500W 5"×3"Green Open Frame Power Supply EPP-500 series

User's Manual

IEC62368-1 UL62368-1 BS EN/EN62368-1 BS EN/EN60335-1

ECO Automate Industrial Security Network Telecom

Features

- 5"×3" compact size
- 320W convection,500W force air
- 550W peak power (3sec.)
- EMI for both Class Ⅰ & Class Ⅱ configuration
- -30~+70℃ wide range operating temperature
- No load power consumption<0.5W by PS_ON control
- High efficiency up to 94%
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 5Vdc standby output, 12Vdc fan supply, Power Good, Power Fail and remote sense
- Operating altitude up to 5000 meters (Note.5)
- LED indicator for power on
- 3 years warranty

Applications

- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Power sourcing equipment of PoE

Description

EPP-500 is a 500W highly reliable green PCB type power supply with a high power density on the 5" by 3" footprint. It accepts 80~264VAC input and offers various output voltages between 12V and 54V. The working efficiency is up to 94% and the extremely low no load power consumption is down below 0.5W. EPP-500 is able to be used for both Class Ⅰ (with FG) and Class Ⅱ (no FG) system design. EPP-500 has complete protection functions; it is complied with the international safety regulations such as TUV BS EN/EN62368-1,TUV BS EN/EN60335-1,UL62368-1 and IEC62368-1. EPP-500 series serves as a high price-to-performance power supply solution for various industrial applications.

Model Encoding

EPP - 500 - 12

- 12 → Output voltage
- 500 → Rated wattage
- EPP → Series name

SPECIFICATION

MODEL			EPP-500-12	EPP-500-15	EPP-500-18	EPP-500-24	EPP-500-27	EPP-500-36	EPP-500-48	EPP-500-54
OUTPUT	DC VOLTAGE		12V	15V	18V	24V	27V	36V	48V	54V
	CURRENT	25CFM	41.6A	33.3A	27.8A	20.8A	18.5A	13.9A	10.4A	9.26A
		Convection	26.7A	21.3A	17.8A	13.4A	11.9A	8.9A	6.7A	5.93A
	RATED POWER Note.5	25CFM	499.2W	499.5W	500.4W	499.2W	499.5W	500.4W	499.2W	500W
		Convection	320.4W	319.5W	320.4W	321W	321.3W	320.4W	321.6W	320.2W
	PEAK POWER(3sec.)		550W							
	RIPPLE & NOISE (max.) Note.2		200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE(MAIN OUTPUT)		11.4~12.6V	14.3~15.8V	17.1~18.9V	22.8~25.2V	25.6 ~ 28.4V	34.2 ~37.8V	45.6 ~50.4V	51 ~56V
	VOLTAGE TOLERANCE Note.3		±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION		±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION		±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME		1000ms, 30ms/230VAC 1500ms, 30ms/115VAC at full load							
	HOLD UP TIME (Typ.)		10ms/230VAC 10ms/115VAC at full load							
INPUT	VOLTAGE RANGE Note.4		80 ~ 264VAC 113 ~ 370VDC							
	FREQUENCY RANGE		47 ~ 63Hz							
	POWER FACTOR		PF>0.94/230VAC PF>0.98/115VAC at full load							
	EFFICIENCY (Typ.)		91%	92%	92.5%	93%	93.5%	94%	94%	94%
	AC CURRENT (Typ.)		5.8A/115VAC 2.9A/230VAC							
	INRUSH CURRENT (Typ.)		COLD START 40A/115VAC 80A/230VAC							
	LEAKAGE CURRENT		<0.75mA / 240VAC							
PROTECTION	OVERLOAD		105 ~ 135% rated output power							
			Protection type : Hiccup mode, recovers automatically after fault condition is removed							
	OVER VOLTAGE		13.2 ~ 15.6V	16.5 ~ 19.5V	19.8 ~23.4V	26.4 ~ 31.2V	29.7 ~ 35.1V	39.6 ~ 46.8V	52.8 ~ 62.4V	56.7~59.4V
			Protection type : Hiccup mode, recovers automatically after fault condition is removed							
	OVER TEMPERATURE		Protection type : Shut down o/p voltage, recovers automatically after temperature goes down							
FUNCTION	5V STANDBY		5Vsb : 5V@0.6A without fan, 1A with fan 25CFM ; tolerance ±2%, ripple : 120mVp-p(max.)							
	12V FAN SUPPLY		12V@0.5A for driving a fan ; tolerance ±10%							
	PS-ON INPUT SIGNAL		Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V"							
	POWER GOOD / POWER FAIL		500ms>PG>10ms ; The TTL signal goes high with 10ms to 500ms delay after power set up ; The TTL signal goes low at least 1ms before Vo below 90% of rated value							
ENVIRONMENT	WORKING TEMP.		-30 ~ +70℃ (Refer to "Derating Curve")							
	WORKING HUMIDITY		20 ~ 90% RH non-condensing							
	STORAGE TEMP.		-40 ~ +85℃							
	TEMP. COEFFICIENT		±0.03%/℃ (0 ~ 50℃)							
	VIBRATION		10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes							
	OPERATING ALTITUDE Note.5		5000 meters							

500W 5"×3"Green Open Frame Power Supply EPP-500 series

SPECIFICATION

SAFETY & EMC (Note 6)	SAFETY STANDARDS	UL62368-1, TUV BS EN/EN62368-1, BS EN/EN60335-1, IEC62368-1, EAC TP TC 004 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH		
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	BS EN/EN55032(CISPR32), CNS13438	Class Ⅰ: Class B , Class Ⅱ: Class A
		Radiated	BS EN/EN55032(CISPR32), CNS13438	Class A
		Harmonic Current	BS EN/EN61000-3-2	Class A
		Voltage Flicker	BS EN/EN61000-3-3	-------
	EMC IMMUNITY	BS EN/EN55024, BS EN/EN61000-6-2		
		Parameter	**Standard**	**Test Level /Note**
		ESD	BS EN/EN61000-4-2	Level 3, 8KV air; Level 2, 4KV contact, criteria A
		Radiated Susceptibility	BS EN/EN61000-4-3	Level 3, criteria A
		EFT/Burest	BS EN/EN61000-4-4	Level 3, criteria A
		Surge	BS EN/EN61000-4-5	Level 4,2KV/L-N, criteria A
		Conducted	BS EN/EN61000-4-6	Level 3, criteria A
		Magnetic Field	BS EN/EN61000-4-8	Level 4, criteria A
		Voltage Dips and interruptions	BS EN/EN61000-4-11	＞95% dip 0. 5 periods, 30% dip 25 periods, ＞95% interruptions 250 periods
OTHERS	MTBF	194.1Khrs min. MIL-HDBK-217F (25℃)		
	DIMENSION	L*W*H	127x76.2x41mm	
			5″x3″x1.61″inch	
	PACKING	P.W.	0.46Kg	
		Q'TY	30pcs	
		G.W.	14.8Kg	
		M'MENT	0.96CUFT	

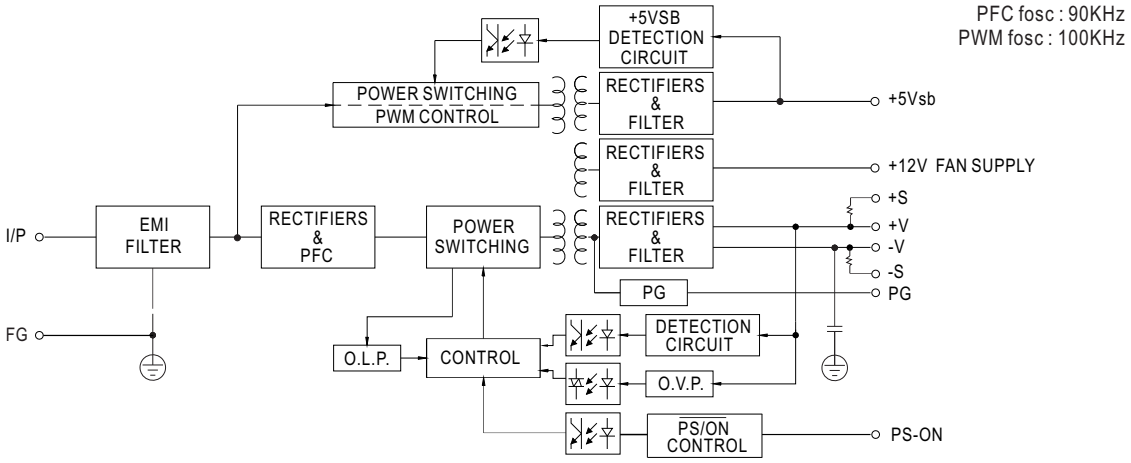
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
6. The power supply is considered a component which will be installed into a final equipment. All the Class Ⅰ (with FG) EMC test are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)

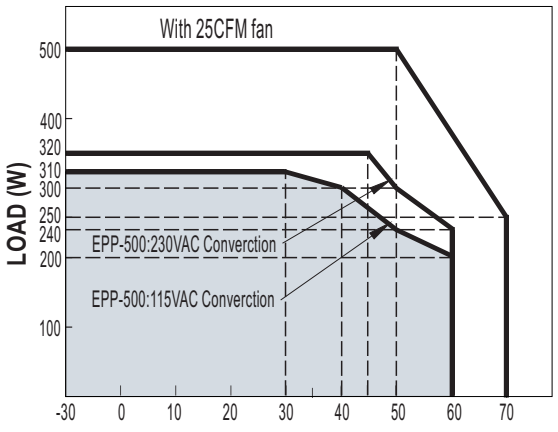
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

EMI Performance	Conducted	Radiated
Class Ⅰ (with FG)	Class B	Class A
Class Ⅱ (no FG)	Class A	Class A

■ Block Diagram

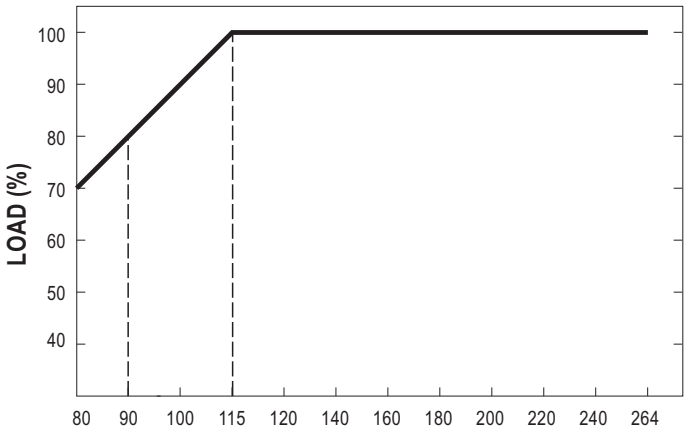


■ Derating Curve



AMBIENT TEMPERATURE (℃)

■ Output Derating VS Input Voltage

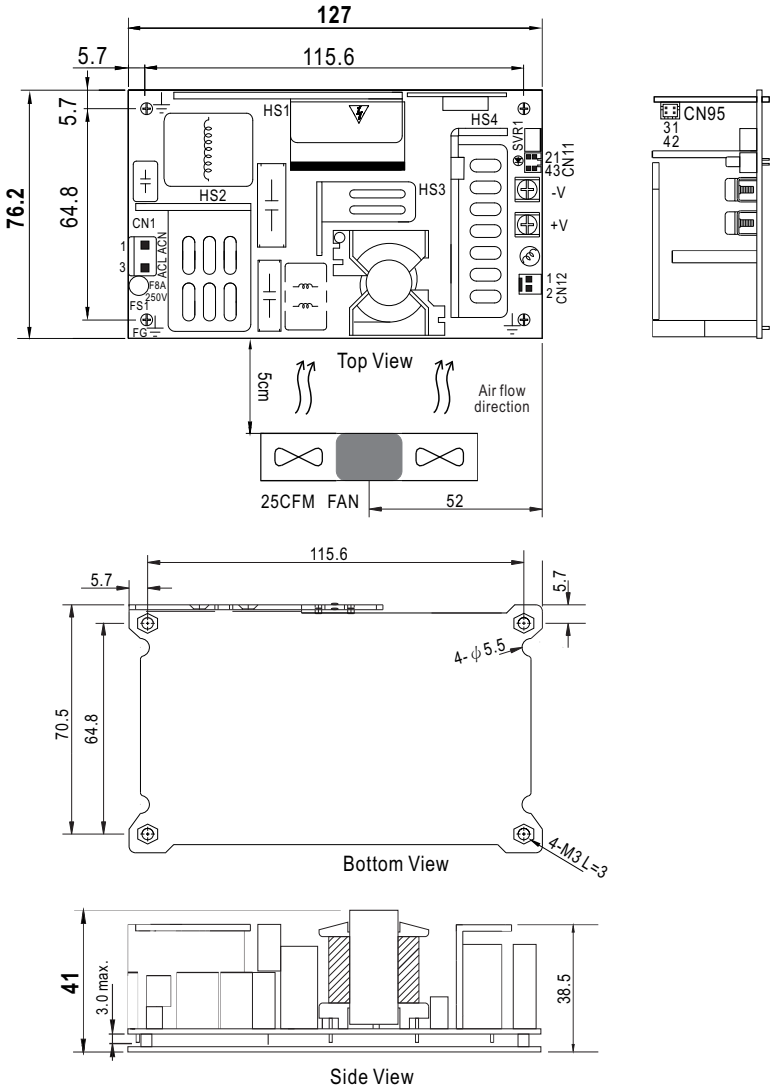


INPUT VOLTAGE (VAC) 60Hz

Convection	320W/230Vac 310W/115Vac
Force Air	500W

■ Mechanical Specification

Unit:mm



※ CONNECTION

AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

DC Output Connector (CN2,CN3)

Pin No.	Assignment	Output Terminals
CN2	-V	M3.5 Pan HD screw in 2 positions Torque to 8 lbs-in(90cNm)max.
CN3	+V	

⚠ HS1,HS2,HS3,HS4 can not be shorted

Function Connector(CN11): TKP DH2I-2X2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	-S	TKP DH2 or equivalent	TKP or equivalent
2	+S		
3	DC COM		
4	PG		

Function Connector(CN95): TKP DH2L-2X2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	5Vsb	TKP DH2 or equivalent	TKP or equivalent
2,4	DC COM		
3	PS-ON		

FAN Connector(CN12) : TKP 8812-2 or equivalent
(Except for RPS-500-TF/SF)

Pin No.	Assignment	Mating Housing	Terminal
1	DC COM	TKP 2502 or equivalent	TKP 8811 or equivalent
2	+12V		

■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html