**Features**
- DIN rail type mount and screw mount methods
- Efficient power conversion
  - high conversion efficiency up to 92% with LLC circuit (SPB-240)
  - stable power supply with minimal noise and ripple
- Space efficient design
  - slim and compact size for maximum space efficiency
  - uniform depth size (except SPB-015/030) for neat and tidy installation
- Safety and user-friendly features
  - terminal protection cover (SPB-060/120/180/240)
  - easy wiring with rising clamp terminal (SPB-015/030)
  - inrush current prevention, output overcurrent prevention, output overvoltage prevention, output short-circuit protection, circuit overheating protection
  - low output voltage indicator (red LED), output indicator (green LED)
- Output power: 15W, 30W, 60W, 120W, 180W, 240W

**Ordering Information**

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<th>SPB</th>
<th>120</th>
<th>24</th>
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**Specifications**

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<td>Ripple &amp; Ripple noise</td>
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Please read "Safety Considerations" in operation manual before using.

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<tr>
<th>Item</th>
<th>Voltage</th>
<th>Power factor</th>
<th>Efficiency</th>
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<tr>
<td>Input characteristic</td>
<td>5VDC</td>
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<tr>
<td>Output</td>
<td>120W</td>
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<td>180W</td>
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<td></td>
<td>240W</td>
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</tbody>
</table>

*1: For 100% load.
*2: The output voltage adjuster (V. ADJ) should be used within voltage adjustment range.
*3: It is for the rated input voltage 100-240VAC (85-264VAC), and 100% load.
*4: It is for the rated input voltage 100-240VAC.
### Specifications

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<td>0.7±10%</td>
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</table>

※5: Refer to ‘Output Derating Curve by Ambient Temperature’.
※6: The weight includes packaging. The weight in parenthesis is for unit only.
※7: Environment resistance is rated at no freezing or condensation.

### Output Derating Curve by Ambient Temperature

![Output Derating Curve by Ambient Temperature](image)

### Over-Heating Protection

If the inner temperature of the switching element is around 140°C by overheat, it stops switching operation and becomes open state. Output voltage is not output.

### Installation

#### DIN rail mounting

- **Mounting to DIN rail**
  - Put the unit on the part ① of the rail before press it to the direction ②.

- **Removing from DIN rail**
  - Put a screw driver into the part ③ before push it downward.

※When mounting this unit on the rail, place the unit at least 30mm above from the floor to remove it easily.
SPB Series

Block Diagram

- **SPB-015/030/060 Series**

```
Input 100-240VAC 50/60Hz
AC1(L) → Input/Noise filter → Inrush current limit circuit → Rectifier circuit → Output
AC1(N) → F.G. → Rectifier circuit → Output
```

- **SPB-120 Series**

```
Input 100-240VAC 50/60Hz
AC1(L) → Input/Noise filter → Rectifier circuit → Power factor correction circuit → Inrush current limit circuit → Rectifier circuit → Output
AC1(N) → F.G. → Control circuit → Rectifier circuit → Output
```

- **SPB-180/240 Series**

```
Input 100-240VAC 50/60Hz
AC1(L) → Input/Noise filter → Rectifier circuit → Power factor correction circuit → Inrush current limit circuit → Rectifier circuit → Output
AC1(N) → F.G. → Control circuit → Rectifier circuit → Output
```

Wiring Diagram/Unit Description

- **SPB-015/030 Series**

```
1. Output power [+V] terminal
2. Output power [-V] terminal
3. Input power [L] terminal
4. Input power [N] terminal
5. Frame ground [F.G.] terminal
```

- **Unit Description**
  A. Output (DC ON) indicator (green)
  B. Output low voltage (DC LOW) indicator (red)
  C. Output voltage adjuster (V.ADJ)

- **SPB-060/120/180/240 Series**

```
1. Output power [+V] terminal
2. Output power [-V] terminal
```

※SPB-015/060 Series has an output power [+V] terminal (1) and an output power [-V] terminal (2).
DIN Rail Mount Type Switching Mode Power Supply

**Dimensions**

- **SPB-015 Series**
  - Dimensions
  - **SPB-030 Series**
  - **SPB-060 Series**
  - **SPB-120/180 Series**
  - **SPB-240 Series**

(A) Photoelectric Sensors
(B) Fiber Optic Sensors
(C) Door/Area Sensors
(D) Proximity Sensors
(E) Pressure Sensors
(F) Rotary Encoders
(G) Connectors/Connector Cables/Sensor Distribution Boxes/Sockets
(H) Temperature Controllers
(I) SSRs/Power Controllers
(J) Counters
(K) Timers
(L) Panel Meters
(M) Tacho/Speed/Pulse Meters
(N) Display Units
(O) Sensor Controllers
(P) Switching Mode Power Supplies
(Q) Stepper Motors & Drivers & Controllers
(R) Graphic/Logic Panels
(S) Field Network Devices
(T) Software
Proper Usage

- Cautions for operating
  - This product does not have the function for parallel or series operation.
  - The output current must be used within the rated specification.
  - If over-current is applied to the product, over-current protection is operating. It causes shorten the life cycle of the product.
  - The output voltage must be used within the rated output specification.
  - For the product, which has the control function for over-voltage, if making the output voltage adjuster (V.ADJ) to over rated voltage, the function starts to work.
  - This product has the function of over-heating protection.
  - The over-heating protection operates when the product has over-heating condition.
  - The product normally operates if the load is removed for over 5 minutes.
  - In case of the SPB-015/030/060, it does not have the harmonics suppression and power factor improvement circuit.
  - To improve harmonics suppression and power factor, install the additional device.
  - In case of the SPB-015/030/060, it uses condenser rectification, and power factor is within 0.4 to 0.6 range. To use a cabinet panel or an electric transformer, select input power capacity of this product as below formula.

\[
\text{Input apparent power [VA]} = \frac{\text{Output active power [W]}}{\text{Power factor} \times \text{Efficiency}}
\]

- This product is provided with a noise filter, but noise is variable according to operating conditions such as installation environment and wiring.
- When the inner fuse is damaged, replace the fuse of same specification.

- Cautions for mounting
  - Mount this product on the surface of metal panel vertically for the reliability.
  - Please mount this product at a well-ventilated place in order to increase the heat radiation efficiency.
  - Mounting
  When installing more than two power supplies, min. 20mm distance is required to radiate heat effectively.
  Assure min. 75mm distance of the upper or the lower product and mount the products as following figure.

- Dielectric or insulation resistance test when this unit is installed in the control panel.
- Separate the unit completely from a control panel circuit.
- Short all terminals of the unit.
- Caution for connecting the input power terminal
  - Connect input line (AC) to the input terminal correctly.
  - When you connect this to the other terminal, it may cause damage to the power supply.
- Do not use the unit in the following environments.
  - Environments with high vibration or shock.
  - Environments with strong alkalies or acids.
  - Environments with exposure to direct sunlight.
  - Near machinery which produce strong magnetic force or electric noise.
- This unit may be used in the following environments.
  - Indoors
  - Pollution degree 2
  - Installation category II