

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current *1 [A]	Inrush current protection	PCB/Pattern			Series/Parallel operation availability *2	
					Material	Single sided	Double sided	Series operation	Parallel operation
SPLFA30F	Flyback converter	130	0.65	Thermistor	CEM-3	Yes		Yes	No
SPLFA50F	Active filter	60 - 440	0.67	Thermistor	CEM-3	Yes		Yes	No
	Flyback converter	130							
SPLFA75F	Active filter	60 - 440	1.0	Thermistor	CEM-3	Yes		Yes	No
	Flyback converter	130							
SPLFA100F	Active filter	60	1.3	Thermistor	CEM-3	Yes *3	Yes *4	Yes	No
	Forward converter	140							
SPLFA150F	Active filter	60	2.0	Thermistor	CEM-3	Yes *3	Yes *4	Yes	No
	Forward converter	140							

*1 The value of input current is at ACIN 100V and rated load.

*2 Refer to Instruction Manual 2.

*3 Output side PCB.

*4 Built-in power supply PCB.

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1 Function

1.1 Input voltage range

- Input voltage range of the power supplies is from AC85V to AC264V (please see SPECIFICATIONS for details).
- In cases that conform with safety standard DEN-AN, input voltage range is AC100-AC120V (50/60Hz).
- If input value doesn't fall within above range, a unit may not operate in accordance with specifications and/or start hunting or fail. If you need to apply a square waveform input voltage, which is commonly used in UPS and inverters, please contact us.
- When the input voltage changes suddenly, the output voltage accuracy might exceed the specification. Please contact us.

● SPLFA30F

- A power factor improvement circuit (active filter) is not built-in. If you use multiple units for a single system, standards for input harmonic current may not be satisfied. Please contact us for details.

● SPLFA30F, SPLFA50F, SPLFA75F, SPLFA100F, SPLFA150F

- Operation stop voltage is set at a lower value than that of a standard version (derating is needed).
- Use Conditions

SPLFA30F	10W
SPLFA50F	15W
SPLFA75F	25W
SPLFA100F	30W
SPLFA150F	50W
Input AC50V	
Duty 1s/30s	

*Please avoid using continuously for more than 1 second under above conditions. Doing so may cause a failure.

1.2 Inrush current limiting

- An inrush current limiting circuit is built-in.
- If you need to use a switch on the input side, please select one that can withstand an input inrush current.

● SPLFA30F, SPLFA50F, SPLFA75F, SPLFA100F, SPLFA150F

- Thermistor is used in the inrush current limiting circuit. When you turn the power ON/OFF repeatedly within a short period of time, please have enough intervals so that a power supply cools down before being turned on.

1.3 Overcurrent protection

- An overcurrent protection circuit is built-in and activated at 105% of the rated current or 101% of the peak current. A unit automatically recovers when a fault condition is removed. Please do not use a unit in short circuit and/or under an overcurrent condition.
- Intermittent Operation Mode
Intermittent operation for overcurrent protection is included in a part of series. When the overcurrent protection circuit is activated and the output voltage drops to a certain extent, the output becomes intermittent so that the average current will also decrease.

1.4 Overvoltage protection

- An overvoltage protection circuit is built-in. If the overvoltage protection circuit is activated, shut down the input voltage, wait more than 3 minutes and turn on the AC input again to recover the output voltage. Recovery time varies depending on such factors as input voltage value at the time of the operation.

1.5 Thermal protection

● SPLFA100F, SPLFA150F

- A thermal protection circuit is built-in.
The thermal protection circuit may be activated under the following conditions and shut down the output.
 - ① When a temperature continue to exceed the values determined by the derating curve.
 - ② When a current exceeding the rated current is applied.
 - ③ When convection stops.
 If the thermal protection circuit is activated, shut off the input voltage and eliminate all the overheating conditions. To recover the output voltage, have enough time to cool down the unit before turning on the input voltage again.

1.6 Isolation

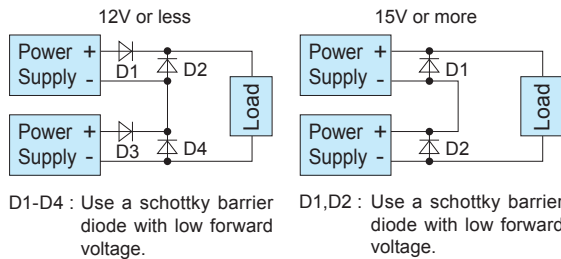
- For a receiving inspection, such as Hi-Pot test, gradually increase (decrease) the voltage for the start (shut down). Avoid using Hi-Pot tester with the timer because it may generate voltage a few times higher than the applied voltage, at ON/OFF of a timer.

2 Series Operation and Parallel Operation

2.1 Series Operation

● SPLFA30F, SPLFA50F, SPLFA75F

■ Series operation is available by connecting the outputs of two or more power supplies with the same output voltage, as shown below. Output current in series connection should be lower than the lowest rated current in each unit.



D1-D4 : Use a schottky barrier diode with low forward voltage.
D1,D2 : Use a schottky barrier diode with low forward voltage.

Fig.2.1 Examples of connecting in series operation (a)

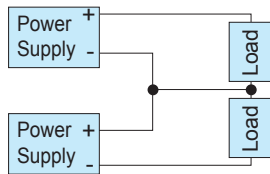


Fig.2.2 Examples of connecting in series operation (b)

● SPLFA100F, SPLFA150F

■ You can use a power supply in series operation. The output current in series operation should be lower than the rated current of a power supply with the lowest rated current among power supplies that are serially connected. Please make sure that no current exceeding the rated current flows into a power supply.

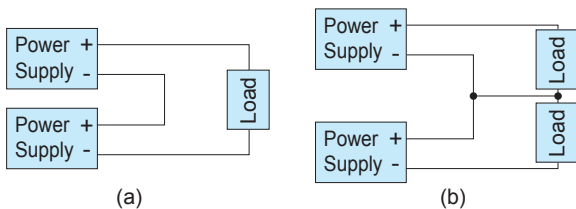


Fig.2.3 Examples of connecting in series operation

2.2 Parallel Operation

- Parallel operation is not possible.
- Redundancy operation is available by wiring as shown below.

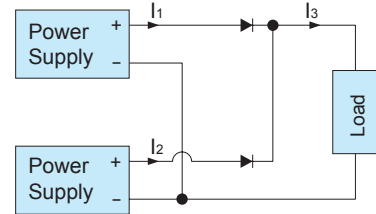


Fig.2.4 Example of redundancy operation

- Even a slight difference in output voltage can affect the balance between the values of I_1 and I_2 . Please make sure that the value of I_3 does not exceed the rated current of a power supply.

$$I_3 \leq \text{the rated current value}$$

3 Assembling and Installation Method

3.1 Derating

- The operative ambient temperature is different mounting position. Derating curve is shown below.
- Note: In the hatched area, the specification of Ripple, Ripple Noise is different from other area.

● SPLFA30F

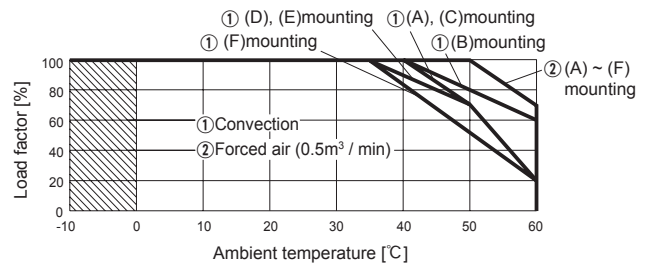


Fig.3.1 Ambient temperature derating curve

● SPLFA50F

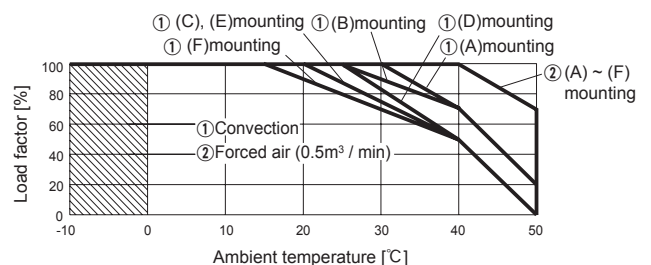


Fig.3.2 Ambient temperature derating curve

● SPLFA75F

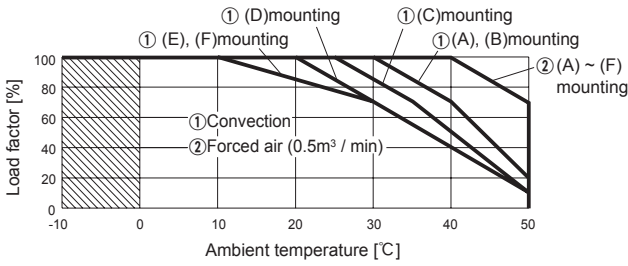


Fig.3.3 Ambient temperature derating curve

● SPLFA100F

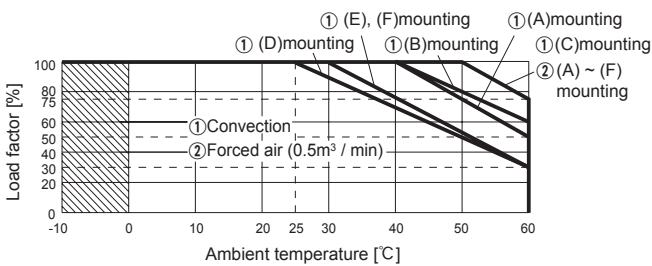


Fig.3.4 Ambient temperature derating curve

● SPLFA150F

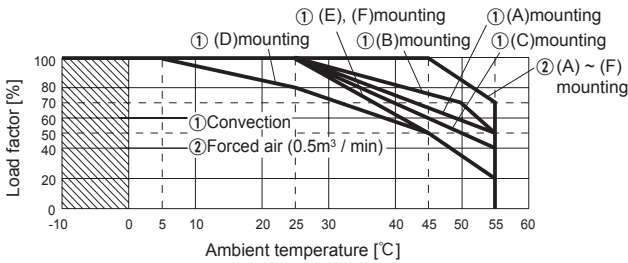


Fig.3.5 Ambient temperature derating curve

■ Derating curve depending on input voltage

Derating curve depending on input voltage is shown in Fig.3.4.

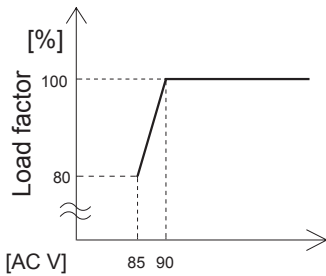


Fig.3.6 Derating curve depending on input voltage

■ Mounting method

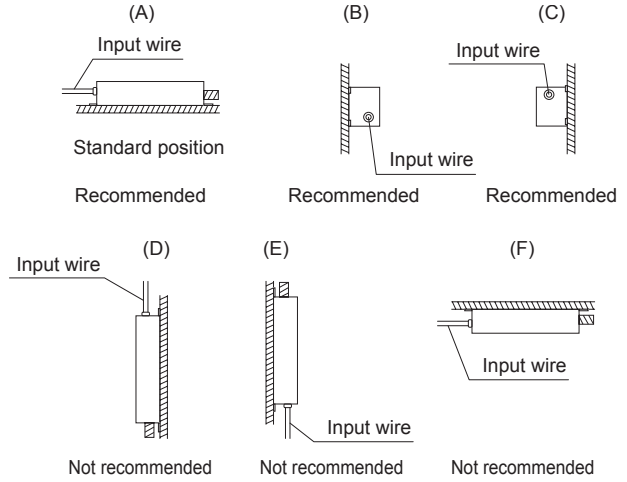


Fig.3.7 Mounting method

*Followings should be prohibited because it may cause failure, malfunction, smoke or fire.

- ① Continuous overload
- ② The input voltage is continuous less than AC85V or exceed AC264V.
- ③ More than rated output voltage is applied to output terminal of power supply.
- ④ When the current and the temperature which deviates from the derating characteristic shown in Fig.3.1 to Fig.3.5.

3.2 Installation method

■ Installation Method

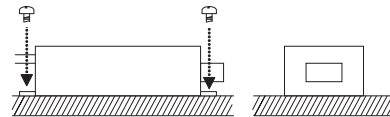


Fig.3.8 Installation Method

* Please fix the power supply with screws at installation.

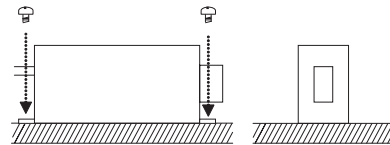


Fig.3.9 Installation Method

* Please fix the power supply with screws at installation.
* Derating curve changes in the case of attachment of Fig.3.9. Please contact us for details.

3.3 Clearance Information

- 100mm or more top and side clearance from the unit to keep proper ventilation.

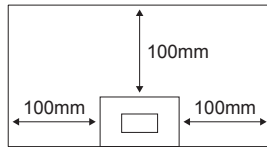


Fig.3.10 Clearance from the unit

4 Option and Others

4.1 Outline of options

● -C

- Option -C units have coated internal PCB for better moisture resistance.

4.2 Others

- While turning on the electricity, and for a while after turning off, please don't touch the power supply because that may be hot.
- When a mass capacitor is connected with the output terminal (load side), the output might become the stop or an unstable operation. Please contact us for details when you connect the capacitor.