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SPECIFICATION



ESD0403

PILOT

RUN,,,FSP300-60GNF,,PC,ATX,WO/FAN,W/NK,W/IO,WO

RANG



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SPECIFICATION

FSP300-60GNF

9PA300B000

Main Feature:
FANLESS
Active PFC Circuit
Full Range Input
HIGH EFFICIENCY

APRIL 01, 2005
REV:1.02



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MODEL: FSP300-60GNF

Revision History

<u>Rev</u>	<u>Description</u>	<u>Date</u>	<u>Author</u>
1.00		2004/11/12	
1.01	REVISE 6.1.1 OPERATING THERMAL DERATING	2005/1/31	
1.02	REVISE 3.3. INPUT LINE CURRENT REVISE 3.4. EFFICIENCY REVISE 4.6.OVER-CURRENT PROTECTION	2005/4/01	

1. GENERAL DESCRIPTION AND SCOPE

This is the specification of Model **FSP300-60GNF**; AC-line powered switching power supply with active PFC (Power Factor Correction) circuit, meet EN61000-3-2 and with Full Range Input features.

The specification below is intended to describe as detailedly as possible the functions and performance of the subject power supply. Any comment or additional requirements to this specification from our customers will be highly appreciated and treated as a new target for us to approach.

2. REFERENCE DOCUMENTS

The subject power supply will meet the EMI requirements and obtain main safety approvals as following:

2.1 EMI REGULATORY

- FCC Part 15 Subpart J, Class 'B' 115 Vac operation.
- CISPR 22 Class 'B' 230 Vac operation.

2.2 SAFETY

- NEMKO EN 60950
- CSA-C22.2 NO. 60950
- IEC 60950
- UL 60950
- CE :
EN 55022:1998+A1: 2000, Class B
EN 61000-3-2: 2000
EN 61000-3-3: 1995+A1: 2001

CISPR22: 1997+A1: 2000, Class B
AS/NZS CISPR 22: 2002, Class B

3. INPUT ELECTRICAL SPECIFICATIONS

3.1. AC INPUT

Parameter	Min.	Nom. ⁽¹⁾	Max.	Unit
V _{in} (115VAC)	99	115	135	VAC _{rms}
V _{in} (230VAC)	180	230	265	VAC _{rms}
V _{in} Frequency	47	--	63	HZ

◆ Nominal voltages for test purposes are considered to be within ±1.0V of nominal.

3.2. INRUSH CURRENT

(Cold start – 25 deg. C)

115V	No damage
230V	No damage

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.

3.3. INPUT LINE CURRENT

115V	3.5 Amps – rms maximum
230V	2.0 Amps – rms maximum

3.4. EFFICIENCY

3.4.1 General

The efficiency of the power supply should be tested at nominal input voltage of 115V AC input and/or 230AC input, under the load conditions defined in Table 1 and Table 2. The loading condition for testing efficiency shown in Table 1 represents a fully loaded system. a ~ 50% (typical) loaded system. and a ~ 20% (light) loaded system.

Table. 1 Loading Table for Efficiency Measurements

300W(loading shown in Amps)						
Loading	+12V1	+12V2	+5V	+3.3V	-12V	+5Vsb
Full	7.0	12.0	8.0	7.5	0.2	1.0
Typical	4.0	8.0	3.0	4.0	0.1	1.0
Light	2.0	2.0	0.5	1.5	0.0	1.0

Table 2. Minimum Efficiency Vs Load

Loading	Voltage	Full load	Typical load	Light load
Required Minimum Efficiency	115V	84%	84%	78%
Required Minimum Efficiency	230V	86%	86%	80%

3.5 MECHANICAL SPECIFICATIONS

The mechanical drawing of the subject power supply, which indicate the form factor, location of the mounting holes, location, the length of the connectors, and other physical specifications of the subject power supply. Please refer to the attachment drawing.

4.0. OUTPUT ELECTRICAL REQUIREMENTS

4.1 OUTPUT VOLTAGE AND CURRENT RATING

Output	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	LOAD REG	LINE REG.	RIPPLE&NOISE	RIPPLE
+3.3V	0.5A	10A	20A	±5%	±1%	80mV P-P	50mV P-P
+5V	0.3A	10A	20A	±5%	±1%	100mV P-P	50mV P-P
+12V1DC	1.0A	4A	8 A	±5%	±1%	200mV P-P	120mV P-P
+12V2DC	1.0A	7A	14A	±5%	±1%	200mV P-P	120mV P-P
-12V	0.0A	0.4A	0.8A	±10%	±1%	200mV P-P	120mV P-P
+5VSB	0.0A	1.0A	2.0 A	±5%	±1%	100mV P-P	50mV P-P

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

(2) total output for this subject power supply is 300W watts.

4.2. LOAD CAPACITY SPECIFICATIONS

The cross regulation defined as follows, the voltage regulation limits DC include DC Output ripple & noise.

Summarizes the expected output transient step sizes for each output. The transient load slew rate $I_s = 0.01A/us$.

LOAD	+3.3V	+5V	+12V1	+12V2	-12V	+5VSB
1	7.5A	8.0A	7.0A	12.0A	0.2A	1A
2	6.0A	20.0 A	3A	3A	0A	0A
3	20.0 A	8 A	3.0A	3.0A	0A	0A
4	0.5 A	0.3A	1.0A	1.0A	0.8A	0A
5	0.5 A	0.3 A	8.0A	1.0A	0A	0A
6	0.5A	0.3A	1.0A	14.0A	0A	0A
7	0.5A	0.3A	1.0A	1.0A	0A	2A
8	0.5A	0.3 A	1.0A	1.0A	0A	0A
9	9.0A	8.0A	8.0A	5.0A	0.8A	1.0A

4.3. HOLD-UP TIME (@FULL LOAD)

115V / 60Hz : 17 mSec. Minimum.

230V / 50Hz : 17 mSec. Minimum.

The output voltage will remain within specification, in the event that the input power is removed or interrupted, for the duration of one cycle of the input frequency. The interruption may occur at any point in the AC voltage cycle. The power good signal shall remain high during this test.

4.4. OUTPUT RISE TIME

(10% TO 90% OF FINAL OUTPUT VALUE, @FULL LOAD)

115V-rms or 230V-rms + 5Vdc : 20ms Maximum

4.5.OVER VOLTAGE PROTECTION

Voltage Source	Protection Point
+3.3V	3.76V-4.8V
+5V	5.6V-7.0V
+12V	13.0V-15.6V

4.6.OVER-CURRENT PROTECTION

VOUTPUT VOLTAGE	Max. overcurrent limit
+3.3V	50A
+5V	48A
+12V1 DC	20.5A
+12V2 DC	20.5A

4.7.SHORT CIRCUIT PROTECTION

Output short circuit is defined to be a short circuit load of less than 0.1 ohm.

In the event of an output short circuit condition on +3.3V, +5V or +12V output, the power supply will shutdown and latch off without damage to the power supply. The power supply shall return to normal operation after the short circuit has been removed and the power switch has been turned off for no more than 2 seconds.

In the event of an output short circuit condition on -12V output, the power supply will not be damaged. The power supply shall return to normal operation as soon as the short circuit has been removed. and the power switch has been turned off for no more than 2 seconds.

4.8. POWER SIGNAL

POWER GOOD @ 115/230V,FULL LOAD	100 –500mSec.
POWER FAIL @115/230V, FULL LOAD	1 mSec. minimum

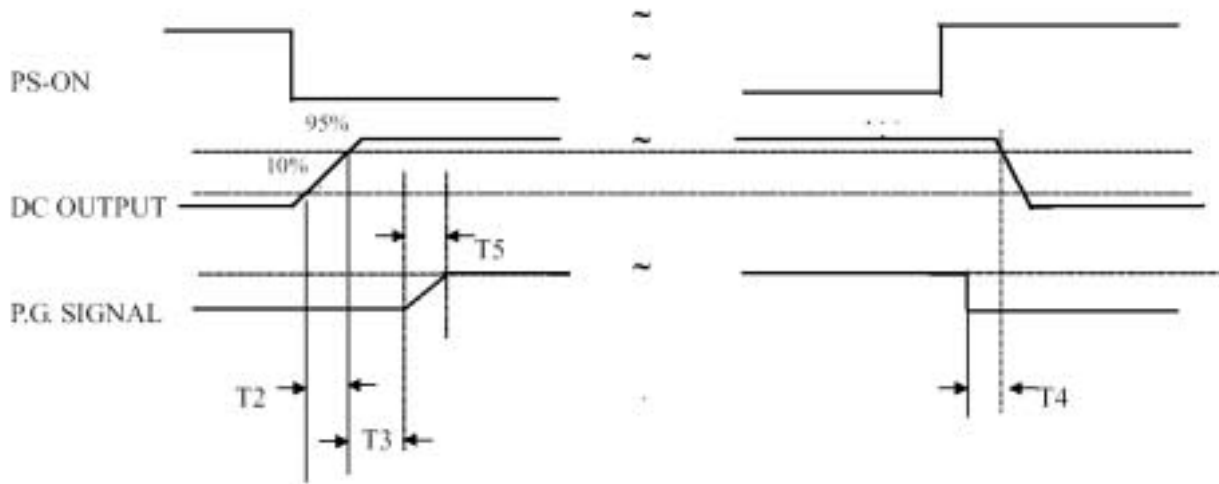


Figure 1

- T2 : RISETIME < 20mS
- T3 : POWER GOOD DELAY TIME 100mS-500mS
- T4 : POWER FAIL DELAY TIME > 1mS
- T5 : POWER GOOD RISE TIME \leq 10mS

5.0 FAN NOISE REQUIREMENTS

5.1. The subject power supply is cooled by a self-contained.

5.2. NOT FAN NOISE

AC INPUT	FULL	TYPICAL
115V	NOISE \leq 20dB	NOISE \leq 18dB
230V	NOISE \leq 20dB	NOISE \leq 18dB

6.0 ENVIRONMENTAL REQUIREMENTS

The power supply will be compliant with each item in this specification for the following Environmental conditions.

6.1. TEMPERATURE RANGE

Operating	0 to +30 deg. C
Storage	-20 to +80 deg. C

6.1.1

OPERATING THERMAL DERATING

Operating Temperature	Output Watts
30°C	300W

Thermal loading shown in Amps						
	+12V1	+12V2	+5V	+3.3V	-12V	+5Vsb
300W	7.0	12.0	8.0	7.5	0.2	1.0

6.2. HUMIDITY

Operating	5 –95% RH, Non-condensing
Storage	5 –95% RH, Non-condensing

6.3. VIBRATION

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

Vibration Operating – Sine wave excited, 0.25 G 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.

Plane of vibration to be along three mutually perpendicular axes.

7.0. LABELLING

Label marking will be permanent, legible and complied with all agency requirements.

7.1. MODEL NUMBER LABEL

Labels will be affixed to the sides of the power supply showing the following:

- Manufacturer’s name and logo.
- Model no., serial no., revision level, location of manufacturer.
- The total power output and the maximum load for each output.
- AC input rating.

8. CONNECTOR PIN DESIGNATIONS

The pin designations and color codes are defined as follows:

	P1 SYSTEM BOARD		P2 DISK DRIVER		P4-P5, P7 – P8 P10-P11, DISK DRIVER		P6,P9,P12 DISK DRIVER	
PIN1	+3.3V	ORANGE	+12V	YELLOW	+12V	YELLOW	+5V	RED
PIN2	+3.3V	ORANGE	COM	BLACK	COM	BLACK	COM	BLACK
PIN3	COM	BLACK	+5V	RED	COM	BLACK	COM	BLACK
PIN4	+5V	RED	COM	BLACK	+5V	RED	+12V	YELLOW
PIN5	COM	BLACK	+3.3V	ORANGE				
PIN6	+5V	RED						
PIN7	COM	BLACK						
PIN8	PWR-OK	GRAY						
PIN9	+5VSB	PURPLE						
PIN10	+12V	YELLOW						
PIN11	+12V	YELLOW						
PIN12	+3.3V	ORANGE						
PIN13	+3.3V	ORANGE						
	3.3V sense	BROWN						
PIN14	-12V	BLUE						
PIN15	COM	BLACK						
PIN16	PS_ON	GREEN						
PIN17	COM	BLACK						
PIN18	COM	BLACK						
PIN19	COM	BLACK						
PIN20								
PIN21	+5V	RED						
PIN22	+5V	RED						
PIN23	+5V	RED						
PIN24	COM	BLACK						

P3 SYSTEM BOARD		
PIN1	COM	BLACK
PIN2	COM	BLACK
PIN3	+12V	YELLOW/BLACK STRIPE
PIN4	+12V	YELLOW/BLACK STRIPE

