

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A] *1	Inrush current protection circuit	PCB/Pattern			Series/Parallel operation availability	
					Material	Single sided	Double sided	Series operation	Parallel operation
SNTUNS50F	Active filter	80-600	0.67	Thermistor	FR-4		Yes	Yes	*2
	Flyback converter	100-300							
SNTUNS100F	Active filter	80-600	1.3	Thermistor	FR-4		Yes	Yes	*2
	Forward converter	300							

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

*2 Refer to instruction manual.

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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).
- To comply with safety standards, input voltage range is AC100-AC240V (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.

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.
- 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 .
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

- The overvoltage protection circuit is built-in. The 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.

Remarks :

Please avoid applying a voltage exceeding the rated voltage to an output terminal. Doing so may cause a power supply to malfunction or fail. If you cannot avoid doing so, for example, if you need to operate a motor, etc., please install an external diode on the output terminal to protect the unit.

1.5 Thermal protection

- When the power supply temperature is kept above 100C, the thermal protection will be activated and simultaneously shut down the output.
When the thermal protection is activated, shut off the input voltage and eliminate all the overheating conditions. To recover the output voltage, keep enough time to cool down the power supply before turning on the input voltage again.

1.6 Output voltage adjustment range

- To increase an output voltage, turn a built-in potentiometer clockwise.
To decrease the output voltage, turn it counterclockwise.

1.7 Output ripple and ripple noise

- Output ripple noise may be influenced by measurement environment, measuring method fig 1.1 is recommended.

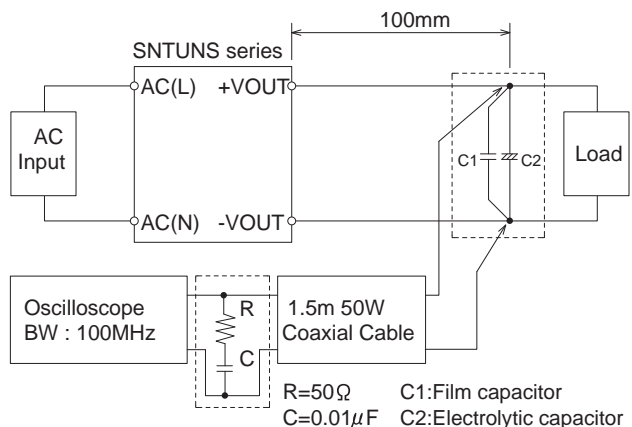


Fig.1.1 Measuring method of Ripple and Ripple Noise

1.8 Isolation

- When you run a Hi-Pot test as receiving inspection, gradually increase the voltage to start. When you shut down, decrease the voltage gradually by using a dial. Please avoid a Hi-Pot tester with a timer because, when the timer is turned ON or OFF, it may generate a voltage a few times higher than the applied voltage.

2 Series Operation and Parallel Operation

2.1 Series Operation

■ 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 the power supplies that are serially connected. Please make sure that no current exceeding the rated current flows into a power supply.

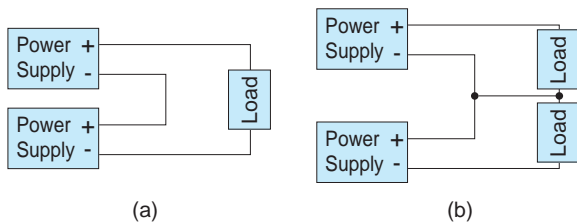


Fig.2.1 Examples of connecting in series operation

2.2 Parallel Operation

■ There is no current balance function. When operating in parallel, such as diode-OR, please use on the output voltage was adjusted enough to balance the current. Exceeds the rated output current, the output is shut down. ■ Redundancy operation is available by wiring as shown below.

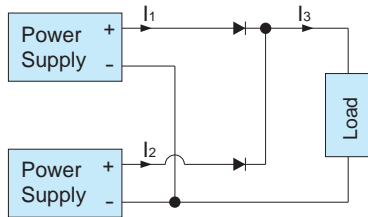


Fig.2.2 Example of connecting in redundancy operation

■ 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.

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

3 Assembling and Installation Method

3.1 Installation method

- The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. The temperature around each power supply should not exceed the temperature range shown in derating curve.
- In case of metal chassis, keep the distance between $d1$ for to insulate between lead of component and metal chassis. If it is less than $d1$ insert the insulation sheet between power supply and metal chassis.
- Avoid placing the AC input line cable underneath the unit. It will increase the line conducted noise. Make sure to leave an ample distance between the cable pattern layout and the unit. Also avoid placing the DC output line cable underneath the unit because it may increase the output noise. Lay out the cable away from the unit.
- Avoid placing the signal line pattern layout underneath the unit because the power supply might become unstable. Lay out the pattern away from the unit.

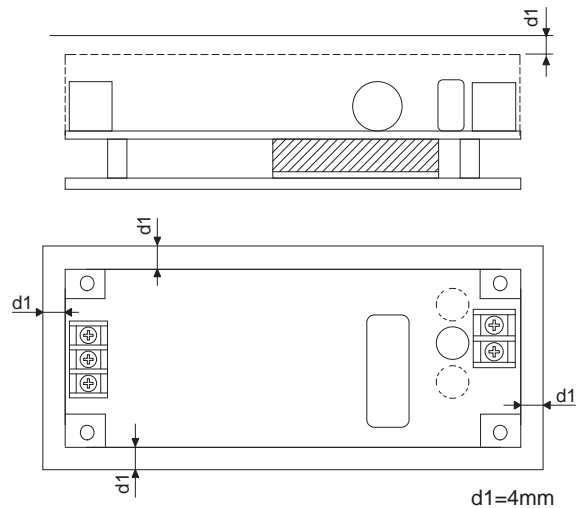


Fig.3.1 Mounting method

3.2 Input voltage derating curve

■ Input voltage derating curve is shown in Fig.3.2.

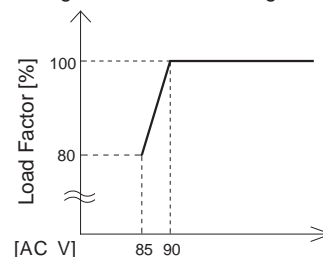


Fig.3.2 Derating curve depending on input voltage

3.3 Output derating curve

- Use with the conduction cooling (e.g. heat radiation by conduction from the aluminum base plate to the attached heat sink).
 - Fig.3.3, shows the derating curve based on the aluminum base plate temperature. In the hatched area, the specification of Ripple and Ripple Noise is different from other areas.
 - Please measure the temperature on the aluminum base plate edge side (Point A).
 - Please consider the ventilation to keep the temperature on the PCB (Point B) less than the temperature of Fig.3.4.
- Contact us for more information on cooling methods.

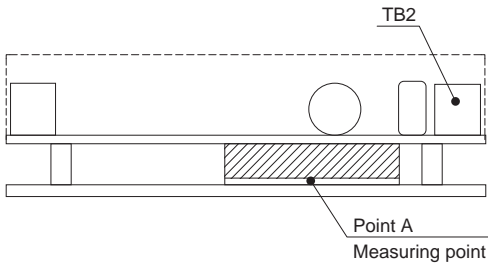
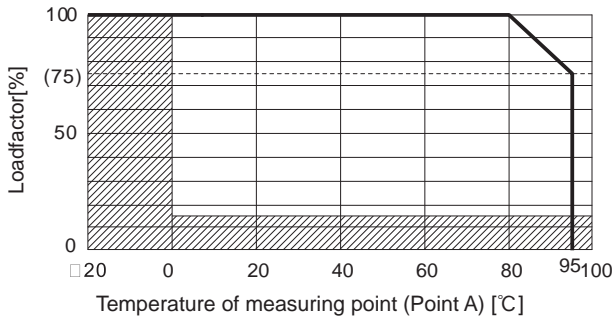


Fig.3.3 Derating curve (Point A)

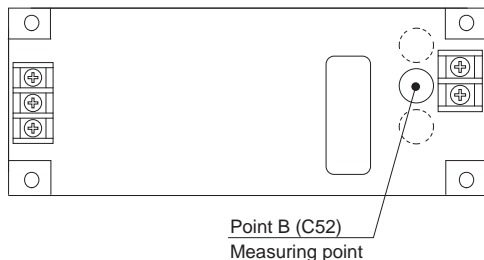
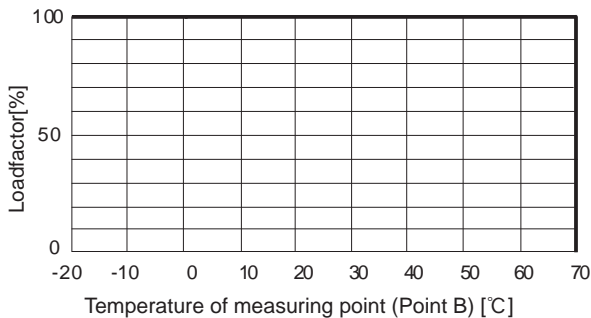


Fig.3.4 Derating curve (Point B)

4 Options

4.1 Outline of Options

- * Please inquire us for details of specifications and delivery timing.
- * You can combine multiple options. Some options, however, cannot be combined with other options. Please contact us for details.

● -C

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

● -J

- Option -J units have J.S.T connectors instead of a terminal block.
- Dedicated harnesses are available for your purchase. Please see Optional Parts for details.
- Please contact us for details about appearance.
- Please do not apply more than 5A per 1 pin.

(1) Matching J.S.T Connectors and Terminals for SNTUNS50F

I/O Connector	Matching Connector	Terminal
CN1	B3P5-VH	VHR-5N
		Chain : SVH-21T-P1.1 Loose : BVH-21T-P1.1
CN2	B4P-VH	VHR-4N
		Chain : SVH-21T-P1.1 Loose : BVH-21T-P1.1

(Mfr : J.S.T.)

(2) Matching J.S.T Connectors and Terminals for SNTUNS100F

I/O Connector	Matching Connector	Terminal
CN1	B3P5-VH	VHR-5N
		Chain : SVH-21T-P1.1 Loose : BVH-21T-P1.1
CN2	B8P-VH	VHR-8N
		Chain : SVH-21T-P1.1 Loose : BVH-21T-P1.1

(Mfr : J.S.T.)

● -K (SNTUNS100F05 only)

- Option -K units have a remote sensing function. Please note that this option is not available for all models.
- Please contact us for details.