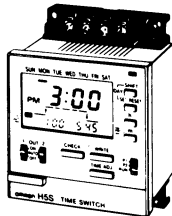
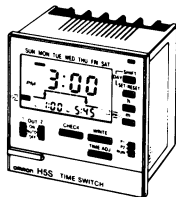


OMRON

Model **H5S** DIGITAL WEEKLY TIME SWITCH

INSTRUCTION MANUAL

Thank you for purchasing this OMRON product. Before using this timer, please study these instructions carefully to familiarize yourself with the product.



Karasuma Nanajo,
Shimogyo-ku, Kyoto 600, Japan
OMRON Corporation

0648484-5E

Precautions on Safety

● Definition of Safety Indications

⚠ WARNING

Incorrect product handling may cause serious injury or death.

● Safety Indications

⚠ WARNING

Never disassemble, deform, subject to heat over 100°C or dispose in fire.
The product has a built-in lithium battery.
Fire, Explosion and Burn Hazard.



Never touch or disassemble the terminals.
Electric Shock Hazard.

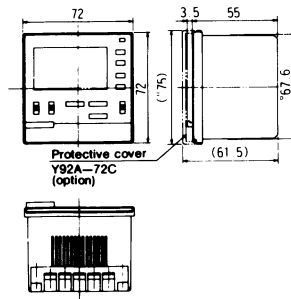


CONTENTS

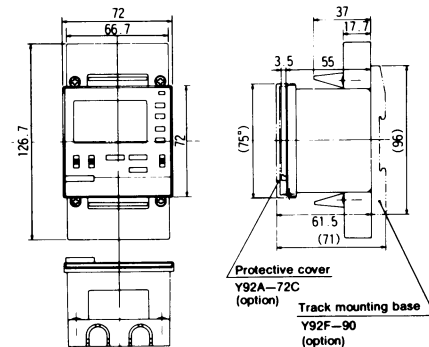
1 OUTLINED DIMENSIONS ...	1	11 CHECKING THE	
2 MOUNTING DIMENSIONS...	2	SET TIME	13
3 WIRING	3	12 DAY OVERRIDE	15
4 NAMES OF		13 CANCELING THE	
RESPECTIVE PARTS.....	4	SETTING.....	17
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10 PULSE-OUTPUT		CHARACTERISTICS.....	22
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1 OUTLINED DIMENSIONS

■ H5S—B (Flush Mounting Type)

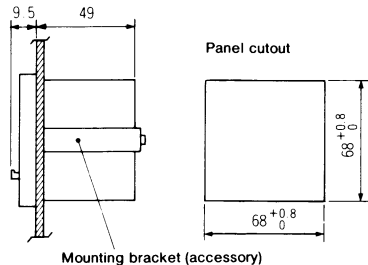


■ H5S—FB (Surface Mounting Type)



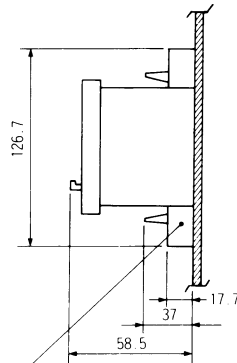
2 MOUNTING DIMENSIONS

■ Flush Mounting (H5S—B)

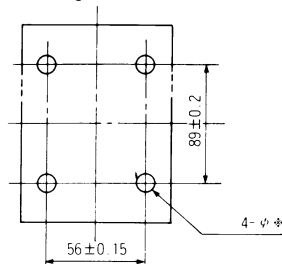


Terminal cover (accessory)

■ Surface Mounting (H5S—FB)



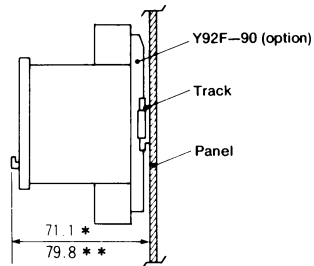
Mounting holes



※ When mounting the time switch on a soft iron panel with the M4 tapping screws supplied, the diameter of the mounting holes drilled on the panel differs depending on the panel thickness, as follows. If the panel is of diecast aluminum, the hole diameter should be slightly larger.

Panel thickness (mm)	0.8	1.0	1.2	1.6	2.0	2.6	3.2	4.0
Hole diameter (mm)	$\phi 3.6$					$\phi 3.7$		

■ Track Mounting (H5S—FB + Y92F—90)

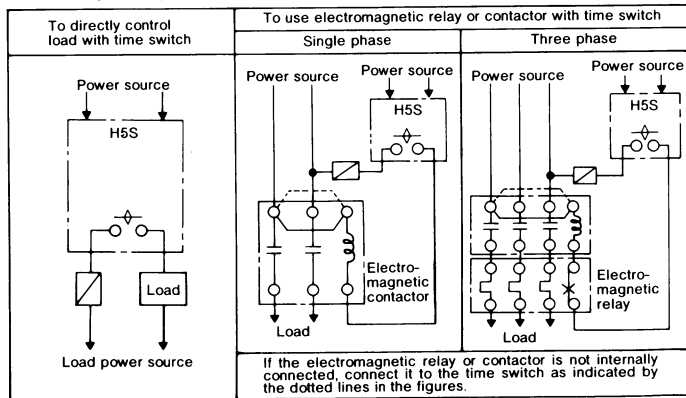


* With mounting track Model PFP—100N or PFP—50N

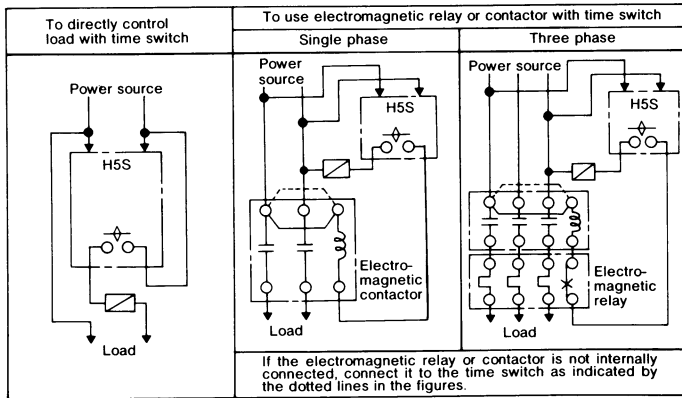
** With mounting track Model PFP—100N2

3 WIRING (Be sure to read 17 "PRECAUTIONS" before wiring.)

● With separate power sources for time switch and load

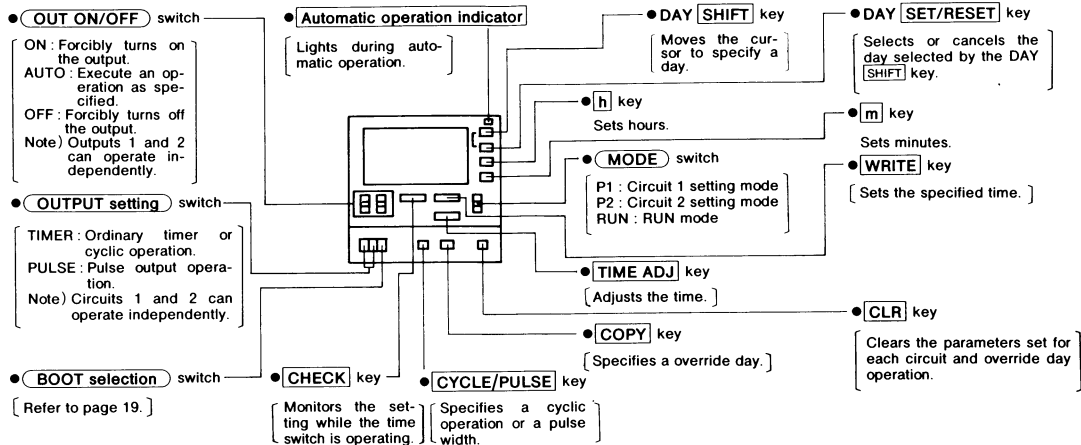


● When time switch and load share power source

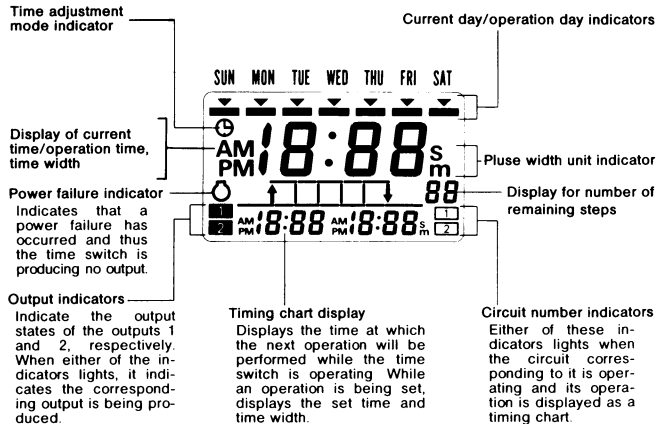


4 NAMES OF RESPECTIVE PARTS

■ Front Panel

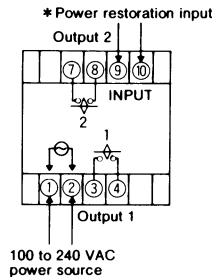


■ Display



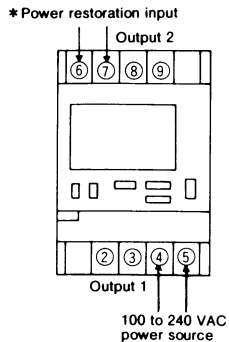
■ Connection

• H5S—B (rear view)



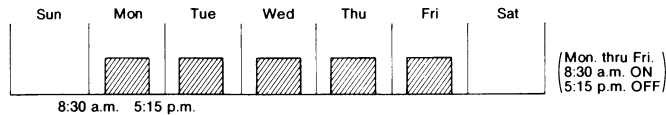
* For details, see page 19.

• H5S—FB (front view)

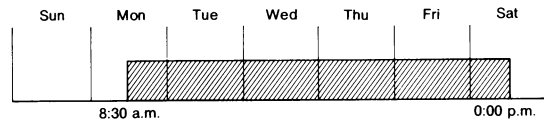


5 SETTING EXAMPLES

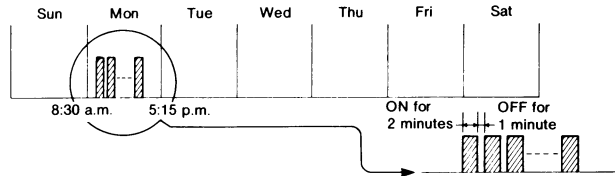
1) For ordinary timer operation (See page 9 for details.)



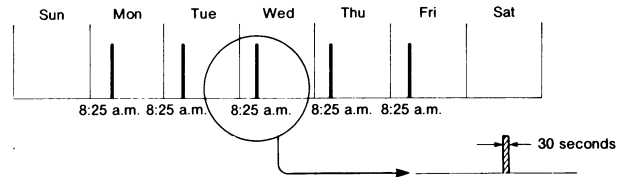
2) For multiple-day operation (See page 10 for details.)



3) For cyclic operation (See page 11 for details.)



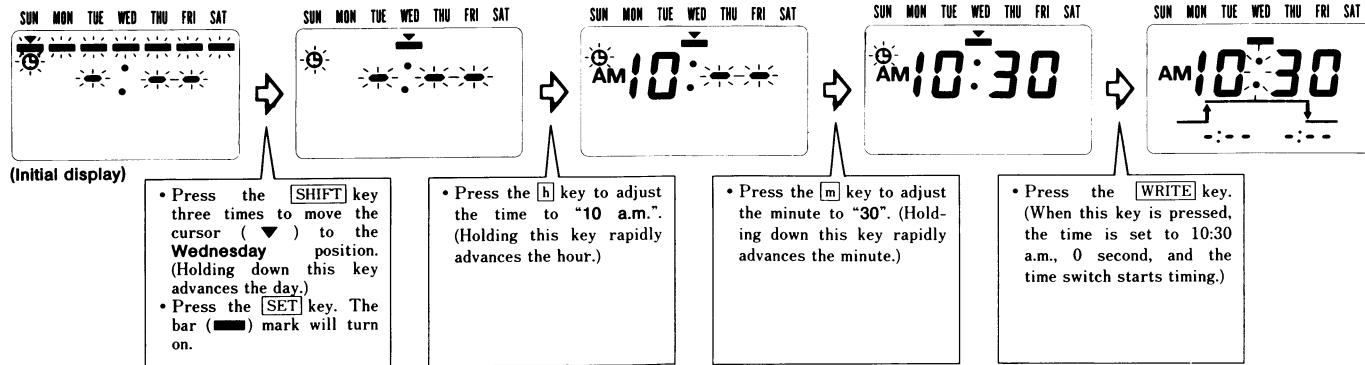
4) For pulse-output operation (See page 12 for details.)



6 TIME ADJUSTMENT

■ The following figures illustrate how to adjust the time to 10:30 a.m., Wednesday.

OUTPUT setting		MODE	
TIMER	1 2	P1	•
MODE		P2	•
PULSE	1 2	RUN	

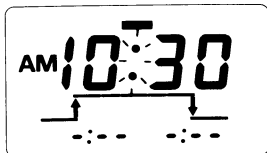


6 TIME ADJUSTMENT

- The time can also be adjusted or changed while the time switch is operating. In the following example, the currently set time, 10:30 a.m., Wednesday, is changed to 4:00 a.m., Monday.

MODE	
P1	—
P2	—
RUN	—

SUN MON TUE WED THU FRI SAT



(Initial display)

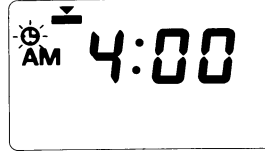
- Hold down the **TIME ADJ** key for 1 second or longer.

SUN MON TUE WED THU FRI SAT



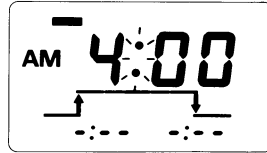
- Using the **SHIFT** and **SET** keys, select **Monday**, so that the bar at the Monday position turns on.
- Adjust the time to "4:00 a.m." with the **h** and **m** keys.

SUN MON TUE WED THU FRI SAT



- Press the **WRITE** key. (When this key is pressed, the time is set to 4:00 a.m., 0 second, and the time switch starts timing.)

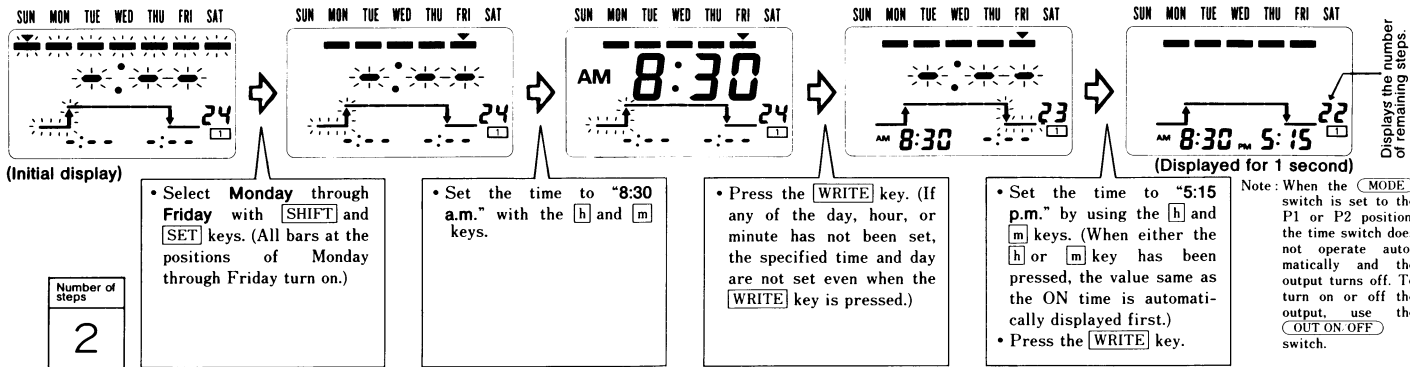
SUN MON TUE WED THU FRI SAT



7 ORDINARY TIMER OPERATION

..... In this example, circuit 1 is to operate at 8:30 a.m. and stop at 5:15 p.m. from Monday through Friday.

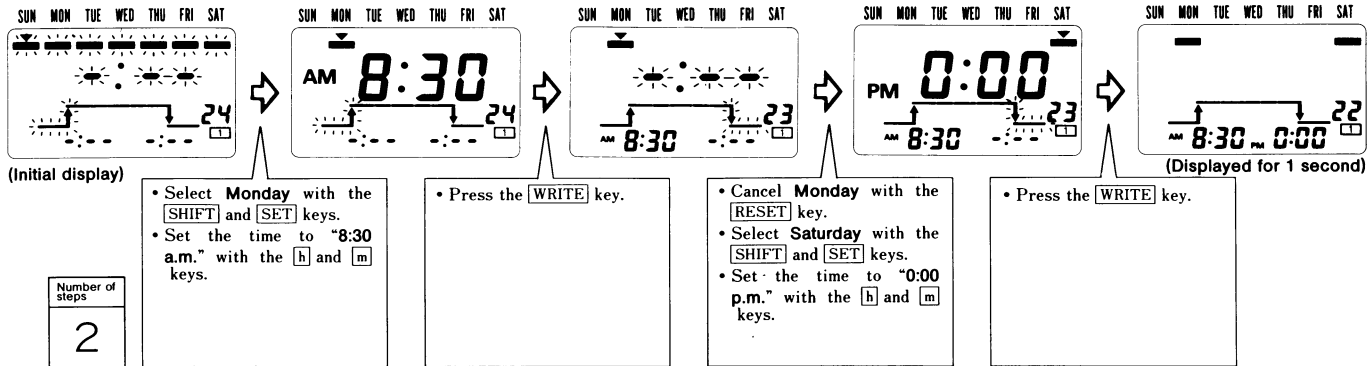
OUTPUT setting	MODE
TIMER	P1
MODE	P2
PULSE	RUN



8 MULTIPLE-DAY OPERATION

..... The time switch turns **ON** circuit 1 at **8:30 a.m.** on **Monday**, and turns it **OFF** at **0:00 p.m.** on **Saturday**.

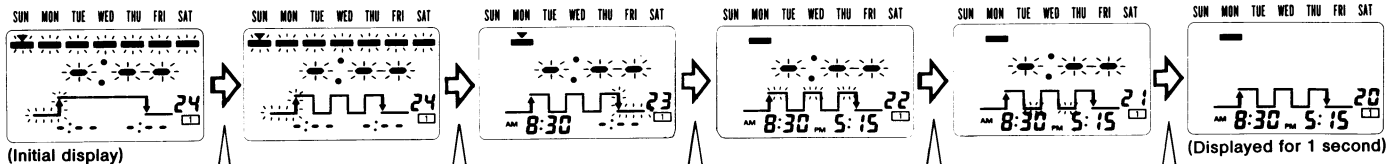
OUTPUT setting		MODE	
MODE	TIMER	P1	☐
	PULSE	P2	☐
		RUN	☐



9 CYCLIC OPERATION

..... Circuit 1 is set to turn **ON** for 2 minutes and **OFF** for 1 minute repeatedly from 8:30 a.m. to 5:15 p.m. on Monday.

OUTPUT setting		MODE	
TIMER	☐	P1	☐
MODE	☒	P2	☐
PULSE	☐	RUN	☐



• Press the **CYCLE** key.

- Select Monday with the **SHIFT** and **SET** keys.
- Set the time to "8:30 a.m." with the **h** and **m** keys.
- Press the **WRITE** key.

- Set the time to "5:15 p.m." with the **h** and **m** keys.
- Press the **WRITE** key.

- Set "0:02" with the **h** and **m** keys.
- Press the **WRITE** key.

- Set "0:01" with the **h** and **m** keys.
- Press the **WRITE** key.

Note: Neither the ON nor the OFF time can be set to "0:00".

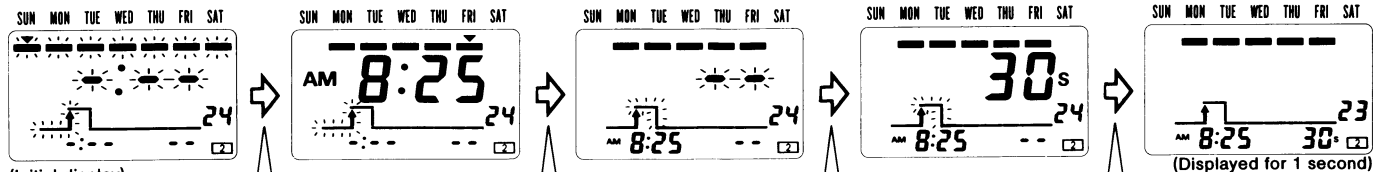
Number of steps

4

10 PULSE-OUTPUT OPERATION

..... Circuit 2 is turned ON for 30 seconds at 8:25 a.m., Monday through Friday.

OUTPUT setting		MODE	
TIMER		P1	•
MODE		P2	•
PULSE		RUN	•



- Select **Monday** through **Friday** with the **[SHIFT]** and **[SET]** keys.
- Set the time to "8:25 a.m." with the **[h]** and **[m]** keys.

- Press the **[WRITE]** key.

- Press the **[PULSE]** key to set "30s". (Holding down this key rapidly advances the second.)

- Press the **[WRITE]** key.

Note : If the pulse width (i. e., the second) was set previously, that pulse width is displayed.

Number of steps
1

11 CHECKING THE SET TIME

- The set times can be checked and, if necessary, changed in the sequence they were set. In this example, the times set for circuit 1 are checked.

MODE	
P1	☐
P2	☐
RUN	☐



- Press the **WRITE** key. If it is necessary to change the setting, do so with the necessary keys and press the **WRITE** key. (Each time the **WRITE** key is pressed, the subsequent set times are displayed in the sequence they were set.)

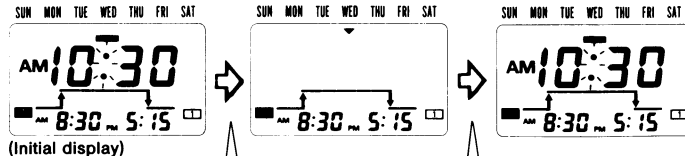
- Press the **WRITE** key. After all the set times have been displayed, the first set time is displayed again.

Note: When the **MODE** switch is set to the P1 (or P2) position, the output is turned off. To turn on the output, use the **OUT ON/OFF** switch.

11 CHECKING THE SET TIME

- The set times can be checked in the time sequence the time switch is to operate. In the following example, the times set for today are checked.

MODE	
P1	☐
P2	☐
RUN	☐



- Press the **CHECK** key.
 - Each time this key is pressed, the operation schedule is displayed in the time sequence.
 - First, the ON times and OFF times set for circuit 1 are displayed starting from the earliest ON time. Then the times set for circuit 2 are displayed.

- Press the **CHECK** key. After all the set times have been displayed, the first set time is displayed again.

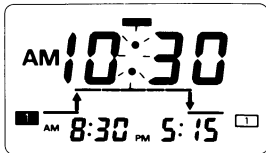
Note: If the time switch is left untouched for 20 seconds during checking, the display automatically returns to the RUN mode. If the timer is set to perform cyclic operation, press the **CHECK** key twice to check one operation.

11 CHECKING THE SET TIME

■ It is possible to check the timing operations in the sequence they are to be executed. In this example, the operations to be performed on **Thursday** are checked.

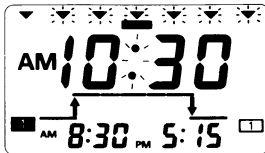
MODE	
P1	•
P2	•
RUN	◻

SUN MON TUE WED THU FRI SAT



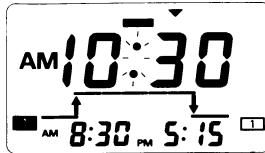
(Initial display)

SUN MON TUE WED THU FRI SAT



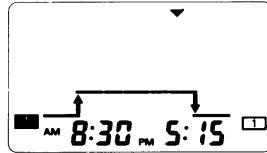
- Press the **[SHIFT]** key.

SUN MON TUE WED THU FRI SAT



- Press the **[SHIFT]** key to stop the blinking of the cursor (▼) at the **Thursday** position.
- Press the **[SET]** key.

SUN MON TUE WED THU FRI SAT



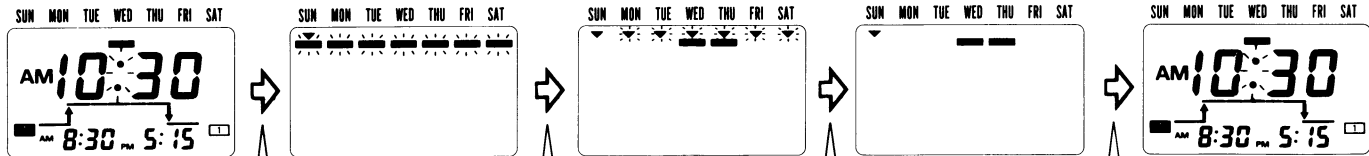
- Press the **[CHECK]** key.
- (Each time this key is pressed, the operation schedule is displayed in the sequence the operations are to be executed. The ON times and OFF times set for circuit 1 are first displayed, starting from the earliest ON time. Then the times set for circuit 2 are displayed. After all the set times of both the circuits have been displayed, the time switch enters the RUN state display.)

Note: If the time switch is left untouched for 20 seconds during checking, the display automatically returns to the RUN mode. If the timer is set to perform cyclic operation, press the **[CHECK]** key twice to check one operation.

12 DAY OVERRIDE

Because Wednesday and Thursday are holidays in the next week, the operations set for Sunday will be executed on these days.
(The time switch executes the newly set program for only one week from the day next to when the program is set. After the one week, the time switch operates according to the previous program.)

MODE	
P1	■
P2	■
RUN	■



(Initial display)

- Hold down the **[COPY]** key for 1 second or longer. If a override day has already been set, the fourth screen is displayed. To change the setting of that day, cancel it once and specify the new setting.

- Select **Wednesday** and **Thursday** with the **[SHIFT]** and **[SET]** keys.
- Press the **[WRITE]** key.

- Select **Sunday** with the **[SHIFT]** and **[SET]** keys.

- Press the **[WRITE]** key.

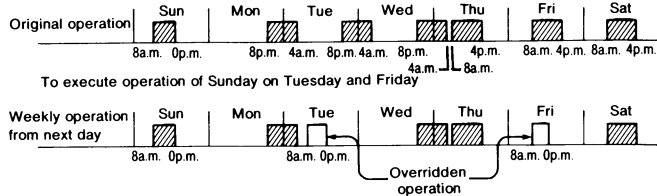
Note: This function has an effect on both circuits 1 and 2. If either of the following operations is executed while executing the day overridden function, the set day is canceled:

- 1) Changing day by adjusting the time
- 2) Addition or change of the setting related to the function.

12 DAY OVERRIDE

■ By using the day override function, if the operation of one day is to be executed on another, and if the time switch is programmed to operate over several days on the day which is the source or destination of the override, the operation is performed as follows :

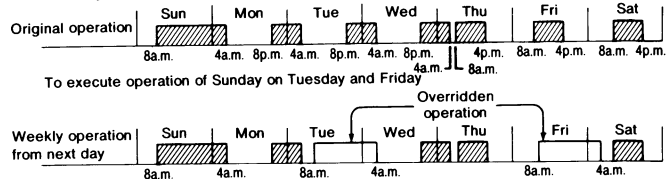
● If the time switch is programmed to operate over several days on the day whose operation is to be overridden



The ON/OFF operation of the output for the overridden day is valid. In this case, the operation of Sunday is to be performed on Tuesday and Friday ; so, the Sunday operation takes precedence. On Tuesday, therefore, the operation of Sunday, which is to turn on the output at 8:00 a.m. and off at 0:00

p.m., is executed after the original operation (turning on the output at 8:00 p.m. on Monday and off at 4:00 a.m. on Tuesday) has been performed. However, on Friday, the output is turned on at 8:00 a.m., as the original operation, but it does not turn off at 4:00 p.m., and instead, is turned off at 0:00 p.m.

● If the time switch is programmed to operate over several days on the day for which an operation is overridden

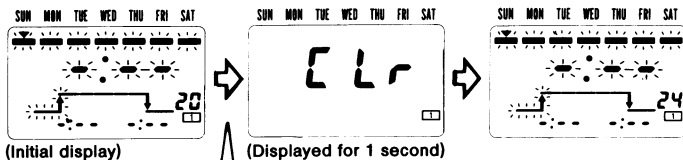


The output is turned on at 8:00 a.m. on Tuesday and is held on until it was originally intended to be turned off, i. e., at 4:00 a.m. on Wednesday. On Friday, it is turned on at 8:00 a.m., but instead of being turned off at 4:00 p.m., as originally scheduled, it is kept on and turned off at 4:00 a.m. on Saturday.

13 CANCELING THE SETTING

- All the operations of circuit 1 or 2 can be canceled. In the following example, all the operations of circuit 1 are canceled.

MODE	
P1	☐
P2	☐
RUN	☐



- Press the **CLR** key.

Note: To cancel all the operations of circuit 2, set the **MODE** switch to the P2 position, and do the same as above.

13 CANCELING THE SETTING

- In the following example, a overridden operation is canceled.

MODE	
P1	☐
P2	☐
RUN	☐

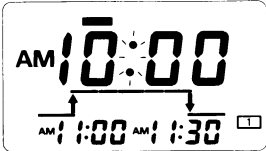
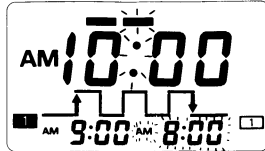
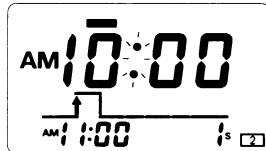


- Press the **COPY** key for 1 second or longer.

- Press the **CLR** key.

14 DISPLAY DURING OPERATION

■ While the time switch is operating, it displays the next operation for circuit 1 to be performed. If the next operation in the day is not programmed for circuit 1, the next operation of circuit 2 is displayed.

Ordinary timer operation		Cyclic operation		Pulse-output operation	
SUN MON TUE WED THU FRI SAT 		SUN MON TUE WED THU FRI SAT 		SUN MON TUE WED THU FRI SAT 	
Current time	Tuesday, 10:00 a.m.	Current time	Tuesday, 10:00 a.m.	Current time	Tuesday, 10:00 a.m.
Next operation	ON at 11:00 a.m. and OFF at 11:30 a.m.	Next operation	Cyclic operation being performed from 9:00 a.m. is stopped at 8:00 a.m. on Wednesday.	Next operation	No operation for circuit 1 today. Circuit 2 operates for 1 second at 11:00 a.m.
Output condition	Both 1 and 2 are OFF.	Output condition	1 is ON and 2 is OFF.	Output condition	Both 1 and 2 are OFF.

15 IN CASE OF POWER FAILURE

If a power failure takes place, the output of the time switch is turned off. What processing is to be performed after power recovery differs depending on the setting of the (BOOT selection) switch.

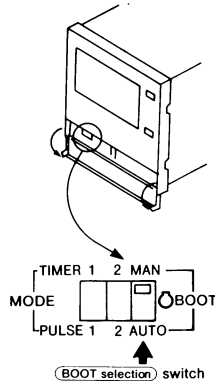
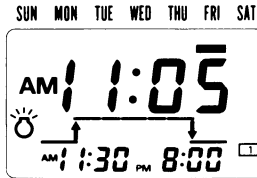
- With the switch set to "AUTO"

The time switch resumes its operation as programmed after power recovery.

- With the switch set to "MAN"

A keyhole mark (○) is displayed and blinks as shown below after power recovery. The time switch does not turn on the output yet. To start the output, either

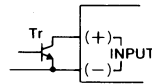
change the (BOOT selection) switch to the "AUTO" position once, or input a signal to the power failure recovery terminal by referring to the next paragraph.



How to Input Signal

- To input the signal, use a switch or a relay. (Use a reliable switch or relay such as the one having gold-plated contacts because the current flow out from the internal circuitry is as low as 0.1 mA.)
- To input the signal by a solid-state output device such as a transistor, pay attention to the following points :

- 1) Connect the correct polarities.

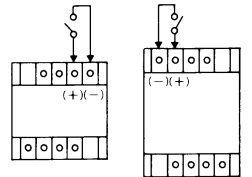


Use a transistor having the following characteristics :

$$V_{ce0} \geq 30 \text{ V}$$

$$I_c \geq 10 \text{ mA}$$

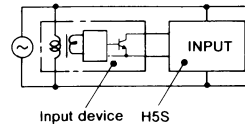
$$I_{ce0} \leq 5 \mu\text{A}$$



Flush mounting type (rear view)

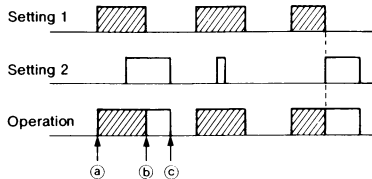
Surface mounting type (front view)

- 2) Use a power supply that has an insulated transformer with secondary coil not grounded for the input device. Or, isolate the input circuit by a photocoupler.



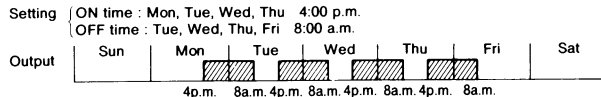
16 OTHER FUNCTIONS

- The earlier ON time takes precedence.

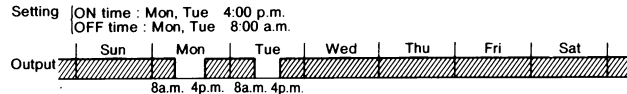


If both the setting 1 and 2 is for an ON/OFF operation or pulse operation, the output is continuously produced without being interrupted. If setting 1 is for cyclic operation, while 2 is for an ON/OFF operation, for example, the cyclic operation is performed during period of (a) to (b), and the ON/OFF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

- 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.



- 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 time and an OFF time 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, the output is not 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 when the **OUTPUT setting** switch is moved between the TIMER and PULSE positions after the data has been set.

17 PRECAUTIONS

- The load capacity differs depending on the load type. Refer to the ratings and make sure that the capacity of your load is within the range of the ratings.
- To use a heater, be sure to incorporate a thermal switch in the load circuit.
- Do not use the time switch in the following locations :
Where the temperature is below -10°C or above $+55^{\circ}\text{C}$
Where is subject to dust and humidity
Where corrosive gas is generated
Where is subject to heavy shock and vibration
Where is subject to splash of water, oil, and direct sunlight
- When installing the time switch where much electric noise is generated, provide as long a distance as possible between the time switch and its input signal lines, and the noise source and the power lines on which noise is superimposed.
- To use the time switch to break an inductive load, connect a surge absorber to the time switch to protect it from malfunctioning or damages.
- The coating of the time switch may be corroded by organic solvents (such as thinner and benzine), strong alkali (such as ammonia and caustic soda), and strong acid substances.

Danger

About built-in battery The H5S has a built-in lithium battery. Do not throw the exhausted lithium battery in fire. Be sure to dispose of the old battery as nonflammable garbage.

18 RATING AND CHARACTERISTICS

Model			H5S— B		H5S— B—31		Model			H5S— B		H5S— B—31	
			H5S—FB		H5S—FB—31					H5S—FB		H5S—FB—31	
Supply voltage			AC 100-240 V			DC 24 V			Setting Number of operations Minimum interval 1 minute ON/OFF operation 24 (12 sets of ON/OFF operations) Pulse operation 24 Cyclic operation 6 sets Number of remaining operations indication When an operation has been set, the number of remaining operations is displayed. Pulse width Setting can be done in units of 1 second from 1 to 59 seconds or in units of 1 minute from 1 to 60 minutes. Memory protection 5 years (at 25°C) Monthly error ±15 seconds (at 25°C) Ambient operating temperature −10~+55°C Ambient strage temperature −25~+65°C Setting error ±0.01%±50 ms max.				
Power consumption			Approx. 3 VA			Approx. 0.8 W							
Load	Number of circuits		2 independent circuits										
	Circuit		Separated from power circuit										
	Capacity	Resistive	250 V, 15 A										
		Incad. lamp	100 V · 300 W										
		Inductive (cos ϕ =0.7)	250 V, 10 A										
		Motor (cos ϕ =0.7)	100 V-400 W, 200 V-750 W										
Configuration		Two pairs of single-pole, single-throw contacts											
Variation due to voltage change			85 to 110% of rated voltage										
External input			By short-circuiting/opening										

