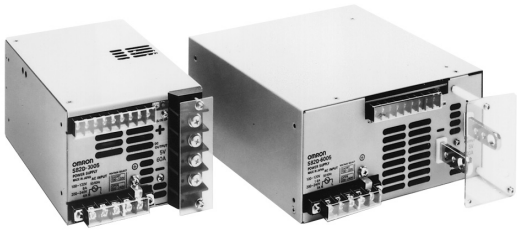
OMRON

Switching Power Supply
S82D

High-Grade Power Supply for Demanding Industrial Applications

- Wide range of output voltages: 5 V or 12 V.
- Selectable 85 to 132 VAC or 170 to 264 VAC input voltage.
- Equipped with overvoltage and overload protection, remote sensing and remote control functions.
- Fan alarm signal warns of possible fan malfunction.
- For loads drawing high current, parallel connection of two power supplies possible.
- Two pairs of output terminals simplify wiring of two loads (300 W).
- Optional multiple output terminal available (600 W).
- 3-year warranty.



Ordering Information

■ SWITCHING POWER SUPPLIES

Stock Note: Shaded models are normally stocked.

Rated input voltage	Power ratings	Output		Part number
		Voltage	Current	
120/240VAC	300 W	5 VDC	60 A	**S82D-3005**
		12 VDC	27 A	**S82D-3012**
	600 W	5 VDC	120 A	**S82D-6005**
		12 VDC	53 A	**S82D-6012**

Note: For mounting brackets and other accessories, refer to the *Accessories* Section on the next page.

■ MODEL NUMBER LEGEND

S82D - □ □ □ □
1 **2**

1. Power ratings
30: 300 W
60: 600 W

2. Output voltage
05: 5 V
12: 12 V
24: 24 V

■ ACCESSORIES (ORDER SEPARATELY)

Stock Note: Shaded models are normally stocked.

Item	Mounting type	Applicable power supply	Part number
Mounting brackets	Bottom mounting	S82D-30□□	**S82Y-D30B**
		S82D-60□□	**S82Y-D60B**
	Side mounting	S82D-30□□	**S82Y-D30S**
		S82D-60□□	**S82Y-D60S**
Terminal expansion bracket		S82D-60□□	**S82Y-D60T**
Connection kit	Parallel	S82D-30□□	**S82Y-D30A**
		S82D-60□□	**S82Y-D60A**
Fan		S82D-30□□	**S82Y-DFAN**
		S82D-60□□	

Specifications

Power rating		300 W	600 W
Efficiency (typical)		74% to 84% (depending on types)	
Life expectancy		10 yrs. min. (used at 40°C at the rated input with a 50% load) The life expectancy of the fan is lower.	
Input			
Voltage (AC only)		120 V (85 to 132 V) or 240 V (170 to 264 V) selectable	
Frequency		47 to 450 Hz	
Current (with rated I/O)	100-V input	8 A max.	14 A max.
	200-V input	4 A max.	7 A max.
Leakage current (with rated I/O)	100-V input	0.5 mA max.	
	200-V input	1 mA max.	
Inrush current (with rated I/O)	100-V input	25 A typ.	30 A typ.
	200-V input	50 A typ.	60 A typ.
Noise filter		Yes	
Output			
Voltage fluctuation		3% max. (combined input, load, and temperature variations)	
Voltage adjustment range		±10%, adjustable with variable resistor (V.ADJ)	
Ripple		2% (p-p) max.	
Input variation influence		0.4% max. (85 to 132 VAC/170 to 264 VAC input, 100% load)	
Load variation influence		0.8% max. (rated input, 0% to 100% load)	
Temperature variation influence		0.04%/°C max. (0° to 50°C, with rated input and output)	
Rise time		300 ms max. (output voltage rise to 90%, with rated input and output)	
Hold time		20 ms min.	
Additional functions			
Overload protection		120% of rated load current (typical), inverted L drop, automatic reset (output shut off after 5 s, reset by input reset)	
Overvoltage protection		120% of rated output voltage (typical), shut-off type, reset by input reset	
Fan alarm		Relay output, connector SPST, 250 VAC, 1 A load resistance, but switching capacity is 125 VA	
Remote sensing		Yes	
Remote control		Yes	
Parallel connection		Yes	

(This table continues on the next page.)

Specifications Table – continued from previous page

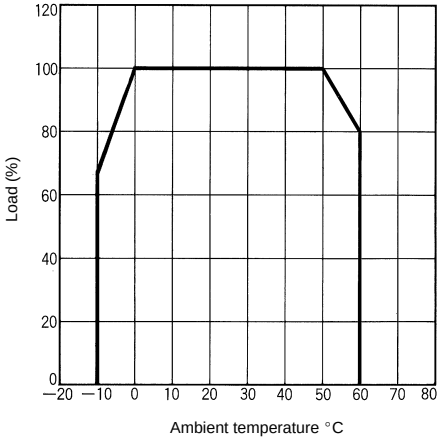
Power rating		300 W	600 W
Characteristics			
Ambient temperature	Operating	See the derating curve in the *Engineering Data* section	
	Storage	–25°C to 85°C (–13°F to 185°F)	
Ambient humidity	Operating	25% to 85%	
	Storage	25% to 95%	
Dielectric strength (see note below table)		2000 VAC, 50/60Hz for 1 min (between all inputs and outputs/housing) 500 VDC for 1 min (between all inputs and outputs/housing)	
Insulation resistance (see note below table)		100 MΩ min. at 500 VDC (between all outputs and inputs/housing)	
Vibration resistance		Malfunction: 10 to 55 Hz, 0.75-mm double amplitude (approx. 4.5G) each in X, Y, and Z directions for 2 hours.	
Shock resistance		Malfunction: 294 m/s^2 (30G), 3 times each in ±1X, ±1Y, and ±1Z directions	
Output indicator		Yes (red)	
Electromagnetic interference		Meets FCC class A standards	
Approved standards		UL 1012, CSA E.B. 1402	
Weight		2.5 kg max.	4 kg max.

Note: Be sure to remove short bar attached between FC and ACG terminals before performing dielectric strength test or insulation resistance test because surge absorber is connected across input lines.

Engineering Data

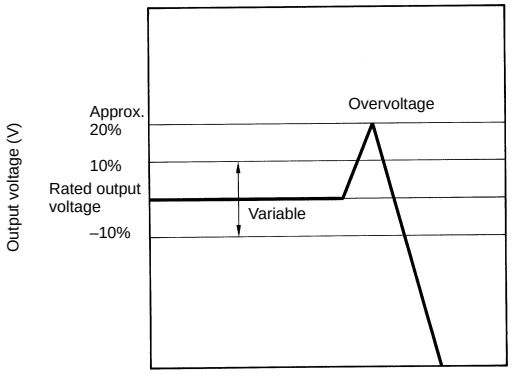
■ DERATING CURVE

Note: The derating curve differs depending on the mounting position of the power supply. The curve above was obtained with the power supply mounted in the standard position.



■ OVERVOLTAGE PROTECTION

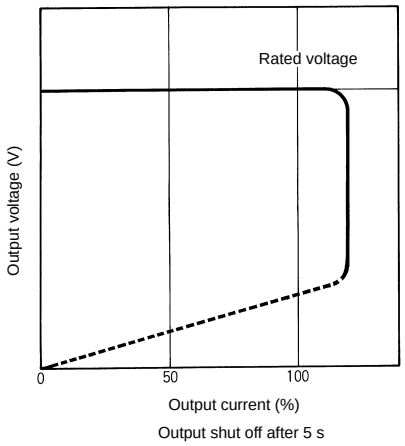
The protective function prevents damage to the load and to the power supply itself (from overvoltage). The output is shut off if the output voltage rises above about 120% of the rated voltage. The input power must be turned off for at least 30 s. Then, turn it on again to reset the power supply.



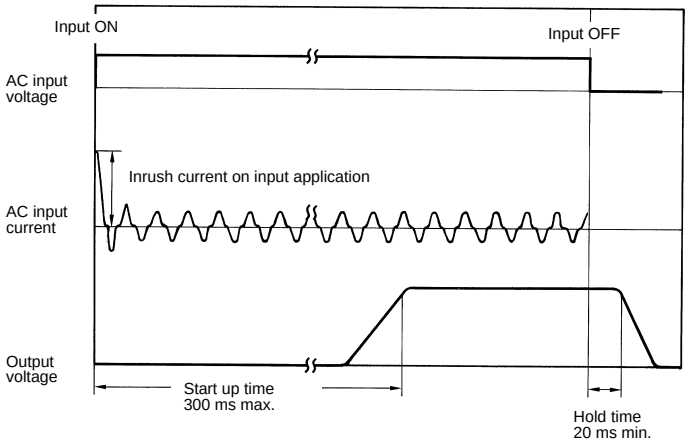
■ OVERLOAD PROTECTION

The protective function prevents damage to the load as well as to the power supply itself due to overload. If the load current rises above the overload set value (105% to 135% of the rated load current), the protective function will engage, and the voltage will be reduced. Reset is automatic, so the power supply will return to normal operation when the overload condition is corrected.

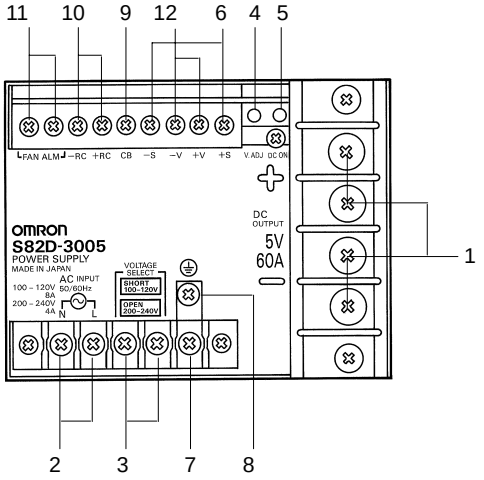
If the output voltage falls below 70% of the rated value in an overload condition, the low-voltage sensing circuit will engage and shut off the output if the low voltage condition continues for more than 5 s. In this situation, reset is not automatic. To reset the power supply, turn off the input power for at least 30 s and then turn it on again.

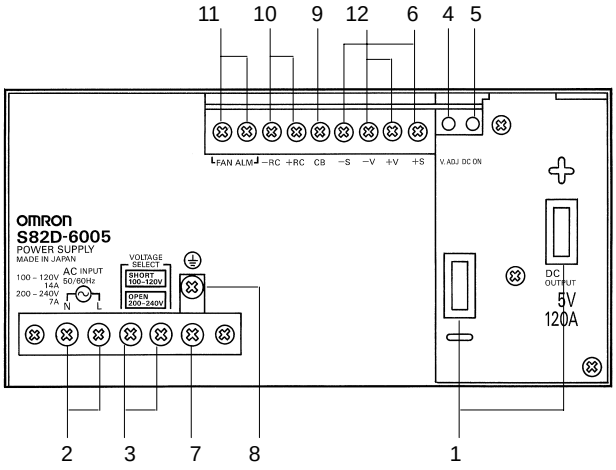


■ INRUSH CURRENT, START UP TIME, HOLD TIME



Nomenclature



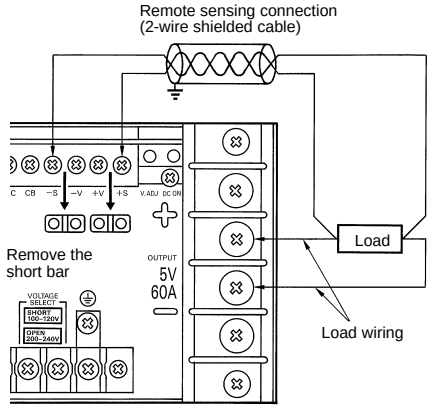


1. **DC Output Terminals:** Connect load wiring.
2. **Input Terminals:** Connect input wiring.
3. **Voltage Select Terminals:** Switch the input voltage by connecting or removing the short bar. (short circuited: 100 to 120 V; open: 200 to 240 V)
4. **V. ADJ Adjustor:** Use to adjust the output voltage.
5. **Output LED Indicator:** Lights when DC current is being output.
6. **Remote Sensing Terminals:** These correct the voltage drop in the load lines.
7. **ACG Terminal:** The intermediate point of the input filter. Shorted to FG terminal for normal operation**.**
8. **FG Terminal:** Shorted to the housing, and connected to a ground line.
9. **Current Balance Terminal:** Connected to the CB terminal of another Power Supply wired in parallel.
10. **Remote Control Terminals:** Connected to an external device to enable remote control of the output while the input voltage is being applied.
11. **Fan Alarm Output:** Turns ON (shorted) when the speed of the internal fan drops.
12. **Output Voltage Monitoring Terminals:** Take-off from the DC output terminals. Connected to the remote sensing terminals (+S and –S) when the remote sensing function is not used.

Operation

■ REMOTE SENSING FUNCTION

This function corrects a voltage drop in the load wiring. When using the remote sensing function, remove the short bars from the remote sensing terminals as shown in the following diagram.

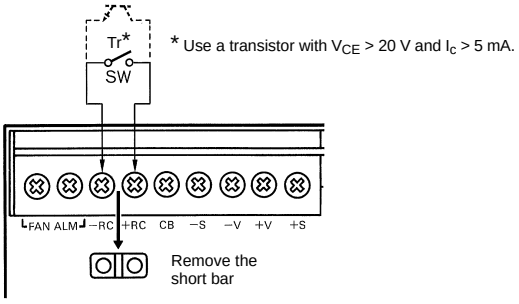


Note: 1. When the voltage drop in the load wiring is large, the overvoltage protection function might engage just from the increase in voltage to correct the voltage drop, so be sure to use high capacity wiring.

2. If the +S and +V terminals are left unconnected, the high voltage protection function will engage and the output voltage will be cut off. If the -S and -V terminals are left unconnected, the output voltage will increase about 5%.

■ REMOTE CONTROL FUNCTION

This function allows the output voltage to be turned on and off with an external signal (as long as the input voltage is being applied). When using the remote control function, remove the short bar from the remote control terminals and connect a switch or transistor as shown in the diagram below. The remote control circuit is insulated from input, output, and GR.



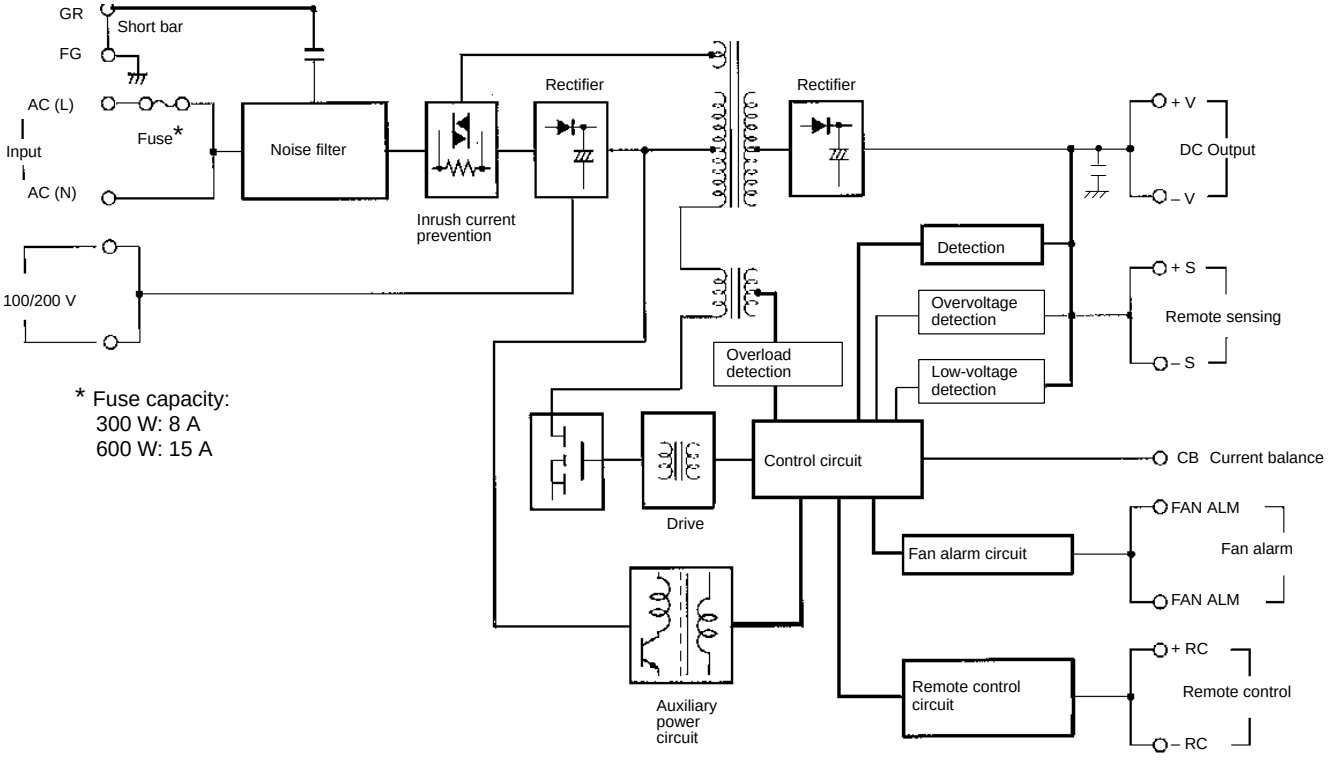
Voltage level	Output voltage
Low: (0.8 V max.)	ON
High: (2 V min.)	OFF

■ FAN ALARM

When the speed of the internal fan drops, the fan alarm output (SPST-NO) will turn ON (shorted).

Normal condition **Alarm condition**

■ BLOCK DIAGRAM

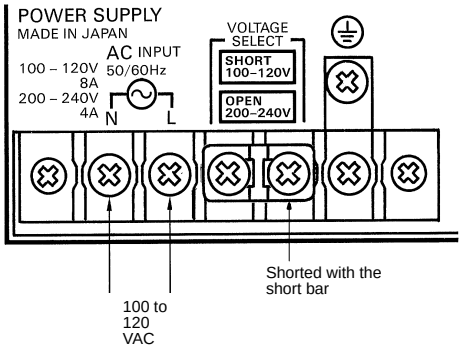


* Fuse capacity:
300 W: 8 A
600 W: 15 A

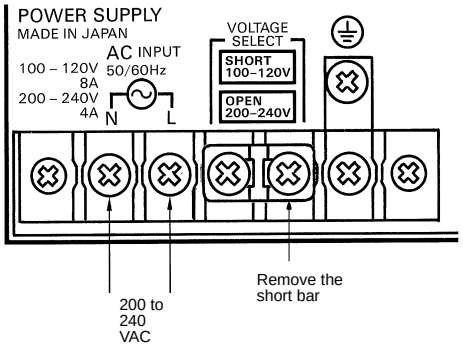
■ SWITCHING THE INPUT VOLTAGE BETWEEN 120 V AND 240 V

- Select 100 to 120 or 200 to 240 V input voltage by shorting or opening the input voltage switching terminals, as shown in the diagram below. (Factory set at 200 to 240 V operation.)

100 to 120 V Input

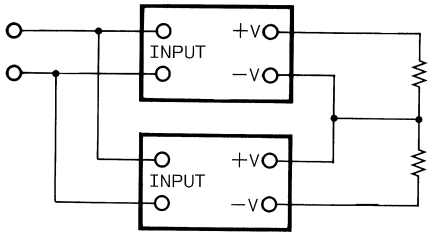


200 to 240 V Input



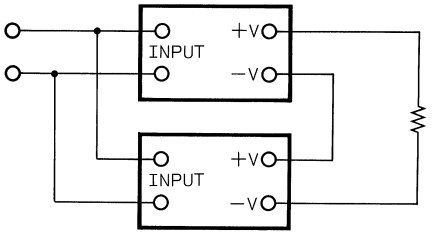
■ GENERATING OUTPUT VOLTAGES (±)

S82D power supplies may be connected to provide floating output voltages (±) as shown below.



■ SERIES CONNECTION

The output of two power supplies can be combined in series to double the output voltage as shown below.



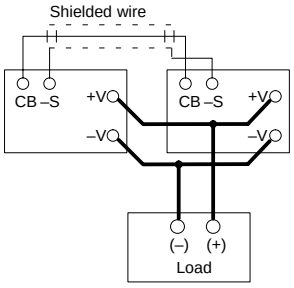
■ PARALLEL CONNECTION (MASTER/SLAVE OPERATION)

The S82D power supply has a built-in current balance function, allowing two units to be connected in parallel (master/slave operation) increasing the output current. A maximum of two units can be connected in parallel.

Master/Slave Operation

When connecting two power supplies for master/slave operation, use shielded wire to connect the current balance (CB) and -S terminals as shown below.

In master/slave operation, the power supply with the lower voltage adjustment set value (controlled by V. ADJ) is the master unit, and the power supply with the higher voltage adjustment set value is the slave unit.



Note: A maximum of two units can be connected in parallel.

Wiring

Use high capacity wiring between the power supplies and the load in order to minimize voltage drops due to wire resistance. A parallel connection kit, sold separately, is available. (Refer to the *Ordering Information section* of this data sheet.) The kit includes a bar to connect the outputs and shielded wire to connect the current balance and -S terminals.

Power supply	Connection kit
S82D-300 W	S82Y-D30A
S82D-600 W	S82Y-D60A

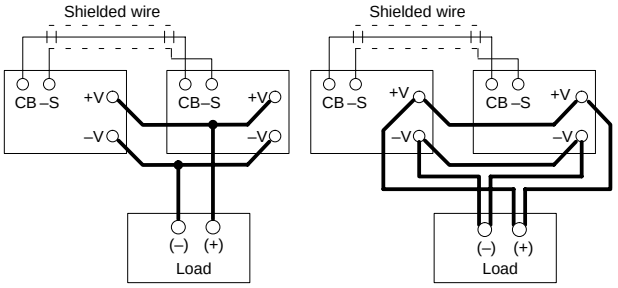
Wiring Specifications

When using lead wires, the wires should meet the specifications in the following table.

Model	Cross sectional area	Length
S82D-3005	14 mm^2 min.	30 cm max.
	8 mm^2 min.	20 cm max.
S82D-3012	8 mm^2 min.	30 cm max.
	5.5 mm^2 min.	20 cm max.
S82D-3024	8 mm^2 min.	50 cm max.
	5.5 mm^2 min.	30 cm max.
S82D-6005	20 mm^2 min.	30 cm max.
	14 mm^2 min. (2 wires min.)	30 cm max.
S82D-6012	14 mm^2 min.	30 cm max.
	8 mm^2 min. (2 wires min.)	30 cm max.
S82D-6024	8 mm^2 min.	30 cm max.
	5.5 mm^2 min. (2 wires min.)	30 cm max.

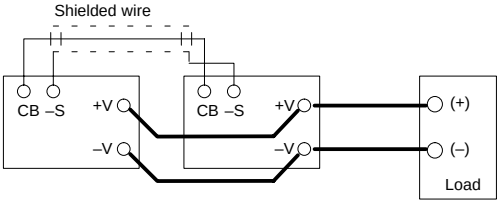
Correct Wiring

To ensure that the voltage drop is the same between each power supply and load, the length and cross sectional area of the wires used should be uniform. Wire the system as shown in the figure below.



Incorrect Wiring

Do not wire the power supplies as shown below. It would cause output voltage imbalance: one of the units would supply excessive current, causing the overload protection to engage. The result would be an unstable current and a reduction in product life expectancy.



Adjusting the Output Voltage (Master/Slave Operation)

Follow the procedure below when adjusting the output voltage of a master/slave system.

1. Connect the two power supplies in parallel and decide which unit will be the master.
2. Turn the voltage adjuster (V. ADJ) of the slave unit completely clockwise.
3. Adjust the voltage adjuster (V. ADJ) of the master unit to the desired voltage.
4. Slowly turn the voltage adjuster (V. ADJ) of the slave unit counterclockwise and set the value just before the output voltage drop.

Note: 1. Set equal output voltages for both power supplies for safety reasons. If the master power supply stops operating due to input failure or breakage, the set output value of the slave power supply will be the output.

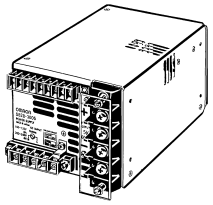
2. Even if one power supply fails to operate, both output LED indicators may be lit if the other power supply is in operation.

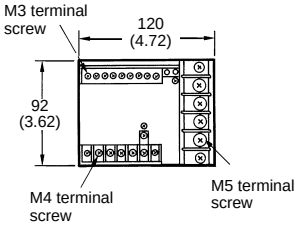
Dimensions

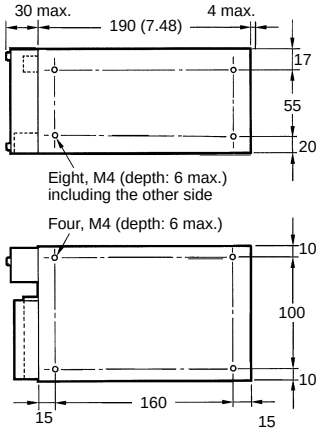
Unit: mm (inch)

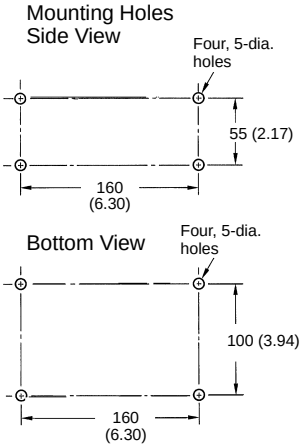
■ SWITCHING POWER SUPPLIES

S82D-30□□ (300 W)

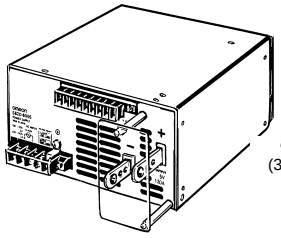


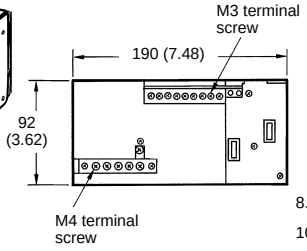


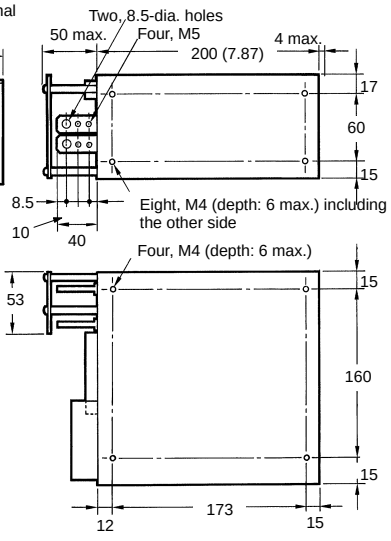


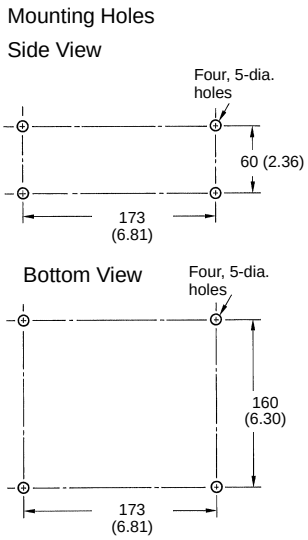


S82D-60□□ (600 W)







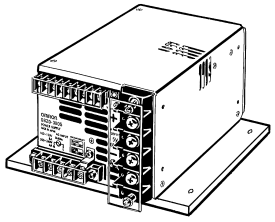


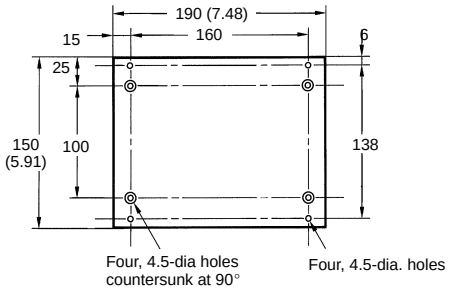
Unit: mm (inch)

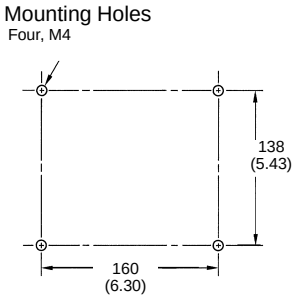
■ MOUNTING BRACKETS (ORDER SEPARATELY)

Bottom Mounting

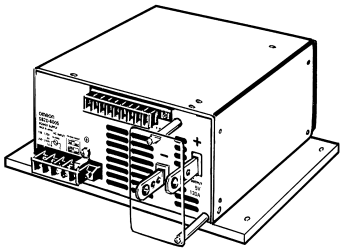
S82Y-D30B for S82D-30□□

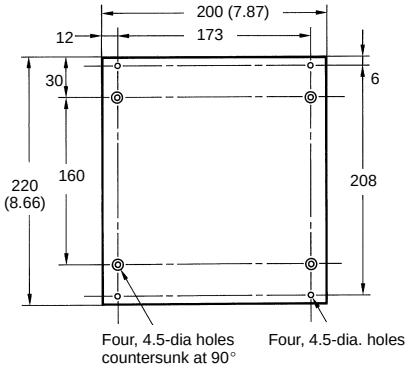


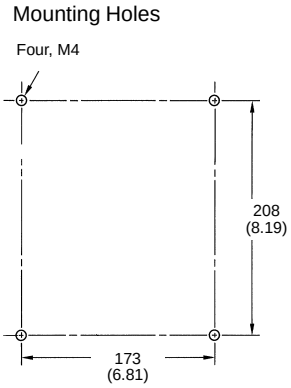




S82Y-D60B for S82D-60□□

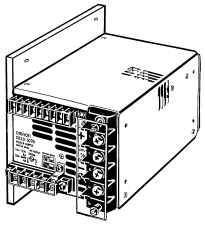


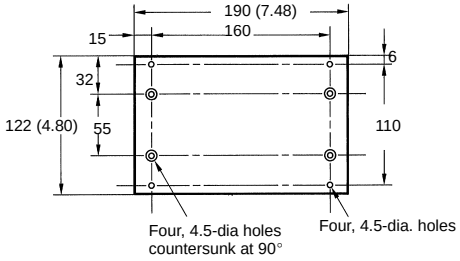


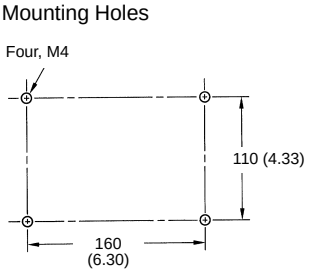


Side Mounting

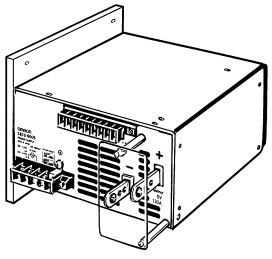
S82Y-D30S for S82D-30□□

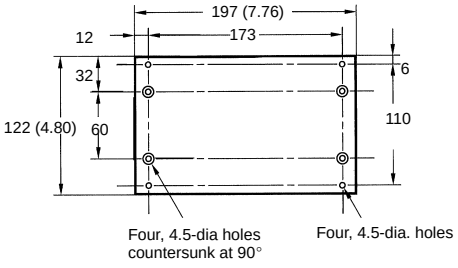


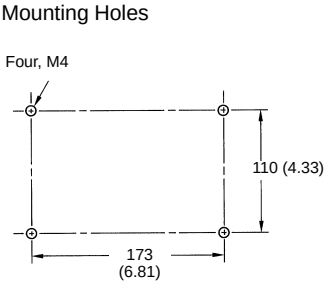




S82Y-D60S for S82D-60□□





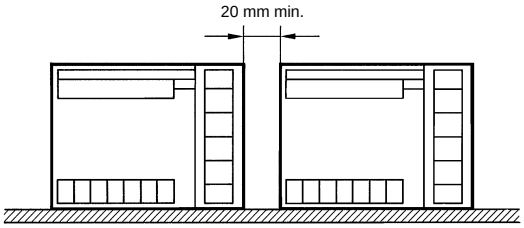


Precautions

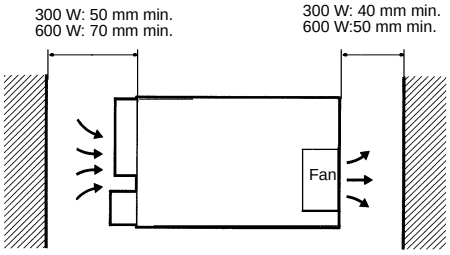
■ MOUNTING

Ventilation Holes and Adequate Air Circulation

- To extend its long-term reliability, provide adequate cooling when installing the power supply.
- When installing two or more power supplies side-by-side, allow at least 20 mm (0.79) spacing between them, as shown in the diagram below.



- The ventilation holes in the front and back surfaces of the unit must remain free of obstruction. The power supply is cooled by air forced through it by the internal fan. Minimum distances are indicated here.



Minimize Dirt and Dust

- Take precautions to minimize dirt, dust, and other airborne debris which could interfere with the forced-air cooling.

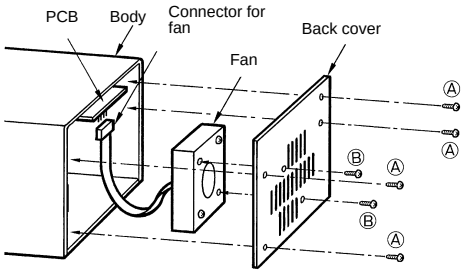
■ REPLACING THE FAN

Fan Alarm

- It is necessary to replace the internal fan when the fan alarm output goes ON.

Note: Replacement fan S82Y-DFAN can be ordered through your dealer.

- To replace the fan, remove the back cover as shown in the diagram below.

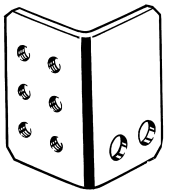


■ TERMINAL EXPANSION BRACKET

For 600 W Power Supplies

- When several loads need to be connected for 600-W Power Supplies, use a terminal expansion bracket (as shown below).

Note: Refer to the *Ordering Information* section of this data sheet.



S82Y-D60T

Brackets: 2
M4 x 8 terminal screws: 12
M5 x 12 terminal screws: 4

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