

Scope

This specification applies to built-in DC stabilized power supply, UZP-400/1200P-A**-J***-*.
In addition, all items in this specification shall be provided at normal temperature and humidity unless otherwise specified.

Model Name Coding

Example : U Z P - 4 0 0 / 1 2 0 0 P - A 2 4 - J 0 H □ - C

- ① Series Name "UZ": UZ series
 ② Peak power "P": Peak power
 ③ Continuous output power "400": 400W
 ④ Peak output power "1200P": 1200W
 ⑤ Arrester..... "A": With Arrester
 ⑥ Output voltage "24": 24V, "30": 30V, "36": 36V, "48": 48V
 ⑦ Input/Output connector type "J": Nylon connector
 ⑧ Optional joint connector "0": Without connector
 ⑨ Presence or absence of function..... "H": High-efficiency type
 ⑩ Modification "Blank": Standard, "C": Coating
 ⑪ Chassis "C": With Chassis, "K": With Chassis and Cover, "Blank": Without Chassis and Cover.

General Specification

| Items | | | Specification | | | | Measurements conditions, etc. |
|----------|-------------------|-----------|-----------------|----|----|----|---|
| | | | UZP-400/1200P-A | | | | |
| | | | 24 | 30 | 36 | 48 | |
| AC input | Rated Voltage | | 200—240 VAC | | | | |
| | Voltage Range | | 170—264 VAC | | | | 240–400VDC input possible |
| | Current | At 200VAC | 2.3A typ. | | | | At rated output (Convection cooling) |
| | | | 2.8A typ. | | | | At rated output (Forced air cooling) |
| | Rated Frequency | | 50—60 Hz | | | | Frequency range 47 – 63Hz |
| | Inrush Current | At 200VAC | 57A typ. | | | | Power thermistor system At cold start (25°C) |
| | Efficiency | At 200VAC | 94% typ. | | | | At 300W output |
| | Power Factor | At 200VAC | 96% typ. | | | | At rated output (Convection cooling) |
| | Hold-up Time | | 50ms min. | | | | At 300W output |

Note

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| Kishihara | Yamada | Yamamoto | UZP-400/1200P -A**-J***-* | 3 7 2 5 - 0 1 - 4 - 5 2 0 |

| Items | | | Specification | | | | Measurements conditions, etc. |
|---|------------------------------|--|--|----|----|---|--|
| | | | UZP-400/1200P-A | | | | |
| | | | 24 | 30 | 36 | 48 | |
| Environment | Operating Temp. | Convection Cooling | -10 to 70°C (Open frame) | | | | Refer to “Output derating specification.” |
| | | | -10 to 60°C (With Chassis and Cover) | | | | |
| | | Forced Air Cooling | -10 to 70°C (Open frame) | | | | Refer to “Output derating specification.” |
| | | | -10 to 70°C (With Chassis and Cover) | | | | |
| | Operating Humidity | | 20 to 90% RH | | | | There shall be no condensation. |
| | Storage Temp. / Humidity | | -20 to 75°C / 10 to 95% RH | | | | |
| | Vibration | | To endure the vibration acceleration of 2G with vibration frequency of 10 to 55Hz for 10 sweep cycles in each X, Y, Z direction. | | | | |
| Surface Dropping | | Lift one bottom edge of the unit 50mm high with the opposite edge placed on the test bench, and let it fall. Repeat 3 times for each of four bottom edges, and no malfunction shall be observed. | | | | Follow JIS-C-60068-2-31 at no operation | |
| Insulation | Dielectric Strength | | 1.5kVAC/1 min.between input and output/RC ※1 | | | | Cut-off current 10mA |
| | | | 1.5kVAC/1 min. between input and FG ※2 | | | | Cut-off current 10mA |
| | | | 500VAC/1 min. between each output/RC/FG | | | | Cut-off current 10mA |
| | Insulation Resistance | | 50MΩ min. between each input/output/RC/FG | | | | At 500 VDC |
| | Leakage Current | | 0.12mA typ. (at 200VAC) | | | | |
| Others | Electrostatic Discharge | | IEC61000-4-2 test level 3 compliant (Contact discharge: ±6kV, 10 times) | | | | Apply to FG and chassis. There shall be no malfunction, nor failure. |
| | Fast Transients Burst | | IEC61000-4-4 test level 3 compliant | | | | There shall be no malfunction, nor failure. |
| | Impulse Voltage Immunity | | IEC61000-4-5 (installation environment class 4 or above) compliant; Apply 5 times each of Common mode ±4kV and Normal mode ±2kV | | | | There shall be no malfunction, nor failure. |
| | Conducted Emission | | VCCI, FCC, CISPR32, and EN55032 Class B compliant | | | | Rated Input and output (Convection) with chassis |
| | Harmonic Current Regulations | | IEC61000-3-2 (Ed. 2.1) Class A, and EN61000-3-2 (A14) Class A compliant | | | | Rated input and output (Convection) |
| Note | | | | | | | |
| <div><div>出図</div><div>24.3.28</div><div>(株)ニプロン 技術管理</div></div> | | | | | | | |

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| Items | | Specification | | | | Measurements conditions, etc. |
|--------|-----------------------|---|----|----|----|--|
| | | UZP-400/1200P-A | | | | |
| | | 24 | 30 | 36 | 48 | |
| Others | Safety Standard | UL62368-1, CSA62368-1(c-UL) | | | | |
| | | EN62477-1 OVCⅢcompliant | | | | |
| | | CE marking, UKCA marking | | | | |
| | | PSE (Ordinance item 2) compliant | | | | |
| | SEMI Standard | SEMI-F47 compliant | | | | When the output power is up to 600W |
| | Cooling | Convection cooling | | | | |
| | Dimensions and Weight | 84×45×180 (W×H×D) /550g typ. | | | | Without Chassis and Cover |
| | | 97.2×57.5×212 (W×H×D) /870g typ. | | | | With Chassis and Cover |
| | Warranty | Three years after delivery: if any defects belong to us, the defective unit shall be repaired or replaced at our cost. | | | | Except for errors caused by operation not specified in this specification. |

Note

- ※1. The dielectric strength between input and output/RC is 3k VAC for 1 min., but please refer to the above specifications to prevent the arrester from operating due to the voltage dividing effect of the grounding capacitor's capacitance (between input, FG/output, and FG).
- ※2. The dielectric strength between input and FG is 2k VAC for 1 min., but please refer to the above specifications because an arrester is installed between input and FG.



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| Output Specification | | | | | | | |
|------------------------|----------------------------------|------------|--------------------------------|-------------------|-------------------|-------------------|--|
| Items | | | Specification | | | | Measurements conditions, etc. |
| | | | UZP-400/1200P-A | | | | |
| | | | 24 | 30 | 36 | 48 | |
| Output Rating | Rated Voltage | | 24V | 30V | 36V | 48V | Rated input Refer to “Output derating based on ambient temperature, installation direction and cooling condition” |
| | Continuous Rating 1 (convection) | Current | 16.8A | 13.4A | 11.2A | 8.4A | |
| | | Power | 403.2W | 402W | 403.2W | 403.2W | |
| | Continuous Rating 2 (forced air) | Current | 21A | 16.8A | 14A | 10.5A | |
| | | Power | 504W | 504W | 504W | 504W | |
| | Peak Rating (10 seconds or less) | Current | 50A | 40A | 33.4A | 25A | Refer to “Peak output specification” convection and forced air. |
| Power | | 1200W | 1200W | 1202.4W | 1200W | | |
| Output Characteristics | Factory Setting | | 24V ±2% | 30V ±2% | 36V ±2% | 48V ±2% | At rated output |
| | Adjustable Voltage Range | | 24V +5% -5% | 30V +5% -5% | 36V +5% -5% | 48V +5% -5% | At more than rated voltage setting, Use it within rated output power. |
| | Static Input Regulation | | 94mV max. | 120mV max. | 144mV max. | 192mV max. | |
| | Static Load Regulation | Rated load | 150mV max. | 180mV max. | 220mV max. | 300mV max. | |
| | | Peak load | 250mV max. | 300mV max. | 370mV max. | 500mV max. | |
| | Temperature Regulation | | 0.02%/°C max. | | | | |
| | Ripple Voltage | 0 to +70°C | 120mV max. | | | 150mV max. | Connect 150mm max. lead wire to output connectors, and then connect a 10uF electrolytic capacitor with a 0.1 uF ceramic capacitor in parallel to the other ends of the wires to measure by an oscilloscope with 100MHz frequency band. Rated output |
| | | -10 to 0°C | 160mV max. | | | 200mV max. | |
| | Spike Noise Voltage | 0 to +70°C | 150mV max. | | | 250mV max. | |
| | | -10 to 0°C | 180mV max. | | | 400mV max. | |
| Protection circuit | Over Current Protection | OCP point | 101%min. of peak rated current | | | | |
| | | Method | Blocking oscillation | | | | |
| | | Recovery | Automatic recovery | | | | |
| | Over Voltage Protection | OVP point | 28.0 to 35.0V | 34.5 to 40.5V | 41.4 to 49.4V | 55.2 to 64.8V | |
| | | Method | Output shutdown | | | | |
| | | Recovery | Reclosing of AC input | | | | |
| Note | | | | | | | |

出図

24.3.28

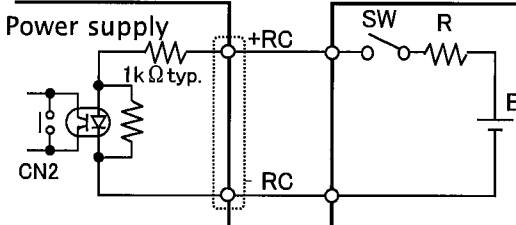
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Signal Input/Output specification

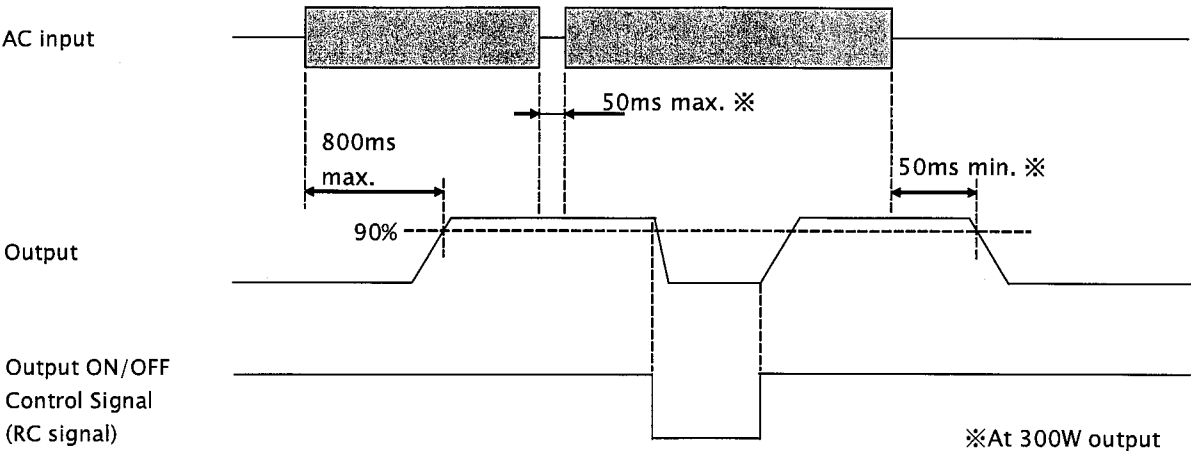
| | Items | Specification | Signal input/output circuit diagram and others | | | | | | |
|---|---|---|--|------------------------|---------------|-------------------|-------------|--------------------|-----|
| Input Signal | Output ON/OFF Control Signal (RC signal) | <u>Operating mode</u> | <u>Connecting example in the case of using external power supply</u>  | | | | | | |
| | | <table><tr><td>Between +RC and -RC</td><td>Output</td></tr><tr><td>SW ON (4.5V min.)</td><td>ON</td></tr><tr><td>SW OFF (0.8V max.)</td><td>OFF</td></tr></table> | | Between +RC and -RC | Output | SW ON (4.5V min.) | ON | SW OFF (0.8V max.) | OFF |
| | | Between +RC and -RC | | Output | | | | | |
| | | SW ON (4.5V min.) | | ON | | | | | |
| | | SW OFF (0.8V max.) | | OFF | | | | | |
| <u>External power supply and Load-limiting resistor</u> | | | | | | | | | |
| <table><tr><td>External power supply: E</td><td>Load-limiting resistor: R</td></tr><tr><td>4.5 to 12.5Vdc</td><td>Not required</td></tr><tr><td>12.5 to 30Vdc</td><td>1.5kΩ</td></tr><tr><td>30 to 48Vdc</td><td>8.2kΩ</td></tr></table> | External power supply: E | Load-limiting resistor: R | 4.5 to 12.5Vdc | Not required | 12.5 to 30Vdc | 1.5kΩ | 30 to 48Vdc | 8.2kΩ | |
| External power supply: E | Load-limiting resistor: R | | | | | | | | |
| 4.5 to 12.5Vdc | Not required | | | | | | | | |
| 12.5 to 30Vdc | 1.5kΩ | | | | | | | | |
| 30 to 48Vdc | 8.2kΩ | | | | | | | | |
| <u>Shorting Plug</u> With shorting plug (CN2) connected, output starts up when AC input is applied regardless of RC signal. To control Start/Stop of output by RC signal, uncap shorting plug of CN2. Note: Shorting plug (CN2) is primary circuit components. Make sure to operate the plug after the AC input is turned off. | | | | | | | | | |

Note



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●Sequence Timing diagram



●Peak output specification

Peak output current shall meet the conditions below.

- Duty ratio of peak current shall be 50% or less.
- Energized period of peak current shall be 10 seconds or less.
- The value resulting from the formula below shall not exceed the continuous rated current, I_o , after derating specified in the clause, "Output derating."

$$\sqrt{(I_p^2 \times D) + (I_m^2 \times (1 - D))} \leq I_o$$

I_p = Peak current value

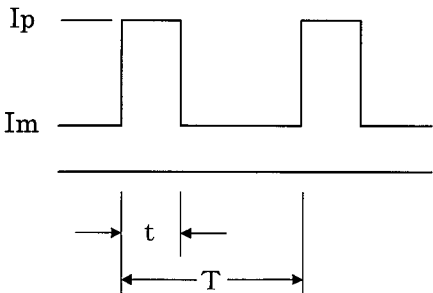
I_m = Min. current value

D = Duty ratio, t/T

t = Pulse width of peak current

T = Cycle

I_o = Continuous rated current specified in the clause "Output derating"



(Note)

If the temperature of the power thermistor for limiting inrush current does not rise enough (and its resistance value is too large), such as when the normal average load power is small, the output voltage at peak output might drop about 100 ms. If this might cause any problem, please check the output voltage waveform while the power supply is installed on an actual device at operation.

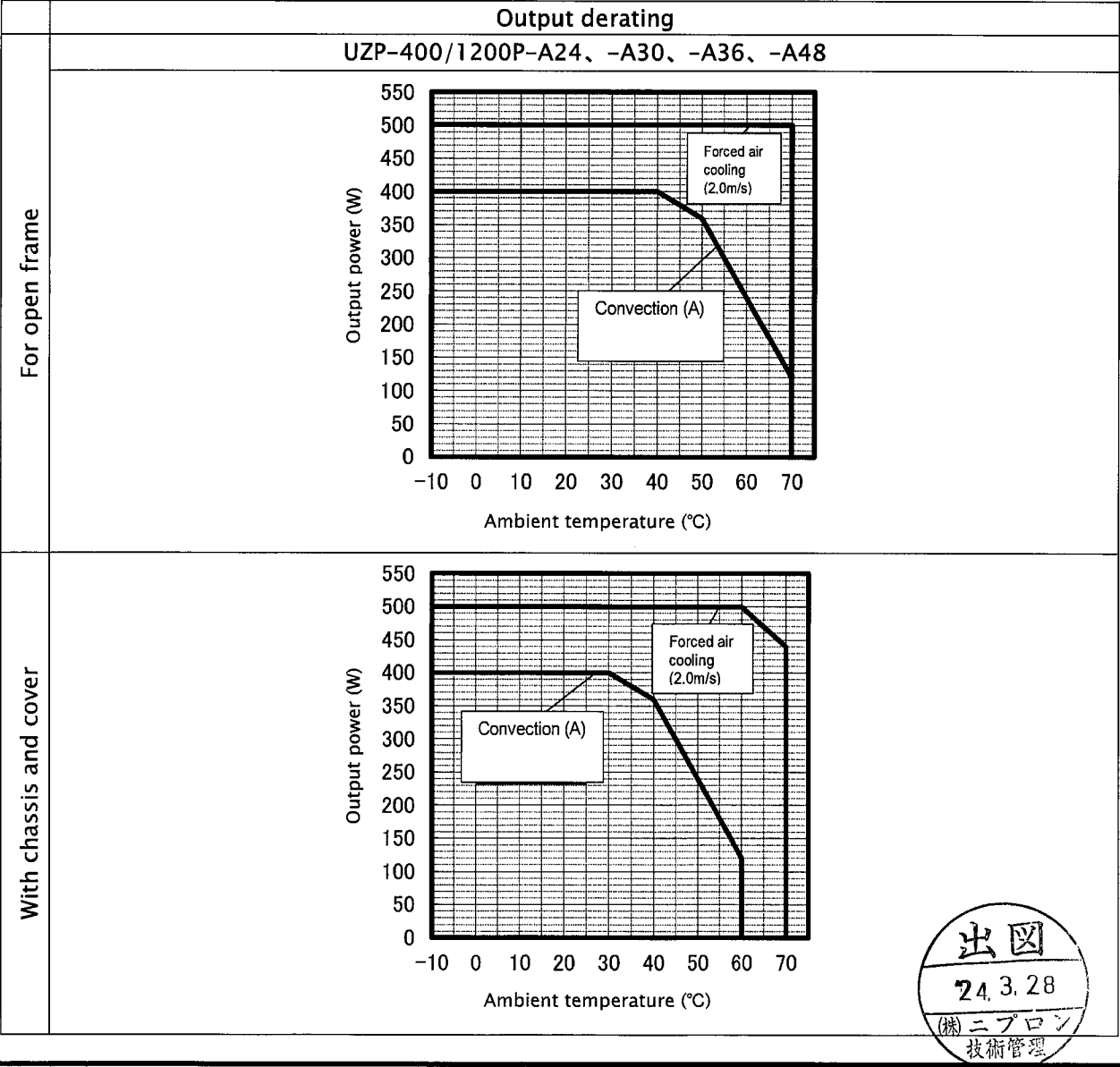
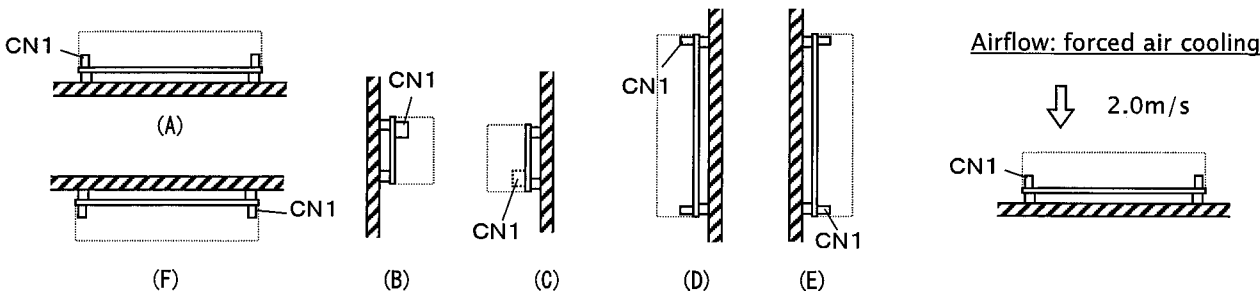
Note



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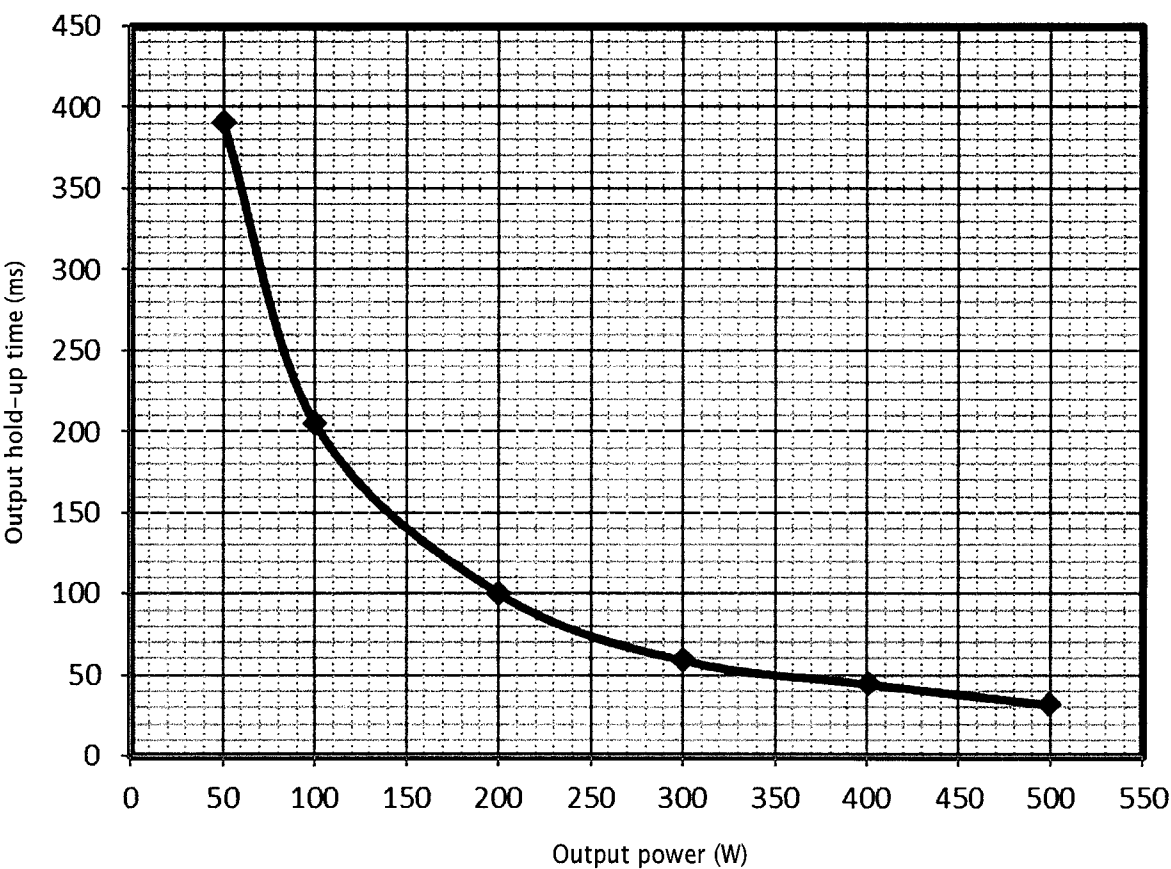
●Output derating based on ambient temperature, installation direction and cooling condition

For the mounting direction (A), follow the derating diagram below depending on the ambient temperature of the power supply. For the mounting direction (B)–(F), please contact us. Also, the airflow shall be 2.0m/s for the forced air cooling as shown below.



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●Output hold-up time characteristics (*UZF-400/1200P-A24-J0H-*, reference value)

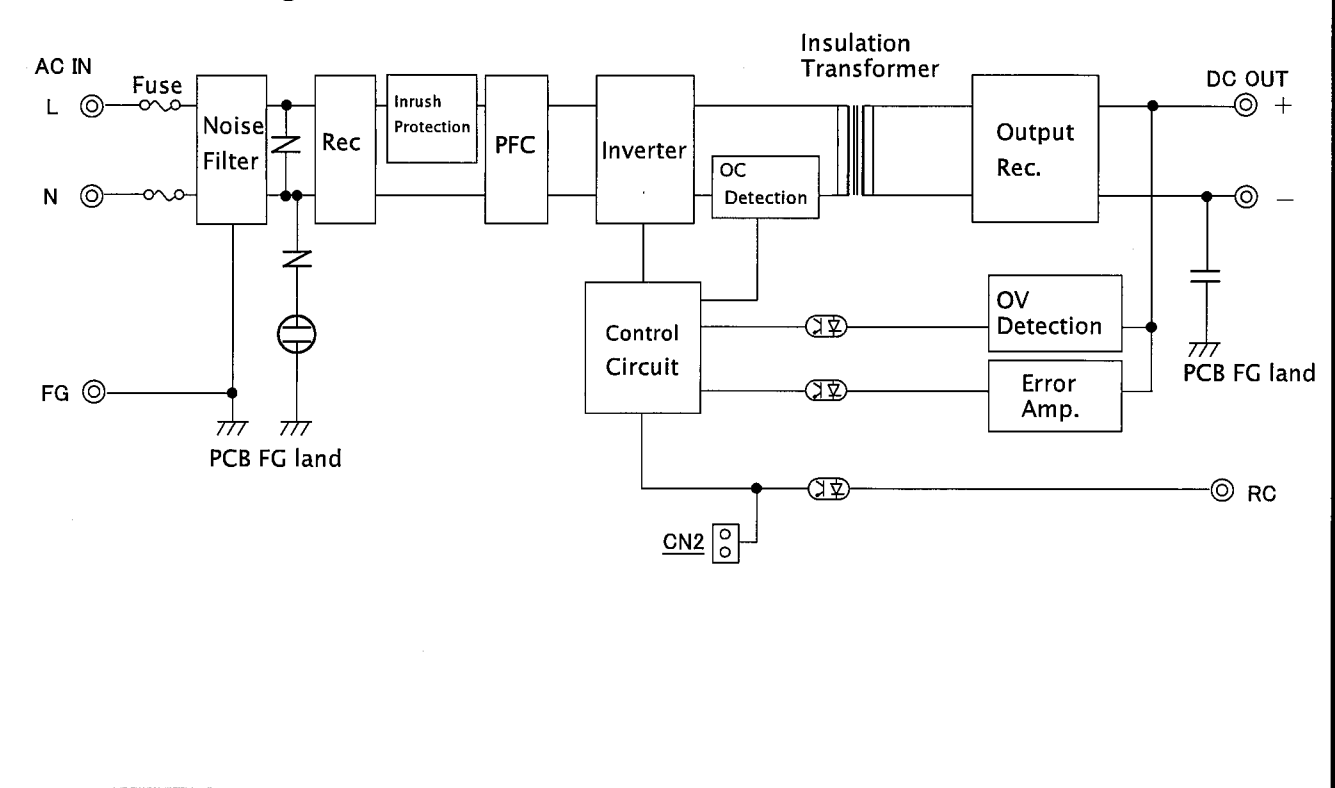


Note



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●Circuit block diagram



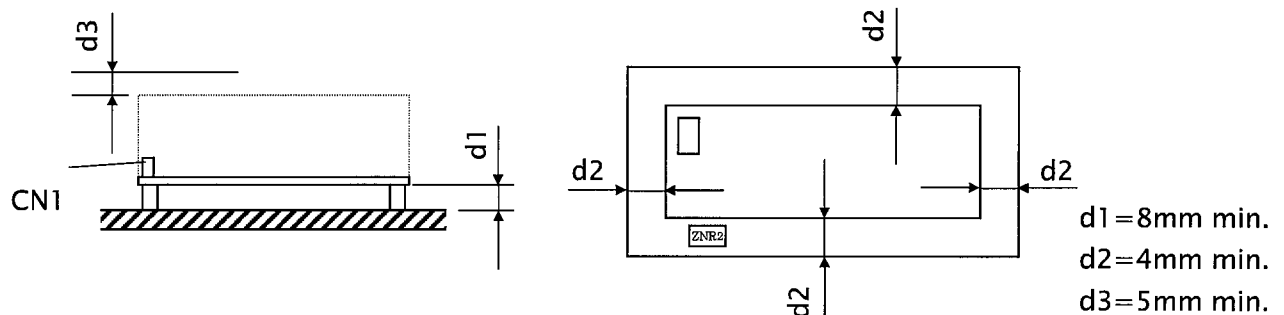
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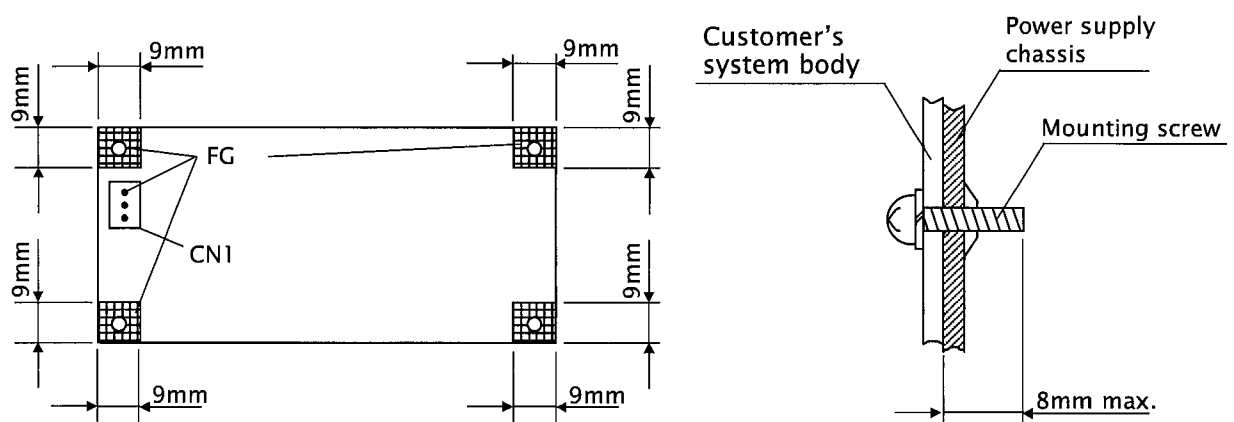
●Power supply installation

- To meet the standard of insulation and dielectric strength, the space (d1, d2, and d3) shown below is necessary around the power supply.
- Sufficient convection and ventilation are required to prevent the ambient temperature of the power supply from rising.
- Keep flammable materials at least 13mm away from the varistor (ZNR2).



●Mounting screws and grounding of power supply

- Tighten screws firmly on all 4 mounting holes of the power supply.
- Use 3mm diameter screws for mounting the power supply.
- Do not use the metal mounting parts that exceed the hatched area shown below.
- In mounting the unit with chassis and cover, do not use any screws that exceed the area shown below.
- Make sure to connect FG terminal of CN1 or the FG part of the PCB to the safety ground of the end application. The FG terminal of CN1 shall be connected to the safety ground of the end application when applying it for safety standards.
- It is recommended to connect the FG part of the soldered side of the board to the metal case of the end application with metal parts such as metal spacers to reduce noise.



Note



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●Precautions before use

1. Grounding ⚠ Warning
This unit is designed and produced to meet Class 1 equipment. Make sure to connect the grounding terminal of the unit to grounding in a proper way for safety.
2. Electric shock ⚠ Warning
This unit is designed and produced as built-in equipment and has high-voltage part inside. Make sure to securely install in the equipment in a proper way to prevent electric shock. Also, shorting plug (CN2) for RC signal setting is primary circuit components. Make sure to turn off AC input before using this plug.
3. PCB handling ⚠ Caution
In handling, hold the edges of the PCB in order not to touch the component sides. Lift the PCB from the End application with spacers at installation. Besides, handle the PCB with care to prevent twisting or bending as it has SMT components.
4. Output short circuit ⚠ Caution
When the output is shorted, capacitors inside the power supply may rapidly discharge, and fire and/or spark may cause a serious accident
5. Inrush current control circuit ⚠ Caution
A power thermistor is used to prevent inrush current into rectifying capacitors when AC input is turned on. If AC is input before the temperature of the thermistor goes low after turning off, a huge inrush current may occur. Make sure to keep a 60-second period at least before reclosing of AC input.
6. Output energy ⚠ Caution
The output energy of this product is dangerous (240VA min.). Service engineers and tools shall not touch the output terminals. Make sure that the input power is shut down and the voltage on the input/output terminals drops to the safe voltage before repairing.



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