



全漢企業股份有限公司
FSP TECHNOLOGY INC.

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SPECIFICATION



EVEREST 85PLUS 800

Released Date:2011/08/25-19:30:58



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SPECIFICATION

EVEREST 85PLUS 800

9PA8000504

(FOR FSP RUSSIA)

Main Feature:

Meet 80 PLUS Bronze

Active PFC Circuit

Full Range Input

High Efficiency

High Power Density

Lower Acoustic Noise

Meet 2010 ErP

Aug. 24, 2011

REV : 1.00



全漢企業股份有限公司
FSP TECHNOLOGY INC.

MODEL: EVEREST 85PLUS 800

Revision History

<u>Rev</u>	<u>Description</u>	<u>Date</u>	<u>Author</u>
1.00	Original	2011/08/24	

1. GENERAL DESCRIPTION AND SCOPE

This is the specification of Model EVEREST 85PLUS 800; AC-line powered switching power supply with active PFC (Power Factor Correction) circuit, meet EN61000-3-2 and with Full Range Input features. Also, 5Vsb power is less than 1W_{input} at power off mode (PS_ON input at high state) which is comply with ErP Lot 6 year 2010 requirement.

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

- VDE EN60950-1
- IEC 60950-1
- UL 60950-1
- 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

3. INPUT ELECTRICAL SPECIFICATIONS

3.1. AC INPUT

Parameter	Min.	Nom. ⁽¹⁾	Max.	Unit
V _{in} (115VAC)	90	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 $\pm 1.0V$ 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 & POWER FACTOR (P.F.)

(At Full load)

AC input	Input line current	P.F.@ Full Load	P.F.@ Pin=75W
115V	< 9.0 Amps – rms	> 0.95	> 0.8
230V	< 4.5 Amps – rms	> 0.9	> 0.75

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. ~ 50% (typical) loaded system. and ~ 20% (light) loaded system.

Table 1. Loading Table for Efficiency Measurements

800W(loading shown in Amps)								
Load	5V	3.3V	12V1	12V2	12V3	12V4	-12V	+5Vsb
Full	17.07	17.07	13.15	13.15	13.15	13.15	1.00	3.00
Typical	8.53	8.53	6.58	6.58	6.58	6.58	0.50	1.50
Light	3.41	3.41	2.63	2.63	2.63	2.63	0.20	0.60

Table 2. Minimum Efficiency Vs Load

Loading	Full load	Typical load	Light load
115V Required Minimum Efficiency	82%	85%	82%
230V Required Minimum Efficiency	82%	85%	82%

3.4.2 Standby Power Consumption (5Vsb):

Input Power < 1W @ 5Vsb/100mA & 230Vac input
PS_ON input signal @ High State

4. OUTPUT ELECTRICAL REQUIREMENTS

4.1. OUTPUT VOLTAGE AND CURRENT RATING

Output	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	LOAD REG	LINE REG.	RIPPLE& NOISE
+3.3 V	0.8A	15A	30A	±5%	±1%	75mV P-P
+5 V	0.5A	15A	30A	±5%	±1%	75mV P-P
+12V1	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V2	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V3	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V4	0.5A	10A	20A	±5%	±1%	140mV P-P
-12V	0A	0.5A	1A	±10%	±1%	200mV P-P
+5VSB	0.1A	1.5A	3A	±5%	±1%	75mV P-P

- (1) +3.3V & 5V total output not exceed 175W.
- (2) +3.3V & 5V & +12V outputs power should not exceed 773W.
- (3) +5VSB & -12V outputs power should not exceed 27W.
- (4) Total output for this subject power supply is 800W.
- (5) 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	+12V1	+12V2	+12V3	+12V4	-12V	+5VSB
condition_1	X	X	X	X	X	X	X	3A
condition_2	0.8A	0.5A	0.5A	0.5A	0.5A	0.5A	0A	0.1A
condition_3	2A	2A	2A	2A	2A	2A	1A	0.1A
condition_4	3A	4A	11A	11A	20A	20A	0.1A	0.1A
condition_5	3A	4A	20A	20A	11A	11A	0.1A	0.1A
condition_6	1A	25A	3A	3A	3A	3A	0.1A	0.1A
condition_7	7.57A	30A	12.46A	12.46A	12.46A	12.46A	1A	3A
condition_8	30A	15.2A	12.46A	12.46A	12.46A	12.46A	1A	3A
condition_9	30A	1A	1.25A	1.25A	1.25A	1.25A	0A	0.1A

4.3. HOLD-UP TIME (@ Typical load of Table 1.)

115V / 60Hz : 25 m sec. minimum.

230V / 50Hz : 25 m sec. 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 + 5Vdc/3.3Vdc : 20ms Maximum

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

115V-rms or 230V-rms + 5Vsb : 25ms Maximum

115V-rms or 230V-rms - 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. OVER CURRENT PROTECTION

Output voltage	Max. over current limit
+3.3V	60A
+5V	60A
+12V1	40A
+12V2	40A
+12V3	40A
+12V4	40A

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, +12V1, +12V2, +12V3 or 12V4 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 –500m sec.
POWER FAIL @ 115/230V, FULL LOAD	1 m sec. minimum

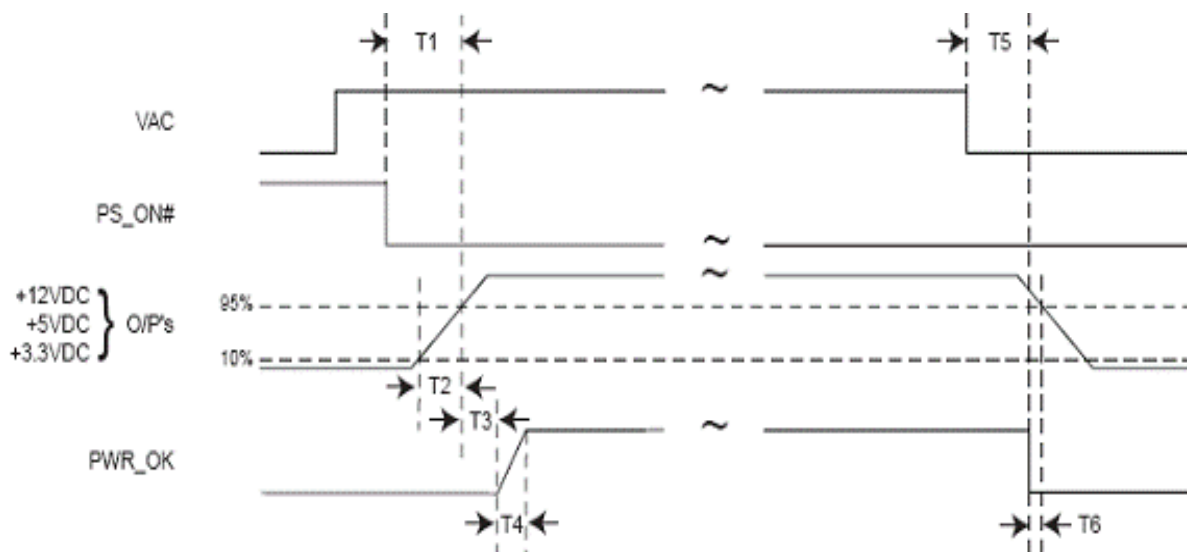


Figure:

- T1: Power-on time shall be less than 500 ms ($T1 < 500$ ms).
- T2: Rise time : 0.1 ms to 20 ms ($0.1 \text{ ms} \leq T2 \leq 20$ ms).
- T3: Power-ok delay time: $100 \text{ ms} < T3 < 500$ ms
- T4: Power-ok rise time: $T4 \leq 1$ ms
- T5 + T6: AC loss to output hold-up time : $T5 + T6 \geq 17$ ms

4.9. The main power supply shall be off when the PS_ON pin is floating (open collector). The ON/STBY pin of P1 must remain off state for 5 Sec (maximum) prior to switching to the ON state.

5. ENVIRONMENTAL REQUIREMENTS

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

5.1. TEMPERATURE RANGE

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

The maximum continuous power rating of supply is 800W at 50°C.

5.2. HUMIDITY

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

5.3. 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.

5.4. GROUND LEAKAGE CURRENT

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

5.5. 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.

5.6. DIELECTRIC STRENGTH

Primary to Frame Ground : 1800 Vac for 1 sec.

Primary to Secondary : 1800Vac for 1 sec

5.7. INSULATION RESISTANCE

Primary to Frame Ground : 20 Meg.ohms Minimum

Primary to Secondary : 20 Meg.ohms Minimum

6. FAN NOISE REQUIREMENTS

6.1. The subject power supply is cooled by a self-contained, 120mm*25mm, 12VDC fan.

6.2. FAN NOISE

AC INPUT	Full load (Table.1)	Typical load (Table.1)	Light load(Table.1)
115V	NOISE \leq 38dB	NOISE \leq 26dB	NOISE \leq 24dB
230V	NOISE \leq 38dB	NOISE \leq 26dB	NOISE \leq 24dB

7. 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. 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.



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SPECIFICATION

EVEREST 85PLUS 800

9PA8000504

(FOR FSP RUSSIA)

Main Feature:

Meet 80 PLUS Bronze

Active PFC Circuit

Full Range Input

High Efficiency

High Power Density

Lower Acoustic Noise

Meet 2010 ErP

Aug. 24, 2011

REV : 1.00



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FSP TECHNOLOGY INC.

MODEL: EVEREST 85PLUS 800

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1.00	Original	2011/08/24	

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- CISPR 22 Class 'B' 230 Vac operation.

2.2. SAFETY

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- CE :
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3. INPUT ELECTRICAL SPECIFICATIONS

3.1. AC INPUT

Parameter	Min.	Nom. ⁽¹⁾	Max.	Unit
V _{in} (115VAC)	90	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 $\pm 1.0V$ 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 & POWER FACTOR (P.F.)

(At Full load)

AC input	Input line current	P.F.@ Full Load	P.F.@ Pin=75W
115V	< 9.0 Amps – rms	> 0.95	> 0.8
230V	< 4.5 Amps – rms	> 0.9	> 0.75

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. ~ 50% (typical) loaded system. and ~ 20% (light) loaded system.

Table 1. Loading Table for Efficiency Measurements

800W(loading shown in Amps)								
Load	5V	3.3V	12V1	12V2	12V3	12V4	-12V	+5Vsb
Full	17.07	17.07	13.15	13.15	13.15	13.15	1.00	3.00
Typical	8.53	8.53	6.58	6.58	6.58	6.58	0.50	1.50
Light	3.41	3.41	2.63	2.63	2.63	2.63	0.20	0.60

Table 2. Minimum Efficiency Vs Load

Loading	Full load	Typical load	Light load
115V Required Minimum Efficiency	82%	85%	82%
230V Required Minimum Efficiency	82%	85%	82%

3.4.2 Standby Power Consumption (5Vsb):

Input Power < 1W @ 5Vsb/100mA & 230Vac input
PS_ON input signal @ High State

4. OUTPUT ELECTRICAL REQUIREMENTS

4.1. OUTPUT VOLTAGE AND CURRENT RATING

Output	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	LOAD REG	LINE REG.	RIPPLE& NOISE
+3.3 V	0.8A	15A	30A	±5%	±1%	75mV P-P
+5 V	0.5A	15A	30A	±5%	±1%	75mV P-P
+12V1	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V2	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V3	0.5A	10A	20A	±5%	±1%	140mV P-P
+12V4	0.5A	10A	20A	±5%	±1%	140mV P-P
-12V	0A	0.5A	1A	±10%	±1%	200mV P-P
+5VSB	0.1A	1.5A	3A	±5%	±1%	75mV P-P

- (1) +3.3V & 5V total output not exceed 175W.
- (2) +3.3V & 5V & +12V outputs power should not exceed 773W.
- (3) +5VSB& -12V outputs power should not exceed 27W.
- (4) Total output for this subject power supply is 800W.
- (5) 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	+12V1	+12V2	+12V3	+12V4	-12V	+5VSB
condition_1	X	X	X	X	X	X	X	3A
condition_2	0.8A	0.5A	0.5A	0.5A	0.5A	0.5A	0A	0.1A
condition_3	2A	2A	2A	2A	2A	2A	1A	0.1A
condition_4	3A	4A	11A	11A	20A	20A	0.1A	0.1A
condition_5	3A	4A	20A	20A	11A	11A	0.1A	0.1A
condition_6	1A	25A	3A	3A	3A	3A	0.1A	0.1A
condition_7	7.57A	30A	12.46A	12.46A	12.46A	12.46A	1A	3A
condition_8	30A	15.2A	12.46A	12.46A	12.46A	12.46A	1A	3A
condition_9	30A	1A	1.25A	1.25A	1.25A	1.25A	0A	0.1A

4.3. HOLD-UP TIME (@ Typical load of Table 1.)

115V / 60Hz : 25 m sec. minimum.

230V / 50Hz : 25 m sec. 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 + 5Vdc/3.3Vdc : 20ms Maximum

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

115V-rms or 230V-rms + 5Vsb : 25ms Maximum

115V-rms or 230V-rms - 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. OVER CURRENT PROTECTION

Output voltage	Max. over current limit
+3.3V	60A
+5V	60A
+12V1	40A
+12V2	40A
+12V3	40A
+12V4	40A

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, +12V1, +12V2, +12V3 or 12V4 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 – 500m sec.
POWER FAIL @ 115/230V, FULL LOAD	1 m sec. minimum

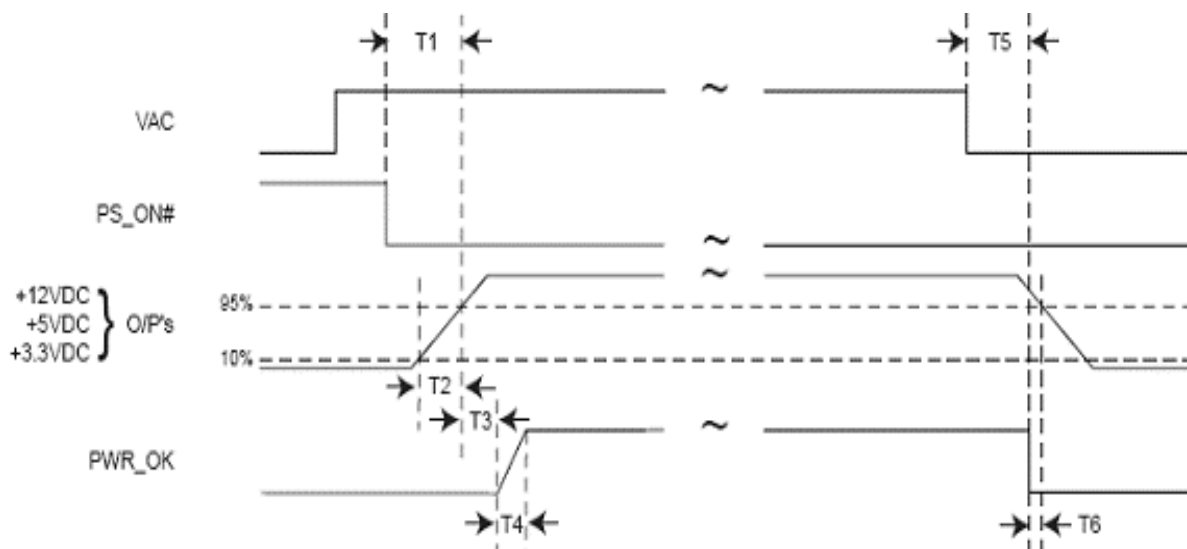


Figure:

T1: Power-on time shall be less than 500 ms ($T1 < 500$ ms).

T2: Rise time : 0.1 ms to 20 ms ($0.1 \text{ ms} \leq T2 \leq 20$ ms).

T3: Power-ok delay time: $100 \text{ ms} < T3 < 500$ ms

T4: Power-ok rise time: $T4 \leq 1$ ms

T5 + T6: AC loss to output hold-up time : $T5 + T6 \geq 17$ ms

- 4.9. The main power supply shall be off when the PS_ON pin is floating (open collector).
 The ON/STBY pin of P1 must remain off state for 5 Sec (maximum) prior to switching to the ON state.

5. ENVIRONMENTAL REQUIREMENTS

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

5.1. TEMPERATURE RANGE

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

The maximum continuous power rating of supply is 800W at 50°C.

5.2. HUMIDITY

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

5.3. 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.

5.4. GROUND LEAKAGE CURRENT

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

5.5. 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.

5.6. DIELECTRIC STRENGTH

Primary to Frame Ground : 1800 Vac for 1 sec.

Primary to Secondary : 1800Vac for 1 sec

5.7. INSULATION RESISTANCE

Primary to Frame Ground : 20 Meg.ohms Minimum

Primary to Secondary : 20 Meg.ohms Minimum

6. FAN NOISE REQUIREMENTS

6.1. The subject power supply is cooled by a self-contained, 120mm*25mm, 12VDC fan.

6.2. FAN NOISE

AC INPUT	Full load (Table.1)	Typical load (Table.1)	Light load(Table.1)
115V	NOISE \leq 38dB	NOISE \leq 26dB	NOISE \leq 24dB
230V	NOISE \leq 38dB	NOISE \leq 26dB	NOISE \leq 24dB

7. 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. 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.