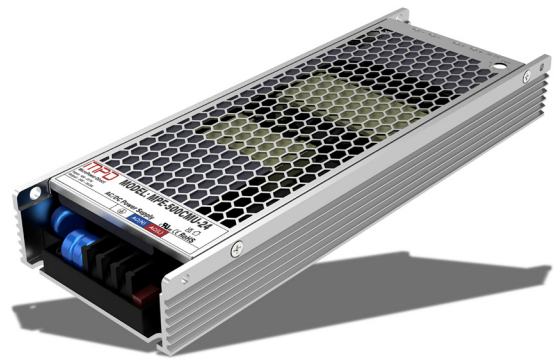


# MPE-500CMU

## 500W, High Isolation AC/DC Power Supplies



### Key Features:

- 500W Output Power
- 85-305 VAC Input
- 4,000 VAC Isolation
- Efficiency to 95%
- -40°C to +85°C Temp
- Meets EN 55032 B
- >200 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                         |         |      |      | 6    | A     |
|                             | 230 VAC                         |         |      |      | 3    |       |
| Inrush Current (Cold Start) | 115 VAC                         |         |      | 30   |      | A     |
|                             | 230 VAC                         |         |      | 60   |      |       |
| Power Factor                | Cold Start                      | 115 VAC | 0.98 |      |      |       |
|                             |                                 | 230 VAC | 0.95 |      |      |       |
| Leakage Current             | 277 VAC                         |         |      |      | 0.75 | mA    |

| Output                      |                                               |                        |                           |         |      |      |          |
|-----------------------------|-----------------------------------------------|------------------------|---------------------------|---------|------|------|----------|
| Parameter                   | Conditions                                    |                        |                           | Min.    | Typ. | Max. | Units    |
| Output Voltage Accuracy     | Full Load                                     | 5V Output              |                           |         | ±2   |      | %        |
|                             |                                               | Other Outputs          |                           |         | ±1   |      |          |
| Line Regulation             | Rated Load                                    | 5V Output              |                           |         | ±0.5 |      | %        |
|                             |                                               | Other Outputs          |                           |         | ±0.3 |      |          |
| Load Regulation             | 0-100% Load                                   | 5V Output              |                           |         | ±1   |      | %        |
|                             |                                               | Other Outputs          |                           |         | ±0.5 |      |          |
| Ripple & Noise (20 MHz)     |                                               |                        |                           |         |      | 200  | mV P - P |
| Hold-Up Time                |                                               |                        |                           | 115 VAC | 10   | 12   | ms       |
|                             |                                               |                        |                           | 230 VAC | 10   | 12   |          |
| Temperature Derating        | With Heat-Sink Plate                          | 5V                     | +40 to 85°C               | 1.667   |      |      | % / °C   |
|                             |                                               | 12/15V                 | +45 to 85°C               | 2       |      |      |          |
|                             |                                               | Other                  | +50 to 85°C               | 2.5     |      |      |          |
|                             | 110 VAC, No Heat-Sink Plate                   | 5V (from 70% load)     | +40 to +85°C              | 1       |      |      |          |
|                             |                                               | Others (from 70% load) | +50 to +85°C              | 1.5     |      |      |          |
|                             | 230 VAC, No Heat-Sink Plate                   | 5V (from 80% load)     | +40 to +50°C              | 1       |      |      |          |
|                             |                                               |                        | +50 to +85°C              | 1.5     |      |      |          |
|                             |                                               | 12/15V (from 90% load) | +40 to +85°C              | 1.33    |      |      |          |
|                             |                                               | Others (from 90% load) | +45 to +85°C              | 1.6     |      |      |          |
|                             | Input Voltage Derating                        | 85 - 100 VAC           |                           |         | 1    |      |          |
| Over Temperature Protection | Output voltage turn off, self-recovery        |                        |                           |         |      |      |          |
| Over Load Protection        | 110%Io, self-recovery                         |                        |                           |         |      |      |          |
| Short Circuit Protection    | Recovery time <5s after short circuit removed |                        | Continuous, Self-Recovery |         |      |      |          |

### General

| Parameter            | Conditions      | Min.  | Typ. | Max. | Units |
|----------------------|-----------------|-------|------|------|-------|
| Isolation Voltage    | Input - Ground  | 2,000 |      |      | VAC   |
|                      | Input - Output  | 4,000 |      |      |       |
|                      | Output - Ground | 1,500 |      |      |       |
| 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  | °C    |
| Operating Humidity          | Non-condensing | 20   |      | 90   | %RH   |
| Storage Humidity            |                | 10   |      | 95   |       |

### Reliability Specifications

| Parameter        | Conditions                      | Min. | Typ. | Max. | Units  |
|------------------|---------------------------------|------|------|------|--------|
| MTBF             | MIL HDBK 217F, 25°C, Gnd Benign | 0.2  |      |      | MHours |
| Safety Standards | See Model Selection Guide       |      |      |      |        |
| Safety Class     | Class I                         |      |      |      |        |



### MicroPower Direct

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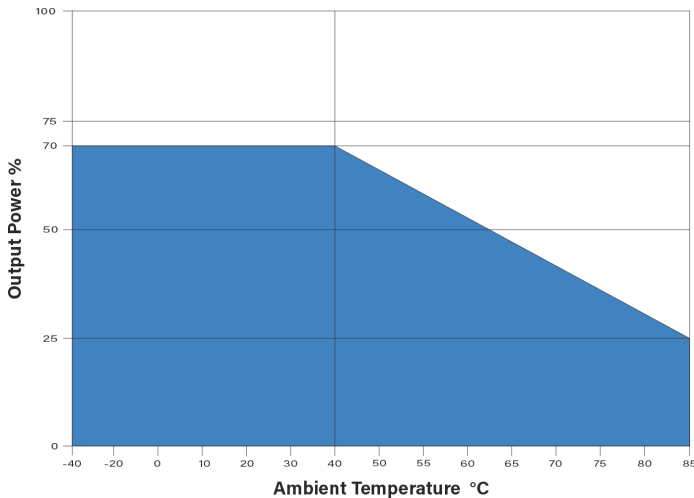
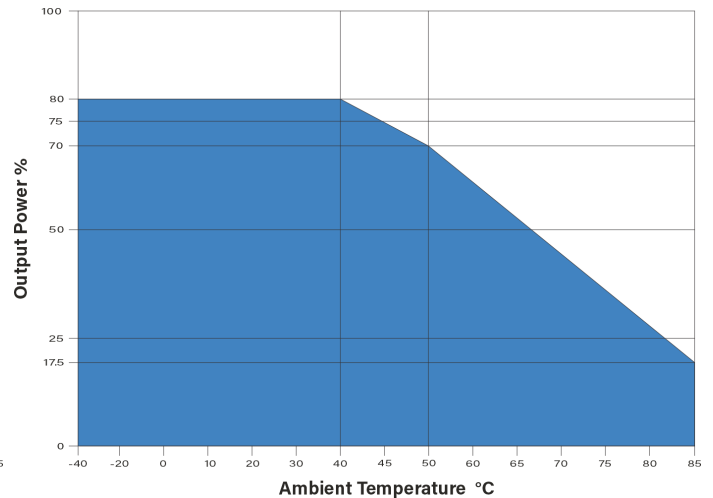
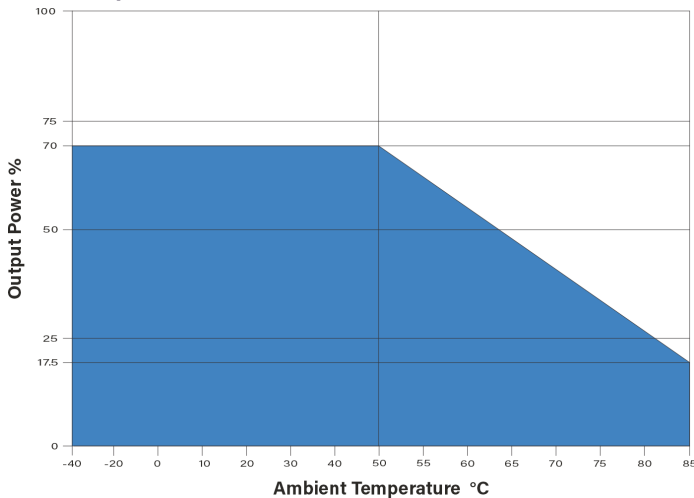
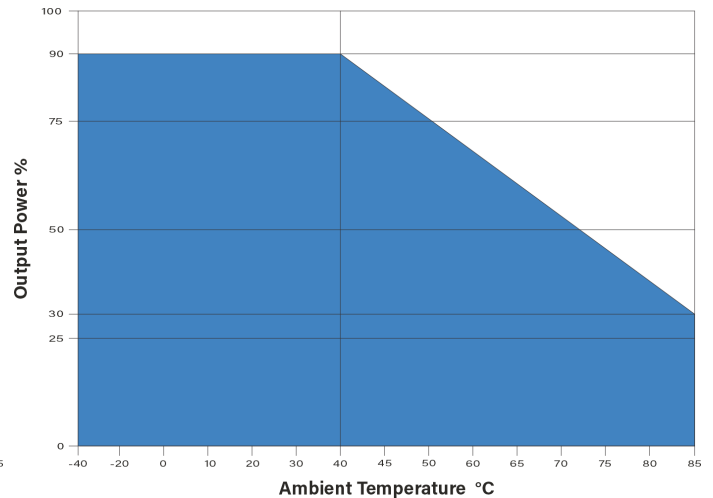


| UL                                                                                                                               | Model Number  | Input       |         | Output        |                  |           | Over Voltage Protection (VDC)<br>See Note 5 | Output Capacitive Load (μF Max) | Efficiency (% Typ) |
|----------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|---------|---------------|------------------|-----------|---------------------------------------------|---------------------------------|--------------------|
|                                                                                                                                  |               | Current (A) |         | Voltage (VDC) | Current (A, Max) | Power (W) |                                             |                                 |                    |
|                                                                                                                                  |               | 115 VAC     | 230 VAC |               |                  |           |                                             |                                 |                    |
|                                                                                                                                  | MPE-500CMU-05 | 6           | 3       | 5             | 80               | 400       | 6.75                                        | 12000                           | 90                 |
|                                                                                                                                  | MPE-500CMU-12 | 6           | 3       | 12            | 41.7             | 500.4     | 15.6                                        | 10000                           | 94                 |
|                                                                                                                                  | MPE-500CMU-15 | 6           | 3       | 15            | 33.3             | 499.5     | 19.5                                        | 10000                           | 94                 |
| ▪                                                                                                                                | MPE-500CMU-24 | 6           | 3       | 24            | 20.9             | 501.6     | 31.2                                        | 8000                            | 94.5               |
|                                                                                                                                  | MPE-500CMU-36 | 6           | 3       | 36            | 13.9             | 500.4     | 46.8                                        | 6000                            | 95                 |
| ▪                                                                                                                                | MPE-500CMU-48 | 6           | 3       | 48            | 10.45            | 501.6     | 60.0                                        | 4000                            | 95                 |
| * MPE-500CMU-24, -48 have UL/cUL 62368 recognition (UL certificate). Contact factory for safety standard status of other models. |               |             |         |               |                  |           |                                             |                                 |                    |

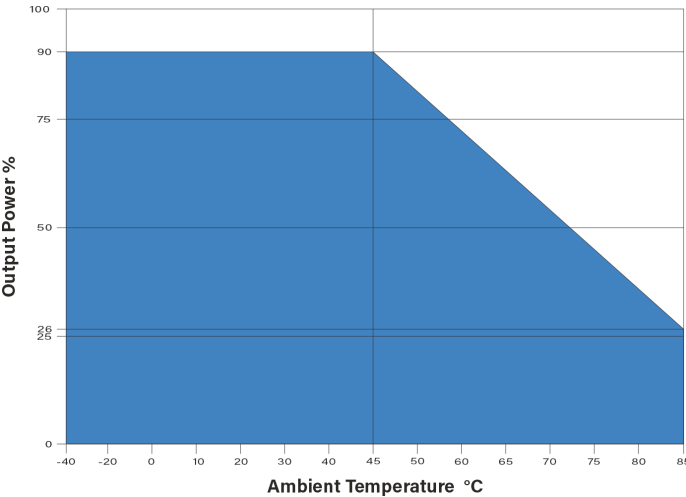
**Notes:**

1. The "tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.
2. EMC performance indicators are on page 6.
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 <10 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.

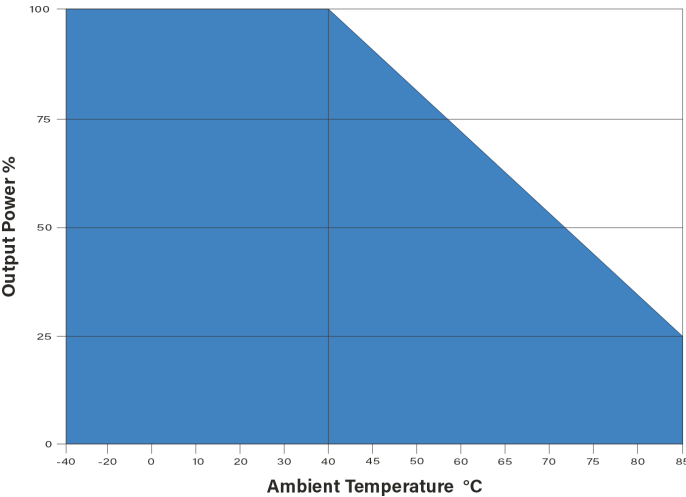
For plastic terminal block cover option, add the suffix "-TC" to the model number (i.e. **MPE-500CMU-05-TC**).

**Temperature Derating: 5V, 110VAC, No Heat Sink**

**Temperature Derating: 5V, 230VAC, No Heat Sink**

**Temperature Derating: 12, 15, 24, 36, 48V, 110VAC, No Heat Sink**

**Temperature Derating: 12, 15V, 230VAC, No Heat Sink**


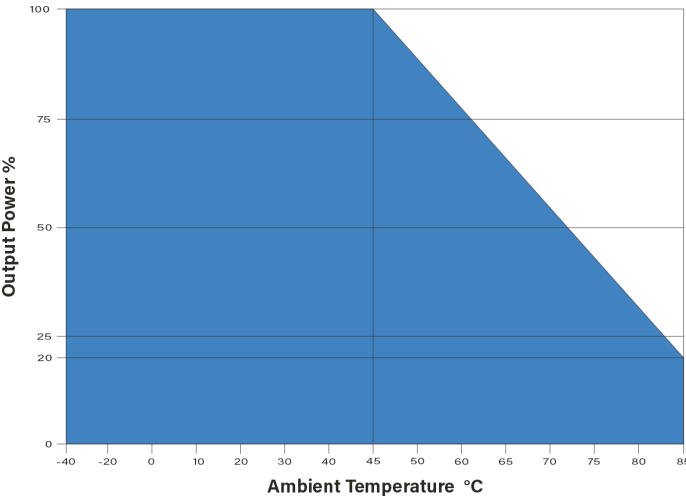
Temperature Derating: 24, 36, 48V, 230VAC, No Heat Sink



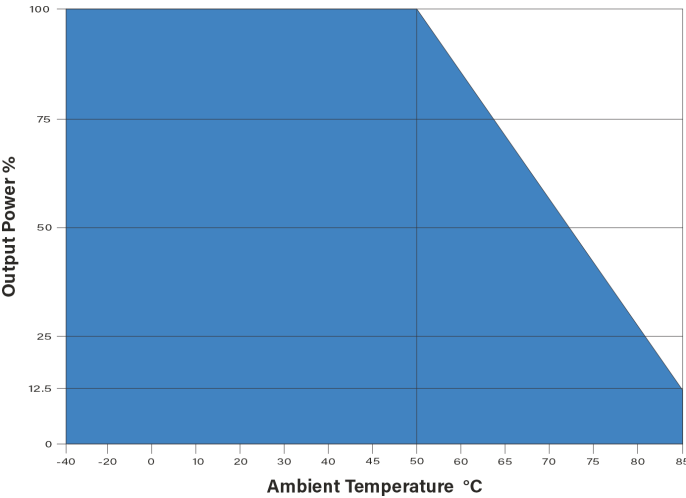
Temperature Derating: 5V, 85-305VAC, With Heat Sink



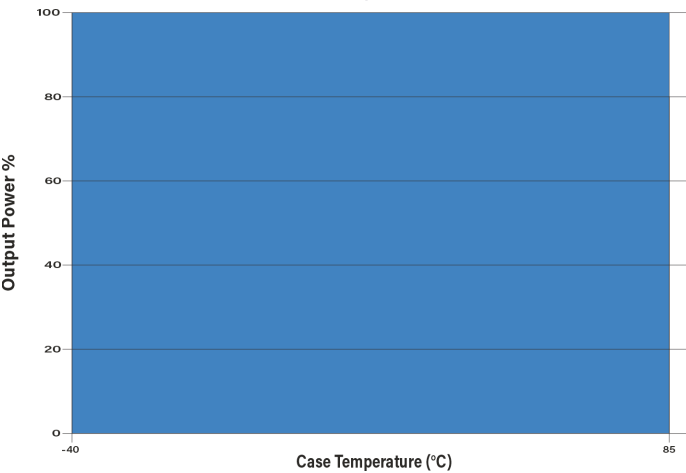
Temperature Derating: 12, 15V, 85-305VAC, With Heat Sink



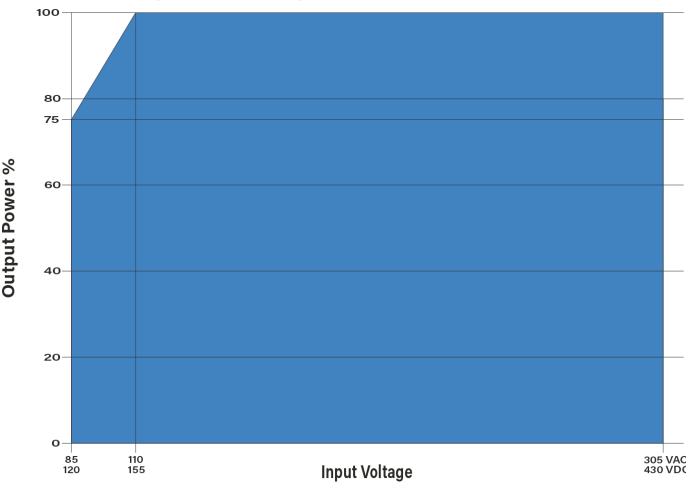
Temperature Derating: 24, 36, 48V, 85-305VAC, With Heat Sink



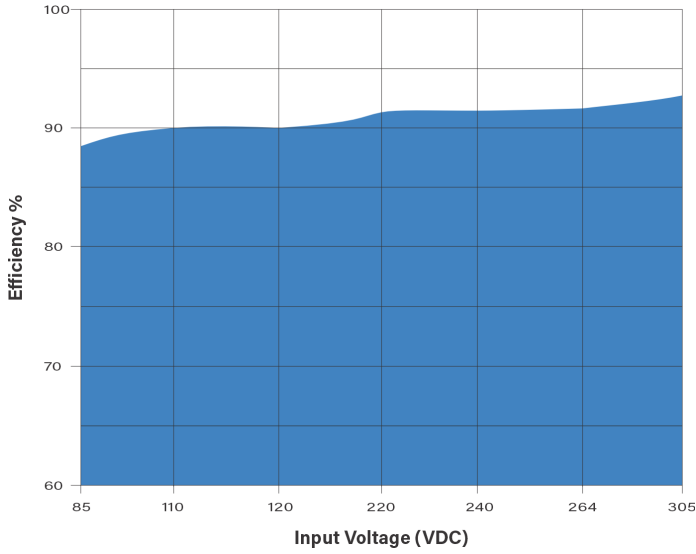
Case Temperature Derating



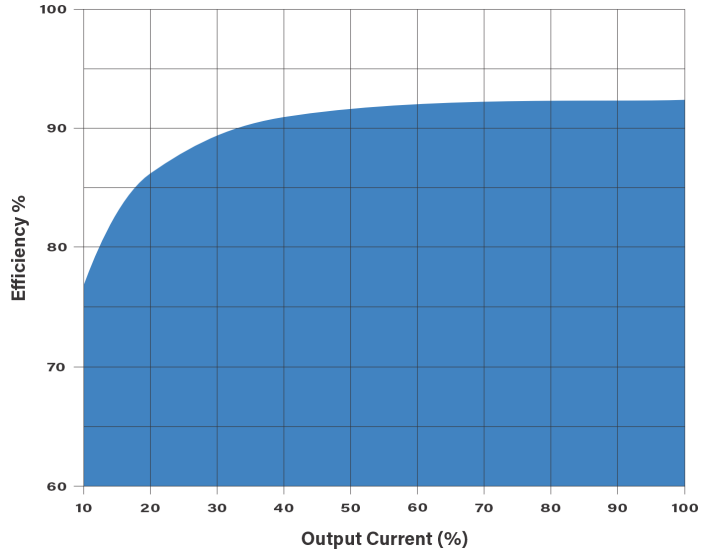
Input Voltage Derating (+25°C)



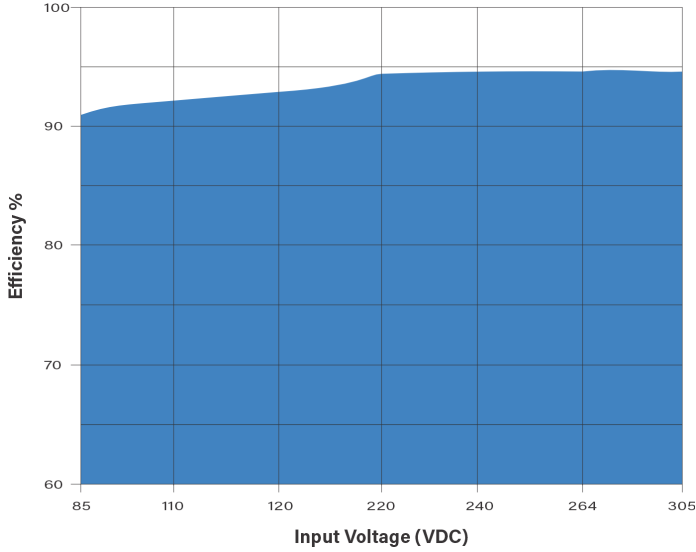
Efficiency vs Input Voltage: 12V, Full Load



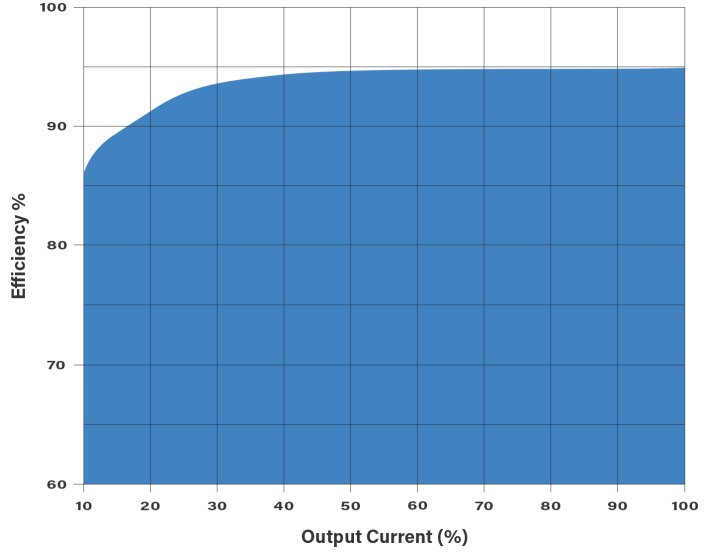
Efficiency vs Output Load: 12V, 230VAC



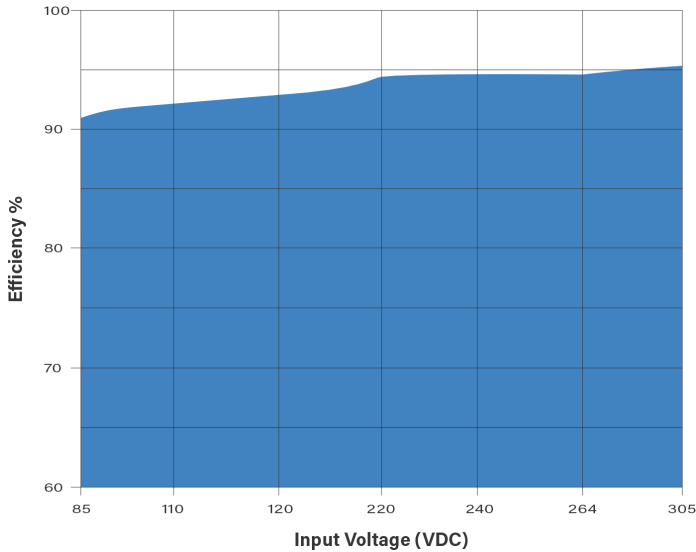
Efficiency vs Input Voltage: 24V, Full Load



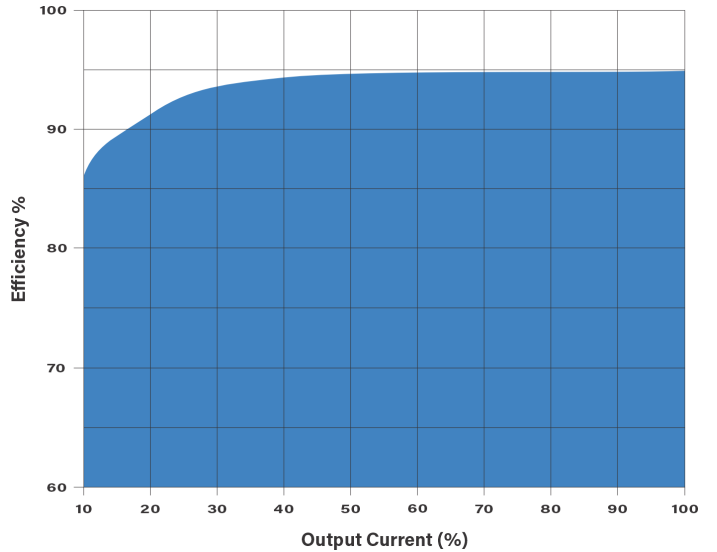
Efficiency vs Output Load: 24V, 230VAC



Efficiency vs Input Voltage: 48V, Full Load



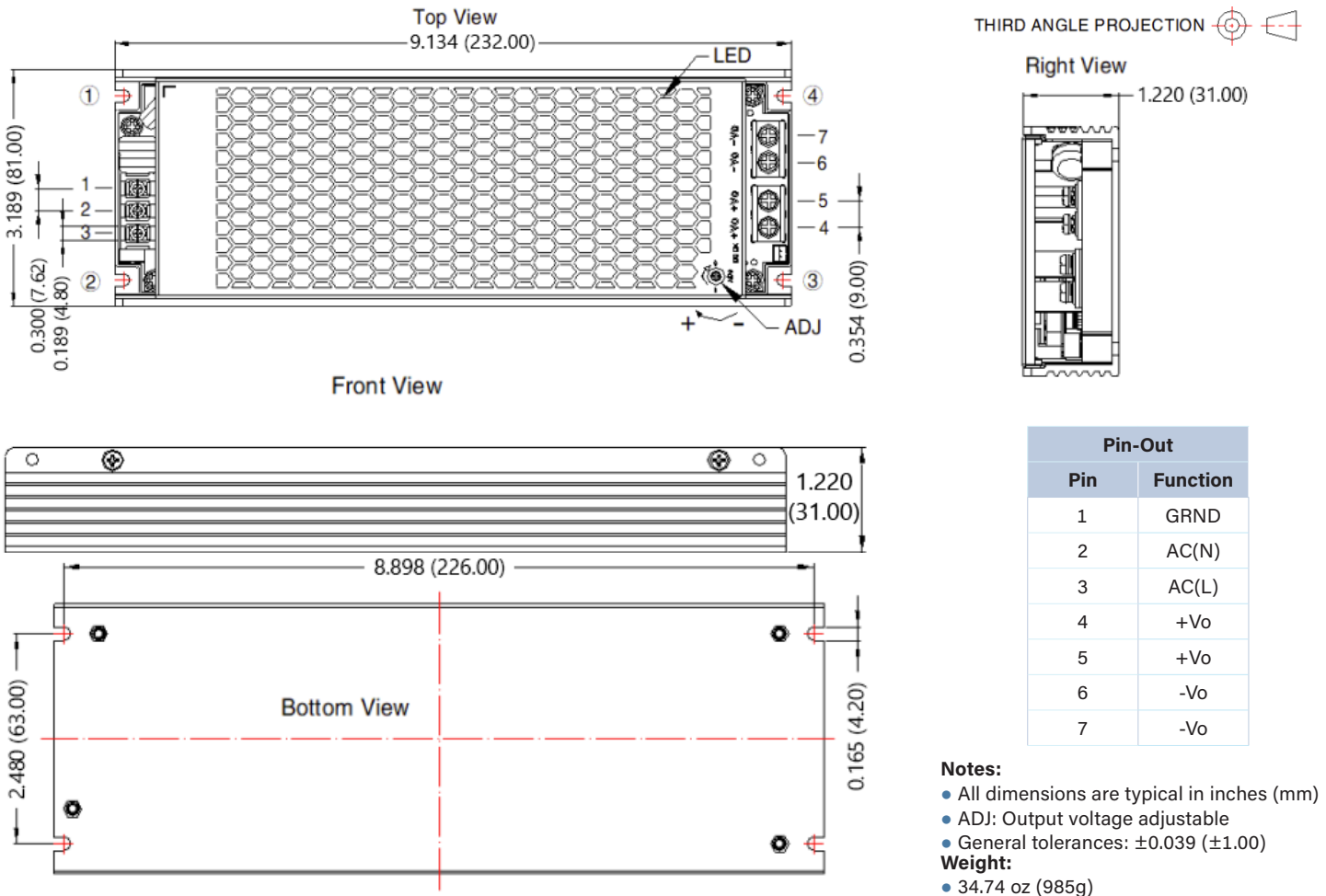
Efficiency vs Output Load: 48V, 230VAC



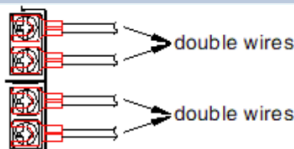
EMI Characteristics

| Parameter                         | Standard         | Criteria | Level                                   |
|-----------------------------------|------------------|----------|-----------------------------------------|
| Radiated Emissions (RE)           | CISPR32/EN55032  |          | B                                       |
| Conducted Emissions (CE)          | CISPR32/EN55032  |          | B                                       |
| Harmonic Current                  | IEC/EN61000-3-2  |          | A/D                                     |
| Voltage Flicker                   | IEC/EN61000-3-3  |          |                                         |
| 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  |          | 30A/m                                   |
| Voltage Dips, Short, Interruption | IEC/EN61000-4-11 | B        | 0%, 70%                                 |

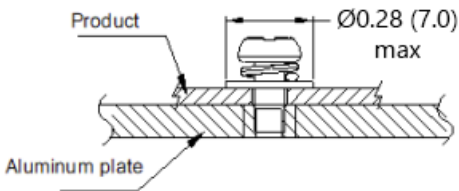
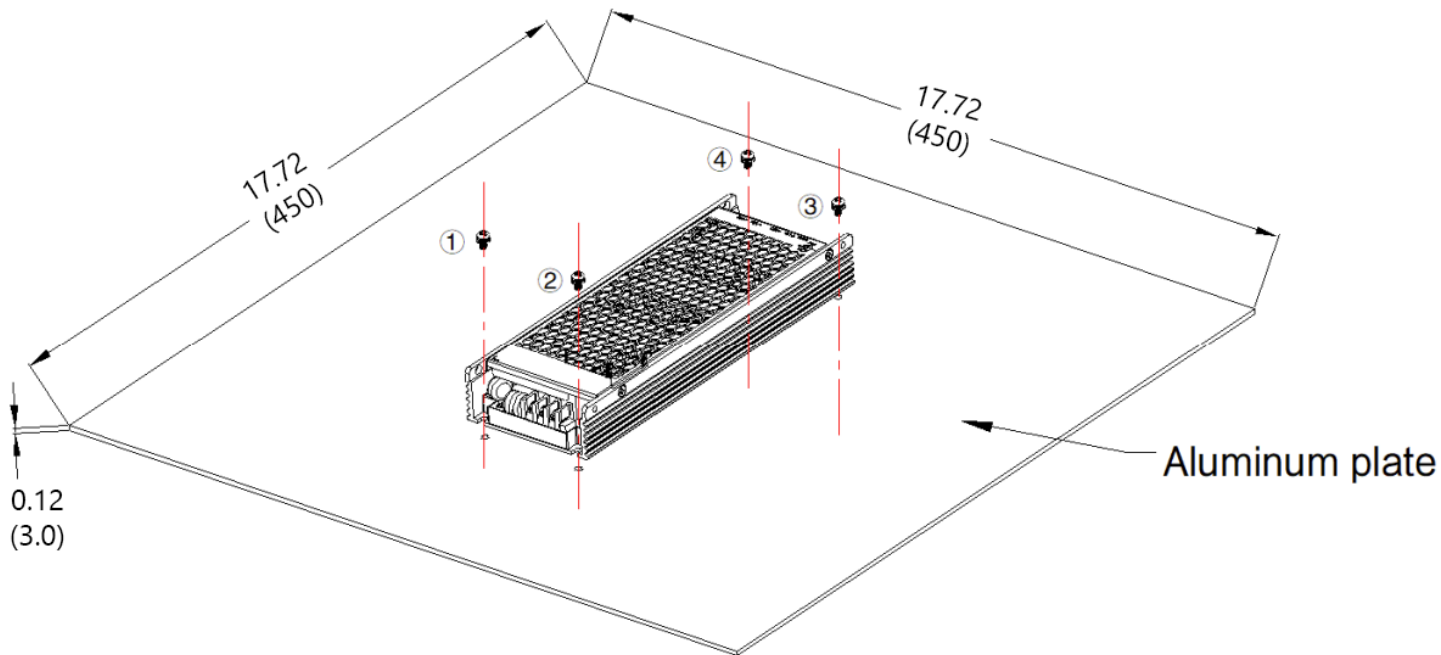
Mechanical Diagrams



| Physical      |                       |
|---------------|-----------------------|
| Case Size     | 9.13 x 3.19 x 1.22 in |
| Case Material | Metal (AL6063, SGCC)  |

| Connector Wires Range |                    |                  |                                                                                       |
|-----------------------|--------------------|------------------|---------------------------------------------------------------------------------------|
| Model                 | Input Connector    | Output Connector | Output Connector (Double Wires)                                                       |
| 5V                    | 22-14AWG           | 10AWG            |  |
| 12V                   |                    | 14-12AWG         |                                                                                       |
| 24/36/48V             |                    | 18-12AWG         |                                                                                       |
| Screw/Torque          | M3.0, Max 0.5N · m | M4, 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. 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 product with M3 combination screws, and the product must be firmly installed at the center of the aluminum plate.