## Function

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1.1 Input Voltage Range

- The rated input voltage range of the power supply is AC90-132V/AC180-264V (See SPECIFICATIONS for more details).
- To comply with the safety standards, use the power supply with the input voltage range of AC90-132V/AC180-264V (50/60Hz).
- If the input voltage is outside the rated range, the power supply may not operate in accordance with the specifications and/or start hunting or fail.
- If the input voltage changes suddenly, the output voltage may go out of the specifications. Consult us for more details.

1.2 Inrush Current Limiting

- Inrush current protection is built-in.
- If you need to use a switch on the input side, select one that can withstand an input inrush current.
- Thermistor is used in the inrush current limiting circuit. When you turn the power supply on and off repeatedly within a short period of time, have enough intervals for the power supply to cool down before being turned on again.

1.3 Overcurrent Protection

- Overcurrent protection is built-in. It works at more than rated output current. The power supply recovers automatically when the overcurrent condition is removed. Do not use the power supply under a short-circuit or overcurrent condition.
- Intermittent Operation Mode
  When overcurrent protection works and the output voltage drops, the output voltage goes into intermittent mode so that the average output current can decrease.

1.4 Overvoltage Protection

- Overvoltage protection is built-in. If overvoltage protection works, shut down the input voltage, wait more than 3 minutes, and turn on the input voltage again to recover the output voltage. The recovery time varies depending on the input voltage, etc.

  Remarks:
  Avoid applying an overrated voltage to the output terminals as it may cause the power supply to malfunction or fail. In case the above-mentioned situation is expected in operating such loads as a motor, for example, consult us for advice.

1.5 Output Ripple Noise

- Output ripple noise may be influenced by the measuring environment.
  The measuring method shown in Fig. 1.1 is recommended.

1.6 Output Voltage Adjustment

- The output voltage can be adjusted within the specified range by turning the built-in potentiometer clockwise (up) or counterclockwise (down).
- Please operate the potentiometer slowly.

1.7 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.

1.8 Low Power Consumption

- These power supplies are designed for low power consumption at no load.
- When the load factor is low (Io:0-20%typ), the switching power loss is reduced by burst operation, which will cause ripple and ripple noise to go beyond the specifications.
- Ripple noise during burst operation will change depending on the input voltage and the output current. Consult us for advice on how to reduce ripple noise.
- When there is a need to measure the stand-by power consumption, measure it by using the average mode of the tester. The measuring environment may influence the result. Consult us for more details.
2 Parallel Operation

- Redundant operation is possible by wiring as shown below.

3 Assembling and Installation Method

3.1 Installation Method

- Do not insert a screw more than 4mm away from the outside of a power supply to keep enough insulation distance between the screw and internal components.
- In order to withstand vibrations and impact, support which is shown in Figure 3.2 is necessary.

![Diagram of Mounting Screw M3](image)

- If you use two or more power supplies side by side, please keep a sufficient distance between them to allow enough air ventilation.
- Ambient temperature around each power supply should not exceed the temperature range shown in the derating curve.

![Diagram of Installation method](image)

3.2 Derating

- Input Voltage Derating Curve
  The input voltage derating curve is shown in Fig. 3.3.

![Input voltage derating curve](image)

- Ambient Temperature Derating Curve
  The derating curves by the ambient temperature are shown in Fig. 3.4.
  - The specifications of ripple and ripple noise change in the shaded area.

![Ambient temperature derating curve](image)

3.3 Expected Life and Warranty

3.3.1 Expected Life
The expected life of the power supply is shown below.

<table>
<thead>
<tr>
<th>Mounting Method</th>
<th>Cooling Method</th>
<th>Average ambient temperature</th>
<th>Expected lifetime [years]</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Convection</td>
<td>$T_a = 30 \degree C$</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_a = 40 \degree C$</td>
<td>3</td>
</tr>
</tbody>
</table>

4 Ground

- When installing the power supply, make sure the FG terminal and the chassis (at more than 2 places) are connected to the safety earth ground.
5 Others

- Note that the case of the power supply remains hot for a while after it is turned off.
- If large capacitors are connected to the output terminals (load side), the output voltage may stop or become unstable. Consult us for advice.
- If the power supply is turned off at no load, the output voltage remains for a few minutes as the power supply is designed for low internal power consumption. Be careful of electrical shock at the time of maintenance.