# MPE-750CMU

## 750W, Enclosed, High Isolation AC/DC Power Supplies

### Key Features:

- 750W Output Power
- 85-305 VAC Input
- 4,000 VAC Isolation
- Efficiency to 94%
- -40°C to +85°C Temp
- Meets EN 55032 B
- >300 kHour MBTF
- 150% Pk Load for 1 Sec
- Reinforced Insulation

### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Input

| Parameter | Conditions | | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Input Voltage Range | Rated Input (Certified Voltage) | | 100 | | 277 | VAC |
| | AC Input | | 85 | | 305 | |
| | DC Input | | 120 | | 430 | VDC |
| Input Frequency | | | 47 | | 63 | Hz |
| Input Current | 115 VAC | | | | 7.5 | A |
| | 230 VAC | | | | 3.8 | |
| Inrush Current (Cold Start) | 115 VAC | | | | 20 | A |
| | 230 VAC | | | | 40 | |
| Power Factor | Full Load, 25°C | 115 VAC | 0.98 | | | --- |
| | | 230 VAC | 0.95 | | | |
| Leakage Current | 277 VAC, 50Hz | | | | <0.5 | mA |

#### Output

| Parameter | Conditions | | | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Output Voltage Accuracy | Full Load | | | | ±1 | | % |
| Line Regulation | Rated Load | | | | ±0.5 | | % |
| Load Regulation | 0-100% Load | | | | ±0.5 | | % |
| Ripple & Noise (20 MHz) | 12V Output | | | | | 150 | mV P-P |
| | Other Outputs | | | | | 200 | |
| Standby Power Consumption | 230 VAC, 25°C | | | | | 5 | W |
| Peak Load Output | 100 - 277 VAC, 1 second | | | | 150% | | W |
| Hold-Up Time | 115/230 VAC | | | 12 | | | ms |
| Temperature Derating | With Heat Sink Plate or 23.5CFM Fan | 12V | -40 to +45°C | 0 | | | %/°C |
| | | | +45 to +85°C | 2 | | | |
| | | 24/28/ 36/48V | -40 to +50°C | 0 | | | |
| | | | +50 to +85°C | 2.5 | | | |
| | Without Heat Sink | 70% start derating | -40 to +45°C | 0 | | | |
| | | | +45 to +85°C | 1.58 | | | |
| Input Voltage Derating | 85 - 180 VAC | | | 0.33 | | | %/VAC |
| | 180 - 305 VAC | | | 0 | | | |
| Over Temperature Protection | Output voltage turn off, self-recovery | | | | | | |
| Over Load Protection | Constant current protection, self-recovery | | | 110 | | 170 | %Io |
| Short Circuit Protection | Recovery time <5s after short circuit removed | | | Continuous, Self-Recovery | | | |

#### General

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Isolation Voltage | Input - Output | 4000 | | | VAC |
| | Input - Ground | 2000 | | | |
| | Output - Ground | 1750 | | | |
| Isolation Resistance | See Note 8 | 50 | | | MΩ |

#### Environmental

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Operating Temperature Range | Ambient | -40 | | +85 | °C |
| Storage Temperature Range | | -40 | | +85 | |
| Cooling Method | Free Air Convection | | | | |
| Operating Humidity | Non-Condensing | 20 | | 90 | %RH |
| Storage Humidity | | 10 | | 95 | |

#### Physical

| | |
|---|---|
| Size | 9.33 x 3.94 x 1.61 in. (See Mechanical Drawing on Page 4) |
| Case Material | Metal (AL6063, SGCC) |
| Weight | 45.86 oz (1.3kg) (See Mechanical Drawing on Page 4) |

#### Reliability Specifications

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| MTBF | MIL HDBK 217F, 25°C, Gnd Benign | 300 | | | kHours |
| Safety Standards | See Model Selection Guide | | | | |
| Safety Class | Class I | | | | |


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## Model Selection Guide

| UL | Model Number | Input | | Output | | | Over Voltage Protection (VDC) See Note 5 | Output Capacitive Load ($\mu$F Max) | Efficiency (%, Typ) |
|---|---|---|---|---|---|---|---|---|---|
| | | Current (A) | | Voltage (VDC) | Current (A, Max) | Power (W) | | | |
| | | 115 VAC | 230 VAC | | | | | | |
| | MPE-750CMU-12 | 7.5 | 3.8 | 12 | 60 | 720 | 17 | 12000 | 94 |
| | MPE-750CMU-24 | 7.5 | 3.8 | 24 | 31.3 | 751.2 | 24 | 10000 | 95 |
| | MPE-750CMU-28 | 7.5 | 3.8 | 28 | 26.8 | 750.4 | 28 | 9000 | 95 |
| | MPE-750CMU-36 | 7.5 | 3.8 | 36 | 20.9 | 752.4 | 36 | 8000 | 95 |
| ▪ | MPE-750CMU-48 | 7.5 | 3.8 | 48 | 15.7 | 753.6 | 48 | 6000 | 96 |

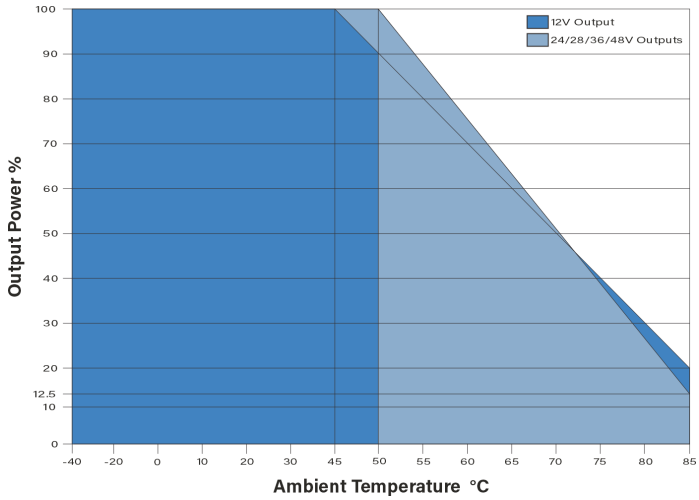
* MPE-750CMU-48 has UL/cUL 62368 recognition (UL certificate). Contact factory for safety standard status of other models.

**Notes:**

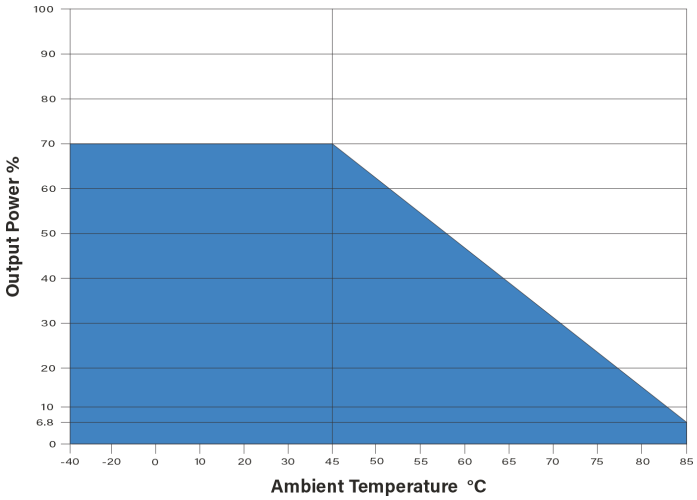
1. The "tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor.
2. EMC performance indicators are on page 4.
3. Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed.
4. Input-output isolation is tested for 60 seconds with a leakage current of <5 mA.
5. A temperature derating of 5°C/1000m is required for operating altitude greater than 2000m.
6. The output voltage can be adjusted by the ADJ knob. Turn clockwise to increase and counterclockwise to decrease.
7. At light load an audible noise is generated in order to improve efficiency. This does not affect performance or reliability.
8. Isolation resistance is given for input - output, input - ground and output - ground. It is tested at 500VDC, 25±5°C, <95% RH non-condensing humidity.

For the protective terminal cover option, add the suffix "**-TC**" to the model number (i.e. **MPE-750CMU-48-TC**).

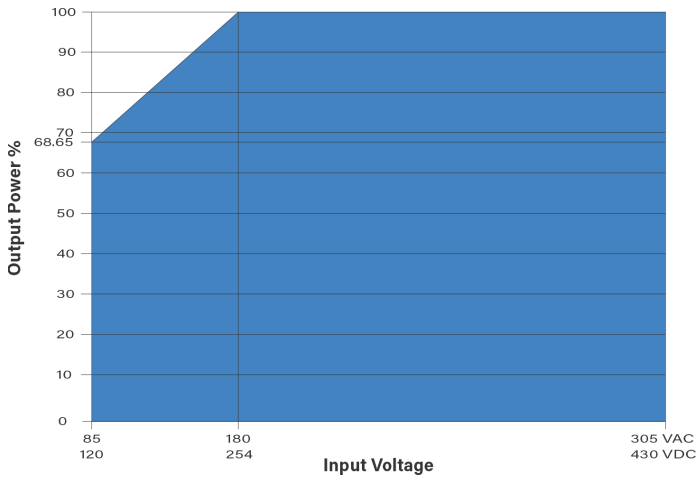
### Temperature Derating with Heat Sink



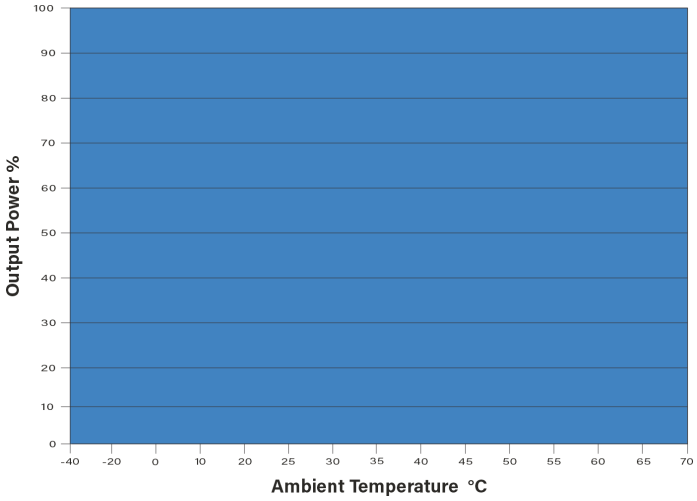

### Temperature Derating: No Heat Sink



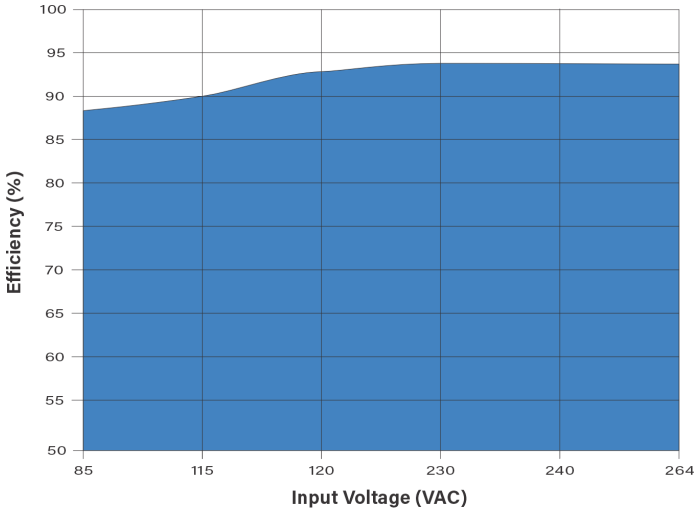

### Input Voltage Derating



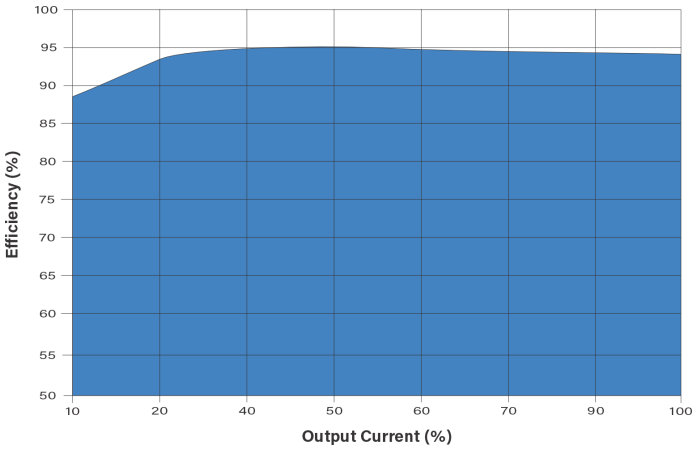

### Case Temperature Derating



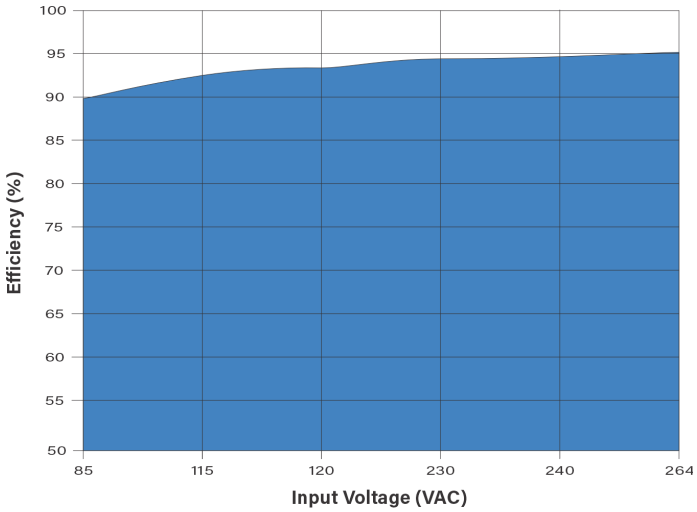
## Efficiency vs Input Voltage: 12V (Full Load)



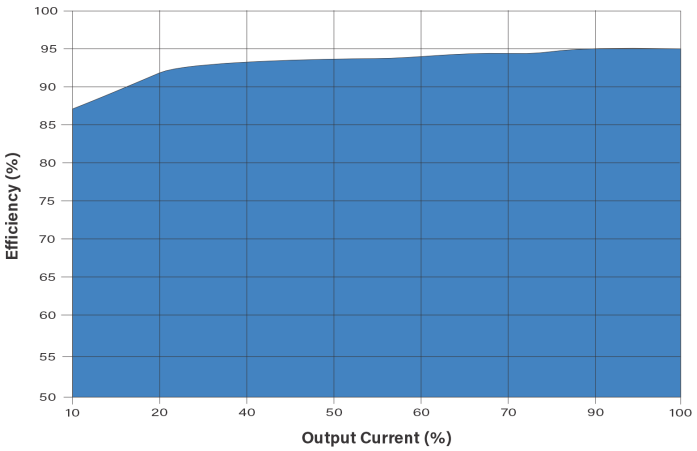

## Efficiency vs Output Load: 12V (230VAC)



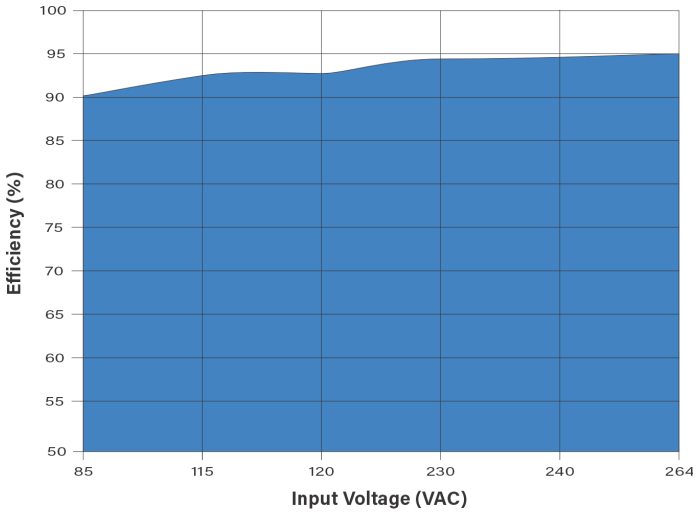

## Efficiency vs Input Voltage: 24V (Full Load)



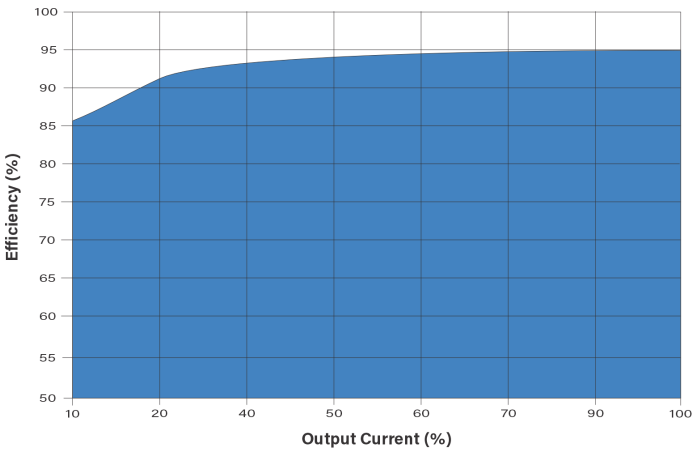

## Efficiency vs Output Load: 24V (230VAC)




## Efficiency vs Input Voltage: 48V (Full Load)




## Efficiency vs Output Load: 48V (230VAC)

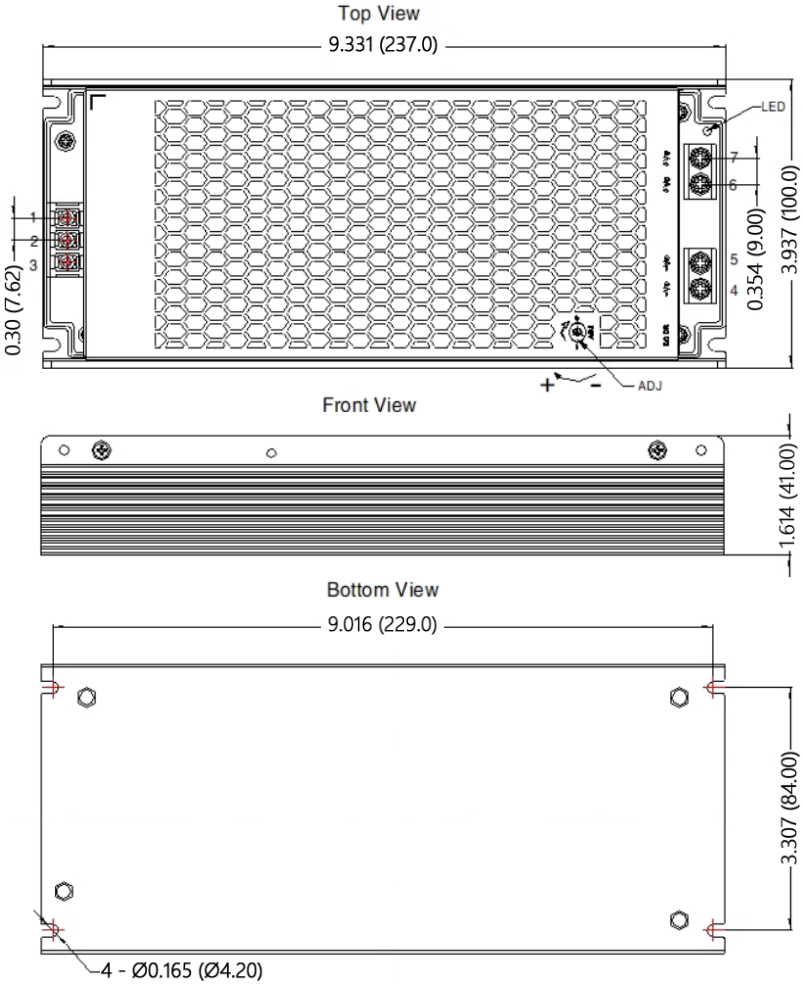


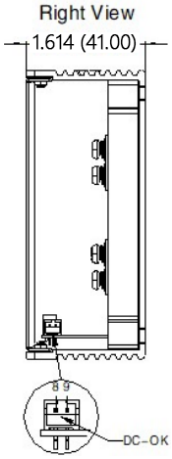
## EMI Characteristics

| Parameter | Standard | Criteria | Level |
|---|---|---|---|
| Radiated Emissions (RE) | CISPR32/EN55032 | | B |
| Conducted Emissions (CE) | CISPR32/EN55032 | | B |
| Harmonic Current | IEC/EN61000-3-2 | | A |
| Voltage Flicker | IEC/EN61000-3-2 | | |
| ESD | IEC/EN61000-4-2 | A | Contact ±8KV/Air ±15KV |
| RS | IEC/EN61000-4-3 | A | 10V/m |
| EFT (Input Port) | IEC/EN61000-4-4 | A | ±2KV |
| EFT (Output Port) | IEC/EN61000-4-4 | A | ±2KV |
| Surge (Input Port) | IEC/EN61000-4-5 | A | line to line ±2KV/line to ground ±4KV |
| Surge (Output Port) | IEC/EN61000-4-5 | A | line to line ±0.5KV/line to ground ±1KV |
| CS (Input Port) | IEC/EN61000-4-6 | A | 10 Vr.m.s |
| CS (Output Port) | IEC/EN61000-4-6 | A | 10 Vr.m.s |
| Power FRequency Magnetic Field | IEC/EN61000-4-8 | A | 10A/m |
| Voltage Dips, Short, Interruption | IEC/EN61000-4-11 | B | 0%, 70% |

## Mechanical Diagrams

THIRD ANGLE PROJECTION



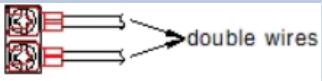
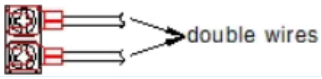

| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | GND |
| 4 | -Vo |
| 5 | +Vo |
| 6 | ADJ |

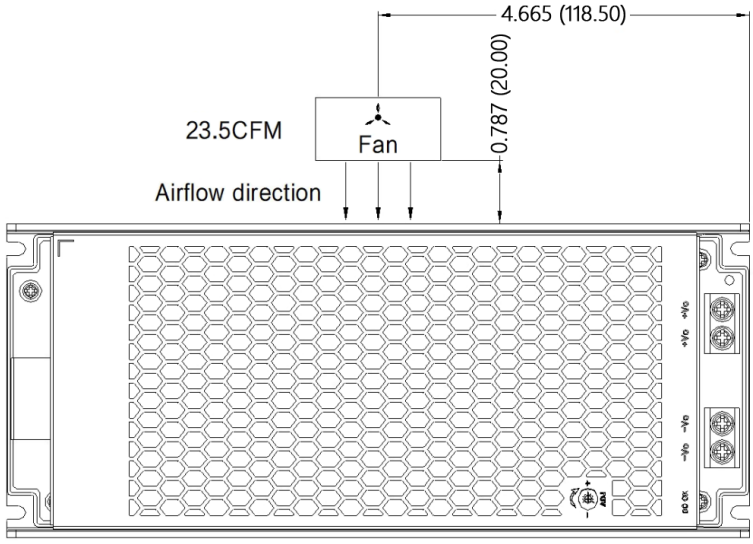
**Notes:**

- All dimensions are typical in inches (mm)
- LED: Output status indicator LED
- ADJ: Output voltage adjustable
- DC OK: JST SPH-002T-S0.5S or equivalent
- General tolerances: ±0.039 (±1.00)

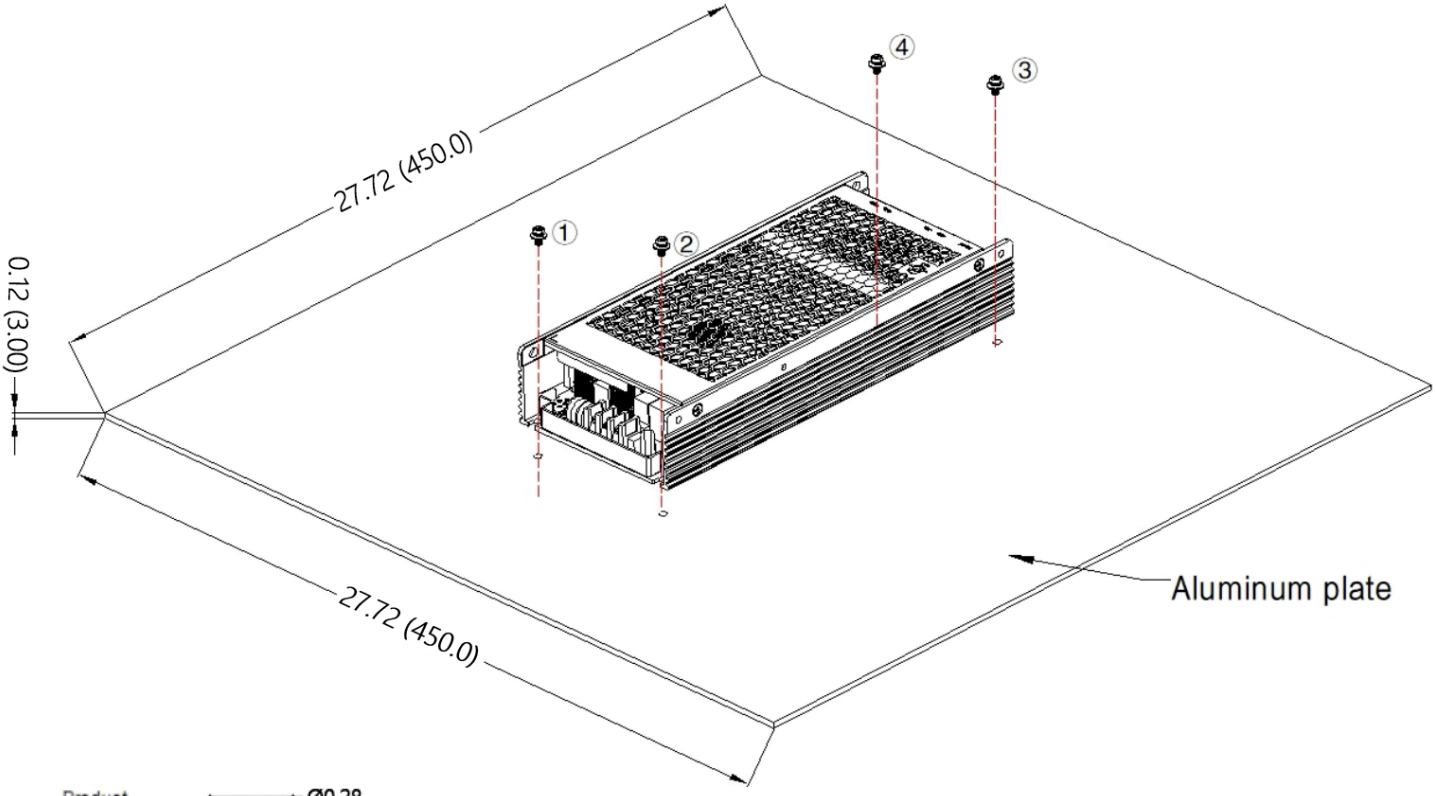
**Weight:**

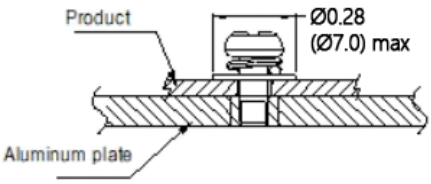
- 45.86 oz (1.3kg)

| Connector Wires Range | | | |
|---|---|---|---|
| Model | Input Connector | Output Connector | Output Connector (Double Wires) |
| 12V | 22-14AWG | 12AWG | +Vo  double wires |
| 24/28/36V | | 16-12AWG | |
| 48V | | 18-12AWG | -Vo  double wires |
| Screw/Torque | M3.0, Max 0.5N · m | M4.0, Max 0.9N · m | |




## Installation Diagram




| Position | Screw Spec | Torque (max) |
|---|---|---|
| 1 - 4 | M3 | 0.4N · m |

**Notes:**

1. In order to meet the derating curve, the product must be installed onto an aluminum plate heat sink. The size of the suggested aluminum plate is shown above. To optimize thermal performance, it is necessary to apply thermal grease on the bottom of the product.
2. It is suggested to install the produxt with M3 combination screws, and the product must be firmly installed at the center of the aluminum plate.
3. Install with 6x M3 round head screws. It is required to apply thermal greae to the bottom of the product.