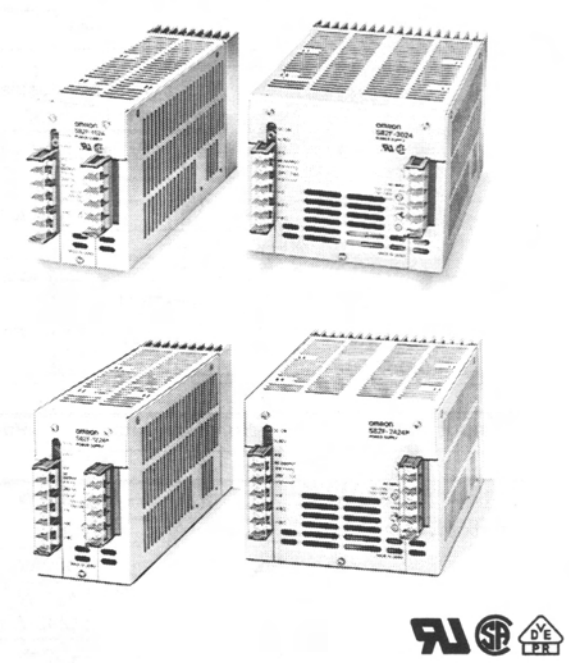
Switching Power Supply

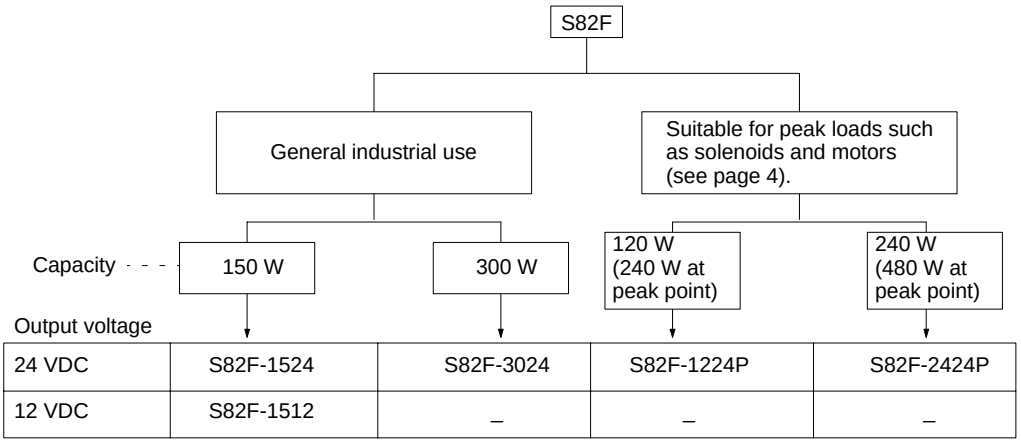
S82F

Easy-to-use Industrial Power Supply with Versatile Functions (S82F); Power Supply Suitable for Peak Loads such as Motors and Solenoids (S82F-P)



- Remote control function incorporated.
- Remote sensing function incorporated (S82F).
- Overcurrent and overvoltage protection functions protect the internal circuitry.
- S82F is VDE, UL, and CSA approved.
  S82F-P is VDE, UL and CSA approved.
- Parallel operation using more than one S82F is possible (S82F).
- Automatically selects either 100 to 120 VAC or 200 to 240 VAC (input voltages).
- Minimum 10-year service life and free-of-charge guarantee period for 3 years.
- Mounting bracket provided.
- Ideal for driving the motors of industrial machines, robots, optical equipment, and cash-exchanging machines (S82F-P).

Ordering Information



Input voltage	No. of outputs	Power ratings	Model	Output (voltage/current)	
				12 V	24 V
100 to 120/200 to 240 VAC (automatically selected)	1	150 W	S82F-1512	13.5 A	---
			S82F-1524	---	7 A
		300 W	S82F-3024	---	14 A
		120 W (240 W at peak point)	S82F-1224P	---	5 A (10 A at peak point)
		240 W (480 W at peak point)	S82F-2424P	---	10 A (20 A at peak point)

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 Corresponding
P: Peak-load corresponding

Specifications

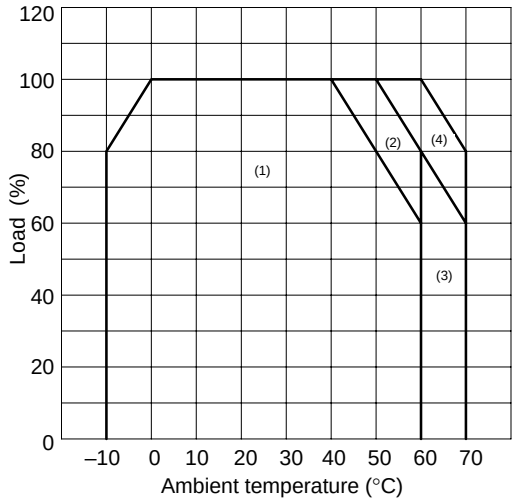
■ Ratings/Characteristics

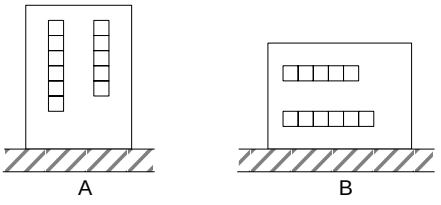
Item			S82F		S82F-P	
			150 W	300 W	120 W (240W at peak point)	240 W (480 W at peak point)
Efficiency (typical)			75% to 80% (12 to 24 V)		83% to 85%	
Life expectancy			10 yrs. min. (Used at 40°C at the rated input with a 50% load)			
Input	Voltage (AC only)		Switchable between 100 V (85 to 132 V) and 200 V (170 to 264 V)			
	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.	1 mA max.	0.5 mA max.	0.5 mA max.
		200 V input	1 mA max.	1 mA max.	1 mA max.	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 function	Overload protection		105% min.(S82F)/210% min. (S82F-P) of rated load current (typical), drop type, automatic reset			
	Overvoltage protection		120% of rated output voltage (typical), shut-off type, reset by input reset			
	Remote sensing		Yes		No	
	Remote control		Yes			
Other	Ambient temperature		Operating: See the derating curve in the *Engineering Data* section. Storage: –20°C to 85°C			
	Ambient humidity		Operating: 30% to 90% Storage: 20% to 95%			
	Dielectric strength		2 k VAC, 50/60 Hz for 1 min (between all inputs and outputs/housing) 500 VDC for 1 min (between all outputs and inputs/housing)		2.5 k VAC, 50/60 Hz for 1 min (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		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. 1402C, VDE0160, VDE0805, EN60950 (IEC950)		UL1012, CSA E.B. 1402C, VDE0160, VDE0805, EN60950 (IEC950)	
	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





Standard (vertical) mounting position

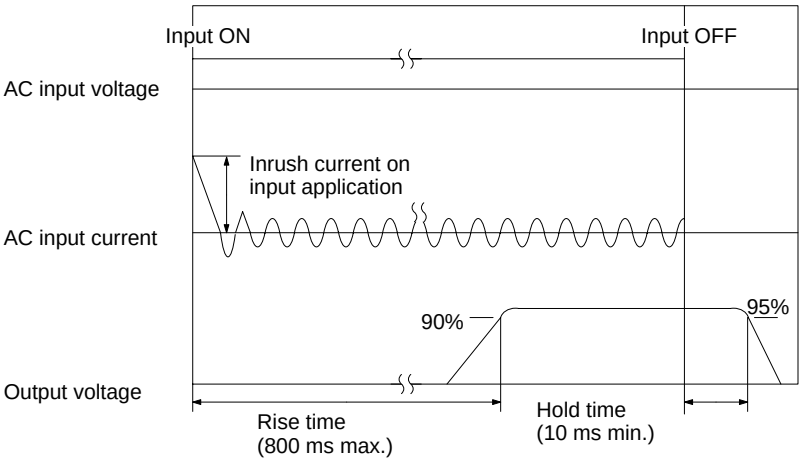
Horizontal mounting position

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

In the case of mounting method A.
Natural air-cooling: (1) + (2)
Forced air-cooling: (1) + (2) + (3) + (4)

In the case of mounting method B.
Natural air-cooling: (1)
Forced air-cooling: (1) + (2) + (3)

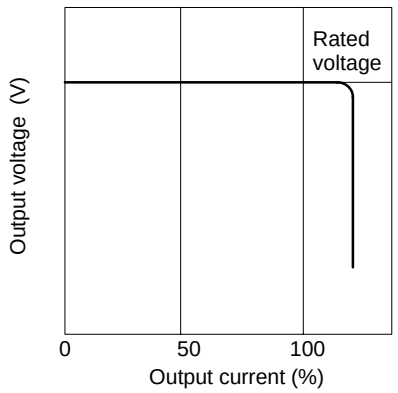
■ Inrush Current, Rise Time, Hold Time



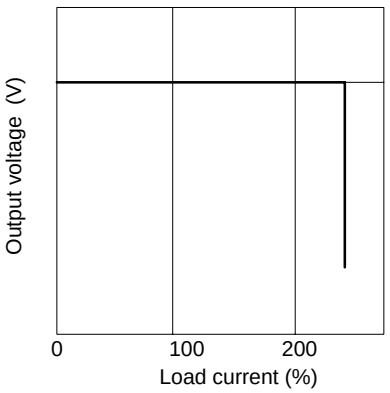
■ Overload Protection

The Power Supply is provided with an overload protection function that protects the load and the Power Supply from possible damage by over-current. When the output current rises above a set value (105% of the rated output current for S82F, and 210% 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.

S82F



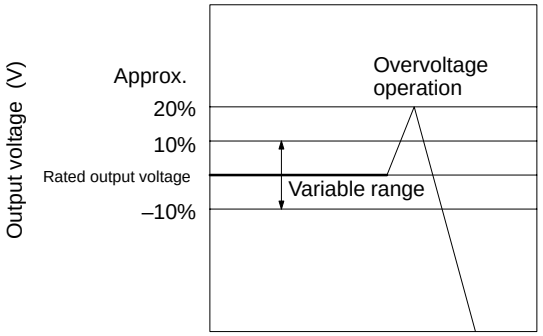
S82F-P



■ 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.

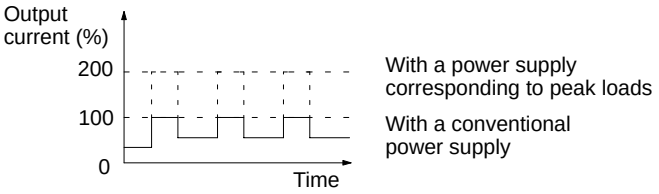
Note: Be sure to turn on the power supply after the cause of the overvoltage output is found and the problem is solved.



Operation

■ Corresponding to Peak Load (S82F-P)

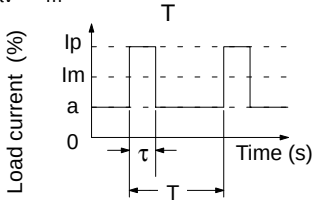
If the load current waveform of the S82F-P is pulse-shaped, the rated capacity of the S82F-P need not be as large as the peak load current. The S82F-P corresponds to the peak load current twice as large as the rated capacity of the S82F-P. This means that the S82F-P is cost- and space-saving and an ideal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



■ Peak-load Current (S82F-P)

A peak load current waveform must satisfy the following condition.

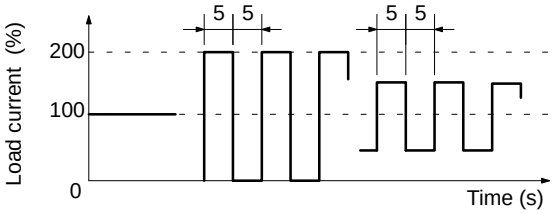
$$I_{av} \geq I_m = \frac{(I_p - a)\,\tau}{T} + a$$



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]

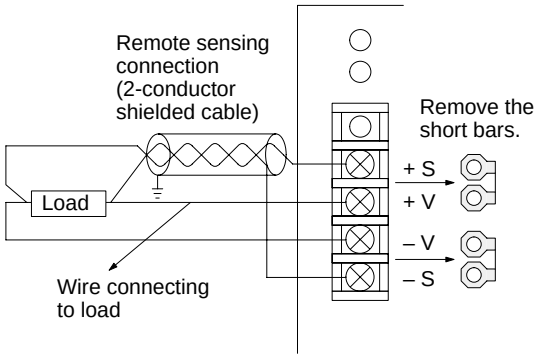
Note: If there is a current flow exceeding the peak current value, the overcurrent protection circuit will work and output voltage will be lowered. If the mean load current continuously exceeds the rated output current, the output will be OFF. If this occurs, turn off the S82F-P for 60 seconds min. and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

Corresponding Waveform Examples



■ Remote Sensing Function (S82F)

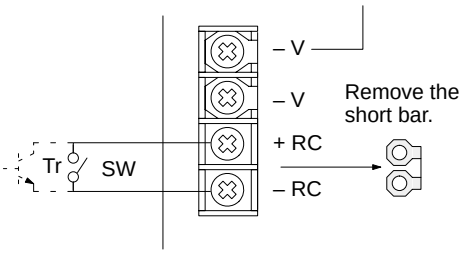
This function corrects a voltage drop in the load wiring. When using the remote sensing function, remove the short bars from the remote sensing terminals as shown in the following diagram.



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

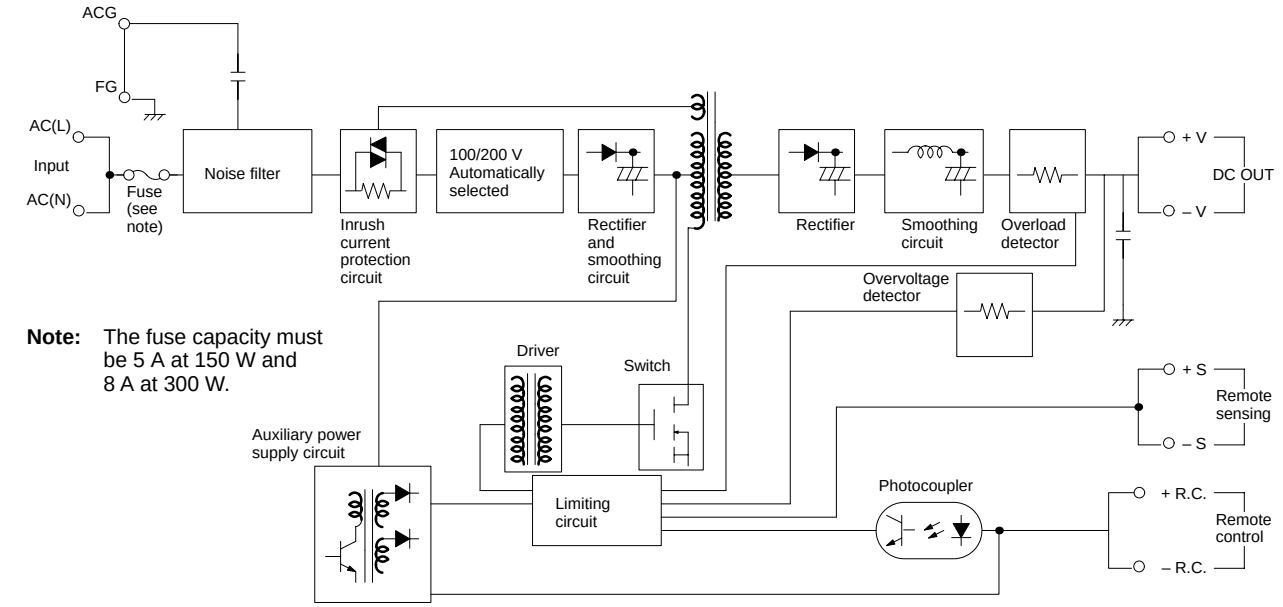
The remote control function makes it possible to turn on or off the output without turning the Power Supply on or off.



Use the Tr with a V_{CE} of 20 V min. and I_C of 5 mA min. The terminal voltage is 0.4 V max. when the output is turned on.

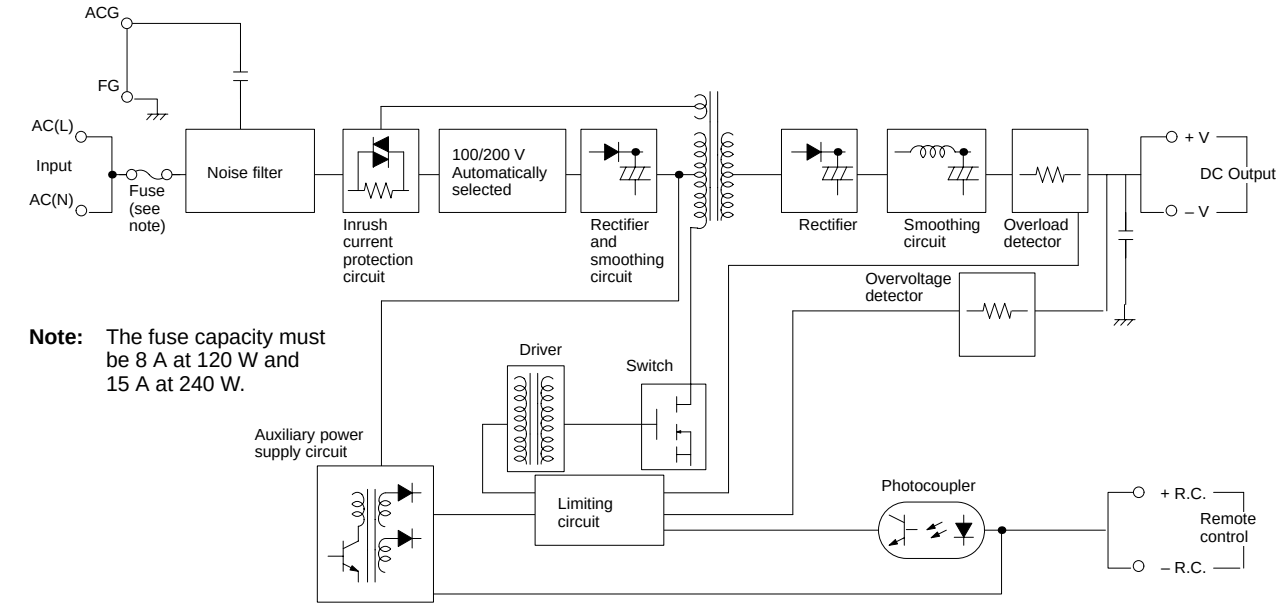
■ Block Diagram

S82F



Note: The fuse capacity must be 5 A at 150 W and 8 A at 300 W.

S82F-P

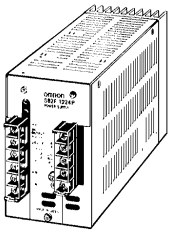


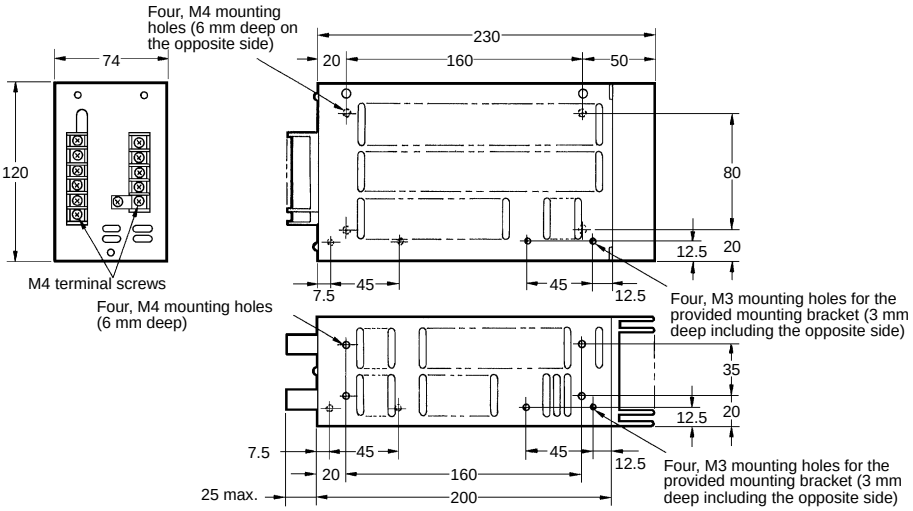
Note: The fuse capacity must be 8 A at 120 W and 15 A at 240 W.

Dimensions

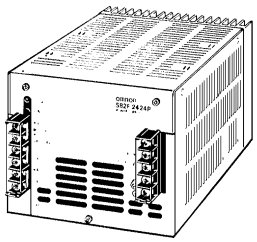
Note: All units are in millimeters unless otherwise indicated.

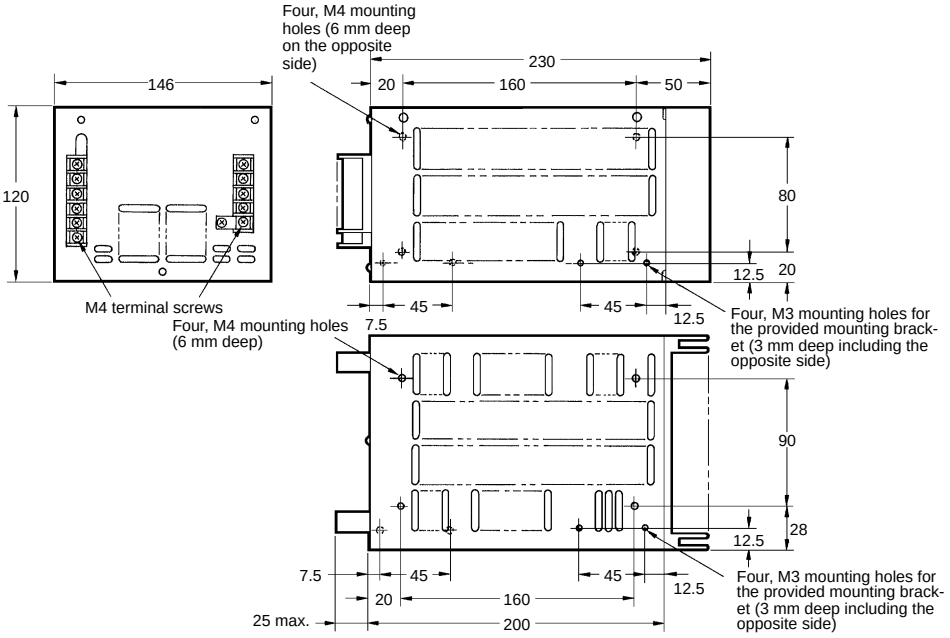
S82F-15□□ (150 W)
S82F-1224P (120 W)





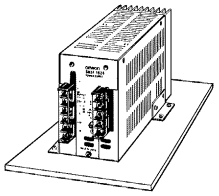
S82F-3024 (300 W)
S82F-2424P (240 W)

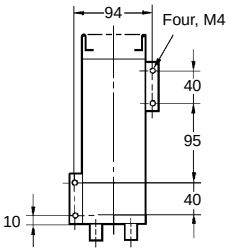


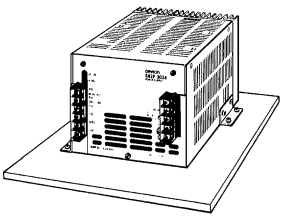


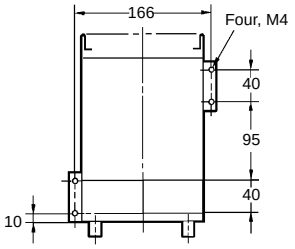
Mounting Bracket

Bottom-mounting

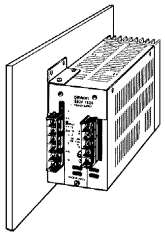


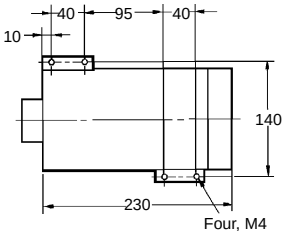


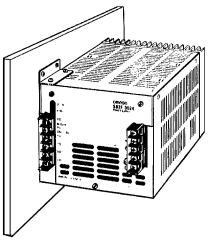


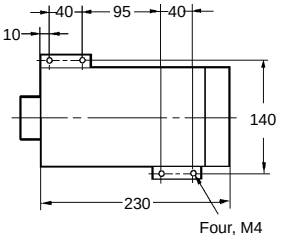


Side-mounting



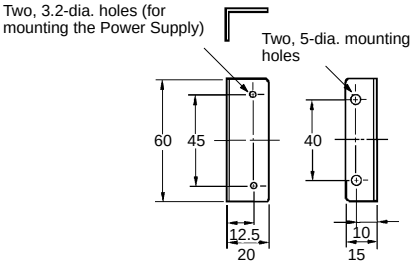






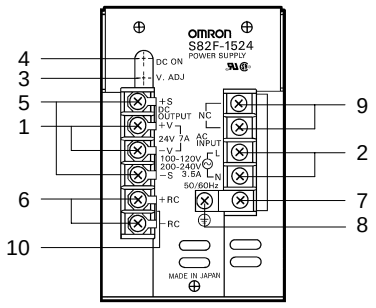
Note: Attach the mounting bracket to the Power Supply and secure it with two screws. Then mount the mounting bracket to the panel.

Mounting Holes

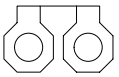


Installation

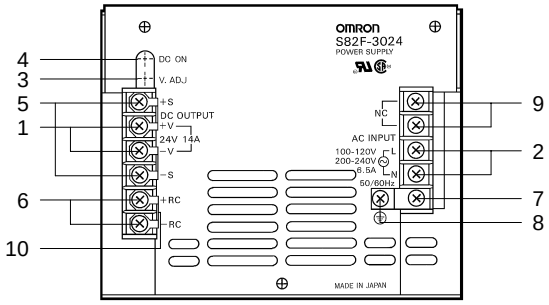
S82F-15□□ (150 W)



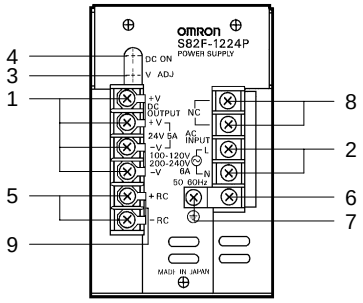
1. **DC Output Terminals:** Connect the load lines to these terminals.
2. **Input Terminals:** Connect the input lines to these terminals.
3. **V.ADJ Adjuster:** Adjusts the output voltage.
4. **Output LED Indicator:** Lights while a Direct Current output (+V, –V) is ON.
5. **Remote Sensing Terminals:** 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**



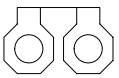
S82F-3024 (300 W)



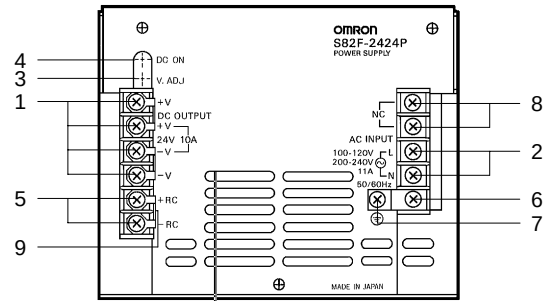
S82F-1224P (120 W)



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 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**



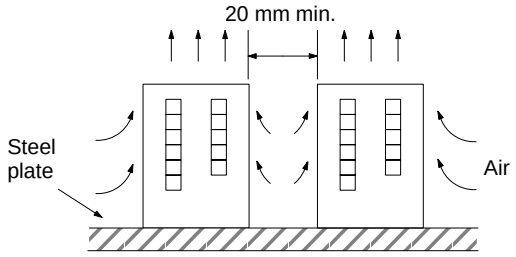
S82F-2424P (240 W)



Precautions

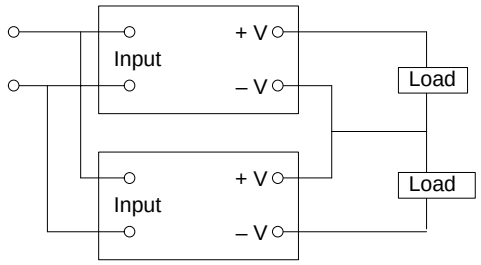
Mounting

To improve and maintain the reliability of the Power Supply over a long period of time, adequate consideration must be given to heat radiation.
The Power Supply is designed to radiate heat by means of natural air-flow. Therefore, mount the Power Supply so that air flow takes place around the Power Supply.
When mounting the Power Supply, mounting it to a steel plate is recommended.
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.



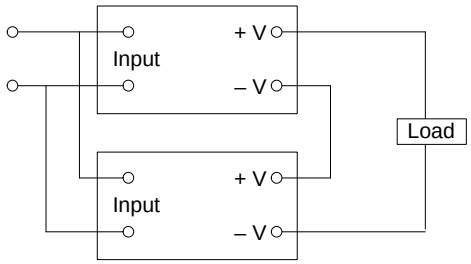
Generating Output Voltage (±)

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 combined in series to double the output voltage as shown below.



Parallel Operation

The S82F Power Supplies can be combined in parallel to increase the output current.
The S82F-P Power Supplies cannot be combined in parallel.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No.T001-E1-3 **In the interest of product improvement, specifications are subject to change without notice.**

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