

# Motor Time Switch H2F-D

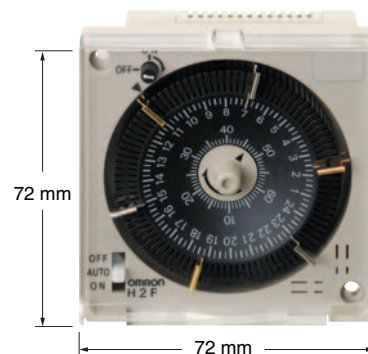
CSM\_H2F-D\_DS\_E\_3\_1

## ON/OFF Control 48 Times per Day in 15-min Increments




The H2F-D is a Low-cost Time Switch for Affordable Operation in a Compact DIN 72 x 72-mm Body. Choose the Ideal Model to Match the Application.

- Just insert the trippers for easy setup.
- Make exact time settings using the dial.
- Three mounting methods.
- Lineup includes models with power interruption backup.
- Safety standards: UL and CSA (except for H2F-30/-31).



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.



**The H2F-DM, -DMC, -DMF, -DMFC, -30, and -31 use nickel metal hydride batteries.**  
Dispose of the batteries at a battery recycling location. Replacement batteries are not available for previous H2F Time Switches from March 2006 and earlier. Replace the entire H2F Time Switch. Refer to *Notice* on page 7.

## Ordering Information

| Control cycle    | Drive method      | Power interruption backup | Power supply voltage | Mounting method | Flush mounting |         | Surface mounting/<br>track mounting |         |
|------------------|-------------------|---------------------------|----------------------|-----------------|----------------|---------|-------------------------------------|---------|
|                  |                   |                           |                      |                 | Control output | SPST-NO | SPDT                                | SPST-NO |
| Daily (24 hours) | Synchronous motor | No                        | 100/110/120 VAC      | Model           | H2F-D          | H2F-DC  | H2F-DF                              | H2F-DFC |
|                  |                   |                           | 200/220/240 VAC      |                 | H2F-D          | H2F-DC  | H2F-DF                              | H2F-DFC |
|                  | Yes               | 100 to 240 VAC            | H2F-DM               |                 | H2F-DMC        | H2F-DMF | H2F-DMFC                            |         |
|                  |                   | 12 to 24 VDC              | H2F-30               |                 | ---            | ---     | H2F-31                              |         |

**Note:** Always use the Time Switch with the Y92S-42 Battery mounted.

## Accessories (Order Separately)

| Name  | Model   |
|---|---------|
| Trippers (1 set for ON and OFF) (See note 1.) | Y92S-21 |
| Battery (See note 2.)                         | Y92S-42 |

- Note: 1.** Three gold-colored trippers for ON and three silver-colored trippers for OFF are enclosed with the H2F-D. Separately order trippers if more are required.
- 2.** The battery is built into the H2F-D. When the battery is nearing the end of its service life, order the model number listed at the left.

# Specifications

## ■ Time Specifications

| Type  | Cycle | Minimum scale graduation | Minimum set time | Maximum set time |
|-------|-------|--------------------------|------------------|------------------|
| Daily | 24 h  | 15 min                   | 15 min           | 23 h 45 min      |

## ■ Ratings

|  |   |
|--|---|
| <b>Power supply voltage</b>            | Synchronous motor: 100/110/120 VAC, 50/60 Hz; 200/220/240 VAC, 50/60 Hz (See note 1.)<br>Quartz motor: 100 to 240 VAC, 50/60 Hz; 12 to 24 VDC |
| <b>Operating voltage range</b>         | 85% to 110% of rated supply voltage   |
| <b>Power consumption (See note 2.)</b> | Synchronous motor: 3 VA max.<br>Quartz motor: 1 VA max. at 100 to 120 VAC, 4 VA max. at 200 to 240 VAC, 1 W max. at 12 to 24 VDC              |
| <b>Control output</b>                  | 15 A at 250 VAC, resistive load   |
| <b>Ambient operating temperature</b>   | -10 to 55°C (with no icing)   |
| <b>Ambient operating humidity</b>      | 35% to 85%  |

**Note:** 1. Use the switch on the back of the H2F-D to change the frequency.

2. Inrush current will briefly flow when the power supply is turned ON. For details, refer to *Technical Guide for Timers and Time Switches*.

## ■ Characteristics

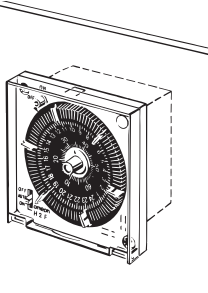
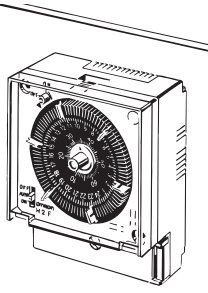
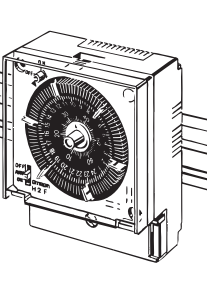
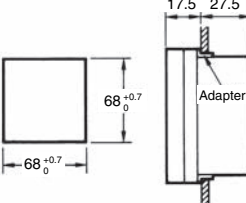
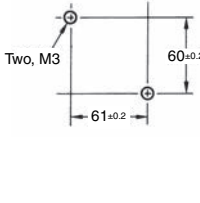
| Item   | Type               | Daily   |                          |
|--|--------------------|---|--------------------------|
|  |                    | Synchronous motor   | Quartz motor             |
| <b>Operating time deviation (See note 1.)</b>      |                    | ±3 min max.   |                          |
| <b>Voltage influence and temperature influence</b> |                    |   |                          |
| <b>Setting error (See note 2.)</b>                 |                    | ±3 min max.   |                          |
| <b>Cyclic error</b>                                |                    | ±3 min max.   |                          |
| <b>Power interruption backup time</b>              |                    | ---   | 180 h min. (See note 3.) |
| <b>Insulation resistance</b>                       |                    | 100 MΩ min. (at 500 VDC)  |                          |
| <b>Dielectric strength</b>                         |                    | 2,000 VAC, 50/60 Hz for 1 min (between current-carrying metal parts and non-current-carrying metal parts and between control output and operating circuit)<br>1,000 VAC, 50/60 Hz for 1 min (between non-continuous contacts) |                          |
| <b>Vibration resistance</b>                        | <b>Destruction</b> | 16.7 Hz with 2-mm single amplitude for 1 hour each in three directions  |                          |
|  | <b>Malfunction</b> | 10 to 55 Hz with 0.25-mm single amplitude for 10 minutes each in three directions   |                          |
| <b>Shock resistance</b>                            | <b>Destruction</b> | 1,000 m/s <sup>2</sup> 5 times each in 6 directions   |                          |
|  | <b>Malfunction</b> | 200 m/s <sup>2</sup> once each in 6 directions  |                          |
| <b>Life expectancy</b>                             |                    | Contacts: 10,000 operations min., Motor: 20,000 h   |                          |
| <b>Weight</b>                                      |                    | Flush-mounting model: Approx. 150 g, Surface-mounting model: Approx. 200 g  |                          |
| <b>Case color</b>                                  |                    | Light gray (Munsell 5Y7/1)  |                          |

**Note:** 1. Deviation in the ON time or OFF time.

2. Time difference between the set time and time required to start operation when the pointer is set to the present time.

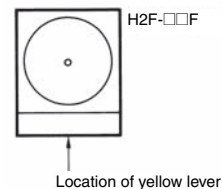
3. Value when power has been supplied for at least 72 h at initial use.

# Mounting Method

| Flush Mounting  | Surface Mounting  | DIN Track Mounting  |
|---|---|---|
|                            |  |  |
| <p>72 × 72 × 45 mm (H × W × D)<br/>(below faceplate: 29 mm)</p>   | <p>95 × 72 × 50 mm (H × W × D)</p>  |   |
| <p><b>Panel Cutout Dimensions<br/>(according to DIN 43700)</b></p>  | <p><b>Mounting Screw Dimensions</b></p>   |   |
|                            |  |   |
| <p>Panel thickness: 1 to 3.2 mm<br/><b>Note:</b> The mounting adapter and mounting screws are enclosed.</p> | <p>Screw size:<br/>M3 × 45 (enclosed)</p>   |   |

## Removing the H2F-D from the DIN Track

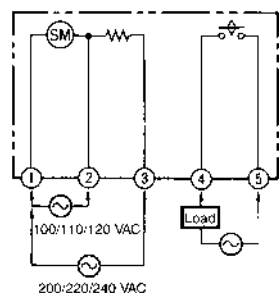
Use a flat-blade screwdriver to pull down the yellow lever at the back of the bottom and remove the Time Switch.



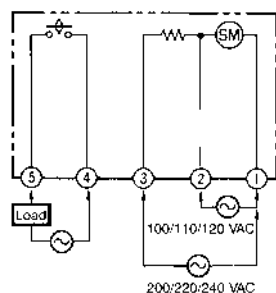
# Connections

## Synchronous Motor Models: SPST-NO Output

H2F-D

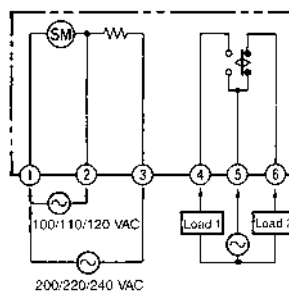


H2F-DF

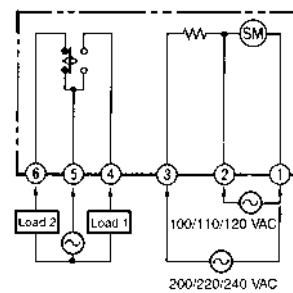


## Synchronous Motor Models: SPDT Output

H2F-DC



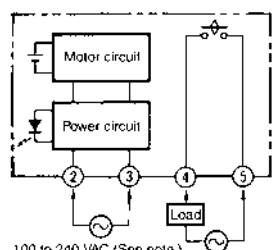
H2F-DFC



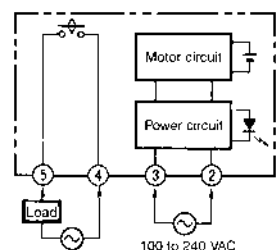
Note: 100-V-class models differ from 200-V-class models. They cannot be used together.

## Quartz Motor Models: SPST-NO Output

H2F-DM, H2F-30

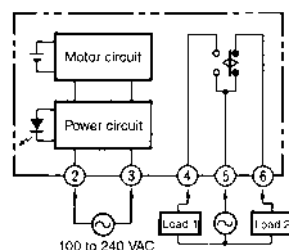


H2F-DMF

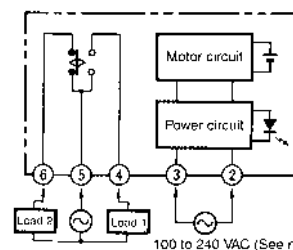


## Quartz Motor Models: SPDT Output

H2F-DMC



H2F-DMFC, H2F-31

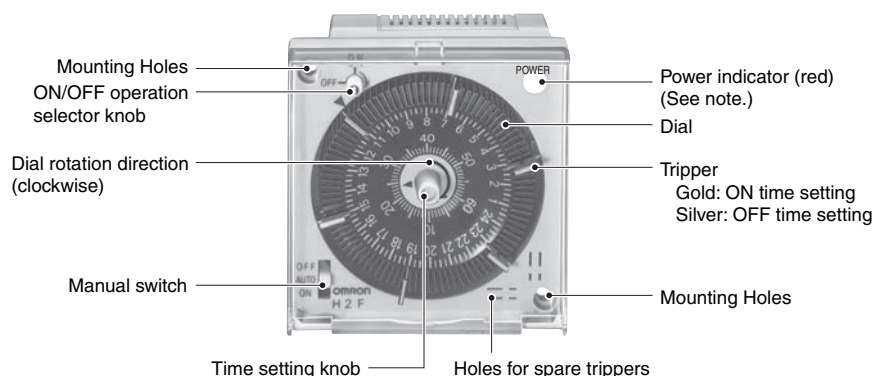


Note: On the H2F-30 (12 to 24 VDC), terminal number 2 is positive and terminal number 3 is negative.

Note: On the H2F-31 (12 to 24 VDC), terminal number 2 is positive and terminal number 3 is negative.

- Note:
1. Use a separate power supply for the load.
  2. Screw tightening torque:  
Maximum torque: 0.98 N·m
  3. Use the same type of lead wires when connecting lead wires to the terminal block. If different wire types are used, it will not be possible to tighten the thin lead wires, and the wires may become disconnected during use.
  4. Recommended wire: AWG 18 to 24 (cross-sectional area: 0.205 to 0.823 mm<sup>2</sup>), solid wire or twisted wire.
  5. Do not connect more than two crimp terminals to the same terminal.

# Nomenclature



Note: Only quartz motor models have a power indicator.

## Time Setting

Insert the trippers into the scale graduation at the desired times.

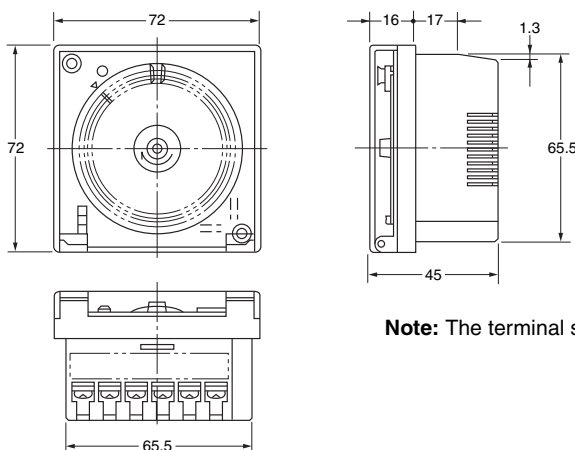
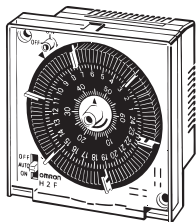
- Insert gold trippers for times the load is to be turned ON and silver trippers for times the load is to be turned OFF.

- Note:
1. Be sure to insert the trippers all the way.
  2. Set the trippers in alternating positions only after thoroughly checking the ON and OFF positions.

# Dimensions

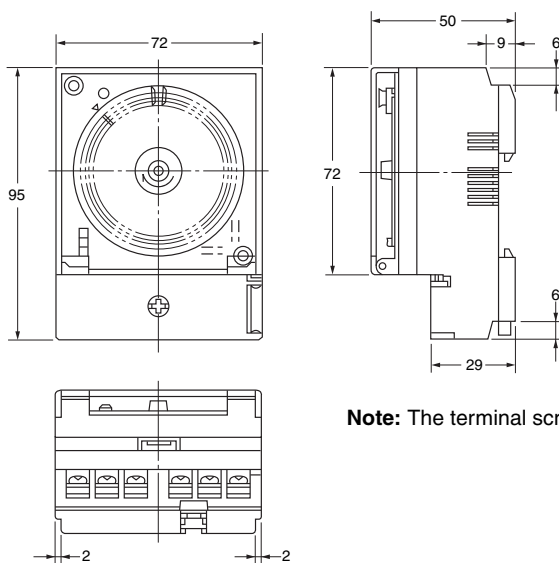
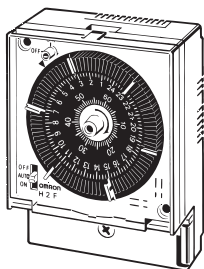
Note: All units are in millimeters unless otherwise indicated.

H2F-D (C)  
H2F-DM (C)  
H2F-30



Note: The terminal screws are M3.5.

H2F-DF (C)  
H2F-DMF (C)  
H2F-31



Note: The terminal screws are M3.5.

# Safety Precautions

Refer to *Safety Precautions for All Timers*.

## WARNING

Minor injury may occasionally occur due to the battery bursting, igniting, or leaking. Never short-circuit the positive and negative terminals, disassemble the battery, deform it under pressure, or dispose of it in fire.



## CAUTION

Minor injury by electric shock may occasionally occur. Do not touch any of the terminals while power is being supplied. Be sure to mount the terminal cover after wiring.



Unexpected operation may occasionally occur.

Before changing times or other settings while power is being supplied, either turn OFF the power on the load side or set the output ON/OFF switch to OFF and confirm the safety of the system.



Fire may occasionally occur. Tighten the terminal screws to the rated torque.



Minor electric shock, fire, or product failure may occasionally occur. Do not allow metal fragments, copper wire scraps, or shavings from installation work to fall inside the Time Switch.



Minor electric shock, fire or product failure may occasionally occur. Never attempt to disassemble, modify, or repair the product or touch any of the internal parts.



Minor injury due to explosion may occasionally occur. Do not use the product where it is subject to flammable or explosive gas.

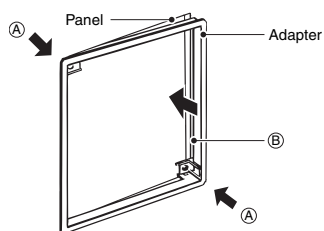


## Precautions for Correct Use

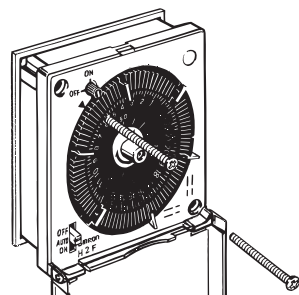
### Mounting

#### Panel Flush Mounting

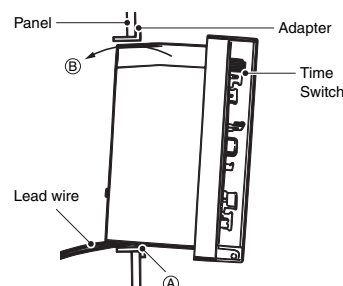
1. As illustrated at the right, bend the enclosed adapter in the direction of A, and then push part B in the direction of the arrow (i.e., toward the back of the panel cut).



2. Once the adapter has been mounted, insert the Time Switch as illustrated at the right. Secure the Time Switch in two places using the enclosed screws (M3 × 16) tightened with a torque of 0.58 N·m max.

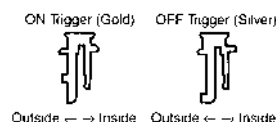
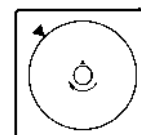


3. If the lead wire has been installed in front of the panel, place the Time Switch on part A of the adapter and push it in toward B. Then secure the Time Switch by tightening the screws as described in step 2.



### Setting the Time

- Turn the center knob clockwise to set the time. Product failure may occur if the knob is turned counterclockwise or the knob is turned while the triggers are being pressed.
- Set the hour to the arrow at the upper left and set minutes to the arrow on the center knob.
- The gold-colored triggers are for ON and the silver-colored triggers are for OFF. Securely push in the triggers with the wider part facing the outer part of the dial.
- Insert the spare triggers into the holes at the lower right for storage.



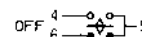
### Manual Switch

#### Models with SPST-NO Output

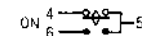
The output will turn OFF regardless of trigger settings when the manual switch at the lower left of the front panel is set to OFF. The output will turn ON regardless of trigger settings when the manual switch is set to ON. The output will turn ON and OFF according to the trigger settings when the manual switch is set to AUTO.

#### Models with SPDT Output

Load 1 (terminals 4 and 5) and load 2 (terminals 5 and 6) will both turn OFF when the manual switch at the lower left of the front panel is set to OFF.



The output will turn ON and OFF according to the trigger settings when the manual switch is set to AUTO. Load 1 (terminals 4 and 5) will turn ON and load 2 (terminals 5 and 6) will turn OFF when the manual switch is set to ON.

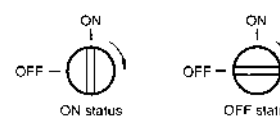


Check the output indicator when returning operation to AUTO. If the knob has been touched or the output indicator has changed because of vibration or shock, turn the knob, switch the output, and then return operation to AUTO.

### Output Indicator and ON/OFF Switch

#### Knob

The output indicator at the upper left of the front panel shows the output status when the manual switch is set to AUTO. The output can also be manually switch ON or OFF by turning the knob clockwise (i.e., in the direction of the arrow). (This is possible only when the manual switch is set to AUTO.)

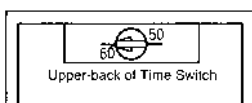


Do not turn the ON/OFF switch knob when the manual switch is set to ON or OFF. Do not turn the Knob counterclockwise.

## H2F-D/-DF Series: Synchronous Motor Models

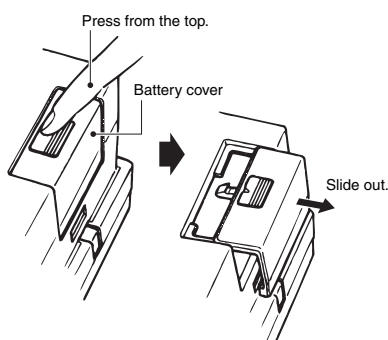
Before mounting the Time Switch, set the frequency switch to the frequency for the region where the Time Switch will be used.

(East Japan: 50 Hz, West Japan: 60 Hz)

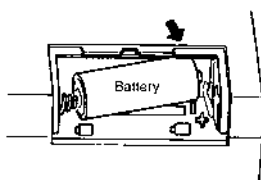


## H2F-DM Series and H2F-30/-31: Quartz Motor Models

- Remove the battery cover on the back of the Time Switch. **Be sure to insert the battery before supplying power. Operating the Time Switch without the battery mounted will increase the time error. Always mount the battery.**



- Pay careful attention to the polarity when inserting the battery. Insert the battery following the polarity marked in the battery box of the Time Switch. Before using the Time Switch, be sure to close the battery cover after the battery is inserted.
- The enclosed battery is fully charged. In the rare event that battery performance decreases due to natural discharging, the 180-hour power interruption backup function will back up operation if power has been continuously supplied for 72 hours after installing the battery in the Time Switch. If the battery is completely discharged, the Time Switch may not operate when the battery is installed. If the Time Switch does not operate, supply power for at least 3 min, and then set the time.
- Turning the power supply ON and OFF will extremely shorten the service life of the battery. Use the Time Switch with the power supplied continuously.
- The service life of the battery is approximately three years (at room temperature). If the battery has been used for three years or more, replace it as soon as possible. Using the battery close to the end of its service life will increase the time error.
- The battery may leak or cause corrosion due to excessive discharge if the H2F is left unused for an extended period with the battery mounted. Be sure to remove the battery before storing the H2F.
- Turn OFF the power supply before replacing the battery.
- Use only the specified battery (Y92S-42). The battery may leak or burst if any other battery is used, possibly resulting in equipment damage or injury.



## Other Precautions

- Always use a thermo-switch on the load circuit when a heater is used.
- Operate the Time Switch within the specified rating ranges for vibration and shock.
- The H2F is not waterproof or oil resistant. Do not use the H2F in locations subject to water splashing or oil contact.

## Notice

**There is no alternative product for the Y92S-22 Nickel-Cadmium Battery. Replace the entire H2F Time Switch.**

### CAUTION

As the result of design changes in March 2006, the backup battery for the H2F Motor Time Switches was changed from the Y92S-22 Nickel-Cadmium Battery to the Y92S-42 Nickel-Hydrogen Battery.

The Y92S-22 Nickel-Cadmium Battery and the Y92S-42 Nickel-Hydrogen Battery are not compatible as replacement batteries. If you attempt to use the Y92S-42 Nickel-Hydrogen Battery with H2F Time Switches from before the design change (i.e., Switches designed for a Y92S-22 Nickel-Cadmium Battery), an insufficient charge may prevent operation.

Or, if you use the Y92S-22 Nickel-Cadmium Battery in an H2F Time Switch designed for the Nickel-Hydrogen Battery, an overcharge may cause the battery to leak.

Check the internal battery specifications on the label on the battery cover on the H2F and on the external markings on the battery.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

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

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### Change in Specifications.

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