MPU-500ASF

Very Compact, U-Channel, 500W With On Board Fan, AC/DC Power Supplies

Key Features:

- 500W Output Power
- Buit-In Fan
- Universal 90-264 AC Input
- Only 5.1 x 3.25 x 2.41 In
- Active PFC
- EN 62368 Approved
- Wide -30 to +70°C Range
- Meets EN 55032 B
- Model Without Top Fan Avail.
- 4 kVAC Isolation

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	Universal	90		264	VAC
		127		370	VDC
Input Frequency		47		63	Hz
Input Current	See Model Selection Guide				
Inrush Current	Cold Start, 115 VAC			40.0	A Pk
	Cold Start, 230 VAC			80.0	
Power Factor Correction, See Note 1	115 VAC	0.98			W/VA
	230 VAC	0.94			
Safety Ground Leakage Current	264 VAC			0.10	mA

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Minimum Load			±1.0		
Output Voltage Accuracy			±2.0		%
Output Voltage Adjust			±5.0		%VOUT
Line Regulation	VIN = 100 to 264 VAC		±1.0		%
Load Regulation	IOUT = 10 to 100%		±1.0		%
Ripple & Noise, See Note 2	12 VOUT		160		mV
	24 VOUT		240		
	48 VOUT		480		
Hold-Up Time	See Note 3	8			mSec
Temperature Coefficient	See Note 4		±0.03		%/°C
Overload Protection	See Note 5	130		160	%IOUT
Over Voltage Protection, See Note 6	12 VOUT		15		VDC
	24 VOUT		30		
	48 VOUT		56		
Over Temperature Protection	See Note 7		125		°C
Short Circuit Protection, See Note 8	Level 1 (Nominal): Continuous, Auto Recovery				
	Level 2 (Instantaneous High Current): Latch Off				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Input to Output	4,000			VAC
		5,656			VDC
	Input to Field Grnd	2,000			VAC
		2,828			VDC
	Output to Field Grnd	1,500			VAC
		2,121			VDC
Switching Frequency			65		kHz

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions	EN 55032		A
Conducted Emissions	EN 55032		B
Noise Immunity (EMS)	EN 55035		

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-30	+25	+70	°C
Storage Temperature Range		-30		+85	°C
Cooling	Free Air Convection (See Derating Curves)				
Humidity	RH, Non-condensing			95	%

Physical

Size and Weight	See Mechanical Drawings (Pages 3 & 4)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	160			kHours
Safety Standards	UL/cUL 62368 recognition (UL certificate)				
Vibration	10~500 Hz, 2G 10 min/1 Cycle. Period of 60 min each along X, Y &Z Axis				

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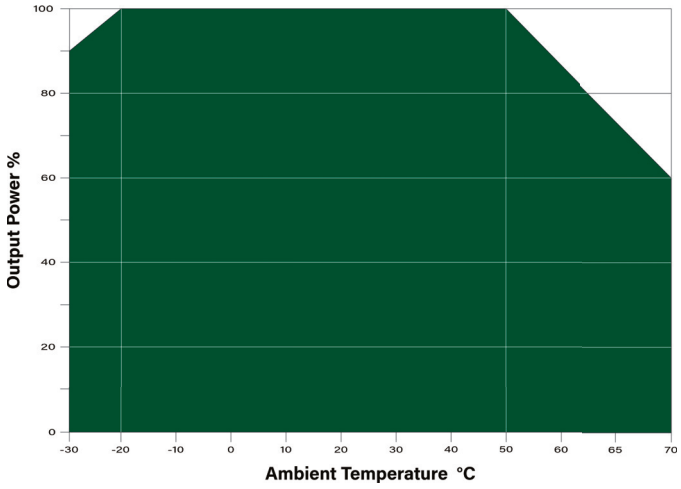
Model Selection Guide

Model Number	Input		Output		Max Output Power (W)	Max Capacitive Load (μF)	Efficiency (See Note 10)
	Current (A)		Voltage (VDC)	Current (A)			
	115 VAC	230 VAC					
MPU-500AS-12F	6.3	3.15	12.0	41.50	500	5,000 μF	90.0
MPU-500AS-24F	6.3	3.15	24.0	20.80	500	2,500 μF	90.5
MPU-500AS-48F	6.3	3.15	48.0	10.41	500	1,250 μF	91.5

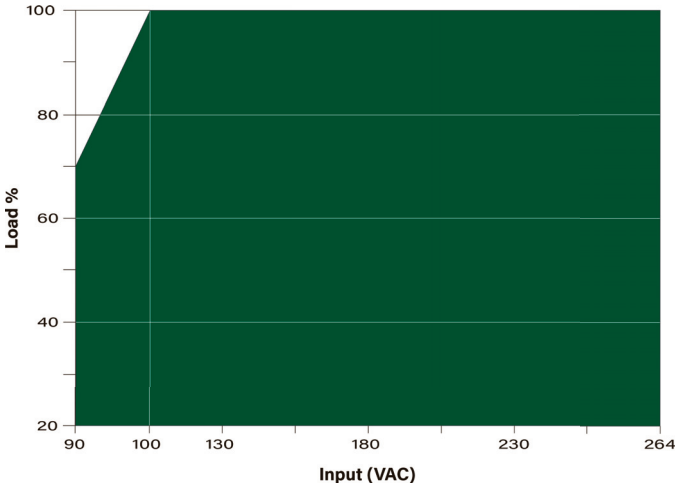
Notes:

1. PFC meets EN61000-3-2.
2. Ripple and noise is measured at 20 MHz bandwidth using a 0.1 μF and a 47 μF capacitor connected in parallel. The capacitors should be connected to the power supply terminals using a 30 cm, 18 AWG twisted pair copper wire. The oscilloscope probe ground lead should be as short as possible and connect directly to the ground ring of the probe.
3. Hold up time is measured with the input voltage set to 115 VAC and the ouput voltage set at 90%.
4. The temperature coefficient is given for the temperature range 0°C to +50°C. For the -30°C to 0°C temperature range it is ±0.06%/°C.
5. Overload protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed.
6. The overvoltage limit is ±5%. The unit recovers automatically when the output returns to within normal limits.
7. The overtemperature limit is 125 °C at the power transformer. The unit recovers automatically when the temperature drops back below this limit.
8. Under normal operation, short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed. If a high instantaneus current is sensed, the unit will latch off. In this case, the cause of the fault will need to be removed and the unit restarted.
9. Each unit includes fusing on each input line. Since these are not field replaceable, it is recommended that an external fuse be used on the input of the power supply for protection. For these units, a 10A/250V slow blow fuse is recommended.
10. Efficiency is specified as typical, with the input at 230 VAC.

Temperature Derating, V_{IN} = 100-197 VAC, 30 CFM



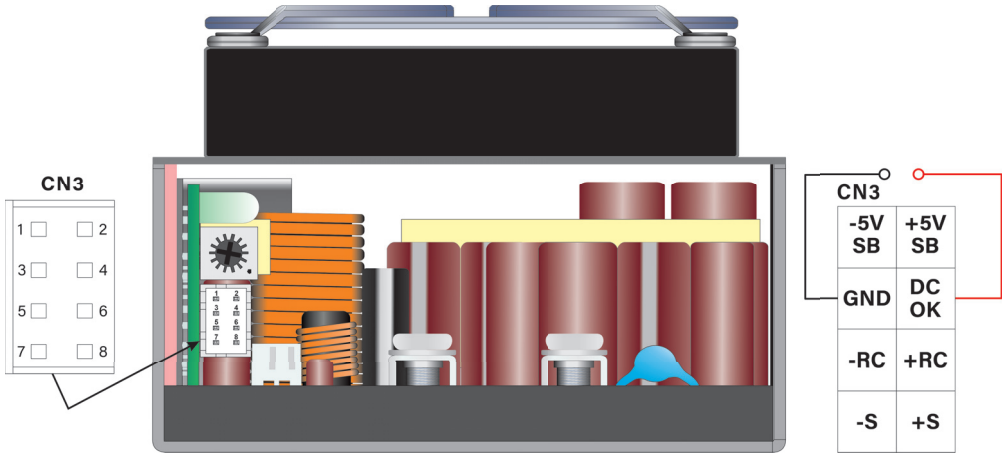
Load vs Input Voltage, T_A = 25°C



The **MPU-500ASF** is also available without the fan and cover included. See the datasheet for the **MPU-500AS**.

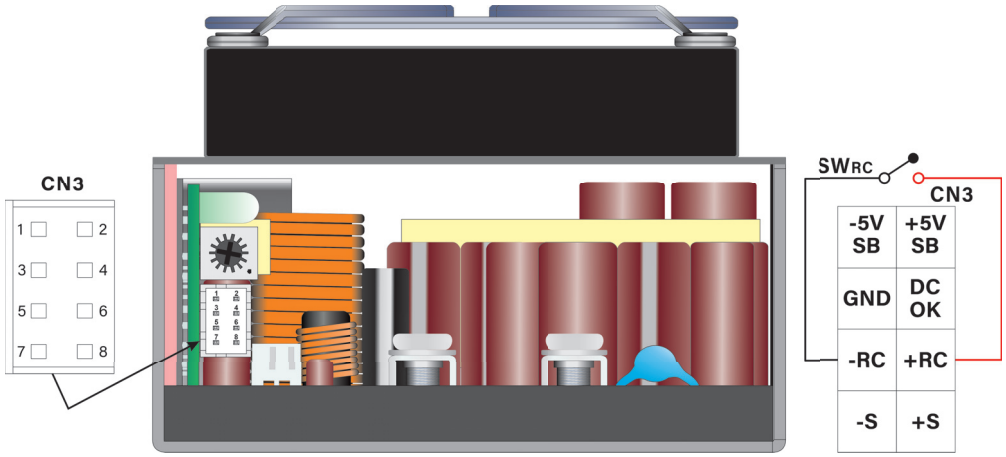
Unit Functions & Controls

Pin No	Function	Description
1	-5VSB	Connects to the unit -VOUT terminal
2	+5VSB	Standby VOUT equals 4.2V to 5.5V referenced to pin 1. The Max load current is 1A with a fan or 0.4A without a fan.
3	GND	Return for the DC OK signal output. Connects to the unit -VOUT terminal
4	DC OK	A DC output referenced to pin 3 (GND)
5	-RC	Return for the +RC signal output. Connects to -VOUT
6	+RC	Turns the unit output On/Off by electrical or dry contact between pins 5 (-RC) and 6 (+RC). To disable VOUT the voltage level between -RC and +RC must be less than 1V. To enable the output, the voltage level must be between 3.3V and 5V.
7	-Sense	The -S signal should be connected to the negative load terminal. The -S and +S leads should be twisted together to minimize noise pick up.
8	+Sense	The -S signal should be connected to the negative load terminal. The -S and +S leads should be twisted together to minimize noise pick up.



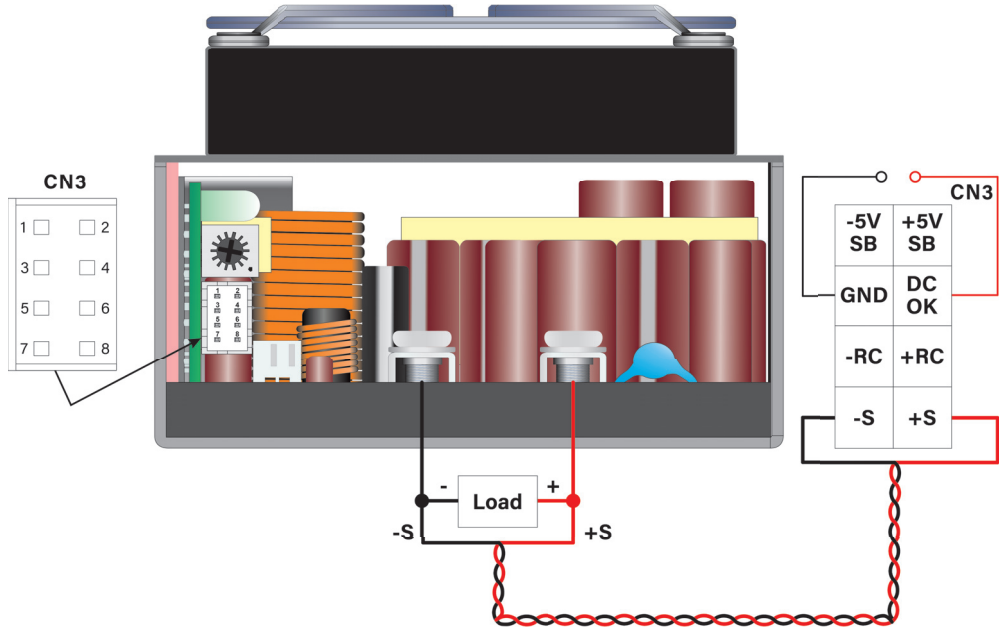
DC OK Signal

Between DC OK & GND	Output Status
3.7V - 6.0V	ON
0V - 1.0V	OFF



Remote Control

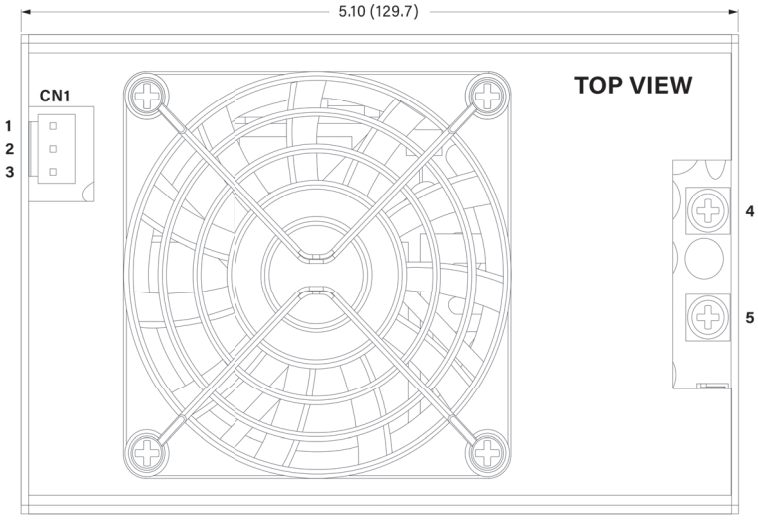
Between +RC & -RC	Output Status
Short (SW On)	OFF
Open (SW Off)	ON

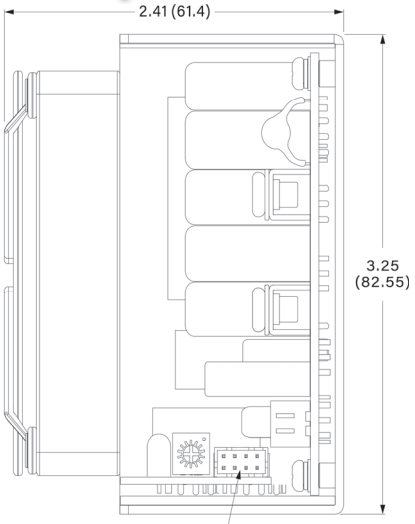


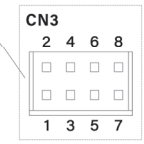
Remote Sense

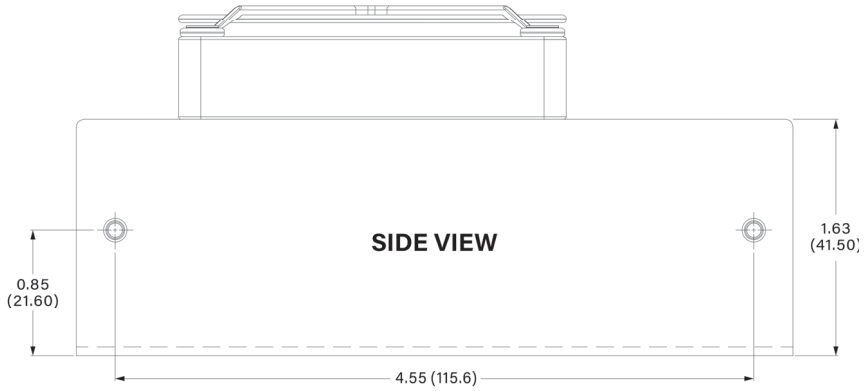
Wiring should be kept as short as possible. Wires should also be twisted together (as shown) to minimize noise.

Mechanical Dimensions

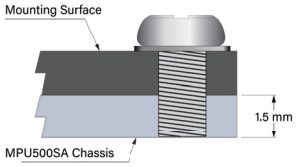


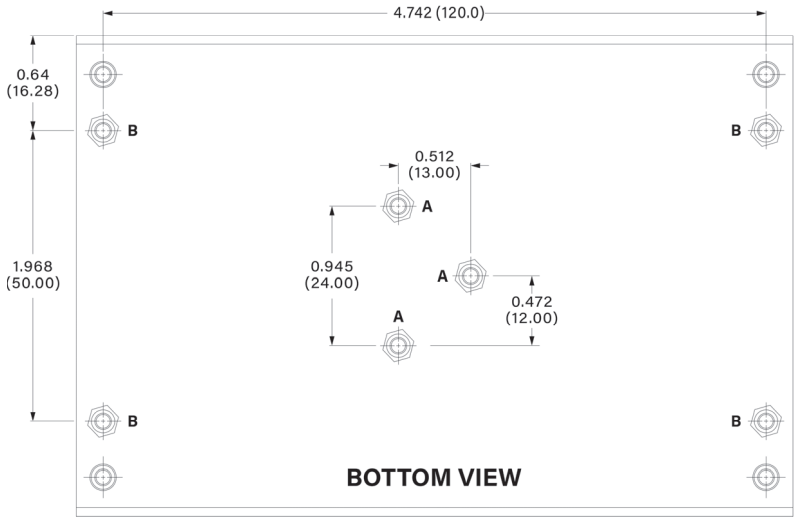






Product Mounting





Mounting Screws (A):
- M3 x 0.5P
  For Fixture to Chassis Only

Mounting Screws (B):
- M3 x 0.5P
  For Fixture to PCB/Chassis

Torque: 3 ± 0.5 kgf.cm

Connections

Input Connector (CN1):
- JST VHR-3N or Equivalent
  Mating Terminal SVH-41T-P1.1

Term.	Function
1	AC-Neutral
2	No Pin
3	AC-Line

Function Connector (CN3):
- JST PHDR-08VS or Equivalent
  Mating Terminal SPHD-001T-P0.5

Term.	Function
1	-5V SB
2	+5V SB
3	GND
4	DC OK
5	-RC
6	+RC
7	-Sense
8	+Sense

Output Connections (4, 5):
- 2 M3.5 Pan HD Screws
  Torque to 8 lbs-in Max
  Suitable Wire = 22 - 14 AWG

Notes:
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)
- Weight = 25.04 Oz (0.710 kg)