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SPECIFICATION



FSP015-DYAA1 /9NA0152200

Released Date:2011/05/04-13:38:26



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Efficiency Testing Criteria

The Product Meet	Regulation	Output Power	Average Efficiency in Active Mode	Maximum Power in No Load	Total Harmonic Distortion
	Energy Star EPS2.0	$1W \leq P_o \leq 49W$	76.41%	$\leq 0.3W$	THD,V <2%
	ErP Lot 7 Tier2	$1W \leq P_o \leq 51W$	76.41%	$\leq 0.3W$	THD,V <2%

Electrical Specification Revision History:

<u>Rev</u>	<u>Description</u>	<u>Date</u>
1.0	SPEC ISSUE	MAR,11,10”
2.0	CHANGE 5.6	JAN,13,11”

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ATTACHMENT: ASSY FIGURES

1.0 GENERAL DESCRIPTION AND SCOPE

This is the specification of Model FSP015-DYAA1; part no. 9NA0152200 AC-DC adapter switching power supply designed and manufactured by FSP GROUP, INC. located in Taiwan, Republic of China.

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.

2.0 CONNECTOR PIN DESIGNATIONS

The pin designations and color codes are defined as follows:

3.0 OUTPUT ELECTRICAL REQUIREMENTS

3.1 OUTPUT RATING

Output	Nominal	Regulation	Ripple/Noise	Min	Max
1	+5.0V	4.75V~5.25V	120mV	0A	3.0A

The total output regulation shall be $\pm 5\%$, including the effects of line voltage variations, load current, ripple and noise, and the AC component of the load current. Ripple and noise measurements shall be made under all specified load conditions through a single Pole low pass filter with 20MHz cutoff frequency. Outputs shall bypass at the connector with a 0.1uF ceramic disk capacitor and a 47uF electrolytic capacitor to simulate system loading.

Ripple Noise test condition: At a static state input voltage ,Vin:115Vac & 230Vac,output at Max Current.

3.2 SHORT CIRCUIT PROTECTION

Output can be shorted without damage, and auto recovery.

3.3 OVER-CURRENT PROTECTION

Output current limit : 5A(Max) at 115Vac & 230Vac & C. C. Mode.

3.4 TURN-ON DELAY TIME_Td(on)

The turn-on delay from application of AC input power to the establishment of rated DC power voltage should not exceed 3.0 seconds under at 115Vac full load and C.C mode test.

3.5 HOLD UP TIME_Th

8mS minimum. Tested 115Vac input and max load at output.

3.6 DYNAMIC LOAD REGULATION

Output Change between 0.5A and 2.5A or 2.5A and 0.5A load, slew rate is 0.5 ~ 1.0A/uS.
High : 10mS, Low : 10mS, 4.75Vdc < Vout < 5.25Vdc.

3.7 OVER VOLTAGE PROTECTION

The voltage will not exceed the upper trip limit with latch up function .

Output Voltage	Upper trip limit	Remark
4.75Vdc ~ 5.25Vdc	9Vdc	Only internal test.

3.8 NO LOAD POWER CONSUMPTION

No Load Power Consumption: Input Power should be under 0.3W at Vin: 115Vac/60Hz & 230Vac/50Hz .

4.0. INPUT ELECTRICAL SPECIFICATIONS

4.1 INPUT VOLTAGE RANGE

PARAMETER	MIN.	NOM.	MAX.	UNITS
V-in Range	90V	115/230	264V	V-rms

4.2 INPUT FREQUENCY

47 - 63Hz

4.3 INRUSH CURRENT

The cold inrush current must not cause the input fuse to open or cause damage to components.

4.4 STEADY AC CURRENT

115Vac @Full Load	0.5A (Max)
230Vac @Full Load	0.3A (Max)

4.5 EFFICIENCY

The AC Adapter will be a minimum of **74%** efficient at 115Vac & 230Vac , maximum load and cold start.

5.0. ENVIRONMENTAL REQUIREMENTS

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

5.1 TEMPERATURE RANGE

Operating	0 to + 40 deg. C
Storage	-25 to +80deg.C

5.2 HUMIDITY

Operating	20 – 80% RH, Non-condensing
Storage	10 – 90% RH, Non-condensing

5.3 VIBRATION

10 to 100Hz sweep at a constant acceleration of -0.5G for 10 min. for each of the perpendicular axes X, Y, Z.

5.4 SHOCK

Half-sine: 2ms

Storage All 6 sides; 50 to 90 in/sec in 10 in/sec increments.

Operating All sides except top; 40 to 70 in/sec in 10 in/sec increments.

No mechanical variations permitted. Electrically, the unit is capable of continuous normal operation after test completion.

5.5 PACKAGE DROP

Turn off system.

Follow MIL-STD-810D, 0 - 9.1kg 1m, 9.2 - 18.2kg 90cm.

10 drops: 1 corner, 3 adjacent edges of corner, 6 faces.

At random, repeat the above process 1 more time.

Note: Check for mechanical damage and functional failures.

5.6 Altitude

From sea level to 2,000m (operation) and 2,000m above (non operation).

6.0. RELIABILITY

6.1. MTBF

The subject adapter have a minimum predicted MTBF of 60000 hours of continuous operation at 25°C, maximum-output load, and 115Vac & 230Vac input voltage.

6.2 DIELECTRIC WITHSTAND VOLTAGE AND INSULATION RESISTANCE

L&N To FG : 2545 VDC 10mA for 3 second.

Insulation Resistance: 500Vdc / 1 Sec, 100 M Ω min. between primary and secondary.

6.3 LEAKAGE CURRENT

The measured reading is less than 250 uA at 264Vac 50Hz.

6.4 EMC

The power supply have to meet EMC regulations as below.

Referring standards	Test specification	IEC standards
ESD	Contact 4KV	IEC61000-4-2
ESD	Air 8KV	IEC61000-4-2
RS	3V/M	IEC61000-4-3
CS	3V/M	IEC61000-4-6
EFT	2KV on AC power line	IEC61000-4-4
SURGE	Differential mode:1.0KV(2ohm) Common mode : 2.0KV(12 ohm)	IEC61000-4-5
DIPS	0% 250Cycle , 40% 5Cycle 70% 0.5Cycle	IEC61000-4-11
CE	Class B	EN55022,EN55024
RE	Class B	EN55022,EN55024

6.5 ENERGY STAR

The power supply have to meet ENERGY STAR(Version 2.0) regulations as below.

More than 76.41% (Energy Star Level V) of average efficiency of 25%,50%,75% and 100% load tested at 115Vac and 230Vac. (Warm up after 30 minutes).