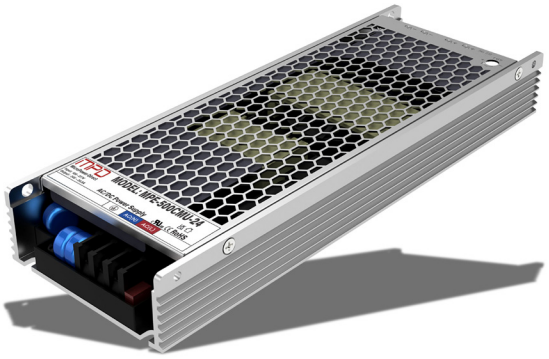
MPE-500CMU

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			%/VAC
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				

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Model Selection Guide

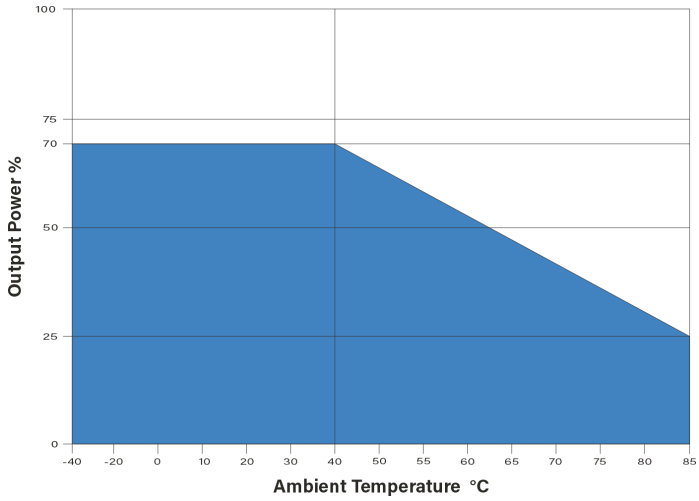
UL	Model Number	Input		Output			Over Voltage Protection (VDC) See Note 5	Output Capacitive Load (μF Max)	Efficiency (%, Typ)
		Current (A)		Voltage (VDC)	Current (A, Max)	Power (W)			
		115 VAC	230 VAC						
	MPE-500CMU-05	6	3	5	80	400	6.75	12000	90
	MPE-500CMU-12	6	3	12	41.7	500.4	15.6	10000	94
	MPE-500CMU-15	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:

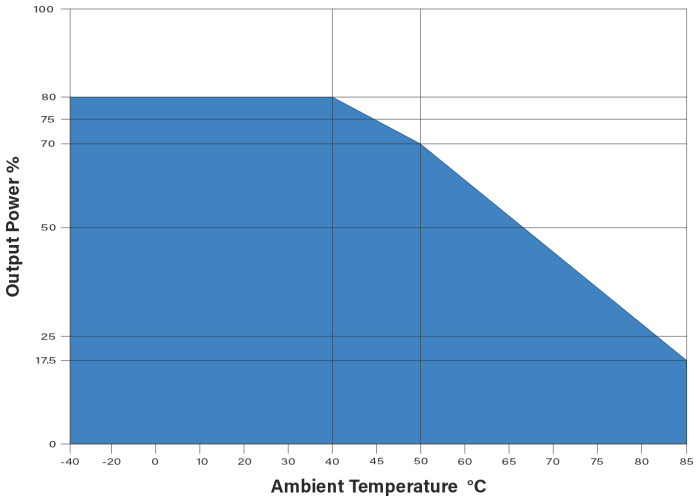
1. The “tip and barrel method” is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.
2. EMC performance indicators are on page 6.
3. Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault 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**).

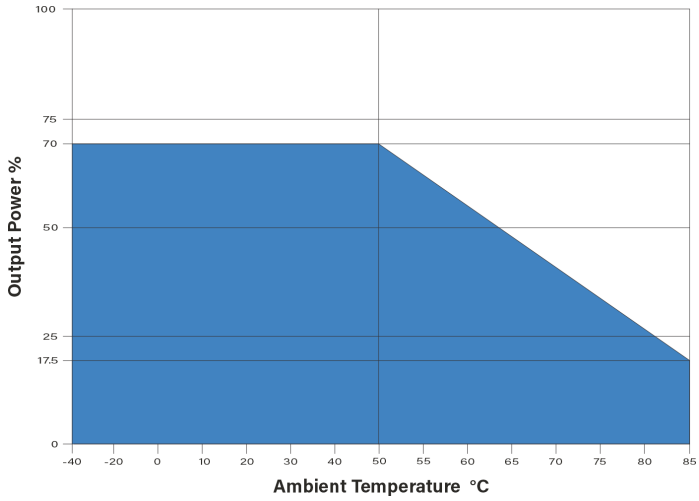
Temperature Derating: 5V, 110VAC, No Heat Sink



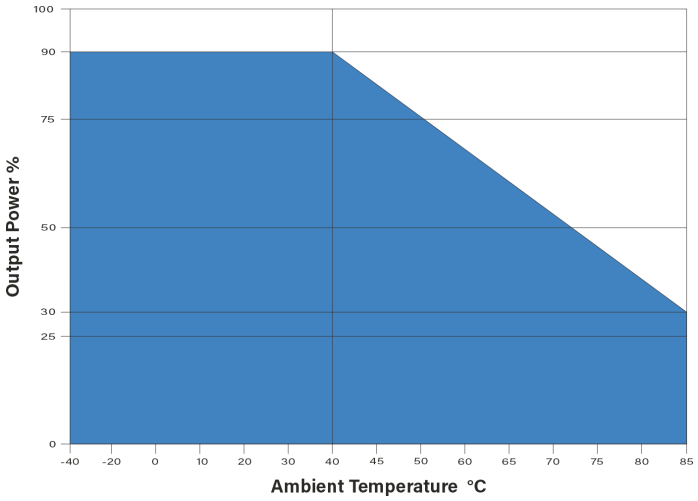
Temperature Derating: 5V, 230VAC, No Heat Sink



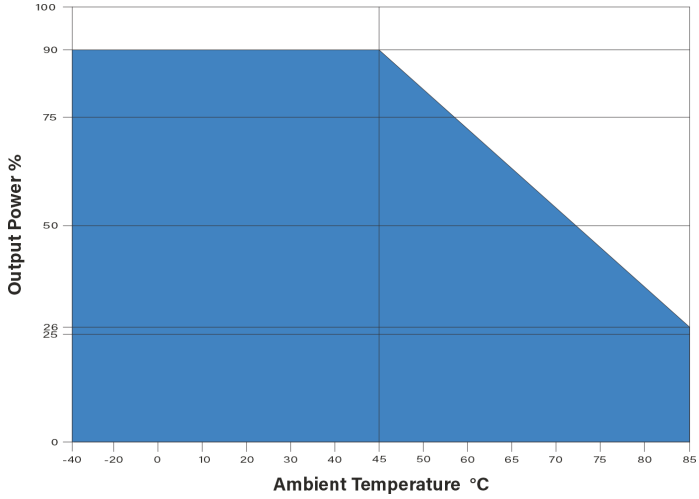
Temperature Derating: 12, 15, 24, 36, 48V, 110VAC, No Heat Sink



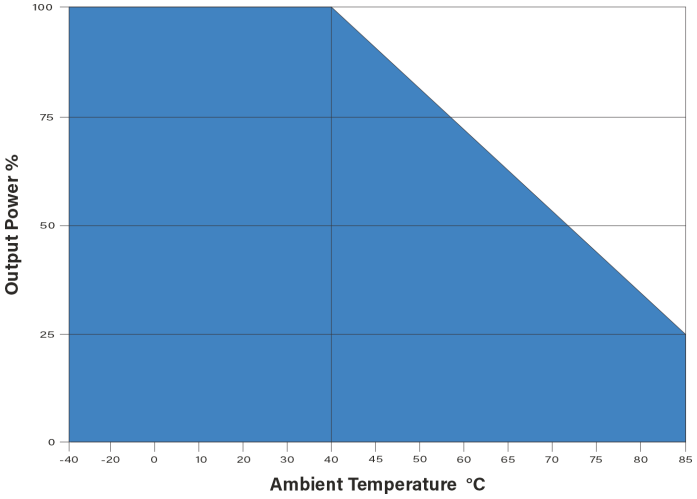
Temperature Derating: 12, 15V, 230VAC, No Heat Sink



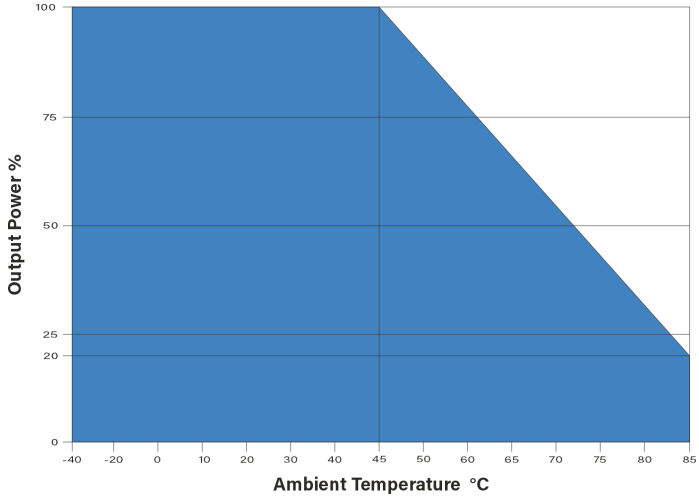
Temperature Derating: 24, 36, 48V, 230VAC, No Heat Sink



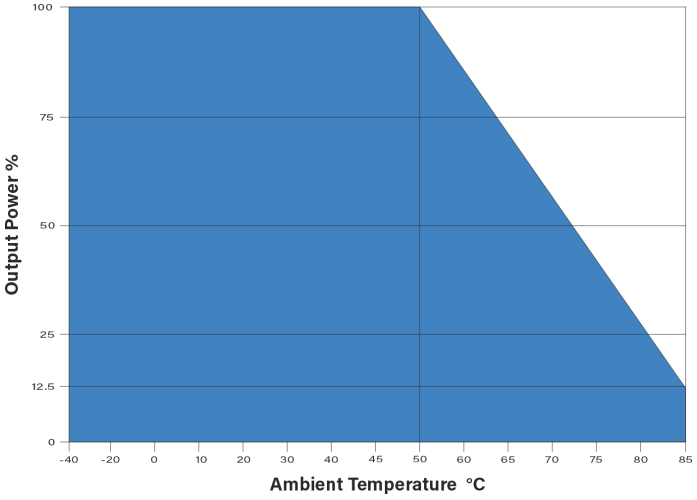
Temperature Derating: 5V, 85-305VAC, With Heat Sink



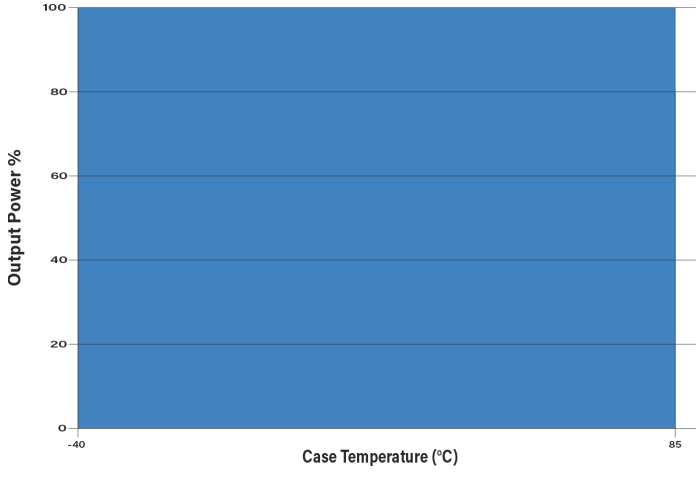
Temperature Derating: 12, 15V, 85-305VAC, With Heat Sink



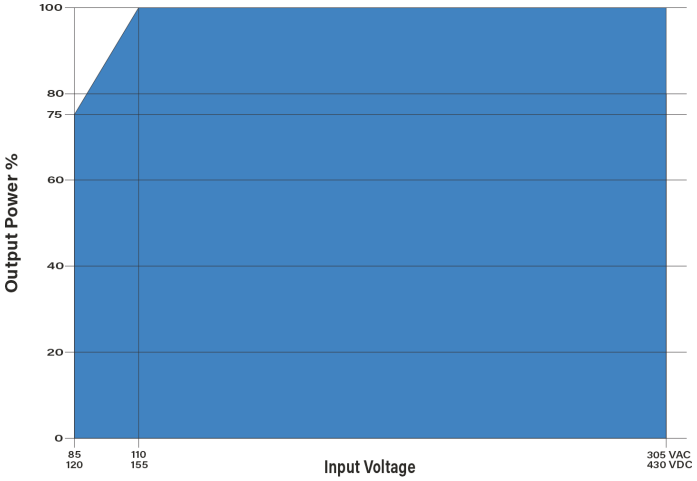
Temperature Derating: 24, 36, 48V, 85-305VAC, With Heat Sink



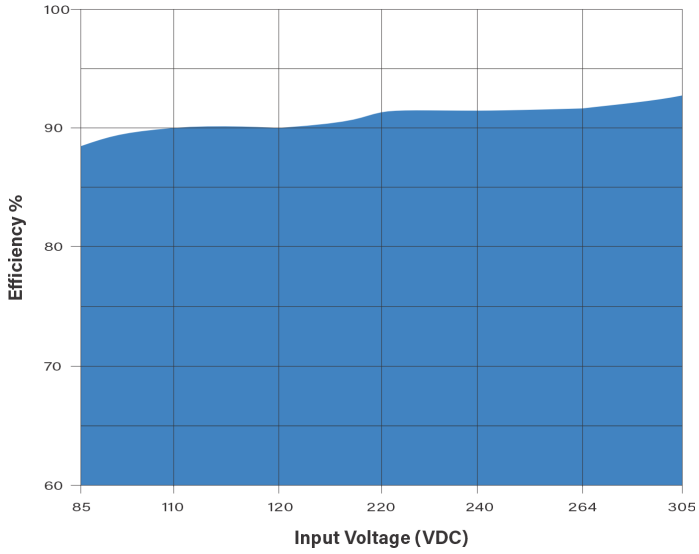
Case Temperature Derating



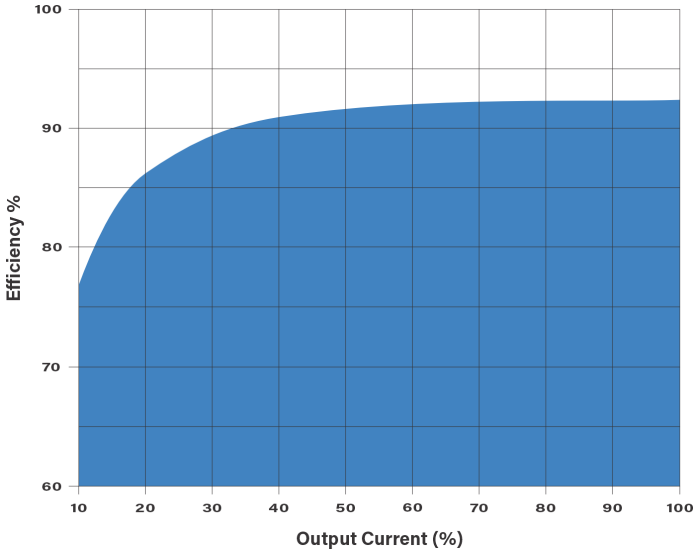
Input Voltage Derating (+25°C)



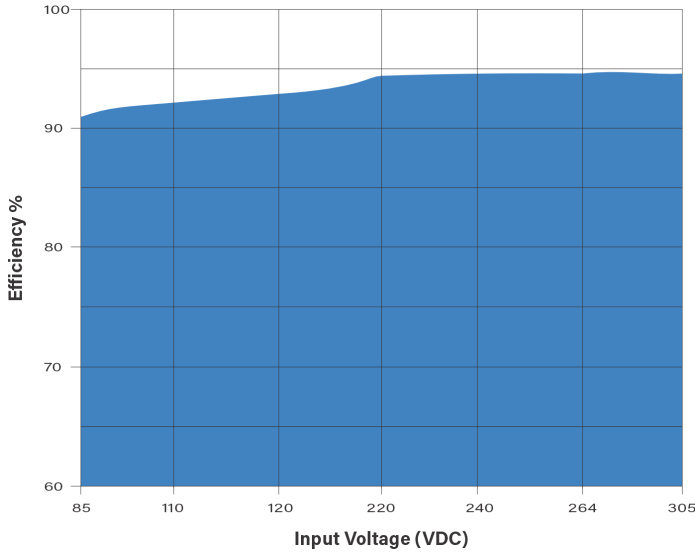
Efficiency vs Input Voltage: 12V, Full Load



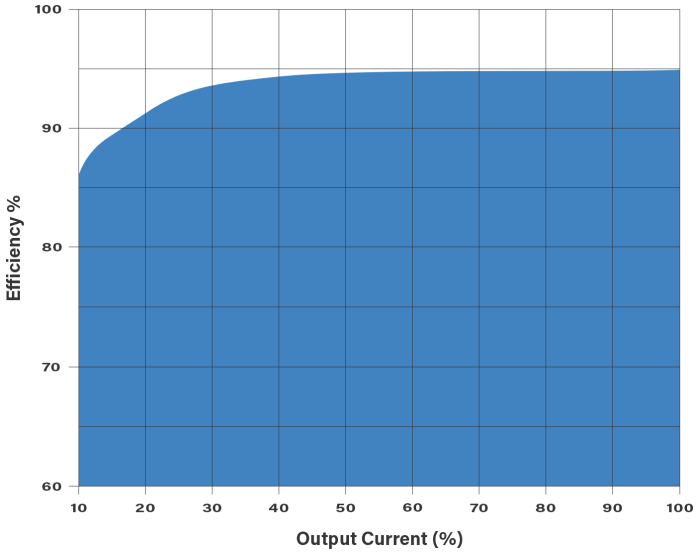
Efficiency vs Output Load: 12V, 230VAC



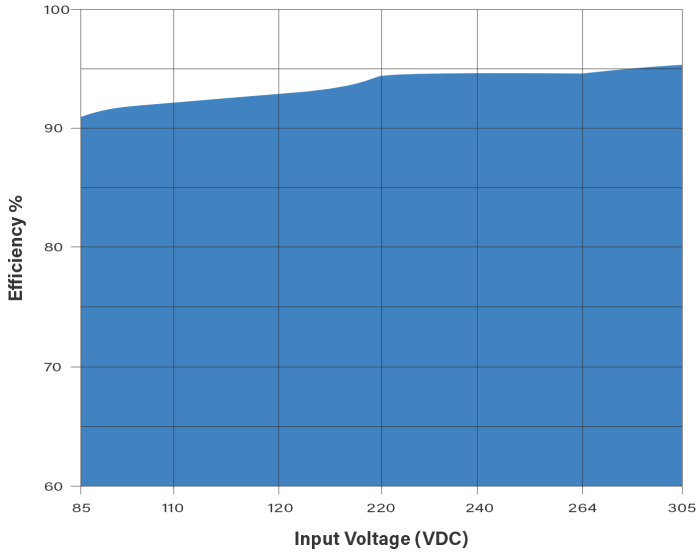
Efficiency vs Input Voltage: 24V, Full Load



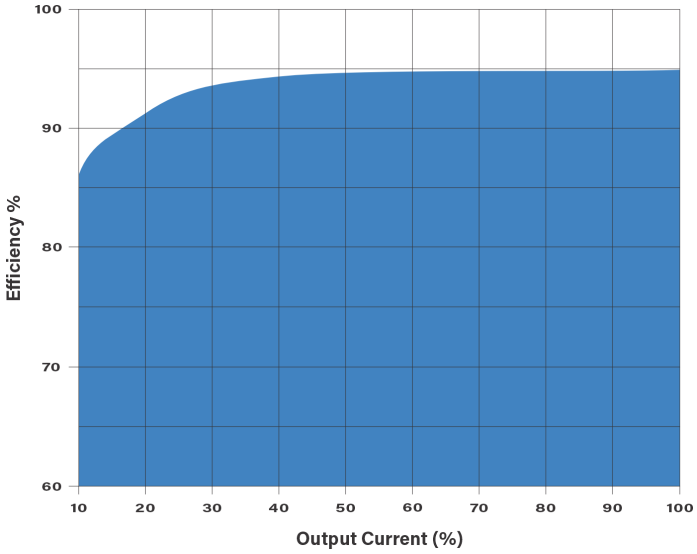
Efficiency vs Output Load: 24V, 230VAC



Efficiency vs Input Voltage: 48V, Full Load



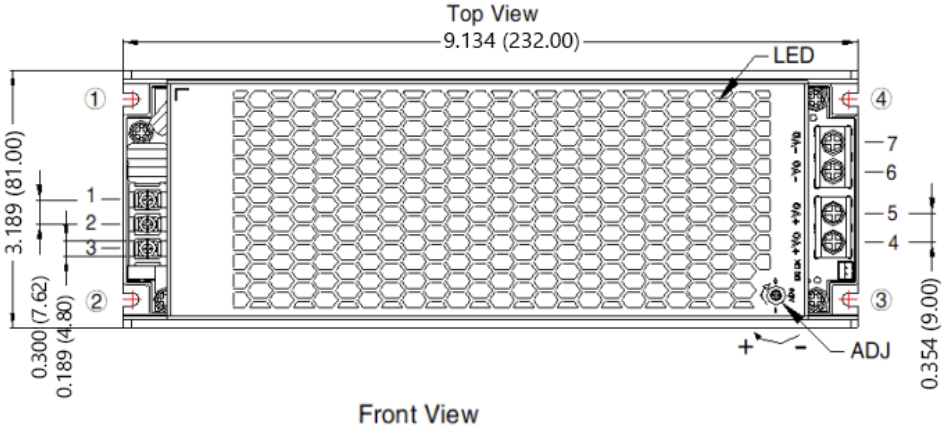
Efficiency vs Output Load: 48V, 230VAC

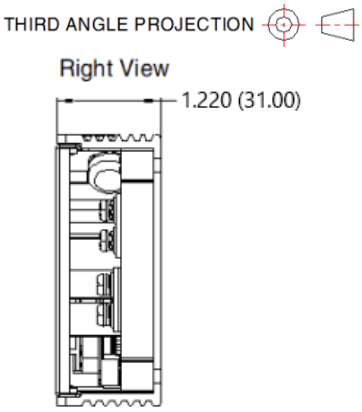


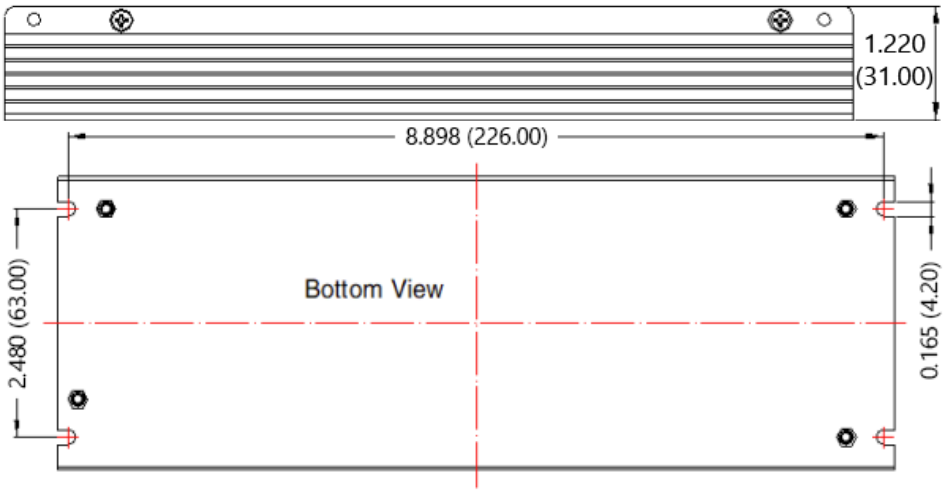
EMI Characteristics

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







Pin-Out	
Pin	**Function**
1	GRND
2	AC(N)
3	AC(L)
4	+Vo
5	+Vo
6	-Vo
7	-Vo

Notes:
- All dimensions are typical in inches (mm)
- ADJ: Output voltage adjustable
- General tolerances: ±0.039 (±1.00)

Weight:
- 34.74 oz (985g)

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	-Vo double wires
12V		14-12AWG	
24/36/48V		18-12AWG	+Vo double wires
Screw/Torque	M3.0, Max 0.5N · m	M4, Max 0.9N · m	

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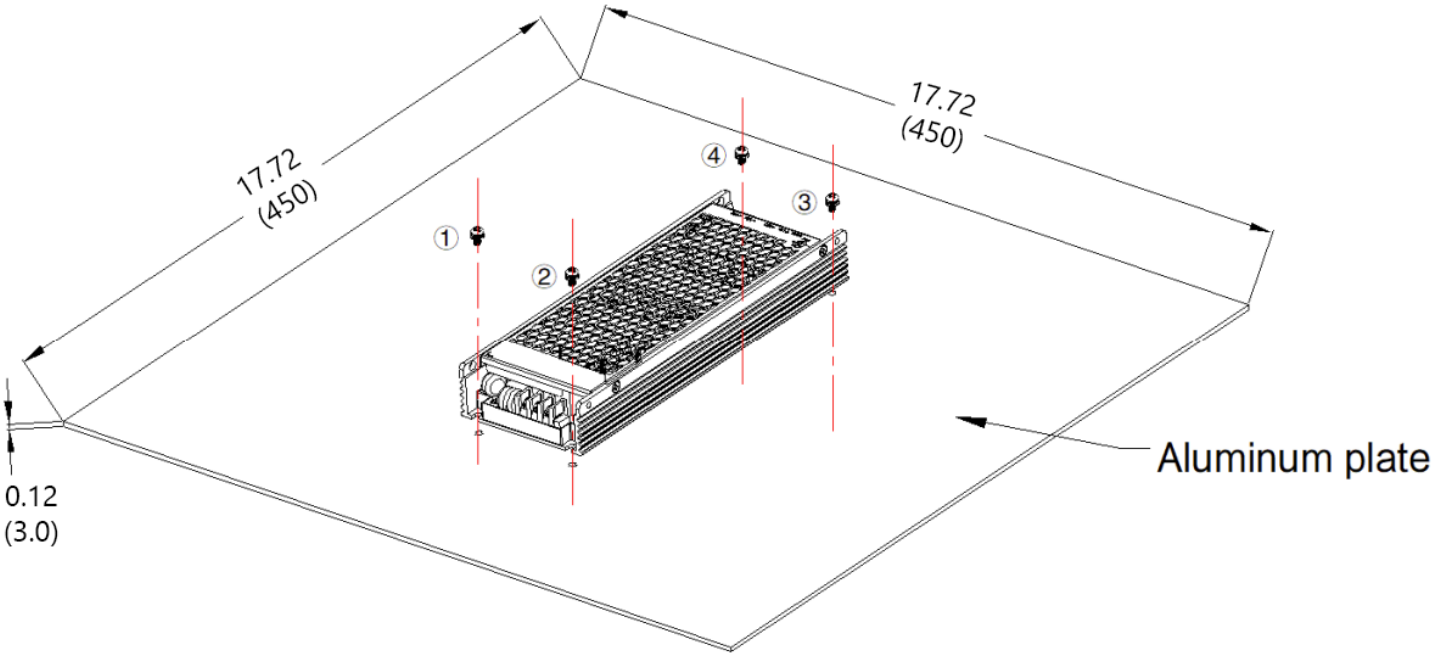
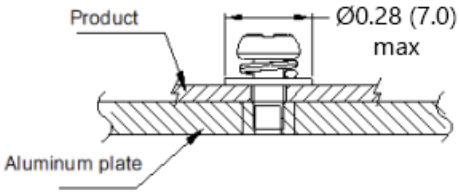
Installation Diagram





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 produxt with M3 combination screws, and the product must be firmly installed at the center of the aluminum plate.