Digital Time Switch
H5S

Easier, More Convenient Time Switches, with New 4-circuit Output and Yearly Models in Addition to 2-circuit Weekly Models

- Independent Day Keys provide easier operation.
- Temporary holiday setting function makes it easy to turn OFF output for holidays and non-operating days.
- Settings can be made even with the Time Switch turned OFF.
- Test mode enables easy program checking.
- Complies with EMC Directives, UL/CSA, and other safety standards.
- Includes summer time (DST) adjustment.
  Yearly models also offer automatic switching to DST.
- Set value can be changed both upward and downward for speedier setting.
- Integrated temperature compensation circuit helps keep accurate time over a wide temperature range. (See note 1.)
- Includes time counter and total counter functions with alarm indicator. (See note 2.)
- Bank function allows program switching by an external input. (See note 3.)
- New 4-circuit output models with a compact, 72 × 72-mm DIN size added to the series.

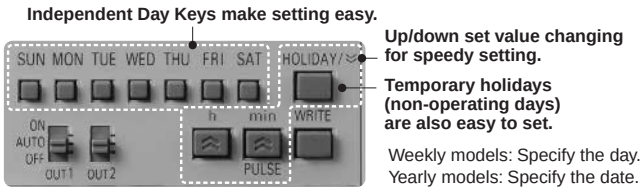
Note: 1. Available only on yearly models.
2. Available only on 2-circuit models.
3. Available only on weekly models.

NEW

Features

Easier and More Convenient to Use

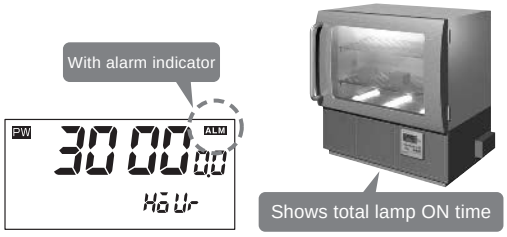
■ Simple Setting



■ Convenient Functions

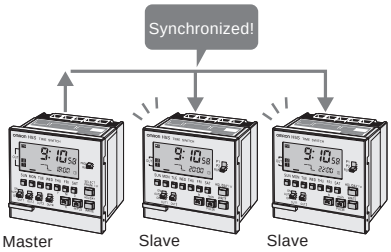
Time Counter/Total Counter Functions (See note.)

This function makes it possible to monitor the total time that a load has been applied, or the total number of operating cycles. It allows the Time Switch to be used for managing maintenance.



Time Adjustment Function (See note.)

The time can be set to 00 min 00 s by using an external input. The times on multiple Time Switches can also be easily synchronized.



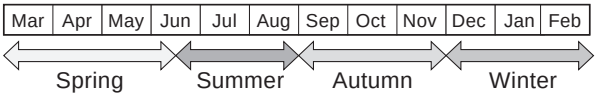
Note: Equipped on 2-circuit models.

More Applications on New Series Models

Yearly Models ***NEW***

Automatic Program Switching by Seasons

The yearly operation can be set to automatically change the weekly program depending on the season. (See note.)



Season (See note 2.)	Spring	Summer	Autumn	Winter
Program example	17:30 ON ▼ 21:00 OFF	19:00 ON ▼ 22:00 OFF	18:00 ON ▼ 21:00 OFF	17:00 ON ▼ 21:00 OFF

Note: Up to four seasons can be set for 4-circuit models, and up to two seasons for 2-circuit models.

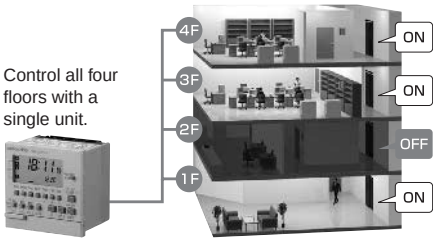
Temperature Compensation Circuit Maintains Accurate Time

A temperature compensation circuit is provided in the yearly models to maintain accurate time keeping even when the ambient temperature varies greatly. This ensures precise operation with minimal time lags all year round, regardless of temperature changes.

4-circuit Models ***NEW***

Space-saving, Economical 4-circuit Models Added to the Series

The new 4-circuit models are 72 × 72-mm DIN size. Their space-saving size allows use in more applications.



Model Number Structure

■ Model Number Legend

Note: This model number legend includes combinations that are not available. Please check the “List of Models” for availability.

H5S- □□□□□ - □
1 2 3 4 5 6

1. **Control cycle**
   W: Weekly
   Y: Yearly
2. **Mounting method**
   None: Flush mounting
   F: Surface mounting/track mounting
3. **Panel language**
   B: English
   A: Japanese
4. **Number of outputs**
   2: 2 circuits
   4: 4 circuits
5. **Supply voltage**
   None: 100 to 240 VAC
   D: 24 VDC
6. **Time accuracy**
   None: Standard
   X: With temperature compensation

Ordering Information

■ List of Models

Control cycle	Number of outputs	Mounting method	Supply voltage	Models
Weekly	2 circuits	Flush mounting	100 to 240 VAC	H5S-WB2
			24 VDC	H5S-WB2D
		Surface mounting/ track mounting	100 to 240 VAC	H5S-WFB2
			24 VDC	H5S-WFB2D
Yearly	2 circuits	Flush mounting	100 to 240 VAC	H5S-YB2-X
			24 VDC	H5S-YB2D-X
		Surface mounting/ track mounting	100 to 240 VAC	H5S-YFB2-X
			24 VDC	H5S-YFB2D-X
	4 circuits	Flush mounting	100 to 240 VAC	H5S-YB4-X
			24 VDC	H5S-YB4D-X
		Surface mounting/ track mounting	100 to 240 VAC	H5S-YFB4-X
			24 VDC	H5S-YFB4D-X

■ Accessories (Order Separately)

Name	Model
Large Terminal Cover (in pairs)	Y92A-72H
Protective Cover	Y92A-72C
Track Mounting Base	Y92F-90

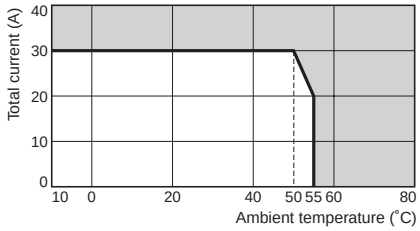
Specifications

■ Ratings

Item			Weekly 2-circuit Models (H5S-W□2)	Yearly 2-circuit Models (H5S-Y□2)	Yearly 4-circuit Models (H5S-Y□4)
Rated supply voltage			100 to 240 VAC (50/60 Hz), 24 VDC (See note 1.)		
Operating voltage range			AC: 85% to 110% rated supply voltage DC: 85% to 120% rated supply voltage		
Power consumption			Approx. 2.9 VA at 264 VAC 60 Hz Approx. 0.8 W at 28.8 VDC	Approx. 3.2 VA at 264 VAC 60 Hz Approx. 0.9 W at 28.8 VDC	Approx. 3.5 VA at 264 VAC 60 Hz Approx. 1.0 W at 28.8 VDC
Control outputs	**Number of circuits**		SPST-NO × 2 circuits		SPST-NO × 4 circuits
	Circuits		Power supply circuit and other (no-voltage) circuit		
	Capacity	**Resistive load (cosϕ = 1)**	15 A at 250 VAC (See note 2.)		3 A at 250 VAC
		Inductive load	10 A at 250 VAC (cosϕ = 0.7)		2 A at 250 VAC (cosϕ = 0.4)
Ambient operating temperature			–10 to 55°C (with no icing or condensation)		
Ambient operating humidity			25 to 85%		
Storage temperature			–25 to 65°C (with no icing or condensation)		
Case color			Light gray (Munsell 5Y7/1)		

Note: 1. Do not use inverter output as a power supply. For details, refer to *Precautions for Safe Use*, item 24, on page 12.

2. The capacity is 15 A per circuit, but derating of the total current for two circuits is required as shown below depending on the ambient temperature.



■ Characteristics

Item		Weekly 2-circuit Models (H5S-W□2)	Yearly 2-circuit Models (H5S-Y□2)	Yearly 4-circuit Models (H5S-Y□4)
Accuracy of operating time		±0.01%±0.05 s max. (See note 1.) The ±0.01% value applies to the set time interval.		
Setting error				
Influence of voltage				
Influence of temperature				
Cyclic error		±15 s per month (at 25°C)	±15 s per month (at –10 to 45°C), ±20 s per month (at 45 to 55°C)	
Memory protection		Continuous use: 5 years min. (at 25°C) (See note 2.)		
Insulation resistance		100 MΩ min. (between current-carrying terminals and exposed non-current carrying metal parts, between operation circuit and control output circuit, between control output circuits, and between non-continuous contacts.)		
Dielectric strength		2,950 VAC, 50/60 Hz for 1 min (between current-carrying terminals and exposed non-current carrying metal parts) 2,000 VAC, 50/60 Hz for 1 min (between operation circuit and control output circuit, and between control output circuits) 1,000 VAC, 50/60 Hz for 1 min (between non-continuous contacts)		
Noise immunity		±1,500 V (between power terminals, for AC power models), ±500 V (between power terminals, for DC power models) Square-wave noise by noise simulator (pulse width: 100 ns, for 1 μs, 1-ns rise time)		
Vibration resistance	**Destruction**	10 to 55 Hz with 0.375-mm single amplitude in 3 directions for 2 hours each		
	Malfunction	10 to 55 Hz with 0.25-mm single amplitude in 3 directions for 10 minutes each		
Shock resistance	**Destruction**	300 m/s^2 3 times each in x, y, and z axes, 6 directions		
	Malfunction	100 m/s^2 3 times each in x, y, and z axes, 6 directions		
Life expectancy	**Mechanical**	100,000 operations min.		
	Electrical	50,000 operations min. (15 A at 250 VAC, resistive load) 50,000 operations min. (10 A at 30 VDC, resistive load) 50,000 operations min. (10 A at 250 VAC, inductive load (cosϕ = 0.7)) 50,000 operations min. (1 HP at 250 VAC, motor load) 50,000 operations min. (100 W at 100 VAC, lamp load) 10,000 operations min. (300 W at 100 VAC, lamp load)		50,000 operations min. (3 A at 250 VAC, resistive load) 50,000 operations min. (3 A at 30 VDC, resistive load)
Approved standards		cURus: UL 508/CSA C22.2 No.14, Conforms to EN 60730-2-7(Pollution degree 2/overvoltage category II), Conforms to VDE 0106/part100. Conforms to Electrical Appliance and Material Safety Law (for Japan)		
EMC		(EMI) EN 60730-2-7 EMI Radiated: EN 60730-2-7 (CISPR 22 Class B) EMI Conducted (Continuous): EN 60730-2-7 (CISPR 22 Class B) EMI Conducted (Non-continuous): EN 60730-2-7 (CISPR 14-1) Harmonic Current: EN 60730-2-7 (IEC 61000-3-2 Class A) Voltage fluctuation/flicker: EN 60730-2-7 (IEC 61000-3-3) (EMS) EN 60730-2-7 ESD Immunity: EN 60730-2-7 (IEC 61000-4-2): 6 kV contact discharge 8 kV air discharge Radiated Electromagnetic Field Immunity: EN 60730-2-7 (IEC 61000-4-3): 10-V/m AM modulation (80 MHz to 1 GHz, 1.4 GHz to 2 GHz) 10-V/m pulse modulation (900 MHz) Conducted Disturbance Immunity: EN 60730-2-7 (IEC 61000-4-6): 10 V (0.15 to 80 MHz) Burst Immunity: EN 60730-2-7 (IEC 61000-4-4): 2 kV power line 1 kV control line Surge Immunity: EN 60730-2-7 (IEC 61000-4-5): 1 kV line to line (power line, output line) 2 kV line to ground (power line, output line) 0.5 kV line to line (input line) 1 kV line to ground (input line) Voltage Dip/Interrupting Immunity: EN 60730-2-7 (IEC 61000-4-11): 0.5-s cycle, 100% (rated voltage)		
Weight		Approx. 200 g		

Note: 1. 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.

2. The total time when power is not being supplied.

■ Operation

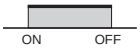
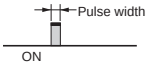
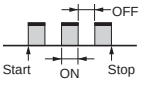
Item		Weekly 2-circuit Models (H5S-W□2)	Yearly 2-circuit Models (H5S-Y□2)	Yearly 4-circuit Models (H5S-Y□4)
Operation method		Digital quartz		
Operation period		1 week (7 days)	1 year (with integrated calendar to 2099)	
Display		• Day, hrs (switchable between 24-hr indication and a.m./p.m. 12-hr indication), minutes, seconds (0.00 to 23:59, 0.00 to 11:59 a.m., 0.00 to 11:59 p.m.) • Digital indication by LCD (character height: 10 mm) • Digital display of operation schedule during operation • Timing chart display of operation schedule during operation		
Min. setting unit		1 min		
Number of steps that can be set	**Weekly program (See note 1.)**	40 steps/circuit	48 steps/circuit (See note 2.) 24 steps/circuit (See note 3.)	48 steps/circuit (See note 2.) 12 steps/circuit (See note 3.)
	Yearly program	---	4 yearly programs/circuit	
	Number of settable yearly temporary holiday settings	---	16	

Note: 1. Depending the operation, the following steps can be used for weekly programs.
Timer operation: 2 steps
Pulse-output operation: 1 step
Cyclic operation: 4 steps

2. When the season switching setting is not being used.

3. When the season switching setting is being used.

■ Operation Functions

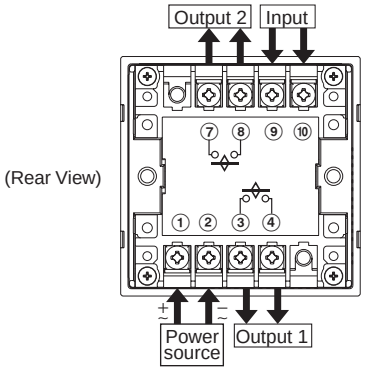
Item	Weekly 2-circuit Models (H5S-W□2)	Yearly 2-circuit Models (H5S-Y□2)	Yearly 4-circuit Models (H5S-Y□4)
Weekly timer operation	Timer operation  Controls the output according to the set time of ON and OFF. • Min. setting unit: 1 min • Multiple-day operation also possible.		
Weekly pulse-output operation	Pulse output operation  Output turns ON for a fixed period (pulse width) at the set ON time. • Pulse width: 1 to 59 s (in 1-s increments), or 1 to 60 min (in 1-min increments) • The pulse width can be set for each step.		
Weekly cyclic operation	Cyclic operation  Repeatedly turns ON and OFF during the period from the cyclic start time to the stop time. Independent ON- and OFF-time settings are possible. • Min. setting unit: 1 min		
Yearly timer operation	---	Adds a yearly timer operation to the weekly timer program. For details, refer to *About Yearly Programs* on page 18.	
Yearly pulse-output operation	---	Adds a yearly pulse-output operation to the weekly pulse-output program. For details, refer to *About Yearly Programs* on page 18.	
Temporary holiday setting	Sets temporary holidays (non-operating days) without having to revise the existing program. For details, refer to *Setting Temporary Holidays (Weekly) and Setting Temporary Holidays (Yearly)* on page 20.		
Day override operation	Executes the operation for one day temporarily on another day in the 7-day period starting from the current day. For details, refer to *Day Override Operation* on page 21.	---	
Program check	Consecutively displays the days and times when the output is set to turn ON and OFF over the course of one week in the sequence in which the Time Switch is to operate. For details, refer to *Program Check Function* on page 21.		

Connections

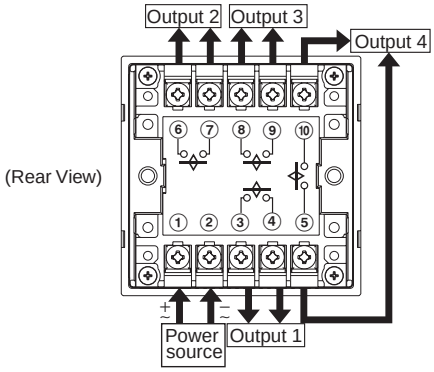
■ Terminal Arrangement

H5S-□A□/-□B□ Flush Mounting Models

(2-circuit models)

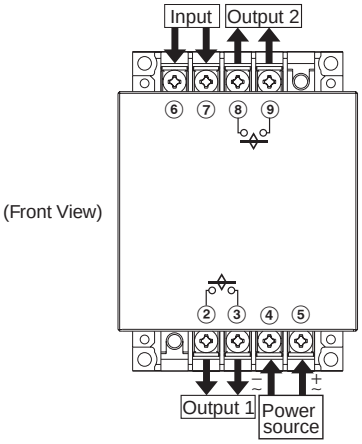


(4-circuit models)

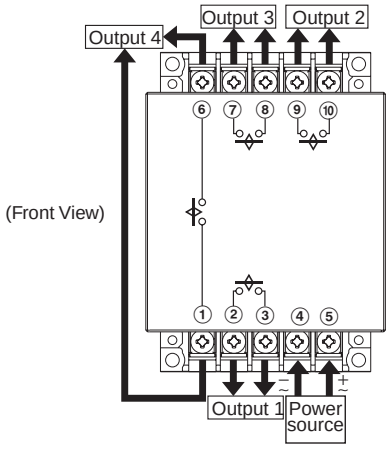


H5S-□FA□/-□FB□ Surface Mounting Models

(2-circuit models)



(4-circuit models)



Note: 1. The Time Switch output uses a no-voltage contact. An external power supply is required for applications in which a load is driven.
2. The output contact ratings are different for 2-circuit and 4-circuit models.

■ Input Connection (2-circuit Models Only)

Use a switch or relay as the input contact.
Use a contact that is capable of operating with 5 V, 0.1 A (with a minimum signal input width of 100 ms).

Flush mounting models (H5S-□A2□/-□B2□)	⑨	⑩
Surface mounting models (H5S-□FA2□/-□FB2□)	⑥	⑦

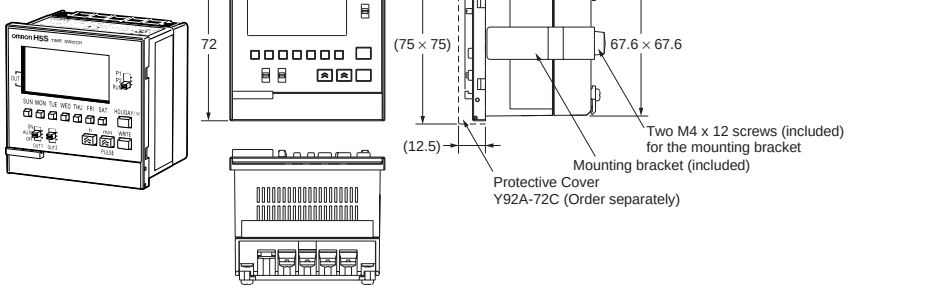
Note: Input must be selected using the “F2: Input selection” step of initial setting mode. For details, refer to *Using Advanced Functions* on page 23.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

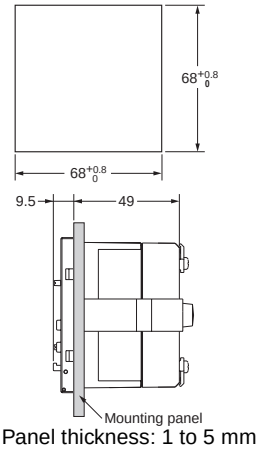
Digital Time Switch

Flush Mounting Model
H5S-□A□/-□B□



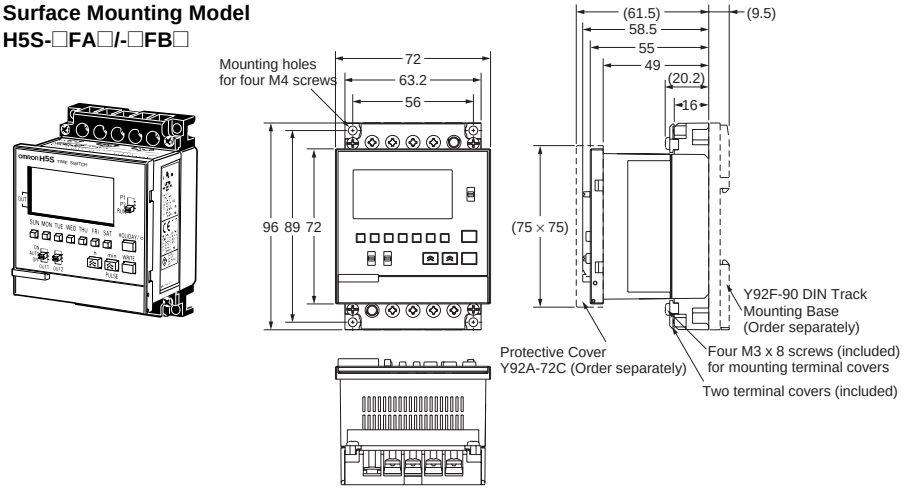
Note: 1. The terminal screws are M3.5.
2. This illustration shows a 2-circuit model. The 4-circuit model has the same dimensions.

Panel Cutout

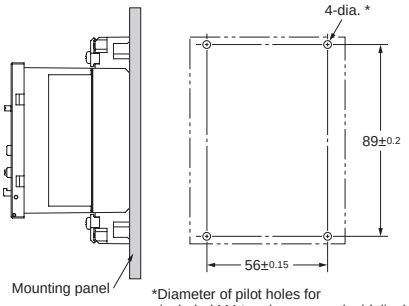


Note: Panel thickness: 1 to 5 mm

Surface Mounting Model
H5S-□FA□/-□FB□



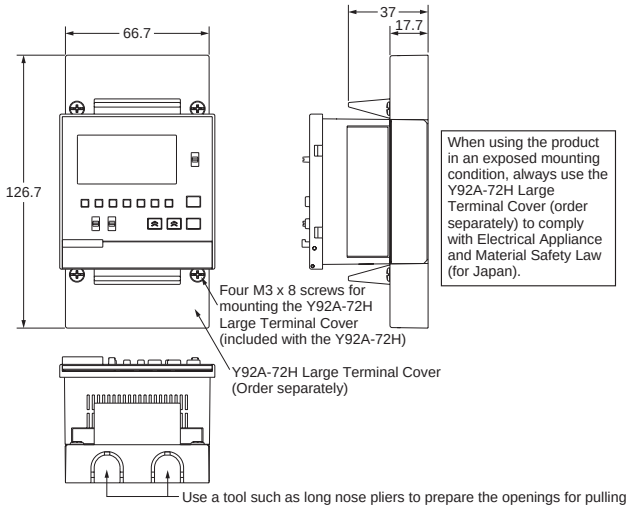
(Surface mounted) **Mounting holes**



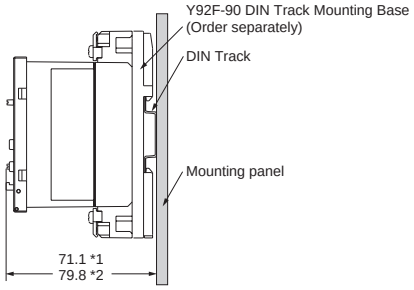
*Diameter of pilot holes for included M4 tapping screws (guideline)

Panel thickness t	0.8 to 1.2	1.6 to 4
Hole diameter	3.6	3.7

(With the large terminal cover (order separately) attached)



(DIN track mounted)



Note: 1. Using a PFP-50N or PFP-100N Mounting Track.
2. Using a PFP-100N2 Mounting Track.

Note: 1. The terminal screws are M3.5.
2. This illustration shows a 2-circuit model. The 4-circuit model has the same dimensions.