

**FEATURES**

**500W Single Output with PFC Function**

**SP-500 series**

- Universal AC Input / Active PFC
- Protections: Short-Circuiting / Over-load / Over-voltage / Over-temperature
- All Using 105°C Long-Life Electrolytic Capacitors
- High Operating temperatures of up to 65°C
- Power "OK" Signal
- U-Bracket Low Profile, 38mm
- Active AC Surge Current Limiting
- 3 Year Warranty
- A DC fan is provided
- Cooling-Free Air Convection for 400w and 500W with 23.5CFM forced
- 2 Mode – Remoter for ON/OFF Ctrl. Which is Setup by User
- Remote Voltage Sense
- High Power Density 6.4w/in<sup>3</sup>
- Withstands 2G Vibration Testing
- High Efficiency, Long Life, and High Reliability



**SPECIFICATION**

Model		SP-500-12	SP-500-15	SP-500-24	SP-500-48
Output Requirements	Voltage (1)	12V	15V	24V	48V
	Rated Current	42A	33.5A	21A	10.5A
	Current Range (Convection)	0 ~ 33.3A	0 ~ 26.7A	0 ~ 16.7A	0 ~ 8.4A
	Rated Power (10.5CFM Fan)	0 ~ 42A	0 ~ 33.5A	0 ~ 21A	0 ~ 10.5A
	Rated Power (Convection)	399.6W	400.5W	400.8W	403.2W
	Rated Power (10.5 CFM Fan)	504W	502.5W	504W	504W
	Ripple & Noise (Max) (2)	150 mVp-p	150 mVp-p	150 mVp-p	150 mVp-p
	Voltage Adjustment Range	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	43.2 ~ 52.8V
	Voltage Tolerance (3)	± 2%	± 2%	± 2%	± 2%
	Line Regulation	± 1%	± 1%	± 1%	± 1%
	Load Regulation	± 2%	± 2%	± 2%	± 2%
	Setup, Rise Time	600ms, 30ms at full load			
	Hold Time	16ms / 230VAC at full load			
Input Requirements	Voltage (4)	90V ~ 264VAC / 127 ~ 370VDC			
	Frequency	47Hz ~ 63Hz			
	Efficiency (Typ.)	90%	90%	90%	91%
	AC Current (max.)	6 A / 115VAC 2A / 230VAC			
	Inrush Current (Typ.)	30A / 115VAC 44A / 230VAC			
	Leakage Current	< 2mA / 230VAC			
Protection Requirement	Over Load	> 105% rated output power Protection type: constant current limiting, output voltage less than 50% rating DC voltage range after 500ms the unit will shutdown			
	Over Voltage	115% ~ 150% rated output voltage Protection type: latch-off mode			
	Over Temperature	95°C With N2 sense by T1 core ±5°C, 95°C With TH1 sense near D26 heat sink ±5°C			
Environmental Conditions	Operating Temperature	-20°C ~ +65°C (Refer to output load de-rating curve)			
	Operating Humidity	20 ~ 90% RH non-condensing			
	Storage Temperature, Humidity	- 40 +85°C / 10 ~ 95% R.H~			
	Temperature Coefficient	±0.03%/°C (0 ~ 50°C)			
	Vibration	10 ~ 500HZ, 2G 10min./ 1 cycle, period for 60 min. Each along X,Y,Z axes			



Model	SP-500-12	SP-500-15	SP-500-24	SP-500-48
Safety & EMC (5)	Safety Standards	UL 60950-1, 2nd Edition, TUV EN60950-1 : 2006+A11 Approved		
	Withstand Voltage	I/P -O/P : 4242 DC I/P -FG : 2121 DC 1 minute		
	Isolation Resistance	I/P -O/P,I/P -FG, O/P -FG:100M $\Omega$ /500VDC		
	EMI Conduction & Radiation	EN55022: 2006 Class B		
	Harmonic Current	EN61000-3-2: 2006 Class A, EN61000-3-3: 1995+A1: 2001+A2: 2005		
	EMS Immunity	EN61204-3: 2000, EN55024: 1998+A1: 2001+A2: 2003 light industry level, criteria A		
Others	Connection	I/P 3P / 9.5mm terminal block with cover, O/P : 8P/9.5mm terminal block with cover		
	Power Ok signal	Open Darin. Max 30Vdc / 0.1A		
	Cooling	Free Air convection for 400W, With23.5CFM Fan for 500W		
	MTBF (MIL-HDBK-217F)			
	ON/OFF Remote Control	Two modes setup remote ON/OFF see Function Description of J2		
	Remote Voltage Sense	Compensates for wire voltage drop		
	Dimension (W*H*D)	254 x 127 x 38(mm) or 10 x 5 x 1.50(inches)		
	Packing	1.7kg : 12Pcs / 20.4KG		

**NOTES:**

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47 uf parallel capacitor.
3. Tolerance: includes set up tolerance, line regulation and load regulation.
4. De-rating may be needed under low input voltages. Please check the de-rating curve for more details.
5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
6. In parallel connection, maybe only one unit operate if the total output load is less than 5% of rated load condition.



### Mechanical Specification

Unit : mm

AC Input Terminal(CN1)Pitch:9.5mm:

Pin. No.	Assignment	
1	Line	AC/L
2	Neutral	AC/N
3	Ground/Earth	FG

Connector pin number assignment(CN2):  
JST B8B-PHDSS or equivalent

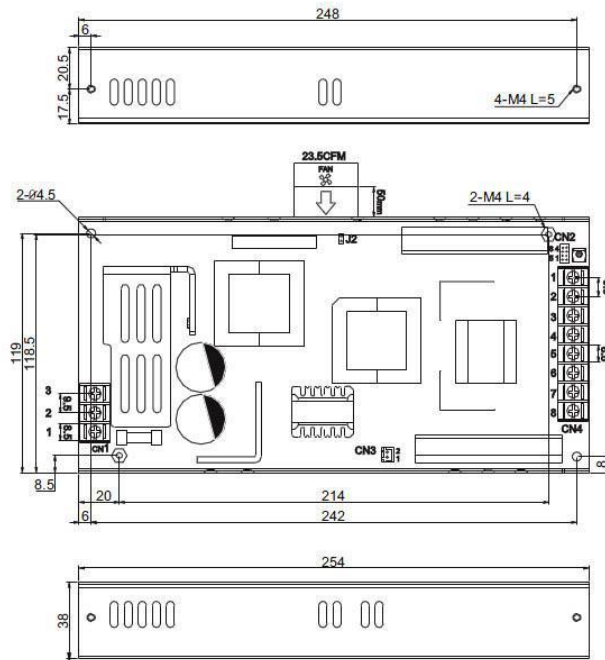
Pin. No.	Assignment	Mating Housing	Terminal
1	VS+	JST PHD-08VS or equivalent	JST SPHD-002T-P05 or equivalent
2	S GND		
3	INH-		
4	NC		
5	VS-		
6	POK		
7	INH+		
8	VS-		

External FAN Power Connector(CN3):

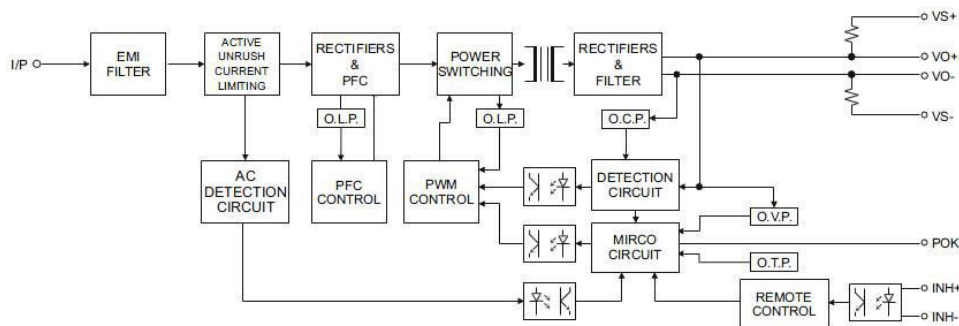
Pin. No.	Assignment	Mating Housing	Terminal
1	SGND	JST XHP-2 or equivalent	JST SXH-001T-0.6 or equivalent
2	12V+		

DC Output Terminal (CN4) pitch:9.5mm:

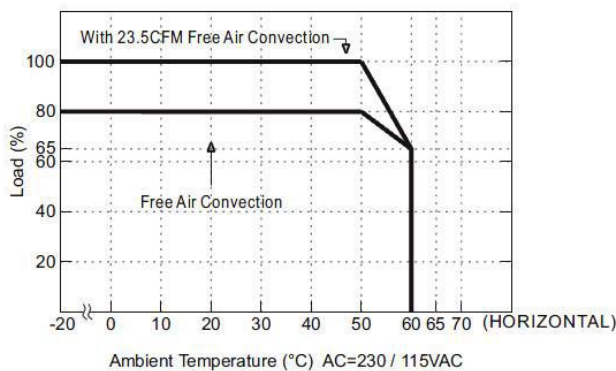
Pin. No.	Assignment	
1	VO(-)	Return
2	VO(-)	Return
3	VO(-)	Return
4	VO(-)	Return
5	VO(+)	+Main Output
6	VO(+)	+Main Output
7	VO(+)	+Main Output
8	VO(+)	+Main Output



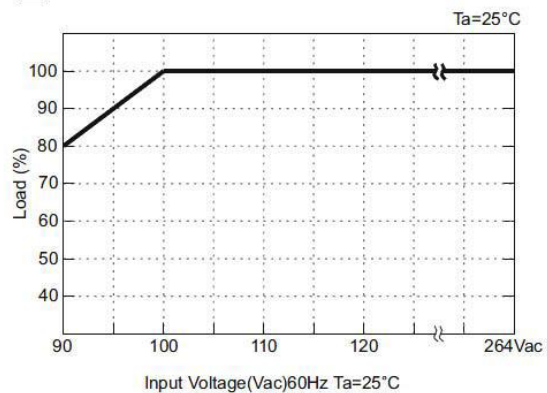
### Block Diagram



### De-rating Curve



### Static Characteristics



### ■ Fuction Description of CN2, CN3

CN2 PIN CONNECTIONS		
1	VS+	Remote Sense VO (+)
2	SGND	Signal Common
3	INH-	Remote ON/OFF Signal (-)
4	N.C	N.C
5	VS-	Remote Sense VO (-)
6	POK	Power OK signal control
7	INH+	Remote ON/OFF Signal (+)
8	VS-	Remote Sense VO (-)

CN3 PIN CONNECTIONS		
1	SGND	Return
2	12V+	FAN Voltage MAX:0.8A

### ■ Fuction Description of J2

#### 1.Remote Control

The PSU can be turned ON/OFF by using the "Remote Control" function.

J2 PIN & CN2 CONNECTIONS		
J2	INH+(7 PIN)/ INH-(3 PIN)	Output Status
Open	SW ON (>2.5V)	ENABLE
Open	SW OFF (<0.8V)	DISABLE
Close	SW ON (>2.5V)	DISABLE
Close	SW OFF (<0.8V)	ENABLE

(Default Setting)

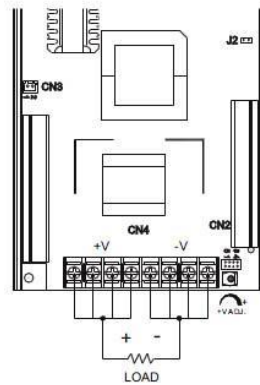
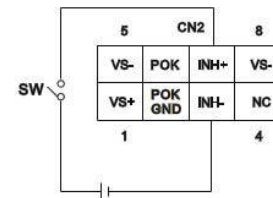


Fig 1.1



External Power I=6~20mA Source

### ■ Fuction Description of CN2

#### 2.P-OK CONTROL

POK Signal use open drain MOSFET control  
MAX:30Vds,0.1A

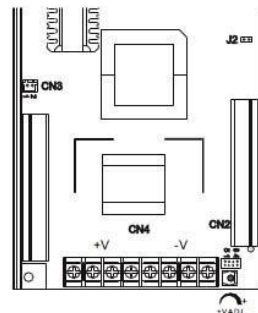
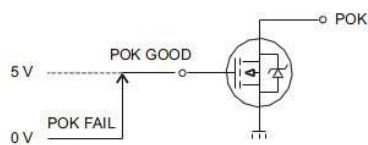
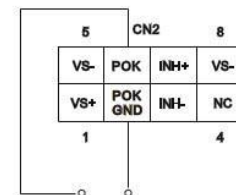


Fig 2.1



### 3. Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.

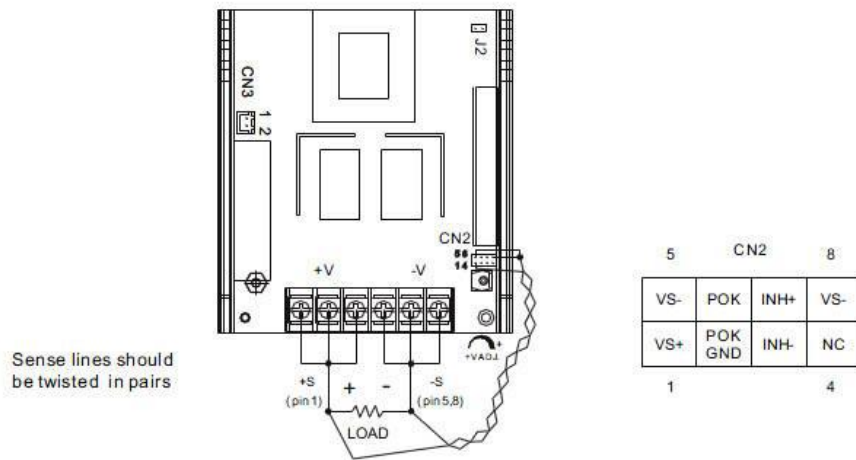


Fig 3.1

## PART NUMBER SCHEME

SP-500-24

Switching Power  
(Open Frame)

Watts

Voltage

