
| Timing functions              |                 |               | ON-delay with elapsed time display                                           |                     | ON-delay with time remaining display | ON-delay with elapsed time display |
| Reset, gate inputs            |                 |               | No voltage                                                                   |                     |                                      |                                    |
| Control output                | Type            | Time limit    | SPDT relay                                                                   |                     |                                      | Open collector solid-state         |
|                               |                 | Instantaneous | —                                                                            |                     |                                      | —                                  |
|                               | Max. load       |               | 3 A, 250 VAC (p.f. = 1)                                                      |                     |                                      | 100 mA max. 30 VDC                 |
|                               | Min. load       |               | 10 mA, 5 VDC                                                                 |                     |                                      |                                    |
|                               | Repeat accuracy |               | ±0.01% ±0.05 sec max. (power-ON start); ±0.005% ±0.03 sec max. (reset start) |                     |                                      |                                    |
| Setting error                 |                 |               | See "Repeat accuracy"                                                        |                     |                                      |                                    |
| Resetting system              |                 |               | Power-OFF and external reset                                                 |                     |                                      |                                    |
| Resetting time                |                 |               | Power OFF: 0.5 sec min.; External reset: 0.02 sec signal min.                |                     |                                      |                                    |
| Indicators                    |                 |               | Time UP (red LED), 8 mm LED numeric display                                  |                     |                                      |                                    |
| Materials                     |                 |               | Plastic                                                                      |                     |                                      |                                    |
| Mounting                      |                 |               | Panel, track, surface                                                        |                     |                                      |                                    |
| Connections                   |                 |               | 8-pin round socket                                                           | 11-pin round socket | 8-pin round socket                   |                                    |
| Weight                        |                 |               | 150 g (5.31 oz.)                                                             |                     |                                      |                                    |
| Approvals                     |                 |               | UL/CSA/SEV                                                                   |                     |                                      |                                    |
| Operating ambient temperature |                 |               | -10° to 55°C (14° to 131°F)                                                  |                     |                                      |                                    |
| Humidity                      |                 |               | 35 to 85% RH                                                                 |                     |                                      |                                    |

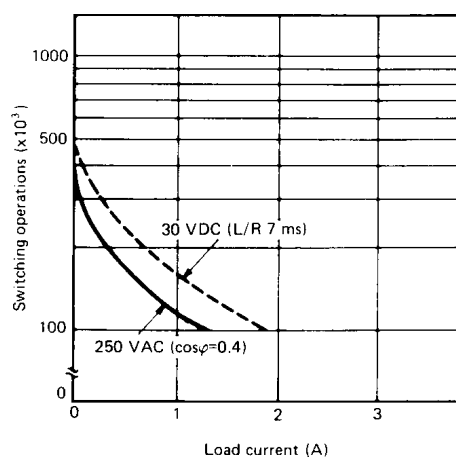
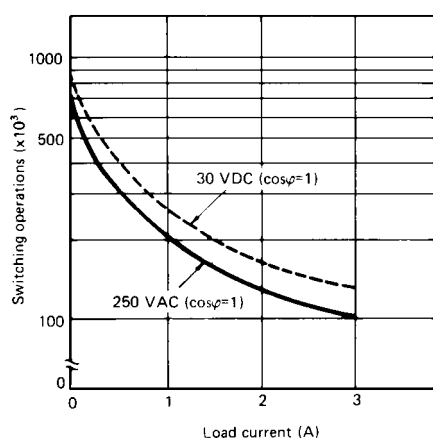
Specifications table continued on the next page.

## SPECIFICATIONS continued

| Part number                         |                        | H5CN-X□N                                                                                                                                                                  | H5CN-X□NM | H5CN-Y□N | H5CN-X□NS      |
|-------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------------|
| Vibration                           | Mechanical durability  | 10 to 55 Hz; 0.75 mm (0.03 in) double amplitude                                                                                                                           |           |          |                |
|                                     | Malfunction durability | 10 to 55 Hz; 0.5 mm (0.02 in) double amplitude                                                                                                                            |           |          |                |
| Shock                               | Mechanical durability  | 30 G                                                                                                                                                                      |           |          |                |
|                                     | Malfunction durability | 10 G                                                                                                                                                                      |           |          |                |
| Variation due to voltage change     |                        | See "Repeat Accuracy"                                                                                                                                                     |           |          |                |
| Variation due to temperature change |                        | See "Repeat Accuracy"                                                                                                                                                     |           |          |                |
| Insulation resistance               |                        | 100 MΩ min. at 500 VDC                                                                                                                                                    |           |          |                |
| Dielectric strength                 |                        | 2,000 VAC, 50/60 Hz for 1 minute between current-carrying terminal and exposed non-current-carrying metal parts, between power supply circuit, and control output circuit |           |          |                |
| Service life                        | Mechanical             | 10 million operations minimum                                                                                                                                             |           |          | Not applicable |
|                                     | Electrical             | 100,000 operations minimum at maximum ratings                                                                                                                             |           |          | Not applicable |

## Engineering Data

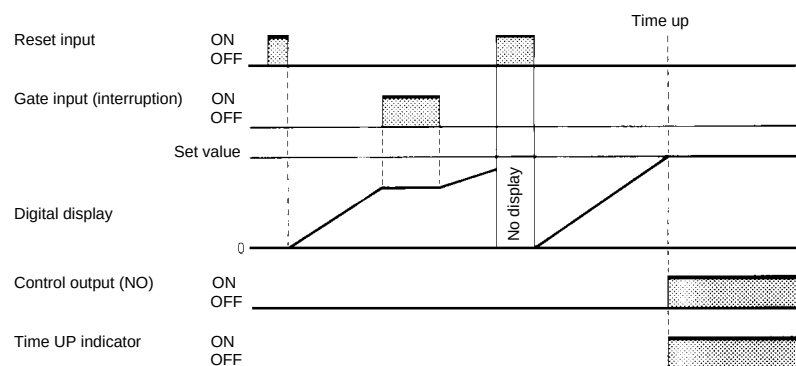
## ■ ELECTRICAL SERVICE LIFE



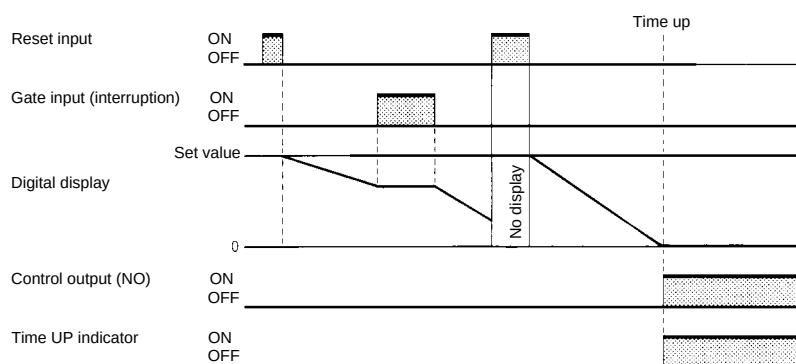
Note: The service life graphs apply to all relay output models. They do not apply to solid-state output models H5CN-XZNS or H5CN-XANS.

# Timing Charts

## ■ ELAPSED TIME (UP) DISPLAY



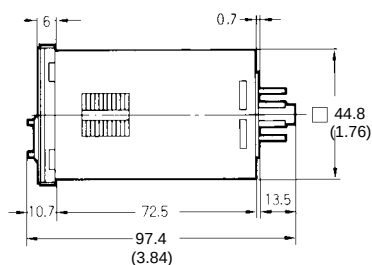
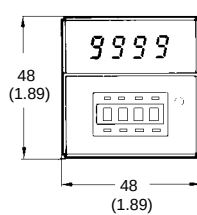
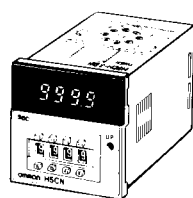
## ■ TIME REMAINING (DOWN) DISPLAY



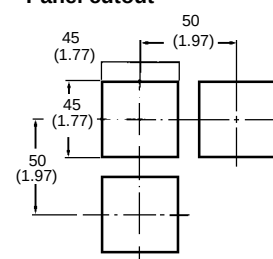
# Dimensions

Unit: mm (inch)

## ■ TIMERS



## Panel cutout

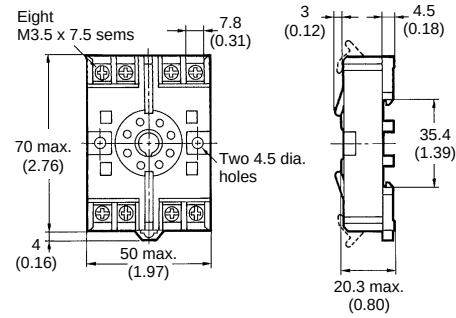
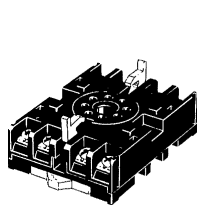


Note: Recommended panel thickness is 1 to 3.2 mm.

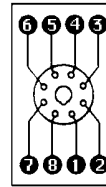
Panel cutout conforms to DIN 43700.

## ■ ACCESSORIES

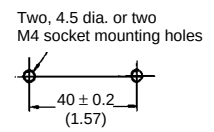
### P2CF-08 Track Mounting/Front Connecting Socket



#### Terminal Arrangement/ Internal Connections (Top View)

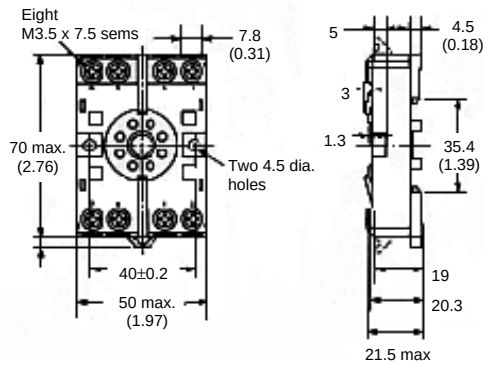
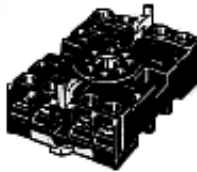


#### Surface Mounting Holes

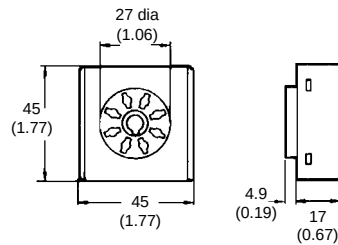
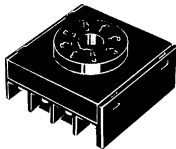


### P2CF-08E Finger Safe Terminal Type

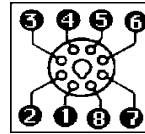
Conforming to VDE0106/P100



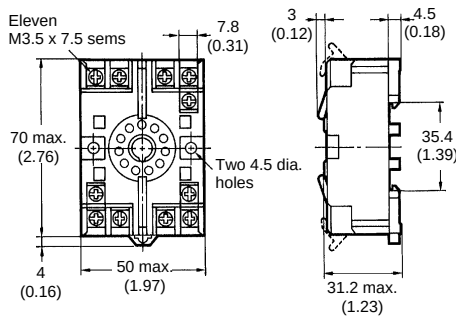
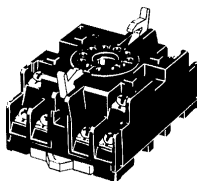
### P3G-08 Back Connecting Socket



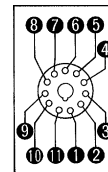
#### Terminal Arrangement



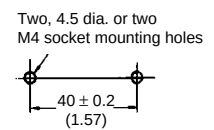
### P2CF-11 Track Mounting/Front Connecting Socket



#### Terminal Arrangement

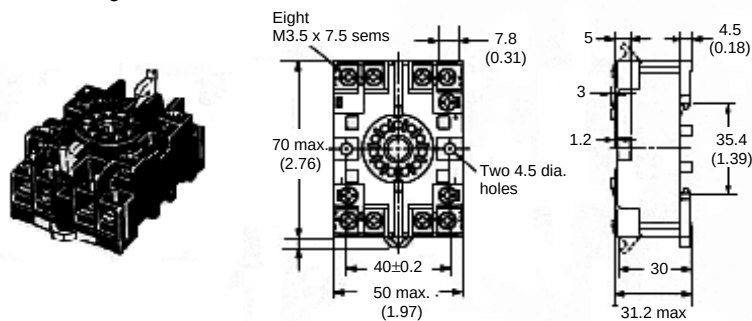
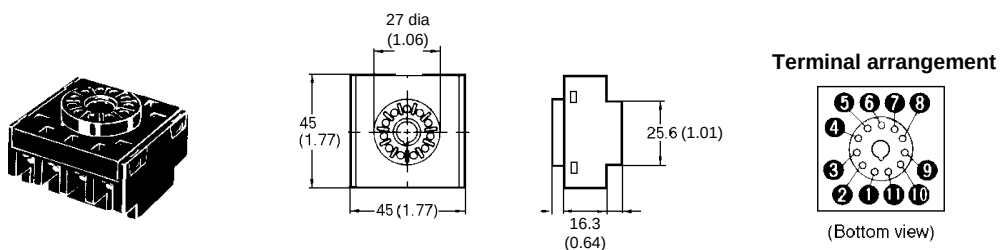


#### Surface Mounting Holes

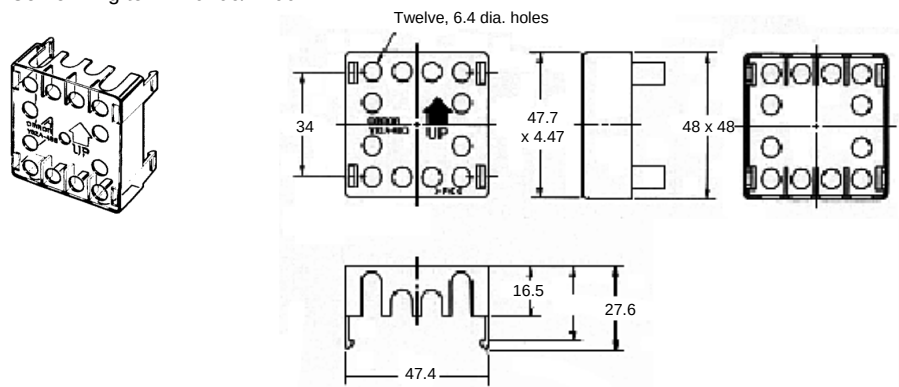


**P2CF-11-E Finger Safe Terminal Type**

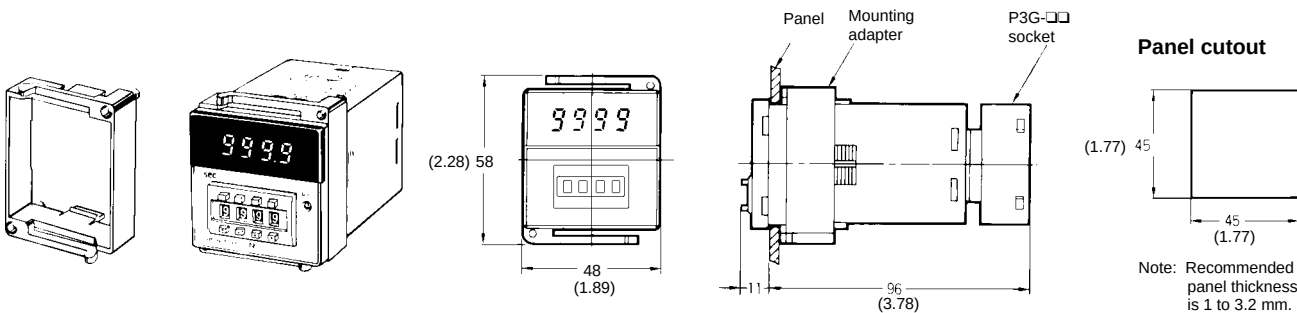
Conforming to VDE0106/P100

**P3GA-11 Back Mounting Socket****Y92A-48G Finger Safe Terminal for P3G(A)**

Conforming to VDE0106/P100

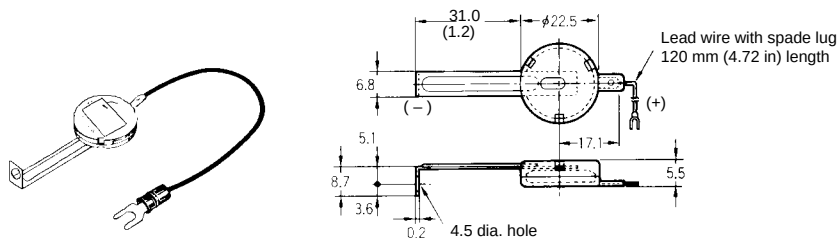
**Y92F-30 Mounting Adapter**

Adapter installs behind the panel. It is ideal for side by side installation. Use P3GA-11 or P3G-08 sockets.



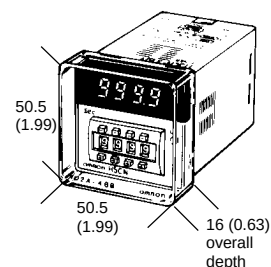
### Y92S-20 Battery for Memory Backup

Use this battery with H5CN-XN□M timers with memory protection circuit. While the timer's built-in memory protection circuit can retain values for power failures lasting up to 10 minutes, the optional battery protects memory in case of a longer power outage. We recommend using the battery as a safeguard. Memory values can be retained for up to 5 years.

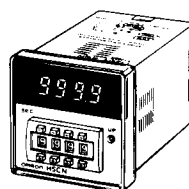


### Y92A-48B Hard Plastic Cover

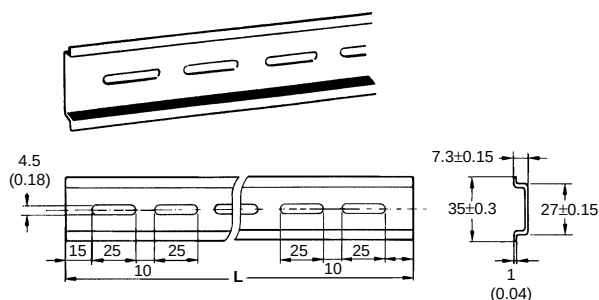
Hard plastic cover Y92A-48B and soft plastic cover Y92A-48D snap onto the front of the timer to protect against dirt and water. The Y92A-48B hard plastic cover prevents accidental resetting. Y92A-48D soft plastic cover fits snugly over the front and allows settings to be changed. These covers are intended for use in areas where unusual service conditions do not exist.



### Y92A-48D Soft Plastic Cover



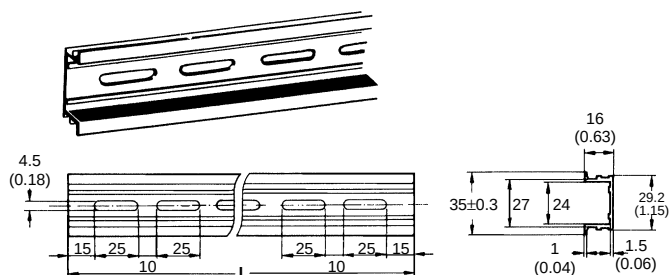
## PFP-100N, PFP-50N Mounting Track



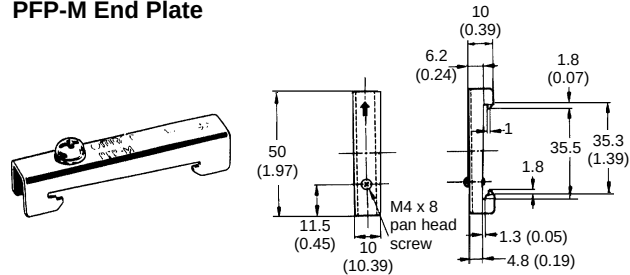
**L: Length**

|       |           |
|-------|-----------|
| 1 m   | PFP-100N  |
| 50 cm | PFP-50N   |
| 1 m   | PFP-100N2 |

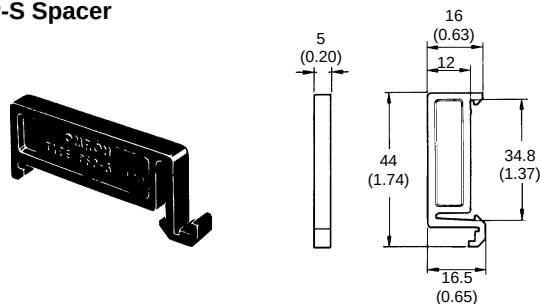
## PFP-100N2 Mounting Track



### PFP-M End Plate



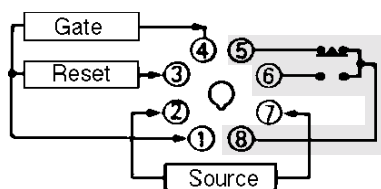
### PFP-S Spacer



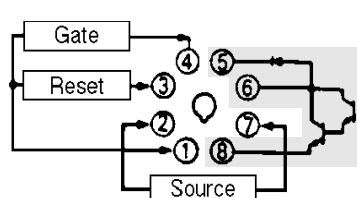
# Connections

| Part number | Input terminal number (no-voltage only) |      |       | Power supply terminal numbers |               | Output terminal numbers |    |    |     |     |
|-------------|-----------------------------------------|------|-------|-------------------------------|---------------|-------------------------|----|----|-----|-----|
|             | COM                                     | Gate | Reset | AC (common), DC-              | AC (hot), DC+ | COM                     | NC | NO | DC- | DC+ |
| H5CN-□□N    | 1                                       | 4    | 3     | 2                             | 7             | 8                       | 5  | 6  | —   | —   |
| H5CN-□□□S   | 1                                       | 4    | 3     | 2                             | 7             | 8                       | —  | 6  | —   | —   |
| H5CN-□□□M   | 3                                       | 5    | 7     | 2                             | 10            | 11                      | 8  | 9  | 1   | 4   |

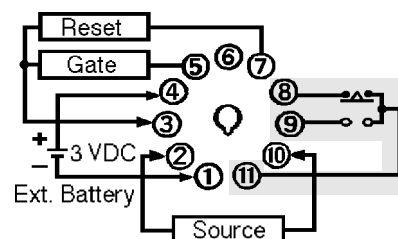
## H5CN-□□N Timer



## H5CN-□□□S Timer



## H5CN-□□□M Timer

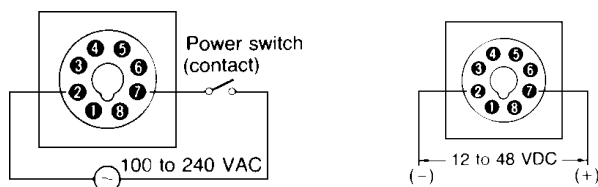


Note: Internal (isolated) contacts are shaded.

## POWER SUPPLY

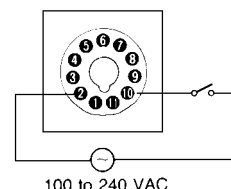
### H5CN-□□N and H5CN-□□□S Timers

Connect the timer so that the supply voltage is applied to terminals 2 and 7. This is for models without memory protection.



### H5CN-□□□M Timers

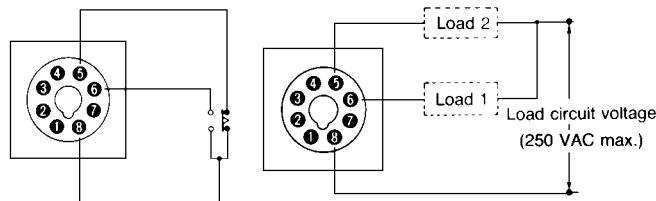
For models with memory protection, connect the supply voltage to terminals 2 and 10.



## CONTROL OUTPUT

### Timed contact output type H5CN-□□N

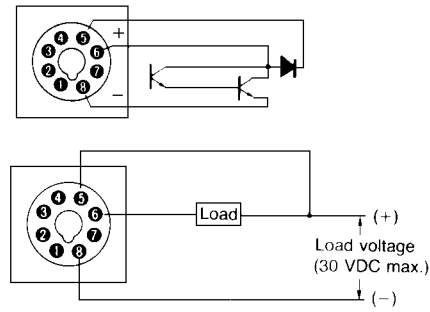
Terminals 5, 6 and 8 are used for the output relay. A normally open contact (Load 1) is connected between terminals 6 and 8. A normally closed contact (Load 2) is connected between terminals 5 and 8.





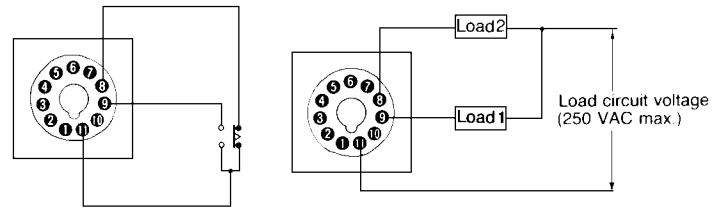
### Timed Solid-state output type H5CN-X□NS

The solid-state output uses an open collector type transistor. Connect terminal 6 (collector) to the positive terminal of the load. Connect terminal 8 (emitter) to the negative terminal. A built-in surge suppression diode on terminal 5 should be connected to the positive terminal of the load when the timer switches an inductive load.



### Timed contact output with memory protection H5CN-X□NM

Terminals 8, 9 and 11 are used for the output relay. A normally open contact (Load 1) is connected between terminals 9 and 11. A normally closed contact (Load 2) is connected between terminals 8 and 11.



## ■ INPUT REQUIREMENTS

### Contact

|                  |                                 |
|------------------|---------------------------------|
| Resistance       | 1 K $\Omega$ max.               |
| Residual voltage | 1 V max. when the contact makes |
| Contact material | Gold-plated contacts            |

Note: Select a contact with short bounce time. Contact bounce causes an error in the operate time equal to bounce time.

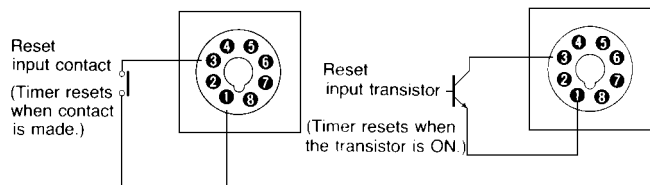
### Solid-State

|                                          |                           |
|------------------------------------------|---------------------------|
| Input type                               | Open collector transistor |
| Voltage when collector is OFF            | 20 V min.                 |
| Collector current                        | 50 mA min.                |
| Input current between collector and base | 0.6 mA max.               |

## ■ RESET INPUT

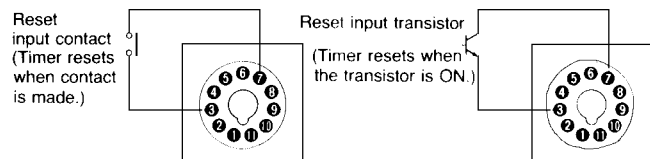
### Timers without memory protection H5CN-□□□, H5CN-□□□S

Connect a no-voltage contact or an open collector transistor output to terminals 1 and 3. The timer resets when contact is made or when the transistor turns ON.



### Timers with memory protection H5CN-X□NM

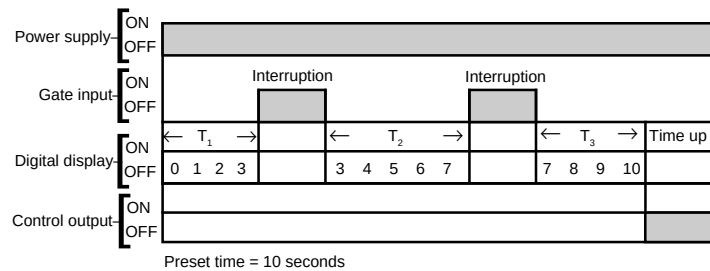
Connect a no-voltage contact or an open collector transistor output to terminals 3 and 7. The timer resets when contact is made or when the transistor turns ON.



## ■ GATE INPUT

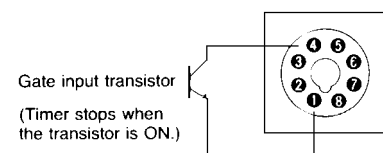
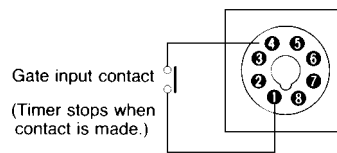
### Cumulative Timing Using the Gate Input with ON-Delay

When the gate signal is closed, timing is temporarily stopped. When the gate signal opens, timing resumes at the point of interruption. The gate input terminal permits the timer to sum up times  $T_1$ ,  $T_2$  and  $T_3$  as shown in the timing chart.



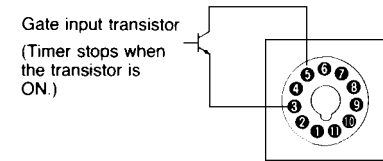
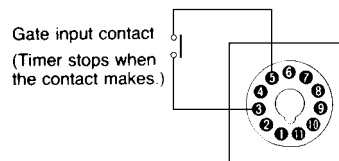
### Timers without memory protection H5CN-□□□, H5CN-□□□S

Connect a no-voltage contact or an open collector transistor output to terminals 1 and 4. The gate input interrupts timing when the contact closes or when the transistor is ON. Timing resumes from the point of interruption when the gate input is removed.



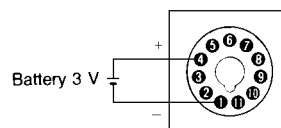
### Timers with memory protection H5CN-□□□M

Connect a no-voltage contact or an open collector transistor output to terminals 3 and 5. The gate input interrupts timing when the contact closes or when the transistor is ON. Timing resumes from the point of interruption when the gate input is removed.



## ■ BATTERY FOR MEMORY PROTECTION

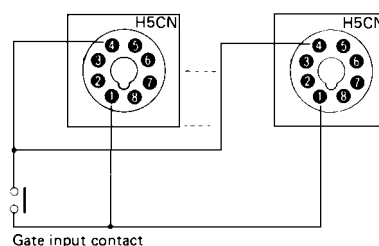
Connect the Y92S-20 battery between terminals 1 and 4 on H5CN-□□□M timers. The 3 V lithium battery is in a holder with lead wire and terminations. It may be used to preserve timer memory for power outages that are longer than 10 minutes duration. Because power failure duration is unpredictable, we recommend using Y92S-20 for long-term memory back up.



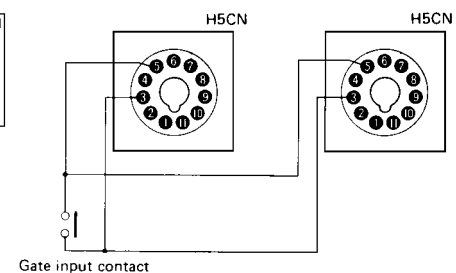
## ■ SIMULTANEOUS INPUT TO SEVERAL H5CN TIMERS

For expanded convenience, input signal may be used to apply gate and reset signals to several H5CN timers. Also a combination of gate to some and reset to other timers is possible. Timers with and without memory backup may be used together. Pay attention to the different terminal numbers required for gate and reset when mixing timer types.

### Gate input, without memory protection

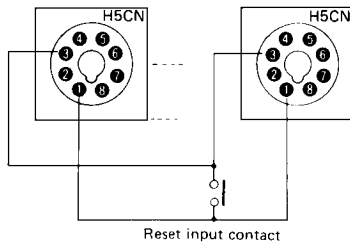


### Gate input, with memory protection

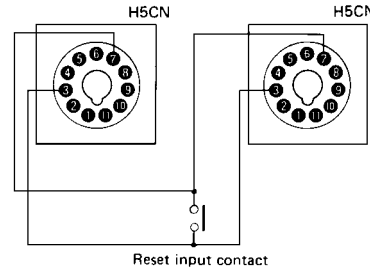


## Simultaneous input to H5CN, continued

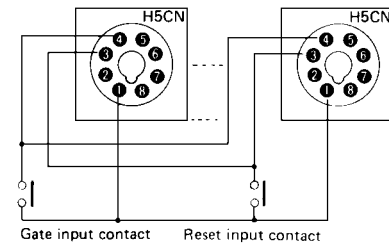
### Reset input, without memory



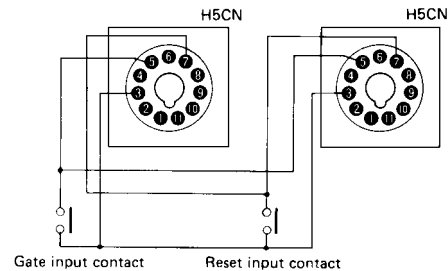
### Reset input, with memory protection



### Reset and gate inputs, without memory



### Reset and gate inputs, with memory protection



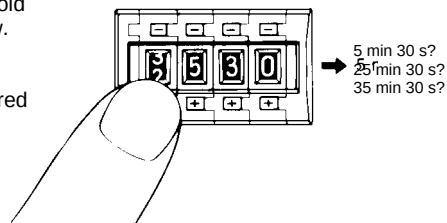
## Operation

### ■ SETTING THE TIME PRESET

Use the four pushwheel switches on the front panel to set the desired time. The H5CN timer does not display the decimal point. Firmly push the switches to avoid having two numbers appear in the display window. This causes the operating time to drift widely.

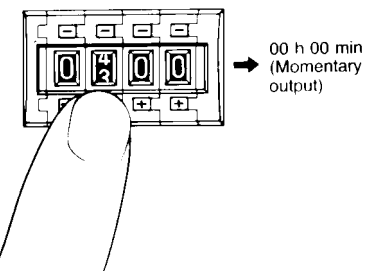
Do not change the setting while the timer is powered up. It may cause a momentary output to occur.

#### Undesirable settings



#### WARNING

Do not set all four digits to zero. This causes a momentary output to occur that may lead to accidental injury or damage.

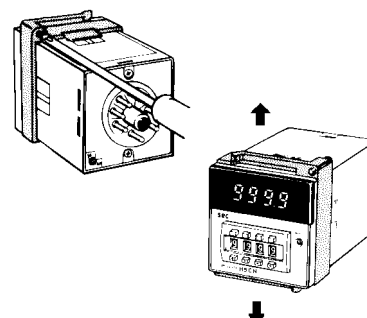


## Mounting

### ■ PANEL MOUNTING

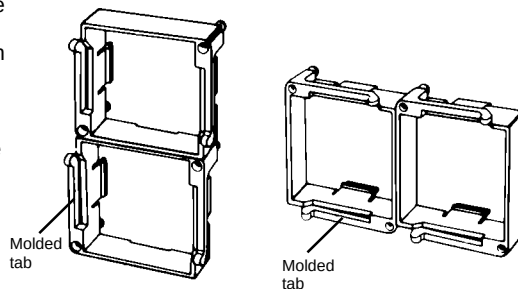
#### Using Y92F-30 Adapter

Insert the timer through the panel cutout. Push the Y92F-30 adapter from the rear of the timer as far forward toward the panel as possible. Push the P3G□-□□ socket onto the rear of the timer. Then wire the socket. Tighten the two retaining screws. To release the adapter, lift the tab at the rear of the adapter.

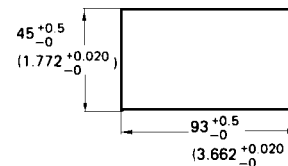


### Using Y92F-30 Adapter (continued)

Several timers may be panel mounted close together using Y92F-30 adapter as shown here. When mounting two or more timers in a vertical line, arrange the adapters so that their molded tabs are positioned on the right and left sides. When mounting two or more timers in a horizontal line, arrange the adapters so that their molded tabs are positioned on the top and bottom sides.



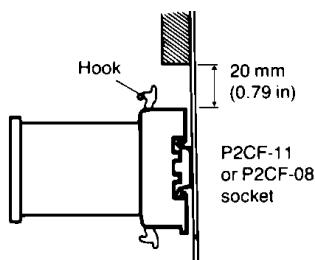
### Panel cutout for side-by-side mounting of two timers



## 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 and to release the hooks for servicing and maintenance. Insert timer into the socket. Latch hooks. 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.

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

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