2. Electrical Characteristics (Ta = 25°C)

<table>
<thead>
<tr>
<th>Item</th>
<th>SSNP-15F</th>
<th>SSNP-25F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Impedance</td>
<td>250 Ω</td>
<td>250 Ω</td>
</tr>
<tr>
<td>Input Current Range</td>
<td>4 to 20 mA DC</td>
<td>4 to 20 mA DC</td>
</tr>
<tr>
<td>Load Voltage Range</td>
<td>85 to 204 V AC rms (Sine wave)</td>
<td>85 to 204 V AC rms (Sine wave)</td>
</tr>
<tr>
<td>Load Current Range</td>
<td>100 mA AC rms (at max. load current)</td>
<td>100 mA AC rms (at max. load current)</td>
</tr>
<tr>
<td>On State Voltage Drop</td>
<td>Below 0.5 V DC</td>
<td>Below 0.5 V DC</td>
</tr>
<tr>
<td>Off State Leakage Current</td>
<td>Below 100 mA AC rms</td>
<td>Below 100 mA AC rms</td>
</tr>
<tr>
<td>Power Adjustment Range</td>
<td>0 to 95%</td>
<td>0 to 95%</td>
</tr>
<tr>
<td>Load Voltage Frequency</td>
<td>50 Hz to 60 Hz Auto-change</td>
<td>50 Hz to 60 Hz Auto-change</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>5.1 mA rms (100 V rms, 50 Hz)</td>
<td>7.0 mA rms (100 V rms, 50 Hz)</td>
</tr>
<tr>
<td>Resonance Time</td>
<td>Ramp-up/Ramp-down Time Approx. 0.5 sec to 15 sec</td>
<td>Ramp-up/Ramp-down Time Approx. 0.5 sec to 15 sec</td>
</tr>
</tbody>
</table>

3. Input current vs. Output power

4. Load mitigation

1. Ratings

<table>
<thead>
<tr>
<th>Item</th>
<th>SSNP-15F</th>
<th>SSNP-25F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Input Current</td>
<td>24 mA DC</td>
<td>24 mA DC</td>
</tr>
<tr>
<td>Max. Load Voltage</td>
<td>284 V AC rms</td>
<td>284 V AC rms</td>
</tr>
<tr>
<td>Max. Load Current</td>
<td>15 A AC rms</td>
<td>25 A AC rms</td>
</tr>
<tr>
<td>1 Cycle Surge Current</td>
<td>146 A</td>
<td>250 A</td>
</tr>
<tr>
<td>Isolation Resistance</td>
<td>100 MΩ and above (500 V DC) *</td>
<td>100 MΩ and above (500 V DC) *</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>2000 V AC rms/min *</td>
<td>2000 V AC rms/min *</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-20 to +85 °C (No icing and Condensation)</td>
<td>-30 to +75 °C (No icing and Condensation)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-30 to +75 °C (No icing and Condensation)</td>
<td>-30 to +75 °C (No icing and Condensation)</td>
</tr>
</tbody>
</table>

* Input ((c), (d)); Ext. Volume ((i), (f)); Output ((i), (f)); Power Source ((i)) - Between Cases

4. Load mitigation

1. Risk of electric shock
   - Do not touch the terminal immediately after it is switched on. It may cause an electric shock by electricity charged in the condenser.

2. Risk of fire or fire burn
   - Do not touch the heat sink while operating or immediately after it is switched off.
   - Do not use the product near inflammable gas or explosive gas.
   - Keep combustibles away from the product.
   - Wiring to terminals must be screwed with adequate torque. (If it may cause excessive heat generation on terminals.)

3. Others
   - Use the unit within the specified ratings.
   - Do not drop the product on any of your body parts.

The following accessories may be available from us.

Accessories      Model code
External Volume  Complete with Volume, Scale plate and Knob.  NPZP-501
(Rest) 660CF15UL  For 15A
(Rest) 660CF25UL  For 25A
Rapid blow fuse  For 15A
Fuse holder      For 25A
Fuse holder cover* HK1038UL
* Same fuse holder/cover for 15A, 25A

SAFETY INSTRUCTION

1. Risk of electric shock
   - Do not soak the product in water, washing liquid or chemicals.
   - Do not put any metallic objects or conducting materials inside the product.
   - Do not overhaul or remodel them.
   - Do not drop the product, give vibration or physical shock.
   - Do not drop the product, give vibration or physical shock.
   - Use the power source within the rated frequency range.
2. Risk of fire or fire burn
   - Using the product under the following condition may cause failure, malfunction or degradation.
   - Exposed to water, oil or chemicals.
   - Exposed to corrosive gas.
   - In the high heat or high humidity.
   - Exposed to dust or metal powders.
   - As the product self-heats while operating, heat sink is attached as a radiator. If the heat convection is obstructed by surrounding equipment and parts, it will lead to possible cause of fire or damage by excessive heat generation.
   - Check the polarity of wires and apply adequate voltage.
   - The load should be within the rated range.
1. Dimensions and Mounting
This product can be mounted on a DIN-rail and the wall of a panel.

(1) Dimensions

(2) Panel Processing

b) Processing of the tip

(3) Torque rate against panel

(4) Mounting direction

- Vertical direction
- Horizontal direction

Panel

The load current should be below 70% of the specified ratings.

2. Regarding Wiring and Connection
When a load is not connected rightly, a fault may be happened. Please connect the load according to the connection example.

(1) Example of connection with temperature controller

(2) Example connection adopting external volume (Manual setting)

Numbers printed in white on a dark circle are terminal numbers of ext. volume (potentiometer).

* Please purchase ext. volume (potentiometer), rapid blow fuse and fuse holder separately (sold separately).

* When used with a temperature controller, this ext. volume cannot be used as "(Gradient setting)."

①: Input terminal (1+)
②: Input terminal (2-)
③: Ext. Volume terminal (3)
④: Ext. Volume terminal (4)
⑤: Power terminal (L2)
⑥: Output terminal (T1)
⑦: Output terminal (L1)

Input impedance of the product is 250 Ω (ohm). Ext. Volume terminal (φ) outputs 5 V, therefore, the input voltage of the product is:

5 V + 250 Ω × (Resistance on ext. volume + 250 Ω)

Choose the ratings of the external volume in compliance with the amount of electric power adjustments. The volume is available as an optional part from us.

(3) Input wiring

a) Wire size
- Single wire: 0.14 to 0.5 mm²
- Stranded wire: 0.14 to 0.5 mm²
- AWG: 20 to 26

b) Screw torque

Terminal No. | Item | Max. rate | Recommendation
---|---|---|---
①/② | Output terminal (T1/L1) | 1.47N-m | 1.18 to 1.73N-m
③ | Output terminal (L2) | 0.58N-m | 0.54 to 0.74N-m

(3) Notes on electric circuit design

1. Protective circuit on output side
a) The product is composed of semi-conductor elements and there is a possibility that the unit fails due to surge voltage and overcurrent. Failures are generally caused by short circuit and it becomes uncontrollable when load is at on state. It is, therefore, more secured to use the product with breaker or contactor as the protective circuit.

b) Output element damages if output side has short-current or overcurrent.
Apply rapid blow fuse within the following range on load circuit.

- Surge > 10 x It
- Surge: 1 cycle surge on current
- It: Fusing current of rapid blow fuse
- Ir: Inrush current of load

2. Protective circuit on input side

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