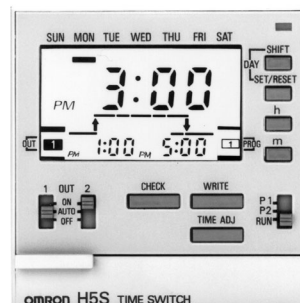


Weekly Time Switch H5S

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to *Warranty and Application Considerations* (page 12), and *Safety Precautions* (page 11).

Weekly Time Switch for Various Time Controls

- A different program possible each day.
- Easy-to-program using the interactive menu system.
- Multiple-day operation, cyclic and pulse-output operation possible.
- ON/OFF operations can be set in 24 steps.
- Timing chart display for operation monitoring.
- Two circuits can be controlled independently.
- Supply voltage from 100 to 240 VAC.
- Surface, flush, or track mounting possible.



Ordering Information

Mounting method	Supply voltage	Models
Flushing mounting	100 to 240 VAC	H5S-B
	24 VDC	H5S-B-31
Surface mounting/track mounting	100 to 240 VAC	H5S-FB
	24 VDC	H5S-FB-31

Specifications

■ Time Ranges

Rated time	Time setting range	Time division
1 week	00:00 a.m. to 11:59 p.m.	1 min

■ Ratings

Rated supply voltage	100 to 240 VAC (50/60 Hz), 24 VDC
Operating voltage range	85% to 110% of rated supply voltage (85 to 264 VAC (50/60 Hz))
Power consumption	AC: Approx. 3 VA DC: Approx. 0.8 W
Control outputs	SPST-NO × 2 circuits: 15 A at 250 VAC, resistive load
Mounting method	Flush mounting, surface mounting, and DIN track mounting
External connections	Screw terminals (M3.5 screw)
Terminal screw tightening torque	0.98 N·m max.

■ Characteristics

Accuracy of operating time	±0.01% ±0.05 s max. (see note)
Setting error	
Influence of voltage	
Influence of temperature	
Cyclic error	Monthly difference ±15 s (at 25°C) (±4 s/week, ±1 min/4 months)
Memory protection	5 years min. (at 25°C)
Insulation resistance	100 MΩ min. (between current-carrying terminals and non-current-carrying metal parts, between operation circuit and contact control output circuit, and between non-continuous contacts)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between current-carrying terminals and non-current-carrying metal parts and between operation circuit and contact control circuit) 1,000 VAC, 50/60 Hz for 1 min (between non-continuous contacts)
Noise immunity	1,500 V (100 ns wide, for 1 μs, 1 ns rise time, ± polarity, and 0° to 360° phase. Square noise generated by noise simulator), 500 V for H5S-□B-31
Vibration resistance	Destruction: 10 to 55 Hz with 0.75-mm double amplitude Malfunction: 10 to 55 Hz with 0.5-mm double amplitude
Shock resistance	Destruction: 294 m/s ² Malfunction: 98 m/s ²
Ambient temperature	Operating: -10°C to 55°C
Ambient humidity	Operating: 35% to 85%
Life expectancy	50,000 operations min. (15 A at 250 VAC, resistive load) 50,000 operations min. (1 HP at 250 VAC, motor load) 50,000 operations min. (10 A at 250 VAC, inductive load (cosφ = 0.7)) 50,000 operations min. (100 W at 100 VAC, lamp load) 10,000 operations min. (300 W at 100 VAC, lamp load)
Approved standards	UL917 (10 A at 250 VAC (general use), 15 A at 125 VAC (resistive load)) CSA C22.2 No.14 (10 A at 250 VAC (general use), 15 A at 125 VAC (resistive load))
Weight	Approx. 200 g

Note: The total error including the repeat accuracy, setting error, variation due to voltage change, and variation due to temperature change is ±0.01%±0.05 s max., ±0.01% indicates an error in the time interval of a set time.

Operation

Operation method	Digital quartz
Operation	1. Weekly operation (multiple-day operation possible) 2. Cyclic operation 3. Pulse-output operation (Pulse width can be set in units of 1 s from 1 to 59 s and in units of 1 min from 1 to 60 min.) 4. Day override operation (Operation for one day can be also executed on any other day.) 5. Forced ON/OFF Operation 6. Manual or automatic operation selectable on recovery from power failure.
Display	Digital indication by LCD (character height: 10 mm) 1. Day, hrs (a.m., p.m.), minutes (0:00 to 11:59 a.m., 0:00 to 11:59 p.m.) 2. Digital display of operation schedule during operation 3. Timing chart display of operation schedule during operation
Number of circuits	2 independent circuits
Setting method	Key switch
Min. setting unit	1 min
Min. set interval	1 min
Number of steps that can be set	24 (total of 2 circuits) (see note)

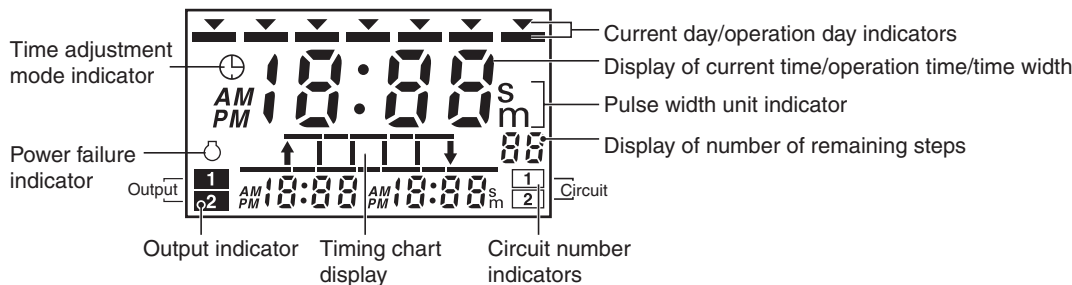
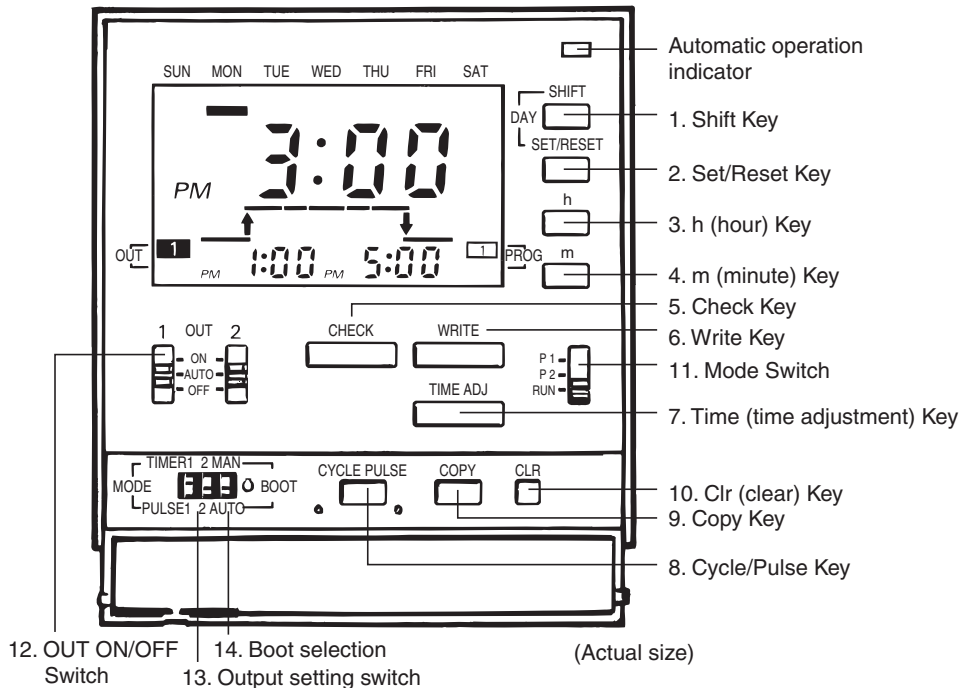
Note: Normally, an ON/OFF operation is counted as two steps (i.e., ON + OFF operations), a cyclic operation as four steps, and a pulse operation as 1 step.

As described on page 5, *Ordinary Timer Operation*, the above number of steps will be sufficient if the Timer is turned ON and OFF at the same time, and the number of steps will not need to be as many as the number of days to be used.

The number of steps does not apply to the operating day shift setting.

Nomenclature

Front Panel (With Cover Open)


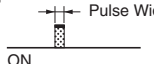
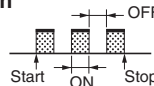
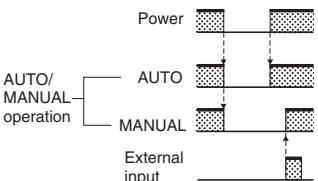


Key Operations

No.	Function
1	Shifts the cursor (▼) specifying a day to the right.
2	Sets or cancels a specified day.
3, 4	Sets a time or ON/OFF time width.
5	Monitors the parameters set for an operation during an operation.
6	Sets parameters.
7	Sets a time adjustment mode.
8	Specifies a cyclic operation, or sets a pulse width.
9	Specifies a day substitution operation.
10	Cancels the parameters set for each circuit, or a day override operation.
11	P1: Circuit 1 setting mode P2: Circuit 2 setting mode RUN: RUN mode
12	ON: Turns on the output regardless of the setting. AUTO: Execute an operation as specified. OFF: Turns off the output regardless of the setting.
13	TIMER: Executes an ordinary timer or cyclic operation. PULSE: Executes a pulse output operation.
14	Specifies an operation to be performed after power recovery (AUTO/MANUAL).

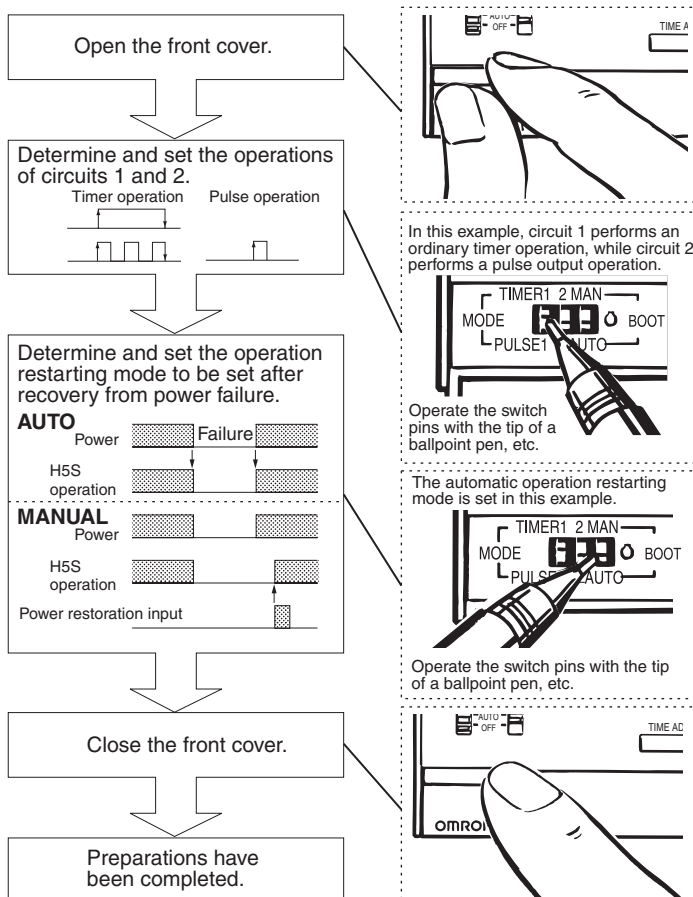
Operation

■ Operation Function

Timer operation 	Controls the output according to the set time of ON and OFF (the time can be set in units of 1 min)
Pulse-output operation 	Produces the output for a fixed duration at the set ON (pulse width: 1 to 59 s, or 1 to 59 min). The pulse width can be set in units of 1 s or 1 min. The pulse width can be set for each step.
Cyclic operation 	Repeatedly performs an ON/OFF operation during a specific period, which can be set in units of 1 min.
Forced ON/OFF operation	Forcibly turns ON/OFF the output by a side switch
Operation on power restoration 	AUTO: Operation is automatically started on power recovery MANUAL: Operation is started by applying an external signal after power recovery
Operating day shift	Executes a day's operation on another day. (The specified new operation is performed only for one week.)

Programming

Before setting the parameters necessary for each operation, the operation of circuits (outputs) 1 and 2 must be determined. Also, whether the operation is restarted automatically or manually after power failure recovery should be specified.



Time Adjustment

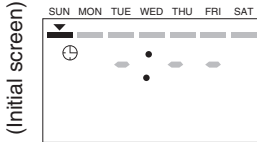
Set the Mode Switch to RUN.

Example: Set Wed. 10:30 a.m.

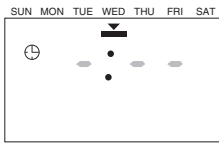
Initial time adjustment after purchase

Display and key operation
(Shaded portion indicates blinking of the indicator.)

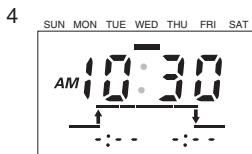
- 1 Specify a day with the Shift and Set Keys.



- 2 Set a time with the h and m Keys.



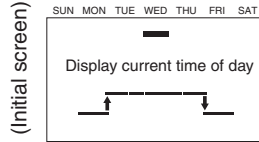
- 3 Press the Write Key to complete.



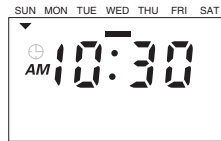
Time adjustment during operation

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Hold down the Time Key for 1 s min.



- 2 Set a time with the h and m Keys. Press the Write Key.



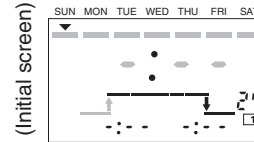
Ordinary Timer Operation

Set the Mode Switch to P1 (or P2).

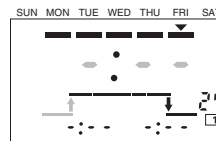
Example: ON at 9:00 a.m. and OFF at 5:45 p.m. on Monday through Friday.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

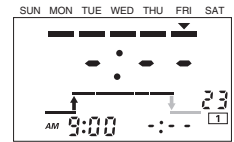
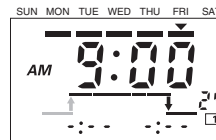
- 1 Move the cursor (▼) with the Shift Key. Press the Set Key so that of a desired day turns on. Select Monday through Friday.
- 4 Set the time to 5:45 p.m. with the h and m Keys. Press the Write Key.



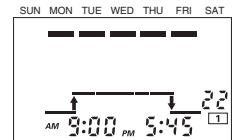
- 2 Set the time to 9:00 a.m. with the h and m Keys.



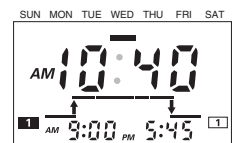
- 3 Press the Write Key.



- 5 (The set times are displayed for 1 s and the display returns to the initial screen.) Set the Mode Switch to RUN.



- 6 The current time is displayed along with the remaining portion of the currently scheduled operation or the time chart for the current operation. Flashing time displays on time charts indicate times for the following day.



Note: If multiple settings are required, repeat steps 1 through 4.

Cyclic Operation

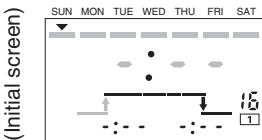
The period of ON time or OFF time can be set within a range between one minute and 11 hours, 59 minutes respectively.

Set the Mode Switch to P1 (or P2).

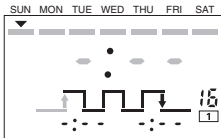
Example: Start: 7:00 p.m. Friday, ON time: 15 min
Stop: 10:10 p.m. Friday, OFF time: 1 hour 10 min

Display and key operation
(Shaded portion indicates blinking of the indicator.)

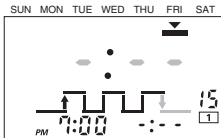
- 1 Open the cover and press the Cycle Key.



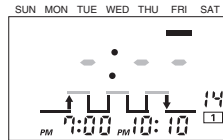
- 2 Specify Friday with the Shift and Set Keys. Set the time to 7:00 p.m. with the h and m Keys. Press the Write Key.



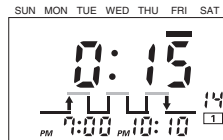
- 3 Set the time to 10:10 p.m. with the h and m Keys. Press the Write Key.



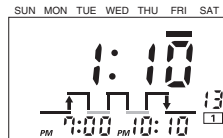
- 4 Depress the h key for a while Set the minute to 15 with m Key.



- 5 Press the Write Key. Set an OFF time of 1 hour 10 min with the h and m Keys.



- 6 Press the Write Key. (The display returns to the initial screen 1 s later.) The Mode Switch to RUN.



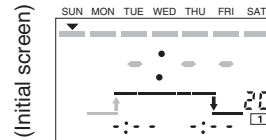
Multiple-day Operation

Set the Mode Switch to P1 (or P2).

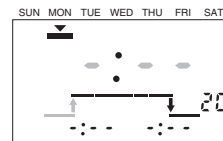
Example: ON at 9:00 p.m. Monday and OFF at 3:15 a.m. Tuesday.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

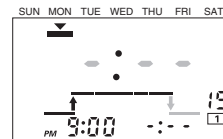
- 1 Specify Monday with the Shift and Set Keys.



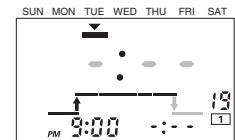
- 2 Set the time to 9:00 p.m. with the h and m Keys. Press the Write Key.



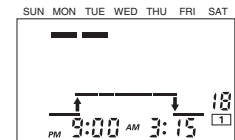
- 3 Press the Reset Key. Specify Tuesday with the Shift and Set Keys.



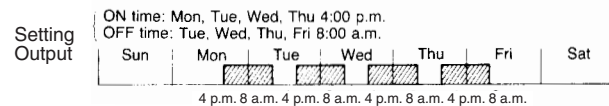
- 4 Set the time to 3:15 a.m. with the h and m Keys. Press the Write Key.



- 5 (Displayed for 1 s and then the initial display returns.) Set the Mode Switch to RUN (Lines for days other than the current day and the program time will flash.)



Note: To set the time switch to operate over several days, the operations can be programmed all at once by specifying the ON and OFF times.



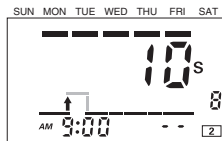
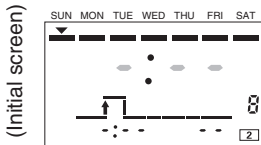
Pulse Output Operation

Set the Mode Switch to P1 (or P2).

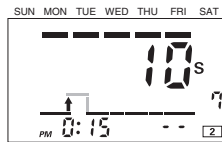
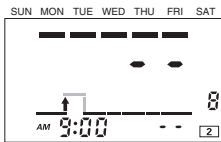
Example: To produce output for 10 s at 9:00 a.m. and 0:15 p.m. Monday through Friday.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Specify Monday, Tuesday, Wednesday, Thursday, and Friday with the Shift and Set Keys. Set the time to 9:00 a.m. with the h and m keys. Press the Write Key.
- 3 Press the Write Key. (The display returns to the initial screen after a 1-second pause.) (In the same manner, set the time of 0:15 p.m. for Monday through Friday.)



- 2 Set the pulse width to 10 s using the Pulse Key. (When this key is depressed, the display value is incremented rapidly.)
- 4 Press the Write Key. (If the previously set pulse width can be used, press the Write Key only. The display returns to the initial screen after a 1-second pause.) Set the Mode Switch to RUN.



Checking the Setting in Operation Sequence

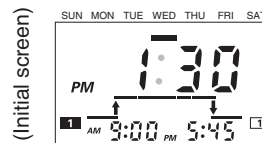
Set the Mode Switch to RUN.

To check the operation of today.

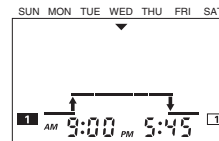
Example: Wednesday

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Press the Check Key.



- 2 The first item of today's operation set for circuit 1 is displayed.



- 3 Afterward, each time the Check Key is pressed, all the operations set for circuit 1 are displayed followed by those for circuit 2. (If nothing is set for circuit 1, display starts with the operations set for circuit 2.)

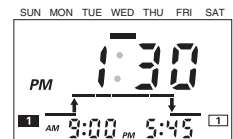
The output is not changed even when Check is pressed. The present value is displayed again when Check has been left untouched for 20 s or longer.

To check the operation of a day other than today.

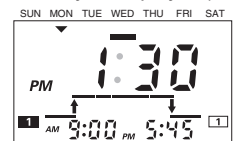
Example: To check Monday's operation on Wednesday

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Move the cursor to the Monday position using the Shift and Set Keys.



- 2 Press the Check Key. (The first item of the operations set for circuit 1 to be executed on Monday is displayed.)



- 3 Afterward, each time the Check Key is pressed, all Monday operations set for circuit 1 are displayed followed by those for circuit 2. (If nothing is set for circuit 1, display starts with the operations set for circuit 2.)

When the specified operation has been displayed for monitoring, the display returns to the initial screen.

Operating Day Shift

If a day change is made in the time setting mode after performing an operating day shift, the operating day shift setting will be invalid.

The operating day shift setting will not be valid for any program that continuously runs from the day before the day to which operation has been shifted.

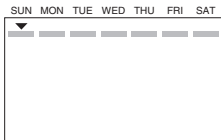
If the present day is set as the day to be shifted to, the program will be shifted to the same day in the following week.

Set the Mode Switch to RUN.

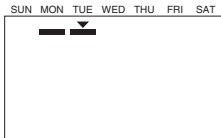
To shift Saturday's operation to Monday and Tuesday on Friday.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Depress the Copy Key for at least 1 s.
- 2 Specify Monday and Tuesday with the Shift and Set Keys.



- 3 Press the Write Key.



Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 4 Specify Saturday with the Shift and Set Keys.



- 5 Press the Write Key.
(The display returns to the initial screen.)

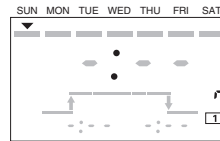


Canceling the Setting

To cancel the setting of each circuit.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Set the Mode Switch to the position of the circuit whose setting is to be canceled.
- 2 Press the CLR Key.



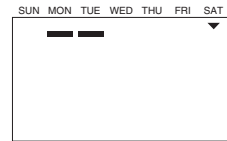
- 3 The message CLR is displayed for 1 s, then the display returns to the initial screen. (The setting for circuit 2 can be canceled in the same manner.)



To cancel the operating day shift program.

Display and key operation
(Shaded portion indicates blinking of the indicator.)

- 1 Set the Mode Key to RUN. Depress the Copy Key for at least 1 s.
- 2 Press the CLR Key.
(The display returns to the initial screen.)



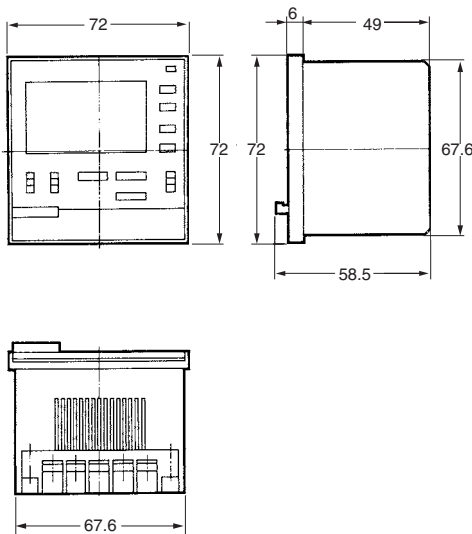
Note: If the operation of steps already set is not required, make all the ON times the same. The number of steps will not be, however, reduced in this case.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

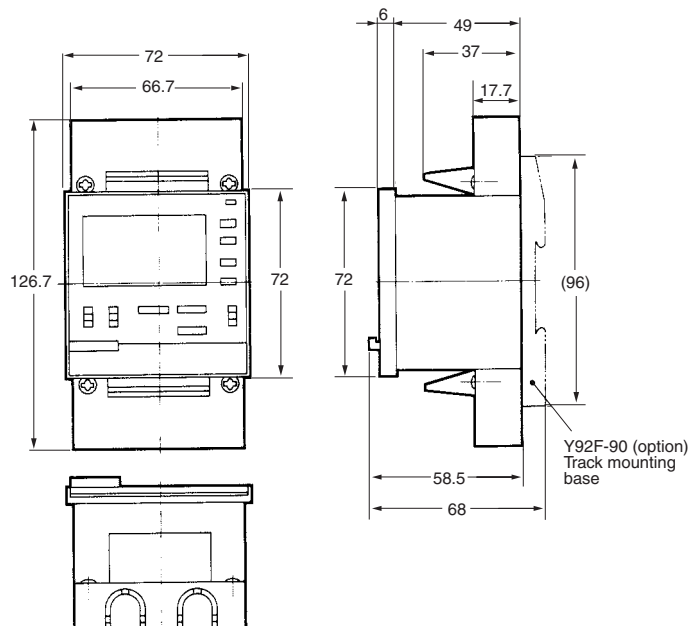
H5S-B (Flush Mounting Model)

(A flush mounting adapter is provided with the Time Switch.)



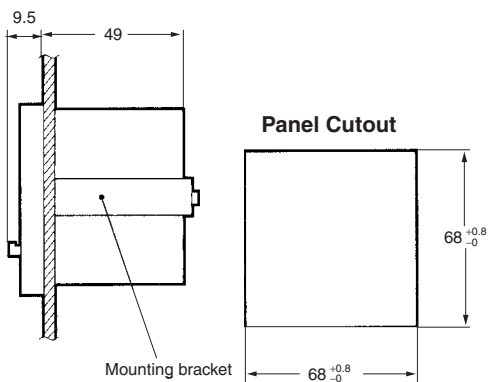
H5S-FB (Surface Mounting Model)

(The Unit is shown with the enclosed terminal cover attached.)



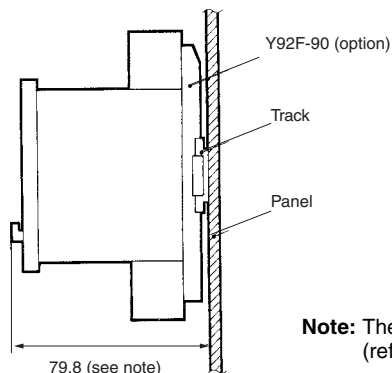
Mounting Dimensions

Flush Mounting (H5S-B)



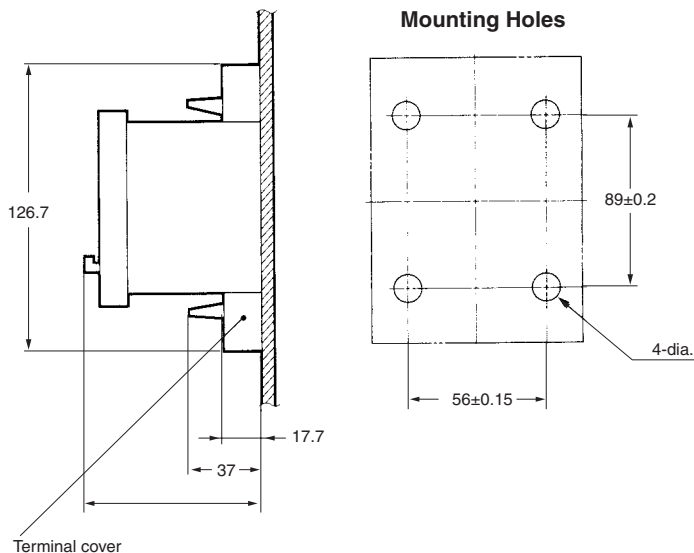
Note: Panel thickness: 1 to 5 mm

Track Mounting (H5S-FB with Y92F-90)



Note: The dimensions depend on the type of DIN track used (reference value).

Surface Mounting (H5S-FB)

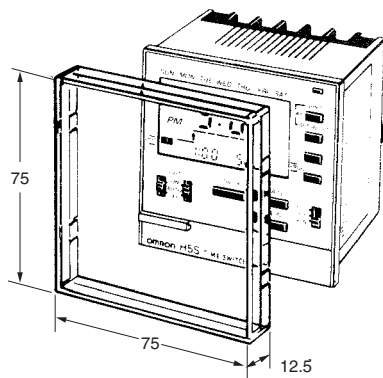


When mounting the time switch on a soft iron panel using the M4 tapping screws, the diameter of the mounting holes drilled into the panel vary according to the panel thickness, as follows. If the panel is die-cast, aluminum, the hole diameter should be slightly larger.

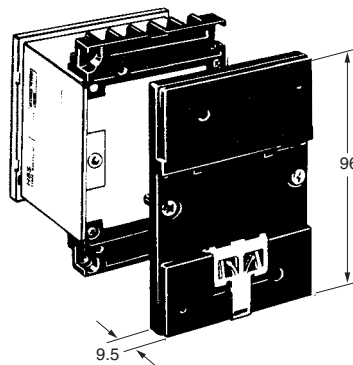
Panel thickness	0.8	1.0	1.2	1.6	2.0	2.6	3.2	4.0
Hole diameter	3.6			3.7				

Accessories (Order Separately)

Y92A-72C Protective Cover

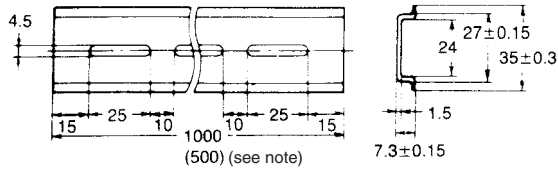


Y92F-90 Track Mounting Base (Only for H5S-FB model)

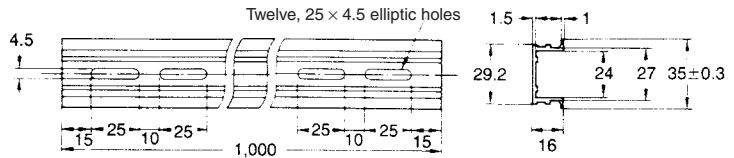


Mounting Track

PF-P100N/PFP-50N (Meets DIN EN 50022)



PFP-100N2 (Meets DIN EN 50022)

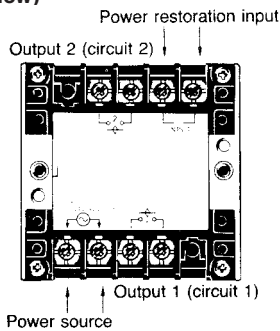


Note: The values shown in parentheses are for the PFP-50N.

Installation

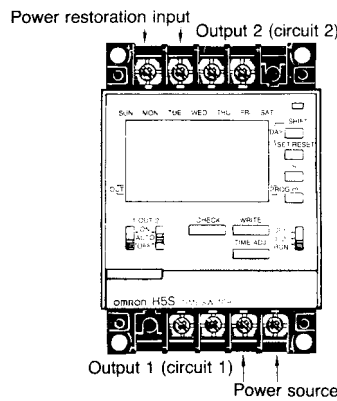
Terminal Arrangement

H5S-B Flush Mounting Models
(Rear View)



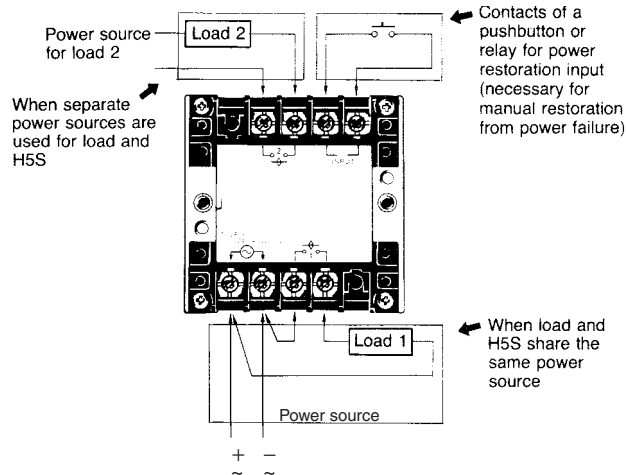
Note: The terminal screws are M3.5.

H5S-FB Surface Mounting Models
(Front View)

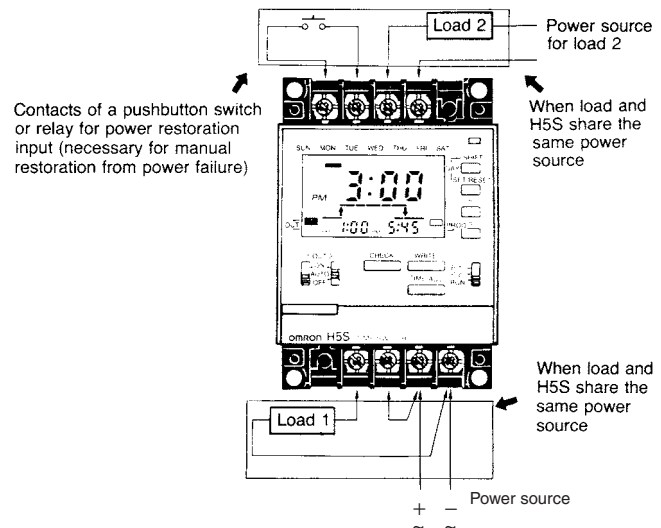


Connections

H5S-B Flush Mounting Models



H5S-FB Surface Mounting Models



Safety Precautions

CAUTION

The H5S contains an explosion-proof lithium battery. It may occasionally burn or burst. Do not disassemble, deform under pressure, heat to 100°C or higher, or incinerate the battery. The lithium battery cannot be replaced.

This may occasionally cause electric shock, fire, or malfunction. Never disassemble, repair, or modify the H5S.

This may occasionally cause electric shock, fire, or malfunction. Do not allow metal fragments or lead wire scraps to fall inside the H5S.

Precautions for Safe Use

Observe the following items to ensure the safe use of this product.

Environmental Precautions

- Store the H5S within the specified ratings. If the H5S has been stored at temperatures -10°C or lower, let it stand for 3 hours or longer at room temperature before turning ON the power supply.
- Use the H5S within the specified ratings for operating temperature and humidity.
- Do not operate the H5S in locations subject to sudden or extreme changes in temperature, or locations where high humidity may result in condensation.
- Do not use the H5S in locations subject to vibrations or shock. Extended use in such locations may result in damage due to stress.
- Do not use the H5S in locations subject to excessive dust, corrosive gas, or direct sunlight.
- Install the H5S well away from any sources of static electricity, such as pipes transporting molding materials, powders, or liquids.
- The H5S is not waterproof or oil resistant. Do not use it in locations subject to water or oil.
- Do not use organic solvents (such as paint thinner or benzene), strong alkaline, or strong acids because they will damage the external finish.

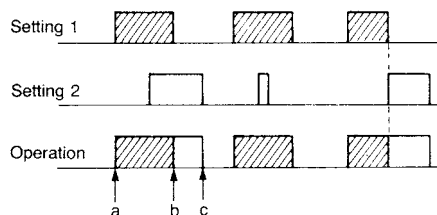
Usage Precautions

- Install a switch or circuit breaker that allows the operator to immediately turn OFF the power, and label it to clearly indicate its function.
- Be sure to wire the terminals correctly.
- Do not install input lines in the same duct or conduit as power supply or other high-voltage lines. Doing so may result in malfunction due to noise. Separate the input lines from high-voltage lines.
- Internal elements may be destroyed if a voltage outside the rated voltage is applied.
- Maintain voltage fluctuations in the power supply within the specified range.
- Use a switch, relay, or other contact so that the rated power supply voltage will be reached within 0.1 s. If the power supply voltage is not reached quickly enough, the H5S may malfunction or outputs may be unstable.

Precautions for Correct Use

Operation

The earlier ON time setting takes precedence.

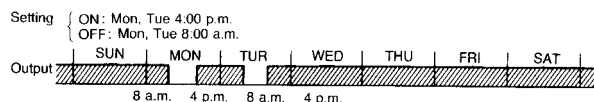


If both settings 1 and 2 are for an ON/OFF or pulse operation, the output is continuously produced without being interrupted. For example, if setting 1 is for cyclic operation, and 2 is set for an ON/OFF operation, the cyclic operation is performed during period of a to b, and the ON/OFF operation is performed from b to c.

If more than one day is specified and when the output is turned on, it is turned off on the day when the first OFF time is set.

Multiple-day Operation

If more than one day is specified and when the output is turned on, it is turned off on the day when the first OFF time is set.



If an ON and OFF have been set at the same time of the same day (such setting is possible), no operation is performed.

If the Mode Switch is set to the P1 (or P2) position, no output is produced. Therefore, after setting has been done, set the Mode Switch to the RUN position and confirm that the automatic operation indicator lights.

The set data may be erased if the OUT switch is moved between the TIMER and PULSE positions after the data has been set.

Backup Power Supply for Memory Protection during Power Failure

The H5S Time Switch has a built-in battery. This backup power supply allows continuous operation of the internal timer circuit and restores the user program during a power failure. If the duration of a power failure or service interruption is within the life-time of the backup battery, no time adjustment is required for the timer. Note that during a power failure, the output contacts are in the OFF state, the display is dark, and the Key switch cannot be used.

The built-in lithium battery cannot be replaced.

Warranty and Application Considerations

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

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OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

Cat. No. L014-E1-06 **In the interest of product improvement, specifications are subject to change without notice.**

OMRON Corporation

Industrial Automation Company

Industrial Devices and Components Division H.Q.

Industrial Control Components Department

Shiokoji Horikawa, Shimogyo-ku,

Kyoto, 600-8530 Japan

Tel: (81)75-344-7119/Fax: (81)75-344-7149

Printed in Japan

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AUDIN - 8, avenue de la malle - 51370 Saint Brice Courcelles - Tel : 03.26.04.20.21 - Fax : 03.26.04.28.20 - Web : <http://www.audin.fr> - Email : info@audin.fr