



全漢企業股份有限公司

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SPECIFICATION



ESD06047106

FSP250-50GUB

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FSP TECHNOLOGY INC

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SPECIFICATION

FSP250-50GUB

9PA250BG00

Main Feature:

**High Efficiency
Active PFC Circuit
Full Range Input
Low Noise**

AUGUST 04,2006

REV :1.01



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FSP TECHNOLOGY INC

MODEL: FSP250-50GUB

Revision History

<u>Rev</u>	<u>Description</u>	<u>Date</u>	<u>Author</u>
1.00		2006/01/06	
1.01	REVISE 3.3. INPUT LINE CURRENT REVISE 4.2. LOAD CAPACITY SPECIFICATIONS REVISE 3.4. EFFICIENCY	2006/08/04	

1. GENERAL DESCRIPTION AND SCOPE

This is the specification of Model FSP250-50GUB; 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
- TUV EN60950 OR VDE EN60950
- 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)	90	115	150	VAC _{rms}
V _{in} Frequency	57	--	63	HZ
V _{in} (230VAC)	150	230	265	VAC _{rms}
V _{in} Frequency	47	--	53	HZ

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

3.2. INRUSH CURRENT

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

AC input	Input line current	Power Factor (@ Full Load)
115V	< 3.0Amps – rms	> 0.95
230V	< 1.5Amps – rms	> 0.9

3.4. EFFICIENCY

3.4.1 General

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 ~ 50-60% (typical) loaded system. and a ~ 20-30% (light) loaded system.

Table. 1 Loading Table for Efficiency Measurements

250W(loading shown in Amps)					
Loading	+12V	+5V	+3.3V	-12V	+5Vsb
Full	16.5	6	4	0.4	1.0
Typical	10	3	2	0.2	0.5
Light	5.5	0.3	0.5	0.1	0.1

Table 2. Minimum Efficiency Vs Load

Loading	Voltage	Full load	Typical load	Light load
Required Minimum Efficiency	115V	78%	81%	80%
Required Minimum Efficiency	230V	81%	82%	80%

◆ Minimum Efficiency for test purposes are considered to be within $\pm 1.0\%$ of nominal.

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	PEAK LOAD	LOAD REG	LINE REG.	NOISE	RIPPLE
+3.3V	0.5A	10A	17A	20A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P
+5V	0.3A	10A	18A	20A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P
+12V	1A	8.5A	17A	20A	$\pm 5\%$	$\pm 1\%$	120mV P-P	120mV P-P
-12V	0A	0.4A	0.8A		$\pm 10\%$	$\pm 1\%$	120mV P-P	120mV P-P
+5VSB	0A	1A	2A	2.5A	$\pm 5\%$	$\pm 1\%$	50mV P-P	50mV P-P

(1) +3.3V & +5V total output not exceed 105W.

- (2) +3.3V & +5V & +12V total output not exceed 230W.
 (3) Total output for this subject power supply is 250 watts.
 (4) Voltages and ripple are measured at the load side of mating connectors with a 0.1uF monolithic ceramic capacitor paralleled by a 10uF electrolytic capacitor across the measuring terminals.

4.2. LOAD CAPACITY SPECIFICATIONS

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

LOAD	+3.3V	+5V	+12V	-12V	+5VSB
Condition_1	X	X	X	X	2A
Condition_2	0.5A	0.3 A	1A	0A	0.1A
Condition_3	0.5A	2A	2A	0.8A	0.1A
Condition_4	1 A	2A	17A	0.1A	0.1A
Condition_5	1 A	12A	4A	0.1A	0.1A
Condition_6	7.5A	16A	12A	0.1A	0.1A
Condition_7	12A	2A	2A	0A	0.1A
Condition_8	17A	9.7A	10.5A	0.8A	2A

4.3. HOLD-UP TIME (@ 80% of Full Load of Table. 1)

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 95% OF FINAL OUTPUT VALUE, @FULL LOAD)

115V-rms or 230V-rms + 3.3Vdc : 20ms Maximum
 + 5Vdc : 20ms Maximum
 + 12Vdc : 20ms Maximum
 + 5Vsb : 20ms Maximum

- 12Vdc : 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-16.5V

4.6.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.

4.7. POWER SIGNAL

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

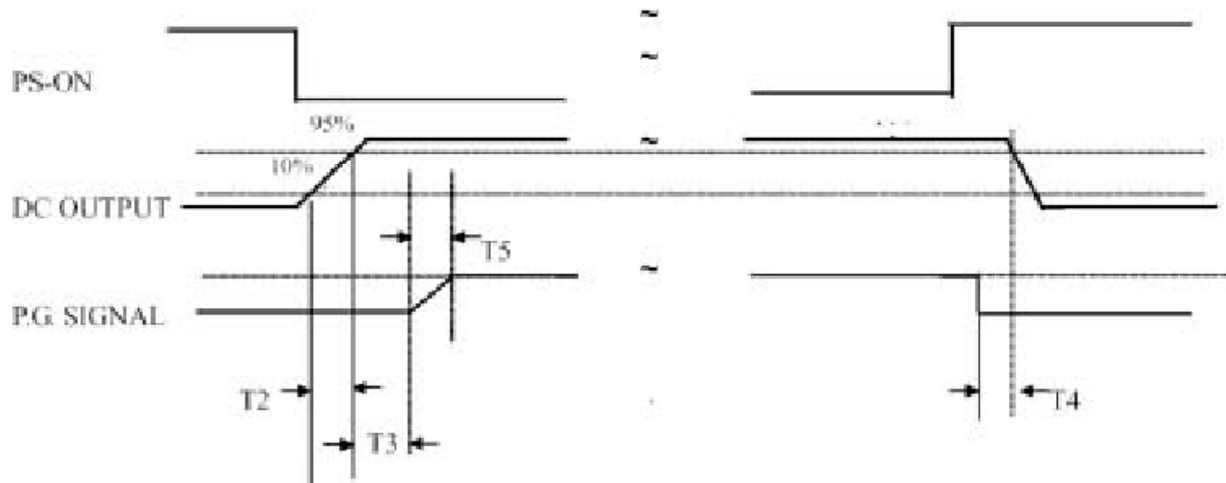


Figure 1

- T2 : RISE TIME < 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, 40mmx15mm, 12VDC fan.

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	10 to +50 deg. C
Storage	-20 to +80 deg. C

The maximum continuous power rating of supply is 250W at 50°C.

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.

6.4 GROUND LEAKAGE CURRENT

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

6.5 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.

6.6 DIELECTRIC STRENGTH

Primary to Frame Ground : 1800 Vac for 1 sec.

Primary to Secondary : 1800Vac for 1 sec

6.7 INSULATION RESISTANCE

Primary to Frame Ground : 20 Meg.ohms Minimum

Primary to Secondary : 20 Meg.ohms Minimum

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.



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MECHANICAL DRAWING



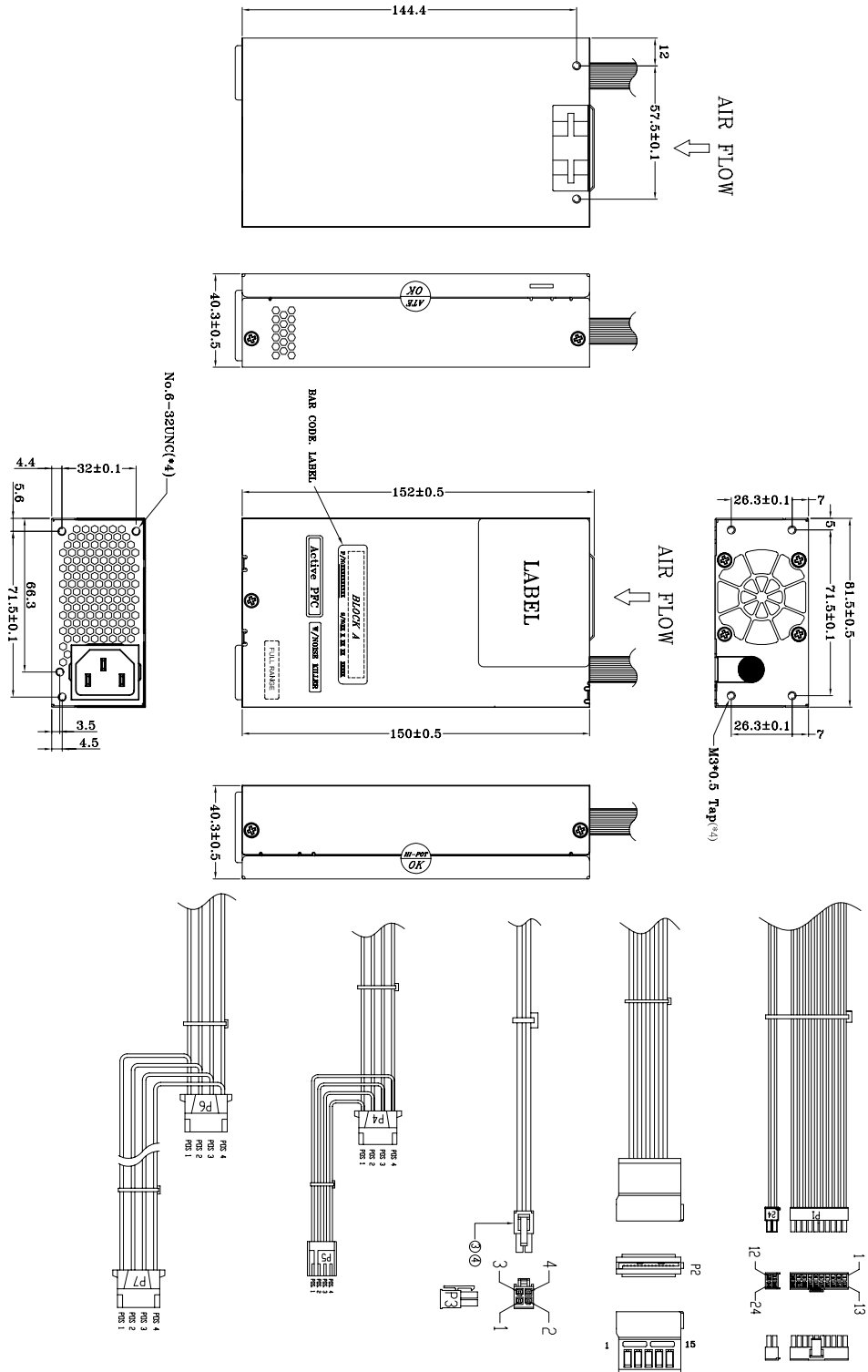
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FSP250-50GUB

Released Date:2006/12/19-16:2:31

REF. ID.	PIN NO.	SIGNAL	WIRE COLOR	GUAGE	CONNECTOR TYPE	CABLE LENGTH
P1	1	+3.3VDC	ORANGE	20	MOLEX CL1270H00 15P or EQUIV.	200 +0/-10mm
	2	+3.3VDC	ORANGE	20		
	3	COM	BLACK	20		
	4	+5VDC	RED	20		
	5	COM	BLACK	20		
	6	+5VDC	RED	20		
	7	COM	BLACK	20		
	8	PW-ON	GRAY	24		
	9	+5VSB	PURPLE	22		
	10	+12V	YELLOW	20		
	11	+12V	YELLOW	20		
	12	+3.3VDC	ORANGE	20		
	13	+3.3VDC	ORANGE	24		
	14	+3.3VDC	BROWN	24		
	15	-12VDC	BLUE	24		
	16	COM	BLACK	24		
	17	PS-ON	GREEN	24		
	18	COM	BLACK	20		
	19	COM	BLACK	20		
P2	1	+5VDC	RED	20	MOLEX CL1270H00 15P or EQUIV.	300 +0/-10mm
	2	+5VDC	RED	20		
	3	+5V	RED	20		
	4	COM	BLACK	20		
P3	1	+3.3V	ORANGE	20	MOLEX 39-01-3040 250 +0/-10mm or EQUIV.	300 +0/-10mm
	2	COM	BLACK	20		
	3	+12V	YELLOW	20		
	4	+12V	YELLOW	20		
P4	1	+12V	YELLOW	20	MOLEX 1-480424-0 300 +0/-10mm or EQUIV.	300 +0/-10mm
	2	COM	BLACK	20		
	3	COM	BLACK	20		
	4	+5V	RED	20		
P5	1	+5V	RED	22	MOLEX 171822-4 150±10mm or EQUIV.	150±10mm
	2	COM	BLACK	22		
	3	COM	BLACK	22		
	4	+12V	YELLOW	22		
P6	1	+12V	YELLOW	20	MOLEX 1-480424-0 300 +0/-10mm or EQUIV.	300 +0/-10mm
	2	COM	BLACK	20		
	3	COM	BLACK	20		
	4	+5V	RED	20		
P7	1	+12V	YELLOW	22	MOLEX 1-480424-0 150±10mm or EQUIV.	150±10mm
	2	COM	BLACK	22		
	3	COM	BLACK	22		
	4	+5V	RED	22		

NOTE:
1. ALL THE LENGTH OF OUTPUT WIRES EXCLUDE HOUSING.
2. 產地標識依業務指示加貼。



UNIT:mm

MODEL NO. : RSP250-50GUB	TITLE: ASSY	SHEET: 1 OF 1		REV:08
R&D(8)	PE	CHECKED	DESIGN	DRAWN
INTERIOR COUNTERSIGN:				賴俊佑

P/N: 9PA250BG00

DATE
DEC.15.2006