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OMRON

Switching Power Supply

S82F

Industrial-Grade Power Supply for General or Peak Load Applications

- Correct input voltage range is automatically selected: 120 VAC or 240 VAC
- Model S82F-P is suitable for peak loads, such as solenoids and motors
- Equipped with remote control, overcurrent, and overvoltage protection
- Model S82F offers remote sensing feature
- UL, CSA, and CE approvals (all models); also VDE approval for model S82F-P
- 3-year warranty



Ordering Information

SWITCHING POWER SUPPLIES

Rated input voltage	Power ratings	No. of outputs	Output voltage	Output current	Part number
120 or 240 VAC (automatically selected)	150 W	1	12 V	13.5 A	**S82F-1512**
			24 V	7 A	**S82F-1524**
	300 W		24 V	14 A	**S82F-3024**
	120 W (240 W at peak point)		24 V	5 A (10 A at peak point)	**S82F-1224P**
	240 W (480 W at peak point)		24 V	10 A (20 A at peak point)	**S82F-2424P**

Note: A mounting bracket is included with each power supply.

MODEL NUMBER LEGEND

S82F - □ □ □ □ □
1 **2** **3**

1. Power ratings
12: 120 W
15: 150 W
24: 240 W
30: 300 W

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

3. Peak-load doubling
P: Available

Specifications

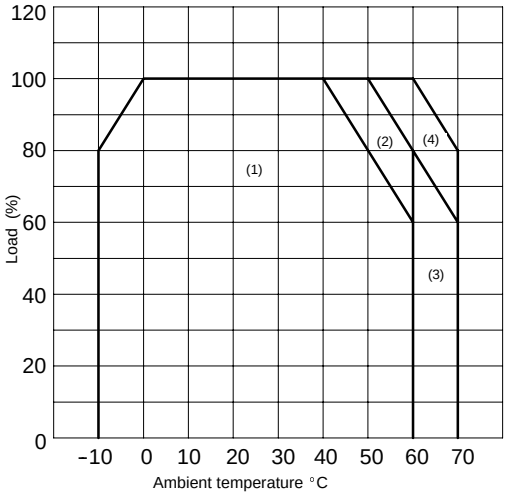
Model		S82F		S82F-P	
Power rating		150 W	300 W	120 W (240W at peak point)	240 W (480 W at peak point)
Efficiency (typical)		75% to 80% (12 to 24 V)		83% to 85%	
Life expectancy		10 yrs. min. (Used at 40°C at the rated input with a 50% load)			
Output capacity		150 W	300 W	120 W (240W at peak point)	240 W (480 W at peak point)
Input					
Voltage (AC only)		120 V (85 to 132 V) or 240 V (170 to 264 V) automatically selected			
Frequency		47 to 450 Hz			
Current (with rated I/O)	100-V input	3.5 A max.	6.5 A max.	3.0 A max. (6.0 A at peak point)	5.5 A max. (11 A at peak point)
	200-V input	2.5 A max.	4 A max.	1.8 A max. (3.6 A at peak point)	3.3 A max. (6.6 A at peak point)
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 max.			
	200-V input	50 A max.			
Noise filter		Yes			
Output					
Voltage adjustment range		±10% adjustable with variable resistor (V.ADJ)			
Ripple		12 V: 240 mV (p-p) max. 24 V: 480 mV (p-p) max.		480 mV (p-p) max.	
Input variation influence		1% max. (85 to 132/170 to 264 VAC input, 100% load)			
Load variation influence		2% max. (rated input, 0% to 100% load)			
Temperature variation influence		0.08%/°C max. (0°C to 50°C, with rated input and output)			
Rise time		800 ms max. (output voltage rise to 90%, with rated input and output)			
Hold time		10 ms min.			
Additional functions					
Overload protection		105% min.(S82F)/210% min. (S82F-P) of rated load current (typical), drop type, automatic reset			
Overload voltage		120% of rated output voltage (typical), shut-off type, reset by input reset			
Remote sensing		Yes		No	
Remote control		Yes			
Characteristics					
Ambient temperature	Operating	See the derating curve in the *Engineering Data* section.			
	Storage	−20°C to 85°C (−4°F to 185°F)			
Ambient humidity	Operating	30% to 90%			
	Storage	20% to 95%			
Dielectric strength		3000 VAC, 50/60 Hz for 1 min. (between all inputs and outputs) 2500 VAC for 1 minute between all inputs and outputs/housing			
Insulation resistance		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) for 2 h each in X, Y, and Z directions			
Shock resistance		Malfunction: 294 m/s^2 (30G), 3 times each in ±X, ±Y, and ±Z directions			
Output indicator		Yes: red			
Electromagnetic interference		Conforms to FCC class A standards			
Approved standards		UL1012, CSA E.B. 1402, VDE 0160, CE			
Weight		1,650 g max.	2,850 g max.	1,800 g max.	3,250 g max.

Note: The input circuitry incorporates a surge absorber. Remove the short bar from the FG and ACG terminals before conducting a withstand voltage test or insulation resistance test.

Engineering Data

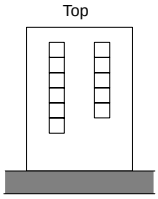
DERATING CURVE

Note: The derating curve depends on the mounting position of the Power Supply.



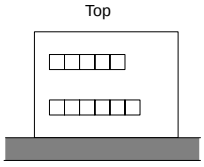
Mounting Position

(A) Standard (Vertical) Installation



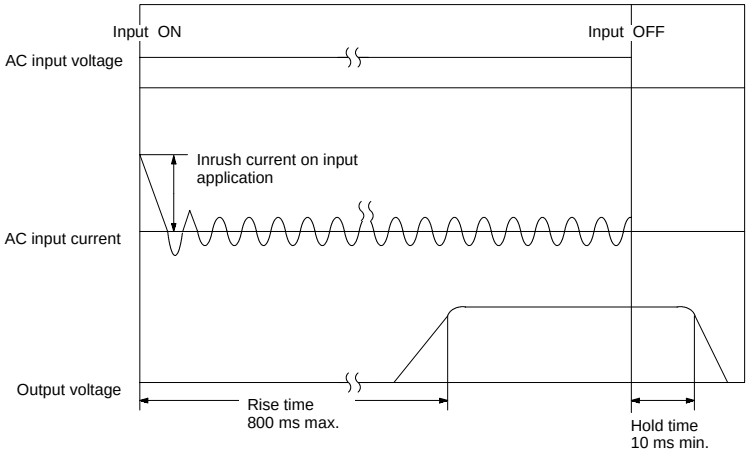
For mounting method A.
Natural air-cooling: (1) + (2)
Forced air-cooling: (1) + (2) + (3) + (4)

(B) Horizontal Installation



For mounting method B.
Natural air-cooling: (1)
Forced air-cooling: (1) + (2) + (3)

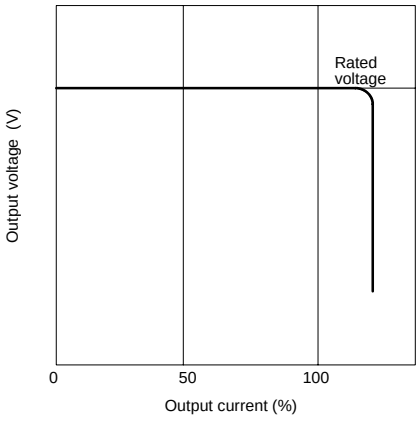
INRUSH CURRENT, RISE TIME, HOLD TIME



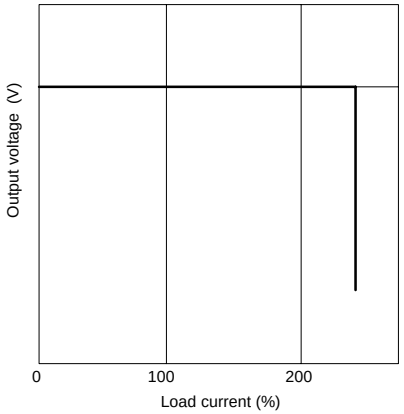
OVERLOAD PROTECTION

The power supply has an overload protection function that protects the load and the power supply from possible damage by overcurrent. When the output current rises above a set value (105% to 135% of the rated output current for S82F, and 210% to 230% of the rated output current for S82F-P), 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.

Model S82F



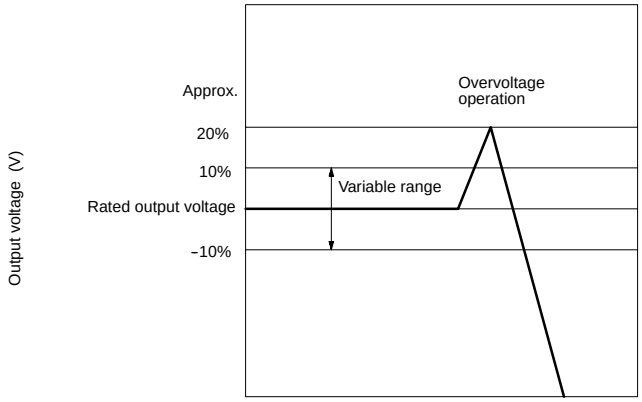
Model S82F-P



OVERVOLTAGE PROTECTION

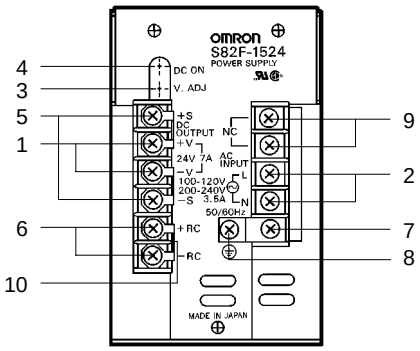
The power supply is provided with an overvoltage protection function that protects the load and the power supply from possible damage by overvoltage. When the output voltage rises above a set value (120% of the rated output voltage), the protection function is triggered, shutting off the output voltage. If this occurs, reset the S82F by turning it off for 20 seconds min. and then turning it on again. To reset the S82F-P, turn off the S82F-P for 60 seconds min. and then turn it on again.

Note: Be sure to turn on the power supply after the cause of the overvoltage output is found and the problem is solved.

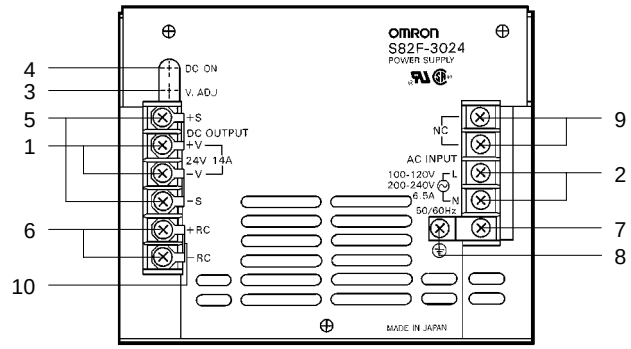


Nomenclature

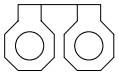
■ S82F-15□□ (150 W)



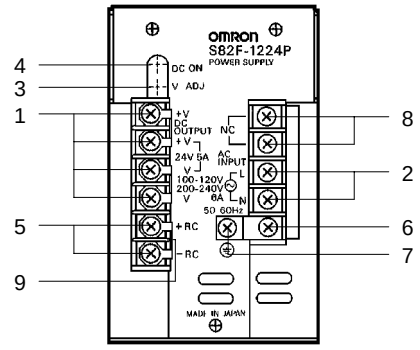
■ S82F-3024 (300 W)



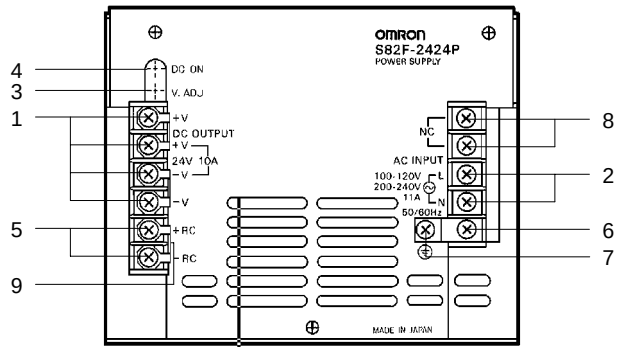
1. **DC Output Terminals:** Connect the load lines to these terminals.
2. **Input Terminals:** Connect the input lines to these terminals.
3. **V.ADJ Adjuster:** Adjusts the output voltage.
4. **Output LED Indicator:** Lights while a direct current (DC) output (+V, –V) is ON.
5. **Remote Sensing Terminals:** Correct the voltage drop in the load lines. Shorted for normal operation.
6. **Remote Control Terminals:** Connected to an external device to enable remote control of the output while the input voltage is being applied.
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. **NC Terminals:** Leave unconnected.
10. **Short Bar**



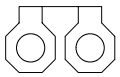
■ S82F-1224P (120 W)



■ S82F-2424P (240 W)



1. **DC Output Terminals:** Connect the load lines to these terminals.
2. **Input Terminals:** Connect the input lines to these terminals.
3. **V.ADJ Adjuster:** Adjusts the output voltage.
4. **Output LED Indicator:** Lights while a direct current (DC) output (+V, –V) is ON.
5. **Remote Control Terminals:** Connected to an external device to enable remote control of the output while the input voltage is being applied.
6. **ACG Terminal:** The intermediate point of the input filter. Shorted to FG terminal for normal operation.
7. **FG Terminal:** Shorted to the housing, and connected to a ground line.
8. **NC Terminals:** Leave unconnected.
9. **Short Bar**

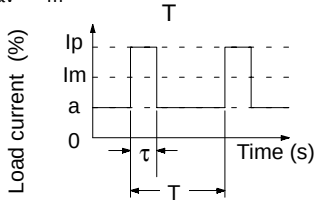


Operation

■ PEAK-LOAD CURRENT (S82F-P)

A peak load current waveform must satisfy the following condition. If the load current waveform of the S82F-P is pulse shaped, the rated capacity of the S82F-P need not be as large as the peak load current. The S82F-P corresponds to the peak load current twice as large as the rated capacity of the S82F-P. This means that he S82F-P is economical, space-saving and an ideal power supply for peak loads such as motors and solenoids.

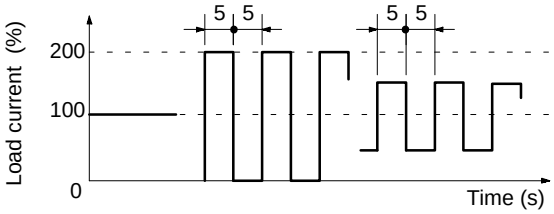
$$I_{av} \geq I_m = \frac{(I_p - a)\,\tau}{T} + a$$



I_p:	Peak current value (200% max.)	[A]
I_{av}:	Rated output current	[A]
I_m:	Mean load current	[A]
τ:	Pulse width (5 s max.) of peak current	[s]
T:	Cycle	[s]
a:	Continuous load current	[A]

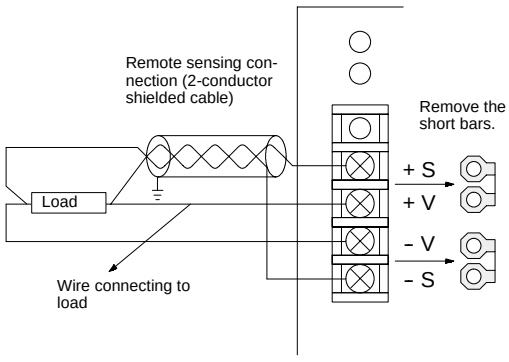
Note: If there is a current flow exceeding the peak current value, the overcurrent protection circuit will work and output voltage will be lowered. If the mean load current continuously exceeds the rated output current, the output will be OFF. If this occurs, turn off the S82F-P for 60 seconds min. and then turn it on again.

Corresponding Waveform Examples



■ REMOTE SENSING FUNCTION (S82F)

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.

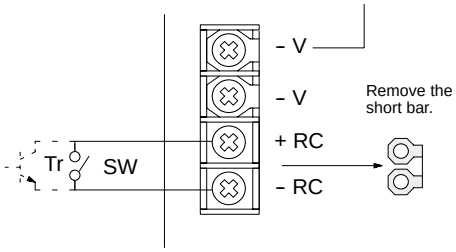


Note: 1. When the voltage drop in the load wiring is large, the overvoltage protection function might engage due to the increase in voltage to correct the voltage drop, so be sure to use high capacity wiring.

2. If the +S and −V or −S and −V terminals are left unconnected, the overvoltage protection function will engage and the output voltage will be cut off.

■ REMOTE CONTROL FUNCTION

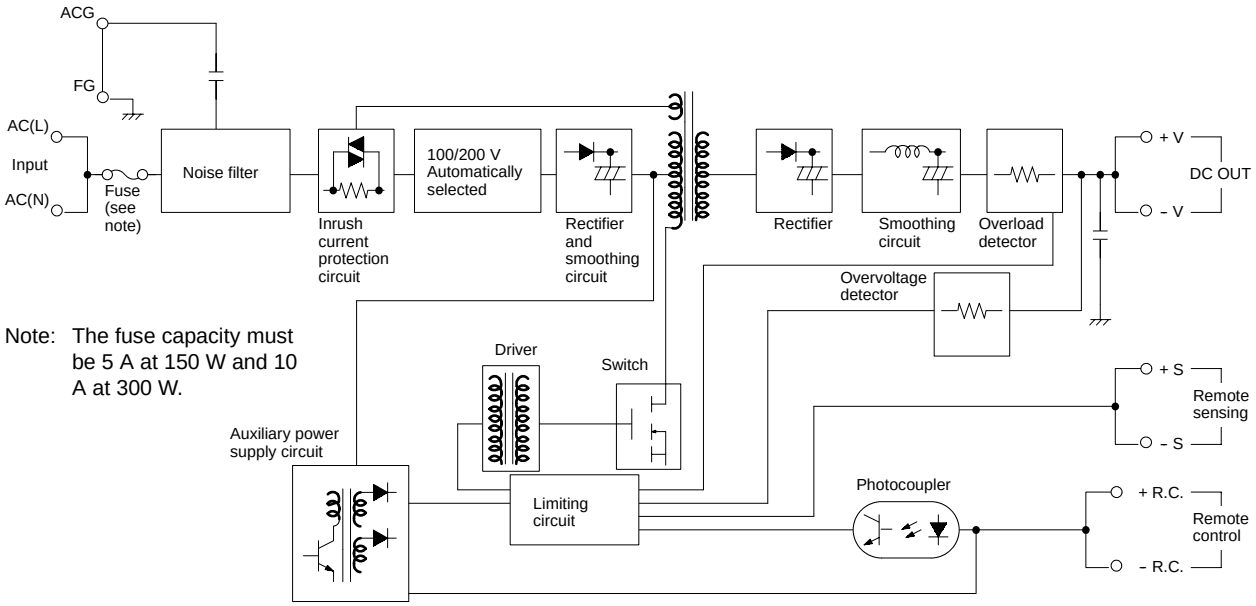
The remote control function makes it possible to turn on or off the output without turning the power supply on or off.



Use the Tr with a V_{CE} of 30 V min. and I_C of 15 mA min. The terminal voltage is 0.4 V max. when the output is turned on.

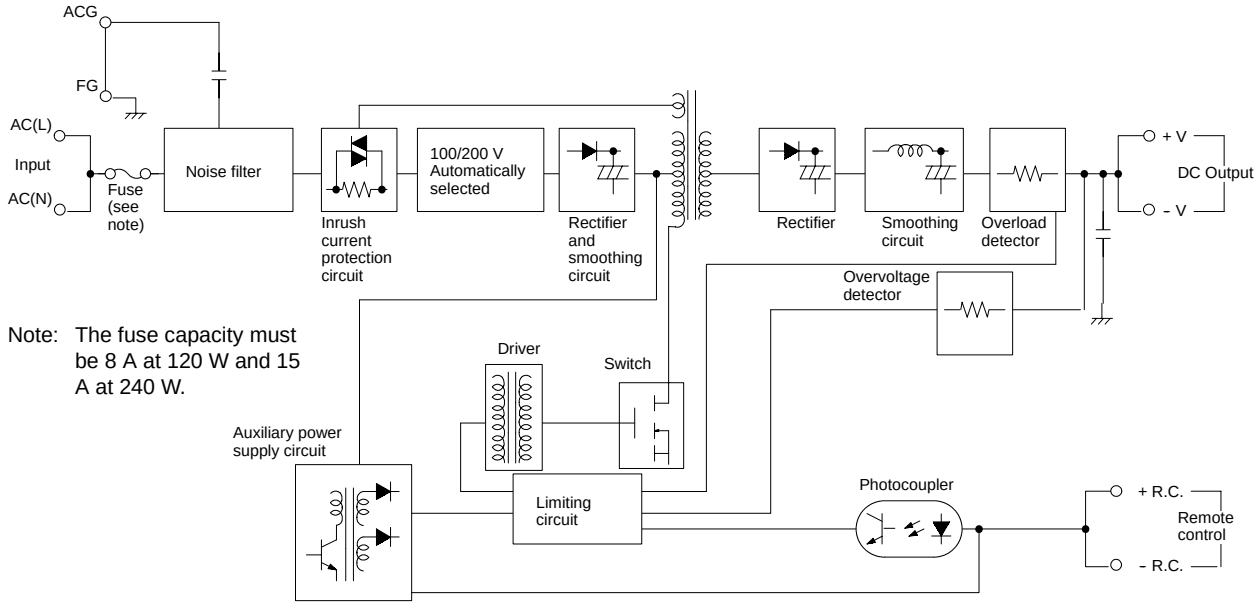
■ BLOCK DIAGRAM

Model S82F



Note: The fuse capacity must be 5 A at 150 W and 10 A at 300 W.

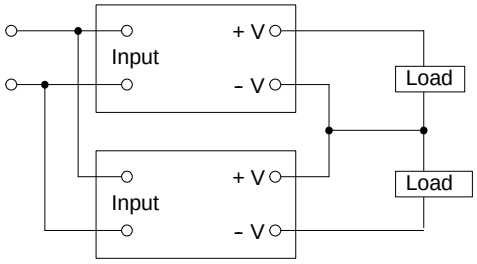
Model S82F-P



Note: The fuse capacity must be 8 A at 120 W and 15 A at 240 W.

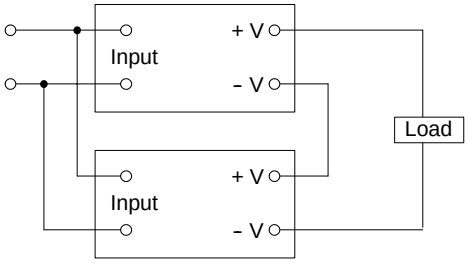
GENERATING OUTPUT VOLTAGE (±)

An output of ± can be generated by using two power supplies (as shown), because the power supply produces a floating output.



SERIES OPERATION

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



PARALLEL OPERATION

The S82F power supplies can be connected in parallel to increase the output current.

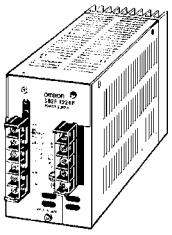
The S82F-P power supplies cannot be connected in parallel.

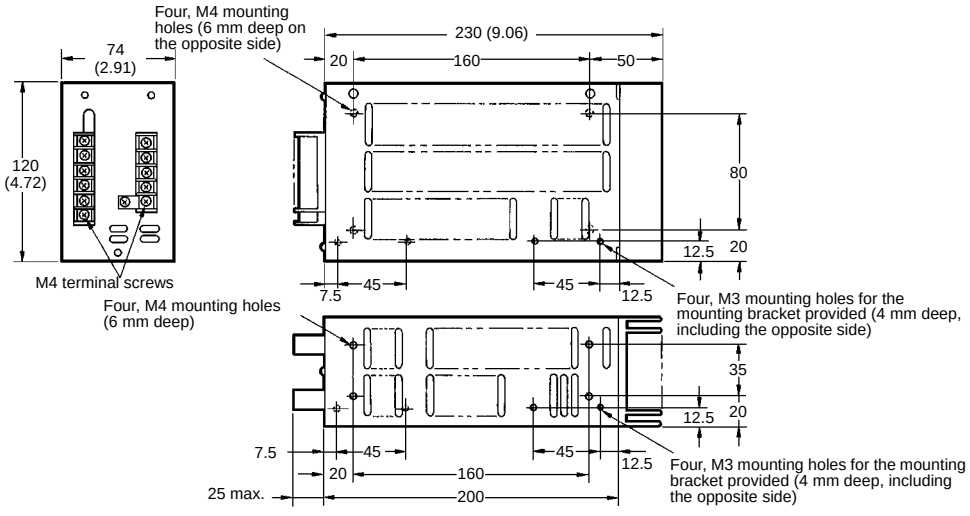
Dimensions

Unit: mm (inch)

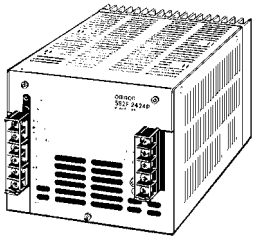
SWITCHING POWER SUPPLIES

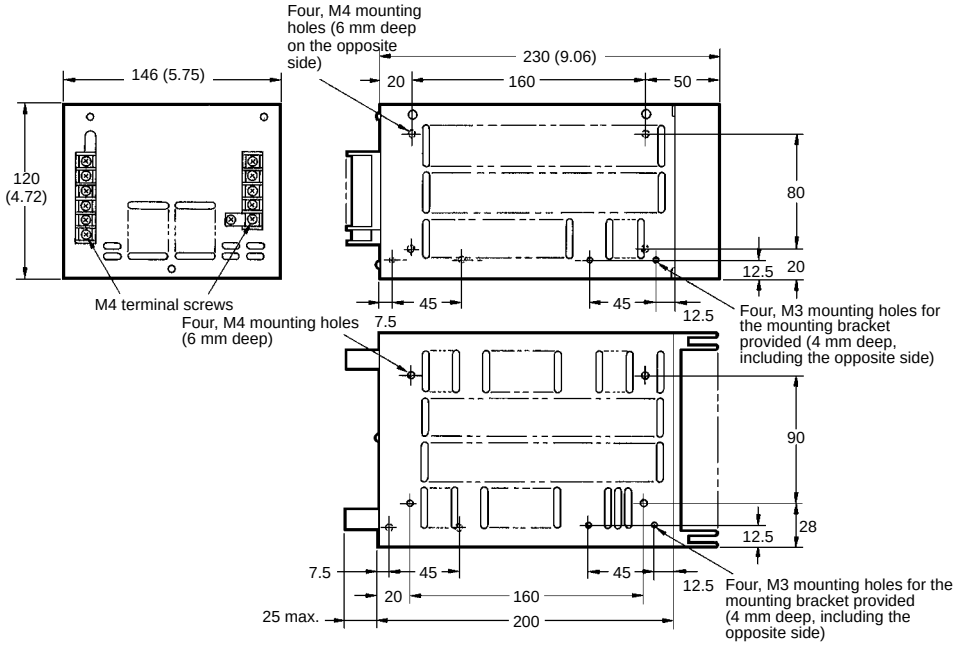
S82F-15□□
S82F-1224P





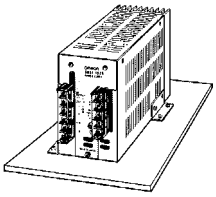
S82F-3024
S82F-2424P

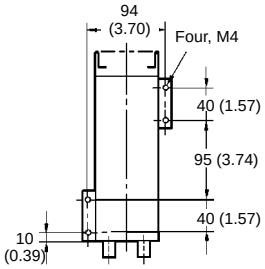


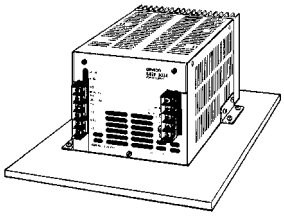


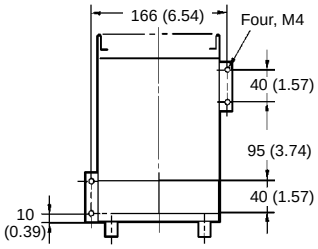
■ MOUNTING BRACKET (INCLUDED WITH POWER SUPPLY)

Bottom Mounting



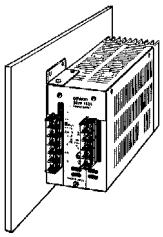


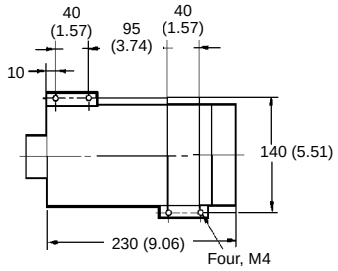


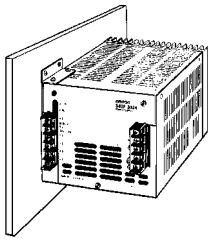


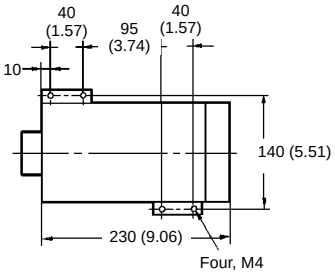
Unit: mm (inch)

Side Mounting

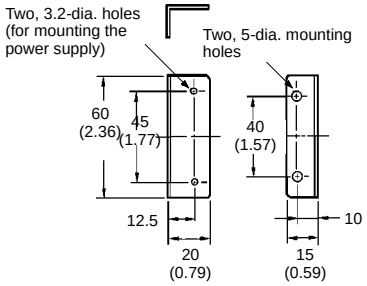








Mounting Holes

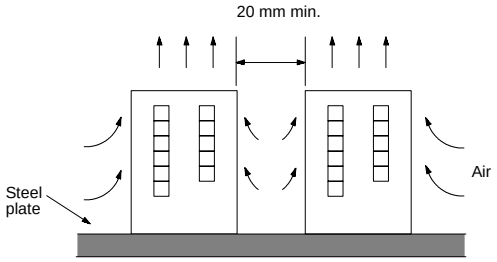


Note: Attach the mounting bracket to the power supply and secure it with two screws. Then attach the mounting bracket to the panel.

Precautions

■ MOUNTING

- The power supply is designed to dissipate heat through natural air-flow. To improve and maintain the reliability of the power supply over a long period of time, mount the power supply so that air flow takes place around it.
- We recommend mounting the Power Supply to a steel plate.
- When mounting two or more power supplies side-by-side, allow at least 20 mm spacing between them, as shown in the following illustration.
- Forced-air cooling is recommended.



NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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