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SPECIFICATION

文件資料管制
FSP GROUP
禁止翻印外傳

ESD14000451

FSP450-60AHNAA,ATX-450PNR

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(W/PFC)

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1.0 GENERAL REQUIREMENTS

This specification describes a 450 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 ±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:
7 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	22A	±5%	±1%	50mV P-P	50mV P-P
+5V	0.3A	8.0A	16A	±5%	±1%	50mV P-P	50mV P-P
+12V1DC	1.0A	5.0A	14.0A	±5%	±1%	120mV P-P	120mV P-P
+12V2DC	1.0A	6.5A	16.0A	±5%	±1%	120mV P-P	120mV P-P
-12V	0.0A	0.2A	0.3A	±10%	±2%	200mV P-P	120mV P-P
+5Vsb	0.0A	1.0A	2.5A	±5%	±1%	50mV P-P	50mV P-P

(1). +3.3V &+5V total output not exceed 130W.
When +3.3V is load to 20A,the +5V maximum load is 12.8A.
When +3.3V is load to15A,the +5V maximum load is 16A.
(2). +12V1DC & +12V2DC total output not exceed 360W.
(3).+3.3V &+5V & +12V1DC & +12V2DC total output not exceed 430W
(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.

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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	20.0A	6.0A	1.0A	2.0A	0.3A	1.5A
4	COND.4	17.0A	13.0A	6.5A	8.5A	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	0.3A	2.0A
7	COND.7	1.0A	5.0A	10.0A	14.0A	0.3A	0.5A
8	COND.8	1.5A	4.0A	14.0A	16.0A	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)

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3.5.2 OVER-CURRENT PROTECTION

There shall be protection from an output over-current event. The supply may shutdown form 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

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3.10 POWER ON TIME

230V (FULL LOAD) : 500mS maximum.

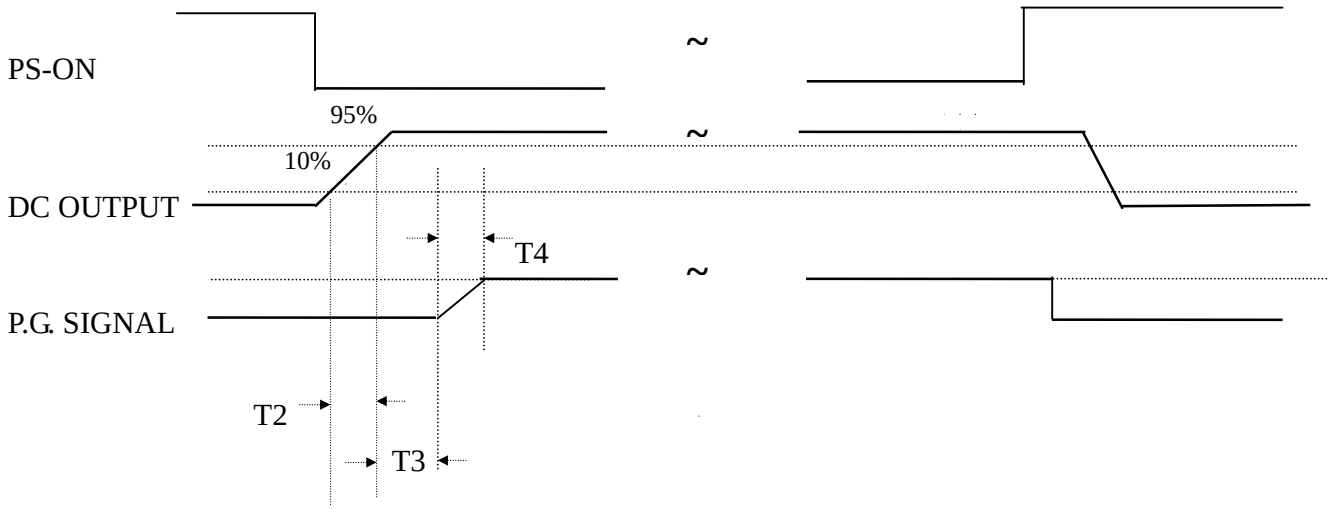

Figure 1

T2 : RISETIME < 20mS

T3 : POWER GOOD DELAY TIME 100mS-500mS

T4 : POWER GOOD RISETIME ≦ 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℃

The maximum continuous power rating of supply is 450W at 25℃ .De-rate 2W/℃ from 50℃ to 25℃.

4.1.2 RELATIVE HUMIDITY : 90%

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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℃

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 form 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.

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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℃.

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7.0 Revision History:

Rev	Description	Date

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