

# 電氣規格書



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FSP500-60AHNAA,ATX-500PNR

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# SPECIFICATION

## FSP500-60AHNAA

### (W/PFC)

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## 1.0 GENERAL REQUIREMENTS

This specification describes a 500 watts power supply. With+ 5V stand-by , remote ON/OFF control for ATX system and passive PFC(Power Factor Correction) circuit at 230 Vac.

## 2.0 INPUT REQUIREMENTS

The power supply shall operate in 230Vrms  $\pm 10\%$ .

The power supply shall operate from an AC mains frequency of 47 through 53 Hz.

Maximum inrush current from power-on (with power on at any point on the AC sine) and including ,but not limited to ,three line cycles ,shall be limited to a level below the surge rating of the input line cord ,AC switch if present ,bridge rectifier ,fuse ,and EMI filter components. Repetitive ON/OFF cycling of the AC input voltage should not damage the power supply or cause the input fuse to blow.

The AC mains steady-state RMS input current shall be:

4 amps maximum / 230 Vrms, 50 Hz.

## 3.0 OUTPUT REQUIREMENTS

### 3.1 OUTPUT VOLTAGE AND CURRENT

	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	LOAD REG.	LINE REG.	RIPPLE	NOISE
+3.3V	0.5A	10.0A	24A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P
+5V	0.3A	8.0A	20A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P
+12V1DC	1.0A	10A	18A	$\pm 5\%$	$\pm 1\%$	120mV P-P	120mV P-P
+12V2DC	1.0A	10A	18A	$\pm 5\%$	$\pm 1\%$	120mV P-P	120mV P-P
-12V	0.0A	0.2A	0.3A	$\pm 10\%$	$\pm 2\%$	120mV P-P	200mV P-P
+5Vsb	0.0A	1A	2.5A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P

(1). +3.3V & +5V total output not exceed 120W.

When +3.3V is load to 24A, the +5V maximum load is 8.16A.

When +3.3V is load to 6.06A, the +5V maximum load is 20A.

(2). +12V1DC & +12V2DC total output not exceed 408W.

(3). +3.3V & +5V & +12V1DC & +12V2DC total output not exceed **483W**

(4). All outputs shall be safety-isolated from the AC mains and share a common return. This common return must be connected to supply chassis.

(5). Voltages and ripple are measured at the load side of mating connectors with a 0.1 uF monolithic ceramic capacitor paralleled by a 47 uF electrolytic capacitor across the measuring terminals.

## LOAD REGULATION CHARACTERISTICS

NO.	LOAD CONDITION	OUTPUT LOAD					
		+3.3V	+5V	+12V1DC	+12V2DC	-12V	+5Vsb
1	COND.1	0.5A	0.3A	1.0A	1.0A	0.0A	2.0A
2	COND.2	1.0A	4.0A	1.0A	1.0A	0.0 A	0.5A
3	COND.3	24.0A	8.0A	2.0A	2.0A	0.3A	1.5A
4	COND.4	17.0A	13.0A	12.0A	11.0A	0.3A	2.0A
5	COND.5	10.0A	16.0A	8.0A	11.0A	0.3A	1.0A
6	COND.6	5.0A	6.0A	9.0A	12.0A	0.2A	2.0A
7	COND.7	2.0A	5.0A	10.0A	18.0A	0.3A	0.5A
8	COND.8	2.0A	5.0A	18.0A	10.0A	0.3A	0.5A
9	COND.9	0.5A	3.0A	3.0A	5.0A	0.0A	1.0A

### 3.2 REMOTE ON/OFF CONTROL

The power supply shall accept a logic open collector level which will disable

/ enable all the output voltage (exclude + 5V standby ).

As logic level is low, outputs voltage were enable.

As logic level is high, outputs voltage were disable.

Note: 1. Logic high level :3.50-5.25V while sourcing 0.4mA maximum.  
2. Logic low level : 0-0.5V while sinking 1.5mA maximum.  
3. Rise Time : 2ms maximum (10%-90%).

### 3.3 OUTPUT VOLTAGE HOLD-UP TIME

10.0 mS minimum : at 230V / 50 Hz.(COND.4)

### 3.4 OPERATION AT NO LOAD

The power supply shall be capable of being operated with no load on any or all outputs without damage. For no load on +3.3V&+5V, the output shall not exceed +4.5 & +6.5Vdc and the power supply may shutdown and require by remote-control or remove AC power restart.

### 3.5 PROTECTION

#### 3.5.1 OVER-VOLTAGE PROTECTION

In the event of an over-voltage condition on +3.3 & +5Vdc &+12V the power supply shall shutdown and require remote control or remove the AC mains input to reset the system.

+5V : 6.4V(maximum)  
+3.3V : 4.6V(maximum)  
+12V1DC : 15.5V(maximum)  
+12V2DC : 15.5V(maximum)

### 3.5.2 OVER-CURRENT PROTECTION

There shall be protection from an output over-current event. The supply may shutdown from such an event and require power-on restart. Testing consists of application of the listed over-current value with maximum load on all other outputs.

Over-current test values: (maximum load)

+3.3V	:	88A maximum
+5V	:	62A maximum
+12V1DC	:	32A maximum
+12V2DC	:	32A maximum

### 3.5.3 SHORT-CURRENT PROTECTION

A short circuit at any output shall cause no damage to the power supply nor blow the primary fuse. The supply may shut down in the event of a short circuit and require power-on restart. A short circuit consists of application of a test resistance of less than 0.05 ohms at each output with maximum load on all outputs.

## 3.6 OUTPUT RISETIME

The cold-start enable output voltage risetime of all outputs shall be measured with maximum load on all outputs.

risetime :	+3.3V	20mS (maximum)
(10-95%)	+5V	20mS (maximum)
	+12 V1DC	20mS (maximum)
	+12 V2DC	20mS (maximum)
	− 12 V	20mS (maximum)
	+5Vsb	20mS (maximum)

## 3.7 OUTPUT OVERSHOOT

No output voltage shall overshoot or generate spikes at turn-on or turn-off, during momentary power loss, output short, or realistic input voltage or output load changes, Overshoot is defined as any output that exceeds the voltage tolerance plus or minus an additional 5%.

## 3.8 EFFICIENCY

Overall efficiency must be 70% minimum measured at normal AC mains voltage and frequency with maximum loads on all outputs.

## 3.9 POWER GOOD SIGNAL

230V (FULL LOAD) : 100-500mS

### 3.10 POWER ON TIME

230V (FULL LOAD) : 500mS maximum.

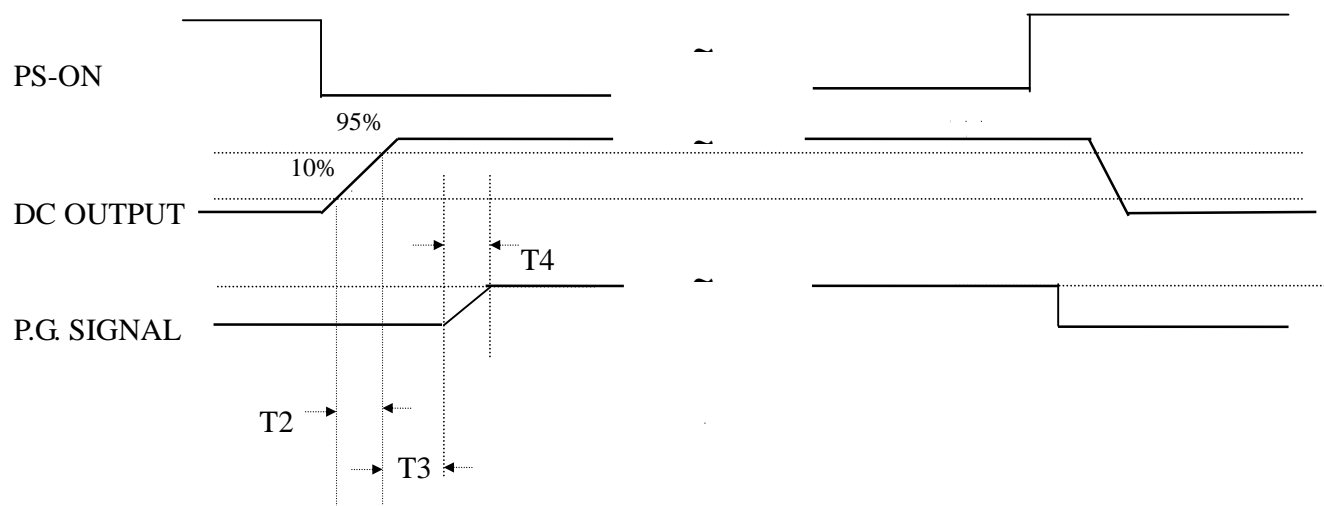


Figure 1

T2 : RISETIME < 20mS

T3 : POWER GOOD DELAY TIME 100mS-500mS

T4 : POWER GOOD RISETIME  $\leq$  10mS

## 4.0 PHYSICAL ENVIRONMENT

### 4.1 OPERATING CONDITIONS

The power supply shall be capable of continuous operation and meet all electrical specification without need for adjustment when subjected to the following environmental conditions:

#### 4.1.1 AMBIENT TEMPERATURE : 0 TO 50°C

The maximum continuous power rating of supply is 500W at 25°C .De-rate 2W/°C from 50°C to 25°C.

#### 4.1.2 RELATIVE HUMIDITY : 90%

## 4.2 STORAGE AND SHIPPING CONDITIONS

No degradation of the power supply shall occur during shipping or storage at the specified conditions.

4.2.1 AMBIENT TEMPERATURE : -20 TO +65°C

4.2.2 RELATIVE HUMIDITY : 95%

## 4.3 SHOCK AND VIBRATION

The power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Storage -40G, 11mSec. half-sine wave pulse in both directions on three mutually perpendicular axes.

Operating -10G, 11mSec. half-sine wave pulse in both directions on three mutually perpendicular axes.

Vibration Operation-Sine wave excited, 0.25G maximum acceleration. 10-250 Hz, swept at one octave/min. Fifteen minute dwell at all resonant points, where resonance is defined as those exciting frequencies at which the device under test experiences excursions two times large than non-resonant excursions.

## 5.0 REGULATORY COMPLIANCE

### 5.1 SAFETY REQUIREMENTS

TUV EN60950

CB REPORT

CE

### 5.2 DIELECTRIC STRENGTH

Primary to Frame Ground : 1800 Vac for 1 sec.

Primary to Secondary : 1800 Vac for 1 sec.

### 5.3 INSULATION RESISTANCE

Primary to Secondary : 20 Meg. ohms Minimum.

Primary to FRAME GROUND : 20 Meg. ohms Minimum.

### 5.4 GROUND LEAKAGE CURRENT

The power supply ground leakage current shall be less than 3.5mA.

### 5.5 EMISSION REQUIREMENTS

When testing the power supply must operate within the listed requirements.



## **6.0 OTHER REQUIREMENTS**

### **6.1 COOLING**

With the fan voltage set to around 12 volts,  
the fan will deliver greater than 38.6 CFM with the power  
supply in open air.

### **6.2 INPUT CONNECTIONS**

Refer to Mechanical Specifications for placement.  
The AC mains input are through a three-circuit IEC type connector mounted  
on the rear of the power supply chassis.

### **6.3 RELIABILITY**

The power supply reliability, when calculated by MIL-HDBK-217; latest  
revision, are exceed 100,000 hours with all output at maximum load and an  
ambient temperature of 25°C.

**7.0 Revision History:**

Rev	Description	Date
<b>2</b>	CHANGE LOAD REGULATION CHARACTERISTICS	2/24/14