

# Switch Mode Power Supply S8VS

## Monitor Functions for Replacement Timing and Total Run Time in a Compact Size.

- 180-W Models added to the series.
- Compact size (40 (W) × 95 (H) mm) (60-W Models)
- Large 3-digit, 7-segment LED shows status (voltage, current etc.) of power supply.
- Approved standards: UL508/60950, CSA C22.2 No.14/60950, EN50178 (=VDE0160), EN60950 (=VDE0806)
- Lead-free solder in 180-W Models. (60-W, 90-W, 120-W, and 240-W Models will be converted to lead-free solder in October 2003.)



## Model Number Structure

### Model Number Legend

Farnell Codes: 5010068 - 5010159

S8VS- □□□□□□□□  
1 2 3

#### 1. Power Ratings

- 060: 60 W
- 090: 90 W
- 120: 120 W
- 180: 180 W
- 240: 240 W

#### 2. Output voltage

- 24: 24 V

#### 3. Configuration

- None: Standard Power Supply
- A: With maintenance forecast monitor and undervoltage alarm (transistor (sinking))
- B: With total run time monitor and undervoltage alarm (transistor (sinking))
- AP: With maintenance forecast monitor and undervoltage alarm (transistor (sourcing))
- BP: With total run time monitor and undervoltage alarm (transistor (sourcing))

## Ordering Information

| Power ratings                     | Type                              | Alarm output (transistor) | Output voltage | Output current | Model number |
|-----------------------------------|-----------------------------------|---------------------------|----------------|----------------|--------------|
| 60 W                              | Standard                          | ---                       | 24 V           | 2.5 A          | S8VS-06024   |
|                                   | With maintenance forecast monitor | ---                       |                |                | S8VS-06024A  |
|                                   | With total run time monitor       |                           |                |                | S8VS-06024B  |
| 90 W                              | Standard                          |                           |                | ---            | 3.75 A       |
|                                   | With maintenance forecast monitor | Sinking                   |                | S8VS-09024A    |              |
|                                   |                                   | Sourcing                  |                | S8VS-09024AP   |              |
|                                   | With total run time monitor       | Sinking                   |                | S8VS-09024B    |              |
|                                   |                                   | Sourcing                  |                | S8VS-09024BP   |              |
|                                   | 120 W                             | Standard                  |                | ---            |              |
| With maintenance forecast monitor |                                   | Sinking                   | S8VS-12024A    |                |              |
|                                   |                                   | Sourcing                  | S8VS-12024AP   |                |              |
| With total run time monitor       |                                   | Sinking                   | S8VS-12024B    |                |              |
|                                   |                                   | Sourcing                  | S8VS-12024BP   |                |              |
| 180 W                             |                                   | Standard                  | ---            | 7.5 A          | S8VS-18024   |
|                                   | With maintenance forecast monitor | Sinking                   | S8VS-18024A    |                |              |
|                                   |                                   | Sourcing                  | S8VS-18024AP   |                |              |
|                                   | With total run time monitor       | Sinking                   | S8VS-18024B    |                |              |
|                                   |                                   | Sourcing                  | S8VS-18024BP   |                |              |
|                                   | 240 W                             | Standard                  | ---            |                | 10 A         |
| With maintenance forecast monitor |                                   | Sinking                   | S8VS-24024A    |                |              |
|                                   |                                   | Sourcing                  | S8VS-24024AP   |                |              |
| With total run time monitor       |                                   | Sinking                   | S8VS-24024B    |                |              |
|                                   |                                   | Sourcing                  | S8VS-24024BP   |                |              |

### Options (Order Separately)

| Name   | Model number |
|--|--------------|
| Side Mounting Bracket for 60-, 90-, and 120-W Models | S82Y-VS10S   |
| Side Mounting Bracket for 180-W Models               | S82Y-VS15S   |
| Side Mounting Bracket for 240-W Models               | S82Y-VS20S   |
| Front Mounting Bracket (See note.)                   | S82Y-VS10F   |

**Note:** Two Front Mounting Brackets are required for 240-W Models.

# Specifications

## ■ Ratings/Characteristics

| Item  | Power ratings<br>Type   | 60 W   |  |  | 90 W                    |                              |  |                  |
|---|---|--|--|--|-------------------------|------------------------------|--|------------------|
|   |   | Standard   | Maintenance forecast monitor   | Total run time monitor   | Standard                | Maintenance forecast monitor | Total run time monitor   |                  |
| Efficiency (typical)                                  |   | 78% min.   |  |  | 80% min.                |                              |  |                  |
| Input   | Voltage   | 100 to 240 VAC (85 to 264 VAC)   |  |  |                         |                              |  |                  |
|   | Frequency   | 50/60 Hz (47 to 450 Hz)  |  |  |                         |                              |  |                  |
|   | Current   | 100 V input  | 1.7 A  |  |                         | 2.3 A                        |  |                  |
|   |   | 200 V input  | 1.0 A  |  |                         | 1.4 A                        |  |                  |
|   | Power factor  | ---  |  |  |                         |                              |  |                  |
|   | Limits for harmonic current emissions   | Based on EN61000-3-2   |  |  | Conforms to EN61000-3-2 |                              |  |                  |
|   | Leakage current   | 100 V input  | 0.5 mA max.  |  |                         |                              |  |                  |
|   |   | 200 V input  | 1.0 mA max.  |  |                         |                              |  |                  |
| Inrush current (See note 1.)                          | 100 V input   | 25 A max. (for a cold start at 25°C)   |  |  |                         |                              |  |                  |
|   | 200 V input   | 50 A max. (for a cold start at 25°C)   |  |  |                         |                              |  |                  |
| Output  | Voltage adjustment range (See note 2.)  | -10% to 15% (with V.ADJ)   |  |  |                         |                              |  |                  |
|   | Ripple  | 2.0% (p-p) max. (at rated input/output voltage)  |  |  |                         |                              |  |                  |
|   | Input variation influence   | 0.5% max. (at 85 to 264 VAC input, 100% load)  |  |  |                         |                              |  |                  |
|   | Load variation influence (rated input voltage)  | 1.5% max. (with rated input, 0 to 100% load)   |  |  |                         |                              |  |                  |
|   | Temperature variation influence   | 0.05%/°C max.  |  |  |                         |                              |  |                  |
|   | Start up time (See note 1.)   | 1,000 ms max. (at rated input/output voltage)  |  |  |                         |                              |  |                  |
|   | Hold time (See note 1.)   | 20 ms min. (at rated input/output voltage)   |  |  |                         |                              |  |                  |
|   | Additional functions  | Overload protection (See note 1.)  | 105% to 160% of rated load current, inverted L drop, intermittent, automatic reset |  |                         |                              |  |                  |
| Overvoltage protection (See notes 1 and 3.)           |   | Yes  |  |  |                         |                              |  |                  |
| Output voltage indication (See note 4.)               |   | No   | Yes (selectable) (See note 5.)   |  |                         | No                           | Yes (selectable) (See note 5.)                                     |                  |
| Output current indication (See note 4.)               |   | No   | Yes (selectable) (See note 6.)   |  |                         | No                           | Yes (selectable) (See note 6.)                                     |                  |
| Peak-hold current indication (See note 4.)            |   | No   | Yes (selectable) (See note 7.)   |  |                         | No                           | Yes (selectable) (See note 7.)                                     |                  |
| Maintenance forecast monitor indication (See note 4.) |   | No   | Yes (selectable)   | No   | No                      | Yes (selectable)             | No   |                  |
| Maintenance forecast monitor output                   |   | No   |  |  |                         |                              | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No               |
| Total run time monitor indication (See note 4.)       |   | No   |  | Yes (selectable)   | No                      |                              |  | Yes (selectable) |
| Total run time monitor output                         |   | No   |  |  |                         |                              | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) |                  |
| Undervoltage alarm indication (See note 4.)           |   | No   | Yes (selectable)   |  |                         | No                           | Yes (selectable)   |                  |
| Undervoltage alarm output terminals                   |   | No   |  |  |                         |                              | Yes (open collector output) 30 VDC max., 50 mA max. (See note 8.)  |                  |
| Parallel operation                                    |   | No   |  |  |                         |                              |  |                  |
| Series operation                                      |   | Yes (with external diode)  |  |  |                         |                              |  |                  |
| Other   | Ambient temperature   | Operating: Refer to the derating curve in <i>Engineering Data</i> . (with no icing or condensation) Storage: -25 to 65°C |  |  |                         |                              |  |                  |
|   | Ambient humidity  | Operating: 25% to 85%; Storage: 25% to 90%   |  |  |                         |                              |  |                  |
|   | Dielectric strength   | 3.0 kVAC for 1 min. (between all inputs and outputs/ alarm outputs; detection current: 20 mA)                            |  |  |                         |                              |  |                  |
|   |   | 2.0 kVAC for 1 min. (between all inputs and GR terminals; detection current: 20 mA)                                      |  |  |                         |                              |  |                  |
|   |   | 1.0 kVAC for 1 min. (between all outputs/ alarm outputs and GR terminals; detection current: 20 mA)                      |  |  |                         |                              |  |                  |
|   | Insulation resistance   | 500 VAC for 1 min. (between all outputs and alarm outputs; detection current: 20 mA)                                     |  |  |                         |                              |  |                  |
|   | Insulation resistance   | 100 MΩ min. (between all outputs/ alarm outputs and all inputs/ GR terminals) at 500 VDC                                 |  |  |                         |                              |  |                  |
|   | Vibration resistance  | 10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions  |  |  |                         |                              |  |                  |
|   | Shock resistance  | 150 m/s <sup>2</sup> , 3 times each in ±X, ±Y, and ±Z directions   |  |  |                         |                              |  |                  |
|   | Output indicator  | Yes (color: green)   |  |  |                         |                              |  |                  |
|   | EMI   | Conducted Emissions  | Conforms to EN50081-2 and based on FCC Class A                                     |  |                         |                              |  |                  |
|   |   | Radiated Emissions   | Conforms to EN50081-2:   |  | Emission Enclosure:     | EN55011 class A              |  |                  |
|   |   | Conforms to EN50081-1:   |  | Emission AC main:  | EN55011 class A         |                              |  |                  |
|   |   |  | Emission Enclosure:  | EN55011 class B (See note 9.)  |                         |                              |  |                  |
|   |   |  | Emission AC main:  | EN55011 class B (See note 9.)  |                         |                              |  |                  |
| EMS   | Conforms to EN61000-6-2   |  |  |  |                         |                              |  |                  |
| Approved standards                                    | UL: UL508 (Listing: Class 2: Per UL1310), UL60950<br>cUL: CSA C22.2 No.14, No.60950 (Class 2)<br>EN/VDE: EN50178 (=VDE0160), EN60950 (=VDE0806) |  |  | UL: UL508 (Listing), UL60950<br>cUL: CSA C22.2 No.14, No.60950<br>EN/VDE: EN50178 (=VDE0160), EN60950 (=VDE0806) |                         |                              |  |                  |
| Weight  | 330 g max.  |  |  | 490 g max.   |                         |                              |  |                  |

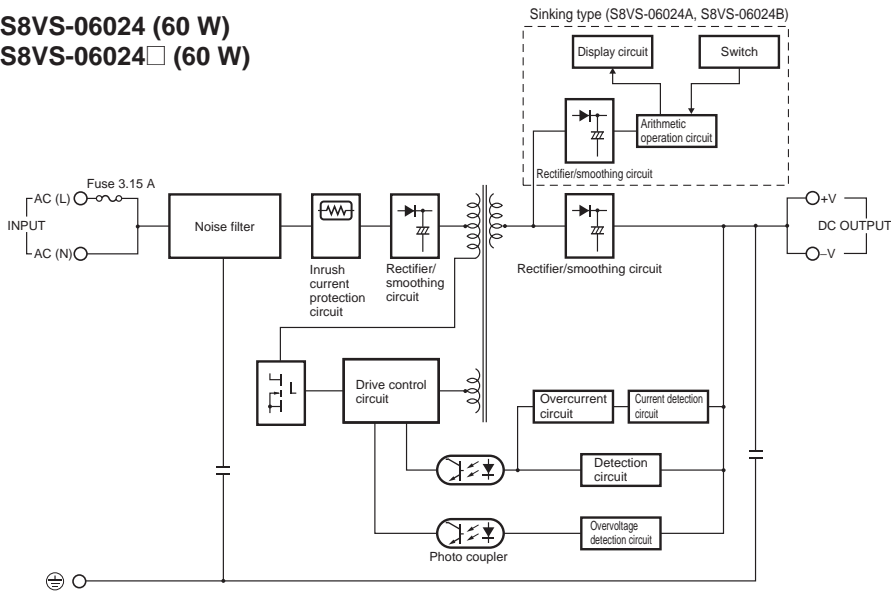
- Note:**
1. Refer to the *Engineering Data* section on page 12 for details.
  2. If the V.ADJ adjuster is turned, the voltage will increase by more than +15% of the voltage adjustment range (more than +10% for 240-W Models).
  3. To reset the protection, turn OFF the power supply for three minutes or longer and then turn the power supply back ON.
  4. Displayed on 7-segment LED. (character height: 8 mm)
  5. Resolution of output voltage indication: 0.1 V; Precision of output voltage indication: ±2% (percentage of output voltage value, ±1 digit)
  6. Resolution of output current indication: 0.1 A; Precision of output current indication: ±5% F.S. ±1 digit max. (specified by rated output voltage)
  7. Resolution of peak-hold current indication: 0.1 A; Precision of peak-hold current indication: ±5% F.S. ±1 digit max. (specified by rated output voltage); Signal width required for peak-hold current: 20 ms
  8. Select from sinking or sourcing outputs.
  9. To ensure the emission enclosure rating, a ferrite ring core should be used in all cabling (TDK HF60T, HF70RH or equivalent model).

| Item   | Power ratings<br>Type                             | 120 W  |   |  | 180 W  |                                    |  | 240 W             |  |                           |  |
|--|---|--|---|--|--|------------------------------------|--|-------------------|--|---------------------------|--|
|  |   | Standard   | Maintenance<br>forecast<br>monitor  | Total run time<br>monitor  | Standard   | Maintenance<br>forecast<br>monitor | Total run time<br>monitor  | Standard          | Maintenance<br>forecast<br>monitor                                   | Total run time<br>monitor |  |
| Efficiency (typical)                                     |   | 80% min.   |   |  |  |                                    |  |                   |  |                           |  |
| Input  | Voltage   |  | 100 to 240 VAC (85 to 264 VAC)  |  |  |                                    |  |                   |  |                           |  |
|  | Frequency   |  | 50/60 Hz (47 to 63 Hz)  |  |  |                                    |  |                   |  |                           |  |
|  | Current   | 100 V input  | 1.9 A   |  |  | 2.9 A                              |  |                   | 3.8 A  |                           |  |
|  |   | 200 V input  | 1.1 A   |  |  | 1.6 A                              |  |                   | 2.0 A  |                           |  |
|  | Power factor                                      |  | 0.95 min.   |  |  |                                    |  |                   |  |                           |  |
|  | Limits for harmonic current emissions             |  | Conforms to EN61000-3-2   |  |  |                                    |  |                   |  |                           |  |
|  | Leakage current                                   | 100 V input  | 0.5 mA max.   |  |  |                                    |  |                   |  |                           |  |
|  |   | 200 V input  | 1.0 mA max.   |  |  |                                    |  |                   |  |                           |  |
| Inrush current<br>(See note 1.)                          | 100 V input                                       | 25 A max. (for a cold start at 25°C)   |   |  |  |                                    |  |                   |  |                           |  |
|  | 200 V input                                       | 50 A max. (for a cold start at 25°C)   |   |  |  |                                    |  |                   |  |                           |  |
| Output   | Voltage adjustment range<br>(See note 2.)         |  | -10% to 15% (with V.ADJ)  |  |  |                                    |  | ±10% (with V.ADJ) |  |                           |  |
|  | Ripple  |  | 2.0% (p-p) max. (at rated input/output voltage)   |  |  |                                    |  |                   |  |                           |  |
|  | Input variation influence                         |  | 0.5% max. (at 85 to 264 VAC input, 100% load)   |  |  |                                    |  |                   |  |                           |  |
|  | Load variation influence<br>(rated input voltage) |  | 1.5% max. (with rated input, 0 to 100% load)  |  |  |                                    |  |                   |  |                           |  |
|  | Temperature variation influence                   |  | 0.05%/°C max.   |  |  |                                    |  |                   |  |                           |  |
|  | Start up time (See note 1.)                       |  | 1,000 ms max. (at rated input/output voltage)   |  |  |                                    |  |                   |  |                           |  |
|  | Hold time (See note 1.)                           |  | 20 ms min. (at rated input/output voltage)  |  |  |                                    |  |                   |  |                           |  |
|  | Additional functions                              | Overload protection<br>(See note 1.)   |   | 105% to 160% of rated load current, inverted L drop, intermittent, automatic reset |  |                                    |  |                   | 105% to 160% of rated load current, inverted L drop, automatic reset |                           |  |
| Overvoltage protection<br>(See notes 1 and 3.)           |   | Yes  |   |  |  |                                    |  |                   |  |                           |  |
| Output voltage indication<br>(See note 4.)               |   | No   | Yes (selectable) (See note 5.)  | No   | Yes (selectable) (See note 5.)                                     | No                                 | Yes (selectable) (See note 5.)                                     | No                | Yes (selectable) (See note 5.)                                       |                           |  |
| Output current indication<br>(See note 4.)               |   | No   | Yes (selectable) (See note 6.)  | No   | Yes (selectable) (See note 6.)                                     | No                                 | Yes (selectable) (See note 6.)                                     | No                | Yes (selectable) (See note 6.)                                       |                           |  |
| Peak-hold current indication<br>(See note 4.)            |   | No   | Yes (selectable) (See note 7.)  | No   | Yes (selectable) (See note 7.)                                     | No                                 | Yes (selectable) (See note 7.)                                     | No                | Yes (selectable) (See note 7.)                                       |                           |  |
| Maintenance forecast monitor indication<br>(See note 4.) |   | No   | Yes (selectable)  | No   | Yes (selectable)   | No                                 | Yes (selectable)   | No                | Yes (selectable)   |                           |  |
| Maintenance forecast monitor output                      |   | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)  | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                                 | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)   |                           |  |
| Total run time monitor indication<br>(See note 4.)       |   | No   | Yes (selectable)  | No   | Yes (selectable)   | No                                 | Yes (selectable)   | No                | Yes (selectable)   |                           |  |
| Total run time monitor output                            |   | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)  | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                                 | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)   |                           |  |
| Undervoltage alarm indication<br>(See note 4.)           |   | No   | Yes (selectable)  | No   | Yes (selectable)   | No                                 | Yes (selectable)   | No                | Yes (selectable)   |                           |  |
| Undervoltage alarm output terminals                      |   | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)  | No   | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                                 | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.) | No                | Yes (open collector output), 30 VDC max., 50 mA max. (See note 8.)   |                           |  |
| Parallel operation                                       |   | No   |   |  |  |                                    |  |                   |  |                           |  |
| Series operation   |   | Yes (with external diode)  |   |  |  |                                    |  |                   |  |                           |  |
| Other  | Ambient temperature                               |  | Operating: Refer to the derating curve in <i>Engineering Data</i> . (with no icing or condensation) Storage: -25 to 65°C  |  |  |                                    |  |                   |  |                           |  |
|  | Ambient humidity                                  |  | Operating: 25% to 85%; Storage: 25% to 90%  |  |  |                                    |  |                   |  |                           |  |
|  | Dielectric strength                               |  | 3.0 kVAC for 1 min. (between all inputs and outputs/ alarm outputs; detection current: 20 mA)<br>2.0 kVAC for 1 min. (between all inputs and GR terminals; detection current: 20 mA)<br>1.0 kVAC for 1 min. (between all outputs/ alarm outputs and GR terminals; detection current: 20 mA)<br>500 VAC for 1 min. (between all outputs and alarm outputs; detection current: 20 mA) |  |  |                                    |  |                   |  |                           |  |
|  | Insulation resistance                             |  | 100 MΩ min. (between all outputs/ alarm outputs and all inputs/ GR terminals) at 500 VDC  |  |  |                                    |  |                   |  |                           |  |
|  | Vibration resistance                              |  | 10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions   |  |  |                                    |  |                   |  |                           |  |
|  | Shock resistance                                  |  | 150 m/s <sup>2</sup> , 3 times each in ±X, ±Y, and ±Z directions  |  |  |                                    |  |                   |  |                           |  |
|  | Output indicator                                  |  | Yes (color: green)  |  |  |                                    |  |                   |  |                           |  |
|  | EMI   | Conducted Emissions  | Conforms to EN50081-2 and based on FCC Class A  |  |  |                                    |  |                   |  |                           |  |
|  |   | Radiated Emissions   | Conforms to EN50081-2:  |  | Emission Enclosure:  | EN55011 class A                    |  |                   |  |                           |  |
|  |   |  | Conforms to EN50081-1:  |  | Emission AC main:  | EN55011 class A                    |  |                   |  |                           |  |
|  |   |  |   |  | Emission Enclosure:  | EN55011 class B (See note 9.)      |  |                   |  |                           |  |
|  |   |  |   |  | Emission AC main:  | EN55011 class B (See note 9.)      |  |                   |  |                           |  |
| EMS  |   | Conforms to EN61000-6-2  |   |  |  |                                    |  |                   |  |                           |  |
| Approved standards                                       |   | UL: UL508 (Listing), UL60950<br>cUL: CSA C22.2 No.14, No.60950<br>EN/VDE: EN50178 (=VDE0160), EN60950 (=VDE0806) |   |  |  |                                    |  |                   |  |                           |  |
| Weight   |   | 550 g max.   |   |  | 850 g max.   |                                    |  | 1,150 g max.      |  |                           |  |

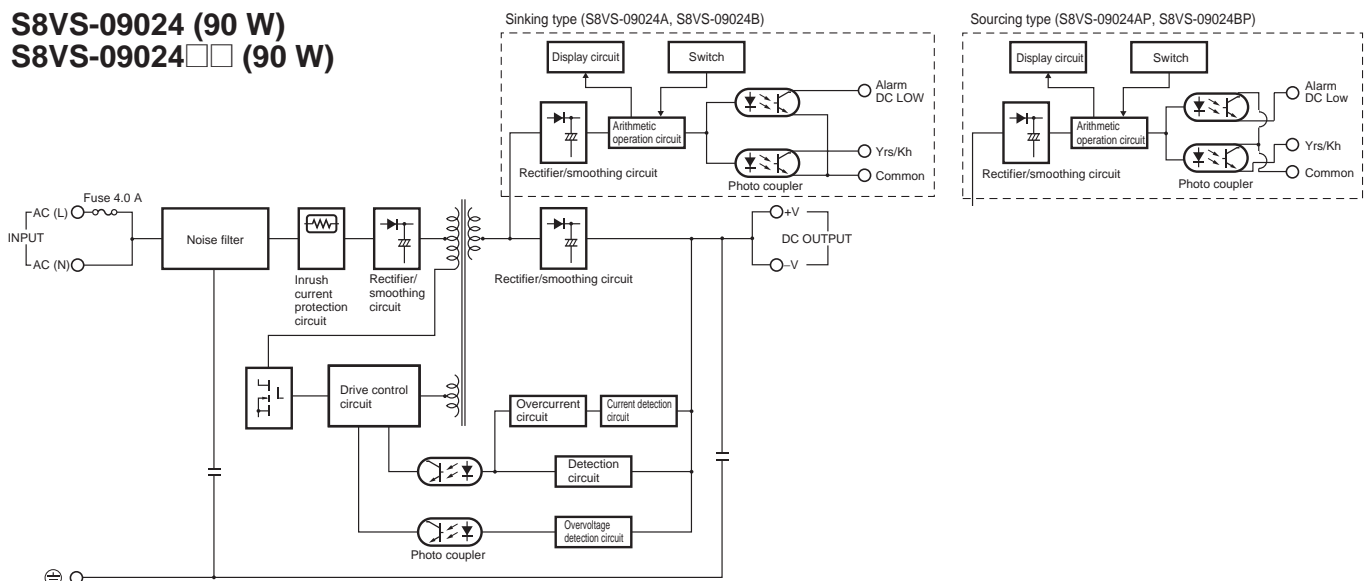
# Connections

## ■ Block Diagram

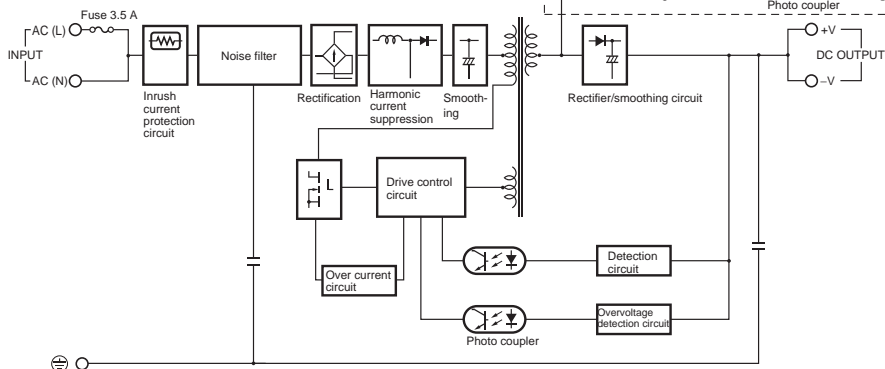
**S8VS-06024 (60 W)**  
**S8VS-06024□ (60 W)**



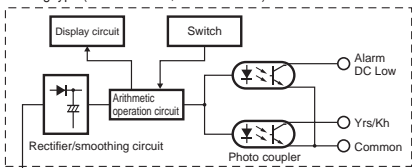
**S8VS-09024 (90 W)**  
**S8VS-09024□□ (90 W)**



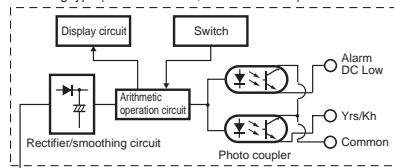
**S8VS-12024 (120 W)**  
**S8VS-12024□□ (120 W)**



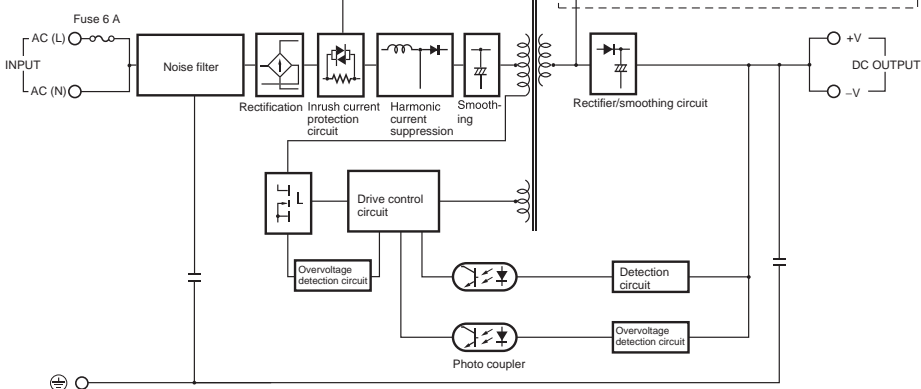
Sinking type (S8VS-12024A, S8VS-12024B)



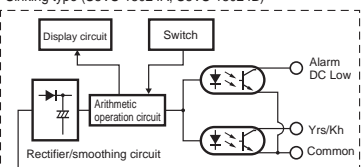
Sourcing type (S8VS-12024AP, S8VS-12024BP)



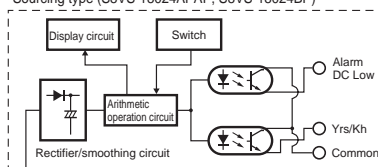
**S8VS-18024 (180 W)**  
**S8VS-18024□□ (180 W)**



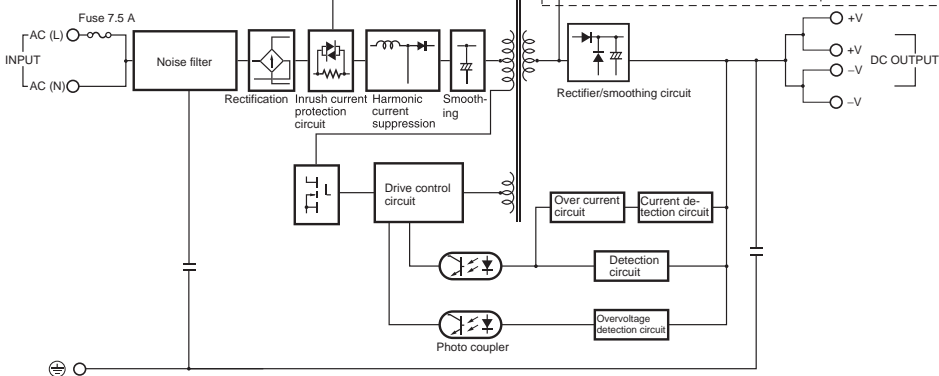
Sinking type (S8VS-18024A, S8VS-18024B)



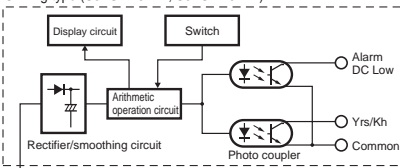
Sourcing type (S8VS-18024AP, S8VS-18024BP)



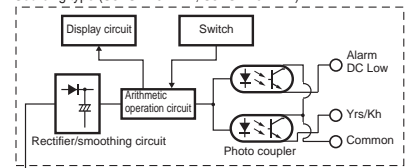
**S8VS-24024 (240 W)**  
**S8VS-24024□□ (240 W)**



Sinking type (S8VS-24024A, S8VS-24024B)



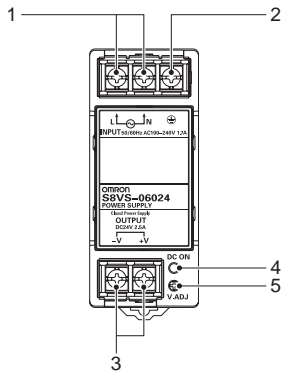
Sourcing type (S8VS-24024AP, S8VS-24024BP)



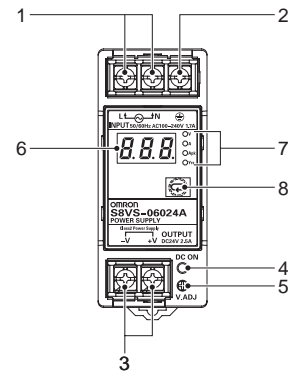
## ■ Installation

### 60-W Models

#### S8VS-06024



#### S8VS-06024□

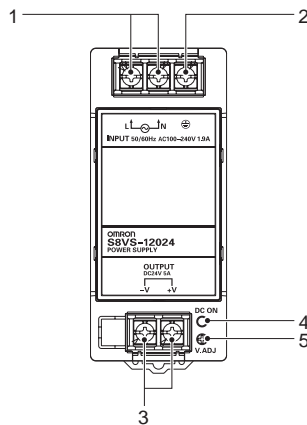


Note: The S8VS-06024A is shown above.

### 90-W/120-W Models

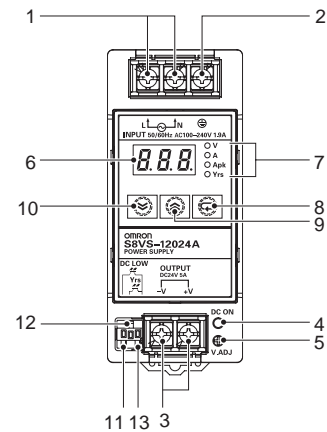
#### S8VS-09024

#### S8VS-12024



#### S8VS-09024□□

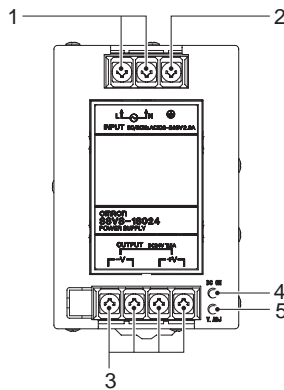
#### S8VS-12024□□



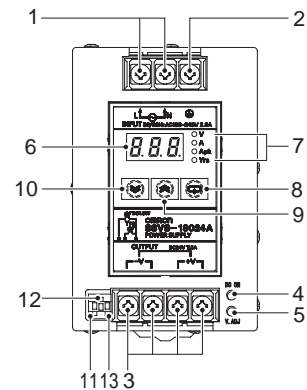
Note: The S8VS-12024A is shown above.

### 180-W Models

#### S8VS-18024



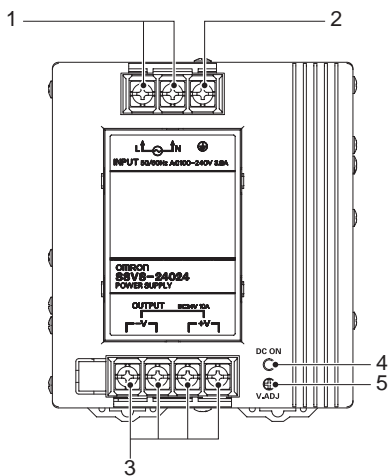
#### S8VS-18024□□



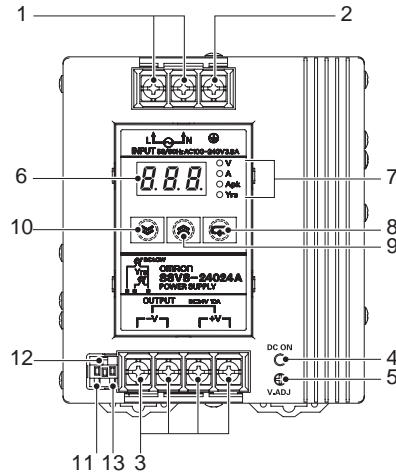
Note: The S8VS-18024A is shown above.

**240-W Models**

**S8VS-24024**



**S8VS-24024□□**



**Note:** The S8VS-24024A is shown above.

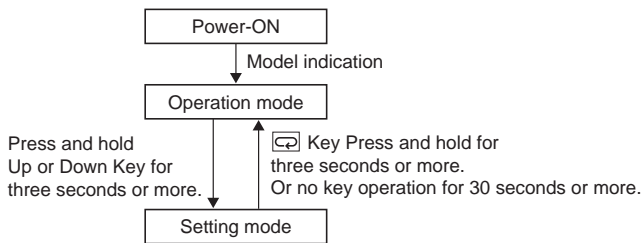
| No.  | Name                              | Function  |
|--|-----------------------------------|---|
| 1  | AC Input terminals (L), (N)       | Connect the input lines to these terminals. (See note 1.)   |
| 2  | Ground terminals (GR)             | Connect the ground line to this terminal.   |
| 3  | DC Output terminals (-V), (+V)    | Connect the load lines to these terminals.  |
| 4  | Output indicator (DC ON: Green)   | Lights while a direct current (DC) output is ON.  |
| 5  | Output voltage adjuster (V.ADJ)   | Use to adjust the voltage.  |
| 6  | Main display (See note 2.)        | Indicates the measurement or set value.   |
| 7  | Operation indicator (See note 2.) | V Lights up when the output voltage is indicated. Blinks during setup of undervoltage alarm value.  |
|  |                                   | A Lights up during indication of output current.  |
|  |                                   | Apk Lights up during indication of peak hold current.   |
|  |                                   | Yrs Lights up during indication of maintenance forecast monitor. Blinks during setup of maintenance forecast monitor setting. (S8VS-0□024A) |
| Kh Lights up during indication of total run time monitor. Blinks during setup of total run time monitor. (S8VS-0□024B) |                                   |   |

| No. | Name   | Function   |
|-----|--|--|
| 8   | Mode Key (See note 2.)                         | Use the Mode Key to change the indicated parameter or reset the peak hold current value. |
| 9   | Up Key (See note 3.)                           | Use the Up Key to change to the setting mode or to increase the set value.               |
| 10  | Down Key (See note 3.)                         | Use the Down Key to change to the setting mode or to decrease the set value.             |
| 11  | Alarm output terminal                          | Undervoltage alarm output terminal (DC LOW) (See note 3.)                                |
| 12  | (See note 4.)                                  | Maintenance forecast monitor terminal (Yrs) (S8VS-□□□24A/ -□□□24AP)                      |
|     |  | Total run time monitor output terminal (Kh) (S8VS-□□□24B/ -□□□24BP) (See note 3.)        |
| 13  | Common terminal for alarm output (See note 3.) | Terminal (emitter) shared for alarm outputs (11) and (12).                               |

- Note:**
1. The fuse is located on the (L) side.
  2. S8VS-□□□24□□ only.
  3. S8VS-□□□24□□ only (excluding S8VS-06024□).
  4. Both sinking and sourcing outputs are available.

# Engineering Data (S8VS-□□□24□□ Only)

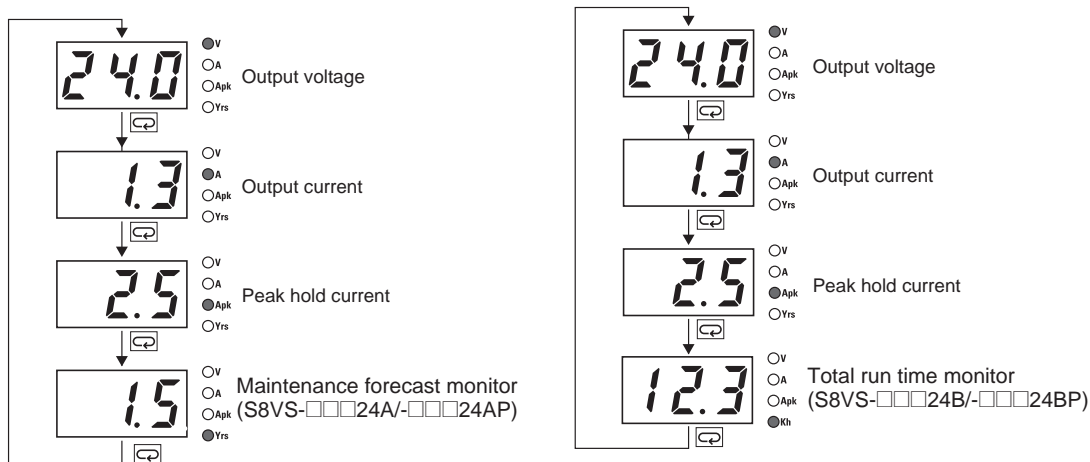
## Mode Change



**Note:** No setting mode is provided for the S8VS-06024□.

## Operation Mode

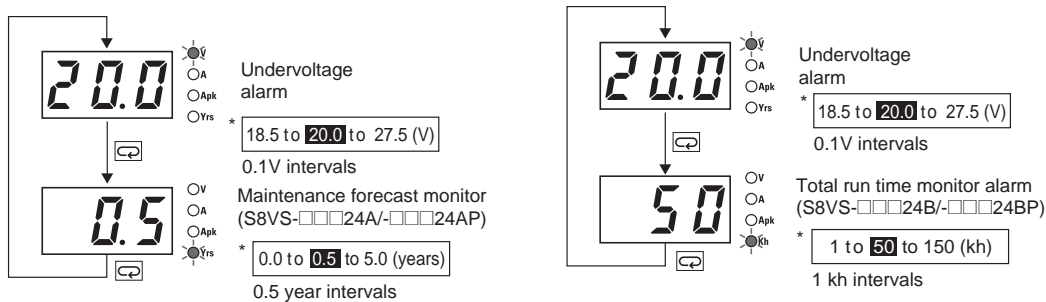
Various states of the power supply unit are indicated.



**Note:** The output voltage will be displayed when the power supply is first turned ON after it is received from the factory. Thereafter, the output voltage will be indicated in the same display when shutting down.

## Setting Mode (Except for S8VS-06024□)

Set various parameters of the power supply unit.

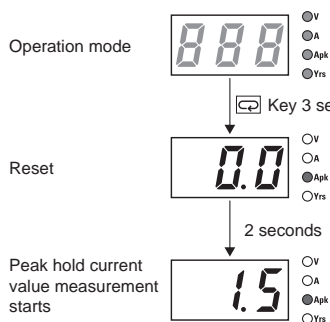


\* The reverse video indicates the shipment setting.

- Note:**
1. Press and hold the (9) Up Key or (10) Down Key for two seconds or more to increase or decrease the value rapidly.
  2. The S8VS-06024□ is not provided with the setting mode and its parameters are fixed at the shipment setting.



### ■ Peak Hold Current Reset



**Note:** The peak hold current value is not reset in the setting mode.

### ■ Total Run Time Monitor Indication and Alarm Output (S8VS-□□□24B/-□□□24BP)

The cumulative running hours of the power supply unit are monitored as total run time. When the total run time reaches the predetermined alarm set value, an alarm (A02) and the total run time monitor are indicated alternately with an output issued from the transistor ((12) Kh) to an external device. (The output is turned OFF when the total run time reaches the alarm set value; with no continuity across (12) and (13).)

The alarm set value can be changed in the setting mode.



- Note:** 1. The total run time cannot be reset. To reset the alarm, increase the alarm set value beyond the value indicated as total run time.  
 Ex.) If a customer decided to change the load at 5,000 hours, when they turn ON the unit again, the timing will start at 5,000 hours and on.
2. The alarm function (setting, indication, and output) is not provided for S8VS-06024B.

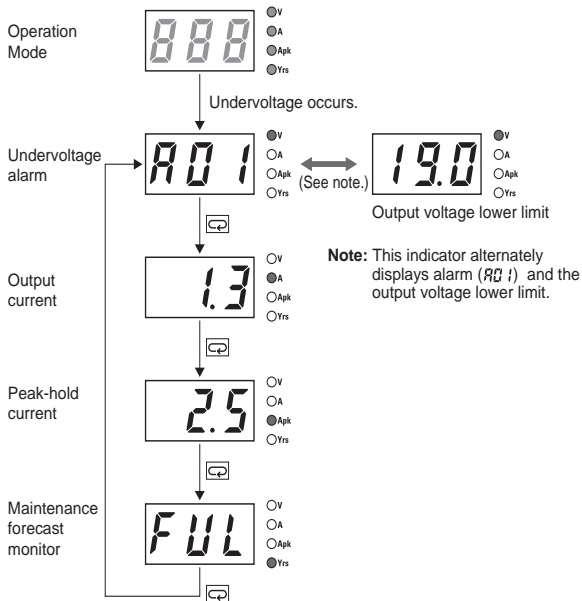
### ■ Self-Diagnostics Function

| (6) Main display | Description   | Output state  | Restoration method   | Setting after restoration                               |
|------------------|---|---------------|--|---|
| - - -            | Noise detected in voltage or current  | No change     | Automatic restoration  | No change   |
| Hot              | Overheated  | (12) OFF      | Automatic restoration  | No change   |
| E01              | Undervoltage alarm set value memory error   | (11) OFF      | Press and hold the (9) Up Key or (10) Down Key for three seconds and check the set value of the corresponding point. The set value must return to the shipment setting | Shipment setting or value set in the setting mode again |
| E02              | Memory error of alarm set value of maintenance forecast monitor or total run time monitor | (12) OFF      |  |   |
| E03              | Other memory error  | (11) (12) OFF | Turn the AC input OFF then ON again. If the product is not reset, contact the dealer.  | No change   |

- Note:** 1. External noise is probable as a cause of “- - -”, “E01”, “E02” and “E03” errors.  
 2. Operation out of the derating curve area, ventilation error, and incorrect mounting direction are probable as a cause of “Hot” error.  
 3. If the “Hot” error state continues for about three hours, the maintenance forecast monitor function (S8VS-□□□24A, S8VS-□□□24AP) becomes invalid. The indication for maintenance forecast monitor remains as “Hot” even after the overheat condition is removed, and the Yrs output (12) remains OFF (with no continuity across (12) and (13)).  
 Replace the power supply if this condition occurs even if the output is correct, as internal parts may be deteriorated.  
 4. The “Hot” error detection function is only for the S8VS-□□□24A/-□□□24AP.

## ■ Undervoltage Alarm Indication

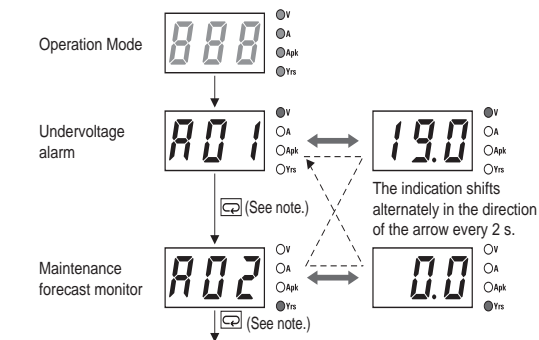
This indicator lights when the output voltage is insufficient.



Note: The display changes to the output voltage display when the voltage is restored to the set value or higher.

## ■ Multiple Alarms

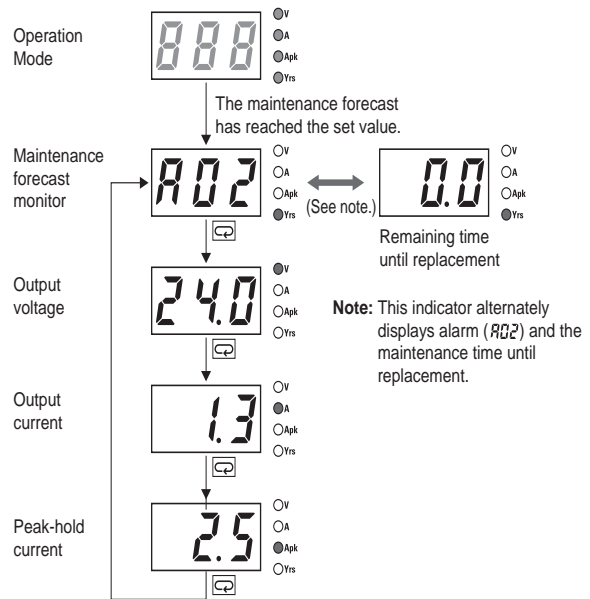
When two or more different alarms occur at the same time



Note: When undervoltage alarm is indicated: Press → output load indication  
When the maintenance forecast monitor or overheat alarm is indicated: Press → undervoltage alarm indication

## ■ Maintenance Forecast

Displays when the maintenance forecast has reached the set value.



## ■ Indication and Output

When the product is purchased, "FUL" will be indicated. As electrolytic capacitors deteriorate, indication changes to "HLF". (However, the "HLF" indication may not appear, depending on the usage environment and the set value for maintenance forecast.)

### S8VS-06024A:

After the remaining time to maintenance is reduced to two years, indication automatically changes to a value, which decreases from "1.5" to "1.0" to "0.5" to "0.0" (year) as the running hours increase. If the remaining time becomes less than 0.5 year, an alarm (AO2) and "0.0" are indicated alternately.

### S8VS-09024A/09024AP, S8VS-12024A/12024AP, S8VS-18024A/18024AP, S8VS-24024A/24024AP:

If the maintenance forecast setting L (which can be set arbitrarily from 0.0 to 5.0 years in 0.5-year steps) is set to a value larger than two years, the indication automatically changes to a value (L - 0.5) after the remaining time to maintenance is reduced to the set years, and an alarm (AO2) and the remaining time are indicated alternately.

If the setting is less than 2.0 years, the indication changes to a value (1.5) after the remaining time becomes less than two years, and after the remaining time becomes less than the set time, an alarm (AO2) and the remaining time (L - 0.5) are indicated alternately.

While the alarm (AO2) and value are indicated alternately, an output is given to an external device from a transistor ((12) Yrs) to notify of the replacement timing. (The output is turned OFF after the replacement timing is reached; with no continuity across (12) and the alarm common output terminal.)



Note: 1. The remaining time to maintenance is based on continuous operation, not including the time when the power supply is turned OFF, and so may take longer to reach than the actual time indicated.

2. Until the power supply has been turned for about one month in total, indication is fixed at "FUL" to estimate the extent of deterioration, while the output remains turned ON (with continuity across (12) and (13)).

## Maintenance Forecast Monitor Function

The power supply unit is equipped with electrolytic capacitors.

The electrolyte inside the electrolytic capacitor penetrates the sealing rubber and evaporates as time passes since it is manufactured, which causes deterioration of characteristics such as decreasing the capacitance, etc.

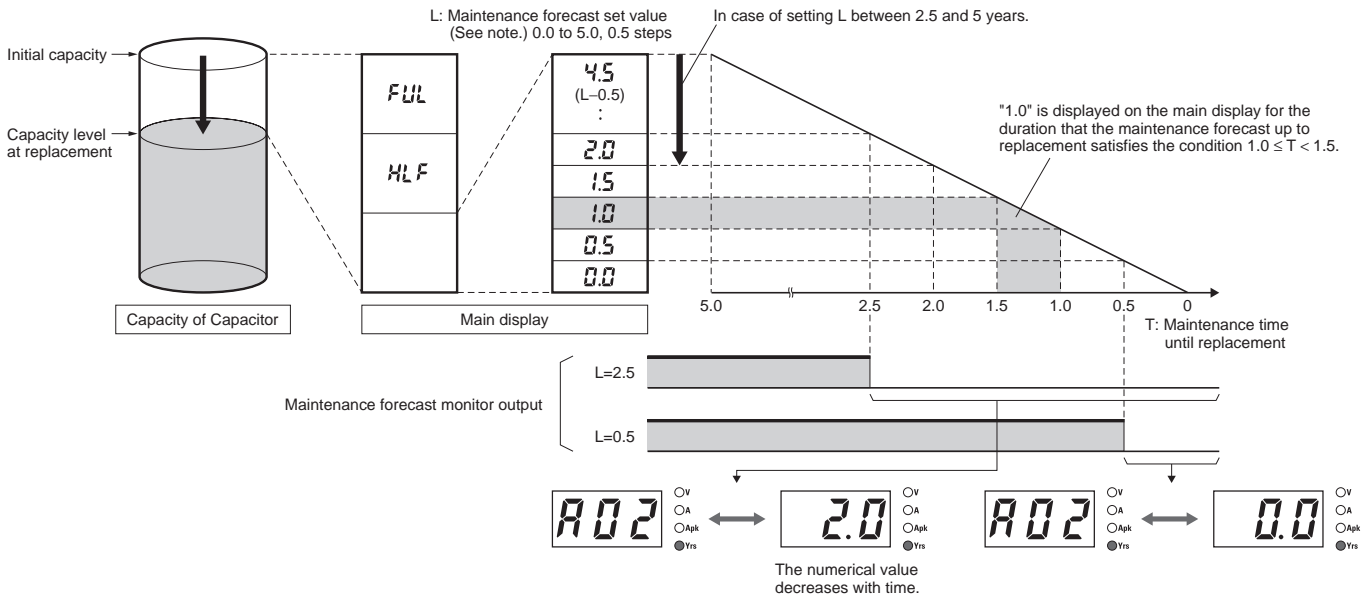
Due to this deterioration of the characteristics of the electrolytic capacitor, the power supply unit decreases its performance as time passes.

The maintenance forecast monitor function shows an approximate period left for maintenance of the power supply unit due to deterioration of electrolytic capacitors. When the period left for maintenance that the power supply forecasts reaches the set value, an alarm is indicated and an output signal is triggered.

Use this function to know the approximate replacement timing of the power supply unit.

**Note:** The maintenance forecast monitor function indicates an approximate period left for maintenance, based on deterioration of the electrolytic capacitor. It does not predict failures caused by other reasons.

### Relationship Between Indicated Values and Output of Set Values



**Note:** This function can be set only on the S8VS-□□□24A/□□□24AP Models (except the S8VS-06024A).

## Principle of Operation

The deterioration speed of the electrolytic capacitor varies considerably according to the ambient temperature. (Generally the speed follows "Rule of Two for every 10°C"; for every 10°C increase in temperature the rate of degradation doubles according to Arrhenius's equation.) The S8VS-□□□24A/□□□24AP monitors the temperature inside the power supply, and calculates the amount of deterioration according to the running hours and inside temperature. Judging by this amount of deterioration, the power supply will give the alarm indication and output when the period left for maintenance reaches the set value.

- Note:**
1. Due to degradation of internal electronic parts, replace the power supply at least once every 15 years even if indication and output of maintenance forecast monitor are not issued.
  2. The maintenance forecast is accelerated or decelerated according to operating conditions. Periodically check indication.
  3. Acceleration or deceleration of the maintenance forecast may cause the output to repeatedly go ON/OFF. Only the S8VS-09024A/09024AP, S8VS-12024A/12024AP, S8VS-18024A/18024AP, and S8VS-24024A/24024AP are equipped with output.
  4. The accuracy of the maintenance forecast function may be adversely affected by applications in which the AC input is frequently turned ON/OFF.

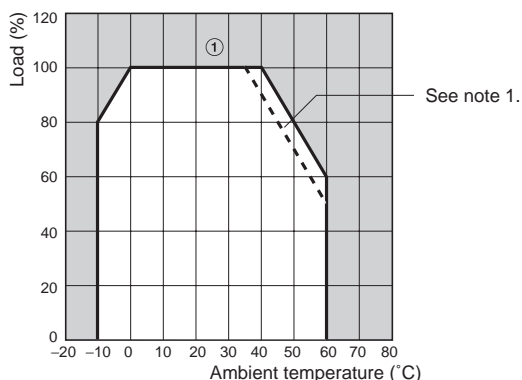
## Reference Value

| Item               | Value            | Definition  |
|--------------------|------------------|---|
| Reliability (MTBF) | 135,000 hrs min. | MTBF stands for Mean Time Between Failures, which is calculated according to the probability of accidental device failures, and indicates reliability of devices. Therefore, it does not necessarily represent a life of the product. |
| Life expectancy    | 10 yrs. min.     | The life expectancy indicates average operating hours under the ambient temperature of 40°C and a load rate of 50%. Normally this is determined by the life expectancy of the built-in aluminum electrolytic capacitor.               |

**Note:** The maintenance forecast is the service life (the power supply's internal temperature is monitored at all times) of the internal electrolytic capacitor in actual operating conditions, and varies according to the customer's operating conditions. 15 years is taken as the maximum period of the maintenance forecast.

# Engineering Data

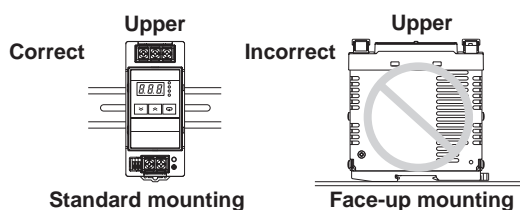
## Derating Curve



**Note: 1.** Using side mounting bracket for right-side mounting (excluding 240-W Models).

- 2. Internal parts may occasionally deteriorate or be damaged. Do not use the Power Supply in areas outside the derating curve (i.e., the area shown by shading ① in the above graph),

## Installation

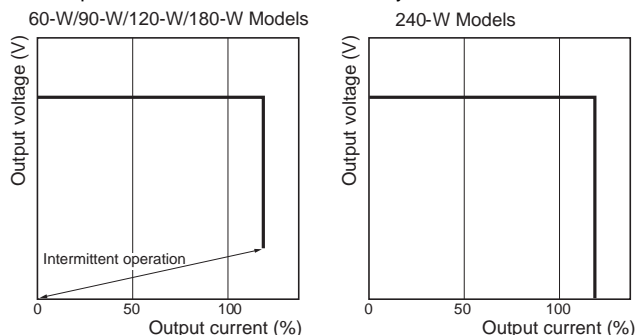


**Note: 1.** Improper mounting will interfere with heat dissipation and may occasionally result in deterioration or damage of internal parts. It may also result in failure of the maintenance forecast monitor function. Use the standard mounting method only.

- 2. If there is a derating problem, use forced air-cooling. The ambient temperature is specified for a point 50 mm below the power supply.

## Overload Protection

The Power Supply is provided with an overload protection function that protects the load and the power supply from possible damage by overcurrent. When the output current rises above 105% min. of the rated current, the protection function is triggered, decreasing the output voltage. When the output current falls within the rated range, the overload protection function is automatically cleared.



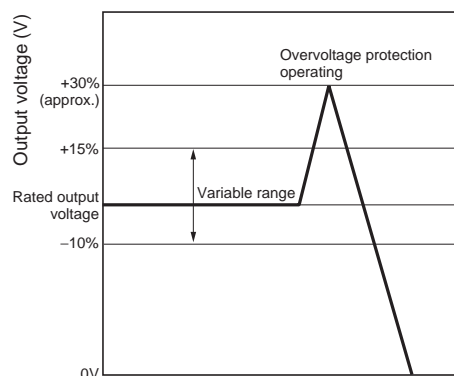
The values shown in the above diagrams are for reference only.

**Note: 1.** Internal parts may occasionally deteriorate or be damaged if a short-circuited or overcurrent state continues during operation. Do not allow operation to continue for more than 20 seconds under these conditions.

- 2. Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

## Overvoltage Protection

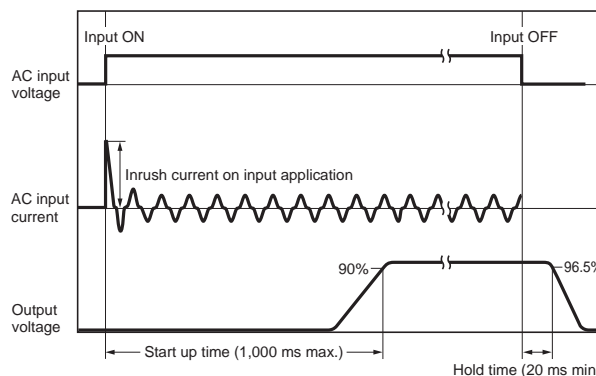
The Power Supply is provided with an overvoltage protection function that protects the load and the Power Supply from possible damage by overvoltage. When an excessive voltage that is approximately 130% of the rated voltage or more is output, the output voltage is shut OFF. Reset the Power Supply by turning it OFF for at least three minutes and then turning it back ON again.



**Note: 1.** Do not turn ON the power again until the cause of the overvoltage has been removed.

- 2. The values shown in the above diagram are for reference only.

## Inrush Current, Start Up Time, Hold Time



## ■ Undervoltage Alarm Function (Indication and Output) (S8VS-□□□24□□ Only)

When output voltage drop is detected, an alarm ( $R01$ ) and lowest output voltage value are indicated alternately. The preset value of detection voltage can be changed in the setting mode.

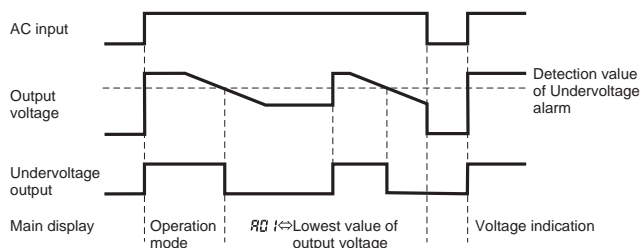
(From 18.5 to 27.5 V (18.5 to 26.3 V for the S8VS-24024□□), in 0.1-V steps. The value is fixed at 20 V for the S8VS-06024□.)

Further, an output ((11) DC LOW) to an external device is given from the transistor to notify of the error (excluding S8VS-06024□).

### Example: Output Voltage Dropping to Below the Preset Value for the S8VS-09024□□, Resulting in an Alarm



- Note:**
1. Operation begins after about three seconds since the AC power is supplied.
  2. The alarm is not indicated in the setting mode.
  3. Press the  $\square$  ((8) Mode Key) after the output voltage is restored, to reset alarm indication.
  4. The undervoltage alarm function monitors the output terminal voltage of the power supply unit. To check the voltage accurately, measure the voltage at the load end.
  5. The undervoltage alarm function may also operate when an interruption in AC input is not restored within 20 ms.

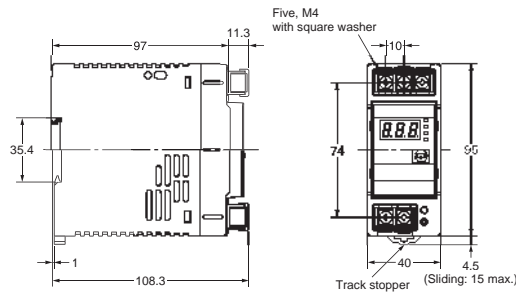
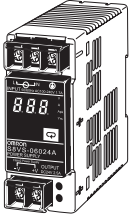


**Note:** Operation begins after about three seconds since the AC power is supplied.

# Dimensions

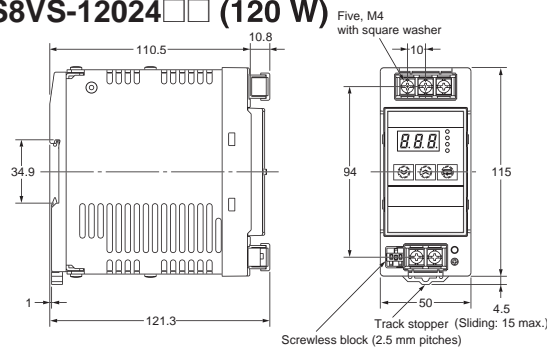
Note: All units are in millimeters unless otherwise indicated.

## S8VS-06024 (60 W) S8VS-06024□ (60 W)



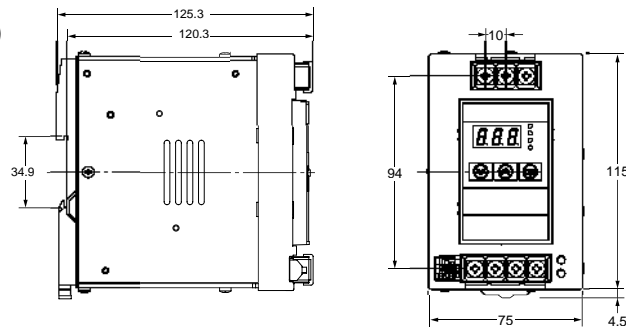
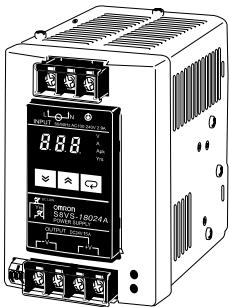
Note: The illustration is the S8VS-06024A Model.

## S8VS-09024 (90 W)/S8VS-12024 (120 W) S8VS-09024□□ (90 W)/S8VS-12024□□ (120 W)



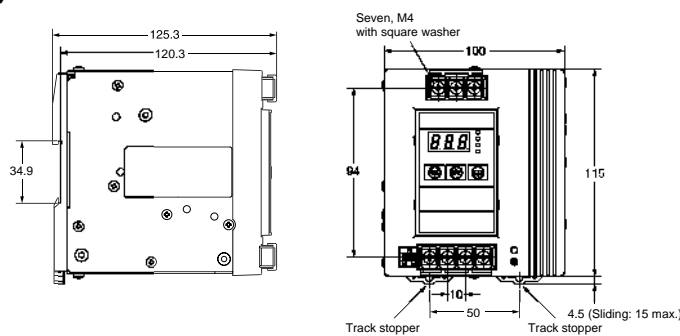
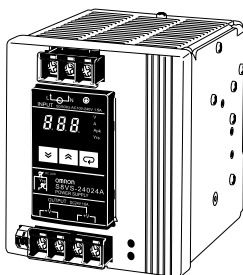
Note: The illustration is the S8VS-12024A Model.

## S8VS-18024 (180 W) S8VS-18024□□ (180 W)



Note: The illustration is the S8VS-18024A Model.

## S8VS-24024 (240 W) S8VS-24024□□ (240 W)



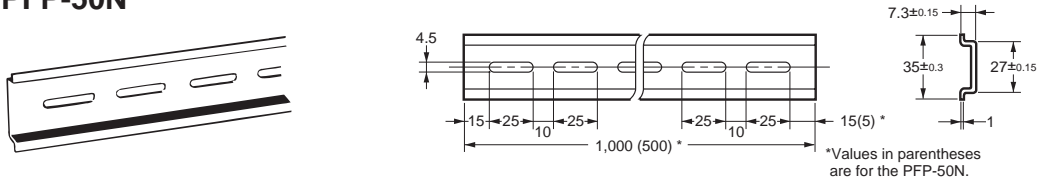
Note: The illustration is the S8VS-24024A Model.

## ■ DIN Track (Order Separately)

Note: All units are in millimeters unless otherwise indicated.

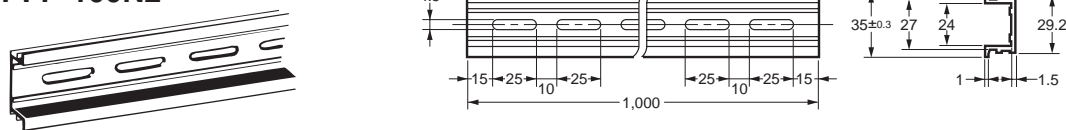
### Mounting Track (Material: Aluminum)

PFP-100N  
PFP-50N



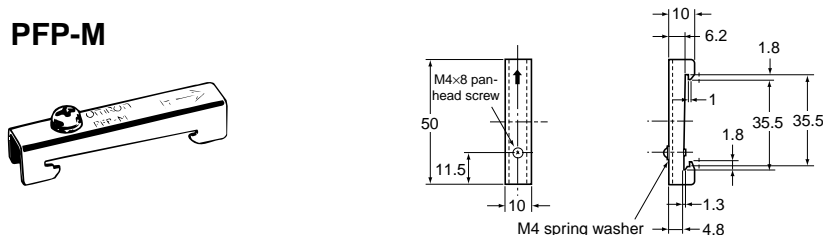
### Mounting Track (Material: Aluminum)

PFP-100N2



### End Plate

PFP-M



## ■ Mounting Brackets

| Type       | Side-mounting Bracket<br>(For 60-, 90-, 120-W types) | Side-mounting Bracket<br>(For 180-W type)                 | Side-mounting Bracket<br>(For 240-W type)                 | Front-mounting Bracket  |
|------------|--|---|---|---|
| Model      | S82Y-VS10S   | S82Y-VS15S  | S82Y-VS20S  | S82Y-VS10F  |
| Dimensions |  |   |   |   |
| Appearance | Left-side mounting  Right-side mounting              | Left-side mounting<br>*Right-side mounting also possible. | Left-side mounting<br>*Right-side mounting also possible. | (For 60-, 90-, 120-, 180-W types)  (For 240-W type)<br>*Use two S82Y-VS10F brackets for the 240-W type. |

# Safety Precautions

## CAUTION

Minor electric shock may occasionally occur. Do not disassemble the product or touch internal parts.



Minor burns may occasionally occur. Do not touch the product during power-ON and immediately after power-OFF.



A minor fire may occasionally occur. Tighten the terminal screws to a torque of 1.08 N-m so that they do not become loose.



Minor electric shock may occasionally occur during operation. Install the terminal cover.



The product may occasionally be damaged. Do not allow metal cuttings to enter the product during mounting work.



## Precautions for Safe Use

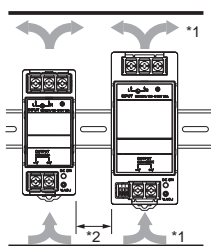
### Mounting

Take adequate measures to ensure proper heat dissipation to increase the long-term reliability of the product.

Be sure to allow convection in the atmosphere around devices when mounting. Do not use in locations where the ambient temperature exceeds the range of the derating curve.

Improper mounting will interfere with heat dissipation and may occasionally result in deterioration or damage of internal parts. It may also result in failure of the remaining service life notice function. Use the standard mounting method only.

When cutting out holes for mounting, make sure that cuttings do not enter the interior of the products.



\*1. Convection of air  
\*2. 20 mm min.

### Wiring

Minor electric shock may possibly occur. Ground the product (GR) completely.

Minor fire may possibly occur. Ensure that input and output terminals are wired correctly.

Do not apply more than 100 N force to the terminal block when tightening it.

Be sure to remove the sheet covering the product for machining before power-ON.

Use the following material for the wires to be connected to the S8VS to prevent smoking or ignition caused by abnormal loads.

## Recommended Wire Type

| Model  | Recommended wire size   |   |
|--|---|---|
|  | For screw terminal  | For alarm output terminal                                     |
| S8VS-06024□  | AWG14 to 20<br>(Cross section 0.517 to 2.081mm <sup>2</sup> ) | ---   |
| S8VS-09024□□<br>S8VS-12024□□<br>S8VS-18024□□<br>S8VS-24024□□ | AWG14 to 18<br>(Cross section 0.823 to 2.081mm <sup>2</sup> ) | AWG18 to 28<br>(Cross section 0.081 to 0.823mm <sup>2</sup> ) |

## Installation Environment

Do not use the Power Supply in locations subject to shocks or vibrations. In particular, install the Power Supply as far away as possible from contactors or other devices that are a vibration source.

Install the Power Supply well away from any sources of strong, high-frequency noise.

## Operating Life

The life of a Power Supply is determined by the life of the electrolytic capacitors used inside. Here, Arrheniu's law applies, i.e., the life will be cut in half for each rise of 10°C or the life will be doubled for each drop of 10°C. The life of the Power Supply can thus be increased by reducing its internal temperature.

## Ambient Operating and Storage Environments

Store the Power Supply at a temperature of -25 to 65°C and a humidity of 90% or less.

Do not use the Power Supply in areas outside the derating curve (i.e., the area shown by shading ① in the graph on page 12), otherwise, internal parts may occasionally deteriorate or be damaged.

Use the Power Supply at a humidity of 25% to 85%.

Do not use the Power Supply in locations subject to direct sunlight.

Do not use locations where liquids, foreign matter, or corrosive gases may enter the interior of products.

## S8VS-□□□24A/-□□□24AP Models Only

Satisfy the following conditions when storing the Power Supply for long periods of time to maintain its remaining service life function.

- When storing for more than three months, store within an ambient temperature range of -25 to +30°C and the humidity range of 25% to 70%.

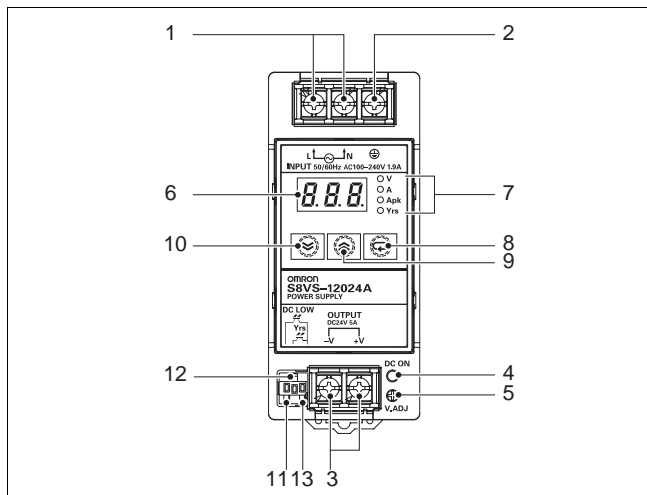


**Periodic Check (S8VS-□□□24A/  
-□□□24B/-□□□24AP/-□□□24BP,  
Except for S8VS-06024A/-06024B)**

It may take from several years to several tens of years under general operating conditions for the power supply to output the maintenance forecast monitor alarm (S8VS-□□□24A/-□□□24AP). The total run time monitor (S8VS-□□□24B/-□□□24BP) may be a similar number of years as the maintenance forecast monitor according to some settings. During operation over an extended period of time, periodically check if the maintenance forecast monitor output ((12)Yrs) or total run time monitor output ((12)kh) is correctly functioning by the following procedure.

1. Select the operation mode.
2. Check that the output ((12)Yrs/kh) is turned ON (with continuity across (12) and (13)).
3. In the operation mode, press and hold the Down Key (10) and the Mode Key (8) simultaneously for at least three seconds. The main display (6) changes to "RD2."  
An inactive output ((12)Yrs/kh) (no continuity across (12) and (13)) in the "RD2" indication indicates the correct function.
4. Release keys to return to the regular state.

**Note:** DC output stays ON during the periodical check.



**Overcurrent Protection**

Internal parts may possibly deteriorate or be damaged if a short-circuited or overcurrent state continues during operation. Do not allow operation to continue for more than 20 seconds under these conditions.

Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

**Alarm Output (S8VS-09024□□,  
S8VS-12024□□, S8VS-18024□□,  
S8VS-24024□□)**

When using the alarm output, sufficiently consider the maximum ratings, residual voltage, and leakage current.

Transistor output: Sinking (NPN) for S8VS-□□□24A Models  
Sourcing (PNP) for S8VS-□□□24AP Models

30 VDC max., 50 mA max.

ON residually voltage: 2 V max.

OFF leakage current: 0.1 mA max.

**Charging the Battery**

If a battery is to be connected as the load, mount an overcurrent limiting circuit and an overvoltage protection circuit.

**Dielectric Strength Test**

If a high voltage is applied between an input and the case (FG), it will pass through the LC of the built-in noise filter and energy will be stored. If the high voltages used for dielectric strength testing are turned ON and OFF with a switch, timer, or similar device, impulse voltage will be generated when the voltage is turned OFF and internal parts may possibly be damaged. To prevent the generation of impulse voltages, reduce the applied voltage slowly with a variable resistor on the test device or turn the voltage ON and OFF at the zero-cross point.

**Inrush Current**

When two or more Power Supplies are connected to the same input, the total current is the sum of the currents for each Supply. Select fuses and circuit breakers giving sufficient consideration to the fusing or operating characteristics so that fuses will not burn and breakers will not break due to inrush current.

**Output Voltage Adjuster**

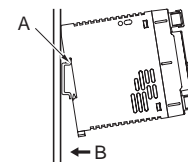
The output voltage adjuster (V.ADJ) may possibly be damaged if it is turned with unnecessary force. Do not turn the adjuster with excessive force.

If the output voltage is set to a value less than 20 V, the undervoltage alarm function may operate.

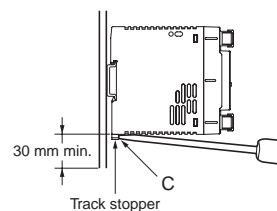
After changing the setting of the adjuster, make sure that the output capacity and output current do not exceed the rated output capacity and rated output current.

**DIN Track Mounting**

To mount the Block on a DIN track, hook portion (A) of the Block onto the track and press the Block in direction (B).



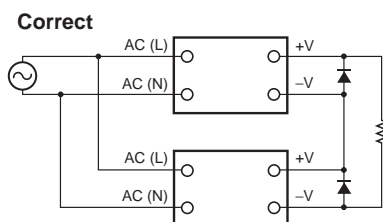
To dismount the Block, pull down portion (C) with a flat-blade screwdriver and pull out the Block.



## Series Operation

Two power supplies can be connected in series.

The ( $\pm$ ) voltage output can be accomplished with two power supplies.



**Note: 1.** The diode is connected as shown in the figure. If the load is short-circuited, a reverse voltage will be generated inside the Power Supply. If this occurs the Power Supply may possibly deteriorate or be damaged. Always connect a diode as shown in the figure.

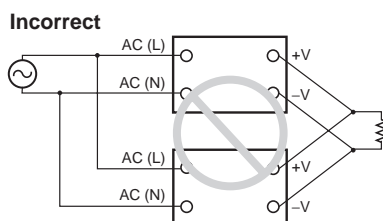
Select a diode having the following ratings.

| Type                       | Schottky Barrier diode                  |
|----------------------------|---|
| Dielectric strength (VRRM) | Twice the rated output voltage or above |
| Forward current (IF)       | Twice the rated output current or above |

2. Although products having different specifications can be connected in series, the current flowing through the load must not exceed the smaller rated output current.

## Parallel Operation

The product is not designed for parallel operation.



## In Case There Is No Output Voltage

The possible cause for no output voltage may be the presence of an overload or overvoltage condition, or may be due to the functioning of a latching protective device. The latching protection may operate if a large amount of surge voltage such as a lightning surge occurs while turning ON the power supply.

In case there is no output voltage, please check the following points before contacting us:

- Check the Overload Protected Status:  
Check whether the load is in overload status or is short-circuited. Remove wires to load when checking.
- Attempt to clear the overvoltage or latching protection function:  
Turn the power supply OFF once, and leave it OFF for at least 3 minutes. Then turn it ON again to see if this clears the condition.



# Warranty and Application Considerations

## Read and Understand this Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

## 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.

### LIMITATIONS OF LIABILITY

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

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability*.

### 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.

Cat. No. T026-EN1-03 **In the interest of product improvement, specifications are subject to change without notice.**

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