全漢企業股份有限公司
FSP TECHNOLOGY INC.
台灣桃園市桃園區建國東路22號　統一編號：84239055
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SPECIFICATION

ESD13058745

FSP060-DIBAN2

Released Date:2015/07/27-11:51:12

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SPECIFICATION

MODEL NO: FSP060-DIBAN2

P/N：9NA0605300

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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
	DOE LEVEL VI	≧50W	≧88%	≦0.21W	THD,V <2%
	ErP Lot 7	≧50W	≧87%	≦0.3W	THD,V <2%

Electrical Specification Revision History:

Rev	Description	Date
1.0	SPEC ISSUE	SEP,13,13”
2.0	CHANGE 4.1	NOV,18,13”
3.0	CHANGE 4.1	DEC,17,13”
4.0	CHANGE 4.7;5.1;6.1	MAR,28,14”

Table of Content

1.0 GENERAL DESCRIPTION AND SCOPE

This is the specification of Model FSP060-DIBAN2 part no. 9NA0605300-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 INPUT CHARACTERISTICS

3.1 input voltage & frequency

The range of input voltage is from 90vac to 264vac with a single phase

	Minimum	Nom	Maximum
Input voltage	**90vac**	**115vac/230vac**	**264vac**
Input frequency	**47hz**	**60hz / 50hz**	**63hz**

3.2 input AC current

1.5A max @ 90vac input & full load

3.3 Irush current (cold start)

(cold start-25deg.C) DC full loading

No damage occur and the input fuse shall not blow up

3.4 Average Effciency

DOE Efficiency Regulations LEVEL6

ALL measurements to be taken after DUT has operated at 100% load for at least 30 minutes

Percentage of Nameplate Output Current	
Load Condition 1	100% +/-2%
Load Condition 2	75% +/-2%
Load Condition 3	50% +/-2%
Load Condition 4	25% +/-2%

115Vac @ 60Hz	Average Efficiency(for four Load): 88 minimum
230Vac @ **50Hz**	Average Efficiency(for four Load): 88 minimum

3.5 No load input power dissipation

SPECIFICATION : Input power 0.21W(MAX)

DITION : At 230Vac input voltage with no load .

4.0 OUTPUT CHARACTERISTICS

4.1 OUTPUT RATING

Output	Nominal	Regulation	Ripple/Noise	Min	Max
1	+12.0V	11.4V~12.6V	120mvp-p	0A	5A

Ripple & noise: tested by a oscilloscope using 20mhz bandwidth and the output is paralleled a 0.1uf ceramic capacitor and a 10uf electrolysis capacitor (under the input voltage 100 ~ 240 VAC)

4.2 LINE/ LOAD Regulation

output	Load condition		Line	Load	Remark
rating	Min load	Max load	regulation	regulation	
+12.0v	0A	5.0A	± 1 %	± 5 %	

4.3 Turn – on delay time

3s max @ 90vac input & full load

4.4 Hold time

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

20mS minimum. Tested 230 Vac input and max load at output

4.5 RISE TIME

40ms max @ full load

4.6 OVERSHOOT

The output overshoot at turn-on shall not exceed 10% of normal voltage value with or without the load connected

4.7 DYNAMIC LOAD REGULATION

Output voltage within 11.4 – 12.6V, for load step 10% to 50% and 50% to 90% load on the output. S/R=0.05A/uS, 100Hz & 1KHz 50% duty.

5.0 Protection Requirements

5.1 OVER-CURRENT PROTECTION

OCP point limited 200% of max load and Shut down & Auto recovery

5.2 OVER-VOLTAGE PROTECTION

Output Voltage	Upper trip limit	Remark
11.4Vdc ~ 12.6Vdc	13Vdc ~ 20Vdc	Only internal test

5.3 SHORT CIRCUIT PROTECTION

Output can be shorted without damage, and auto recovery

5.4 UNDER VOLTAGE PROTECTION

UVP	80vac(max)

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 + 40 deg.C
Storage	-20 to +70 deg.C

6.2 HUMIDITY

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

6.3 VIBRATION

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

Vibration Storage – Sine wave excited, 1.0 G maximum acceleration, 10-500 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 SHOCK

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

Storage All 6 sides;40G, 6 mSec. Half-sine wave pulse in both directions on three mutually perpendicular axes.

Operating All sides except top;10G, 6 mSec. Half-sine wave pulse in both directions on three mutually perpendicular axes.

6.5 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

7.0 *RELIABILITY*

7.1 BURN-IN

THE POWER SUPPLY shall be burned-in at least 4 hours at 35℃± 5℃ under full load cond ition

7.2 MTBF

The subject adapter have a minimum predicted MTBF of 100000 hours of continuous operation at 25℃, maximum-output load, and nominal AC input voltage

8.0 EMI/EMS STANDARDS

8.1 EMI Standards

EN 55022：1998 + A1：2000 +A2：2003 CLASS B

CISPR22：2003 CLASS B

AS/NZS CISPR22：2004 CLASS B

EN61000-3-3 Voltage fluctuations& ficker

EN61000-4-2 (ESD TEST)

After applied +/-4kv contact discharge and Adapter is no function error.

After applied +/-8kv air discharge Adapter is no function error.

EN61000-4-4 Electrical fast transient (EFT)

Test Sequence	Peak Voltage	Frequency	Port	Coupling Mode Mains only	Number of Bursts
Class 2	1.0kV	5kHz	Mains or Clamp	L1, L2, and PE in sequence	200 (1 minute) per polarity and coupling mode

EN61000-4-5 EC1000-4-5 LEVEL 2 (SURGE stest)：

Differential mode : 1kv.

Common mode : 2kv.

8.2 LEAKAGE CURRENT

At 264 Vac 60Hz, 0.25mA max.

8.3 INSULATION RESISTANCE

20MΩ min @ primary to secondary add a 500vdc test voltage

8.4 Dielectric strength (hi pot)

Primary to secondary ：2545vdc / 10mA / 60seconds (3seconds for production)

or

Primary to secondary ：1800vac / 10mA / 60seconds (3seconds for production)

8.5 ALTITUDE

The power supply must operate to a maximum altitude of 5000M above sea level

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MECHANICAL DRAWING

OAD15030542

9NA0605345/G.P,FSP060-DIBAN2(F66004)

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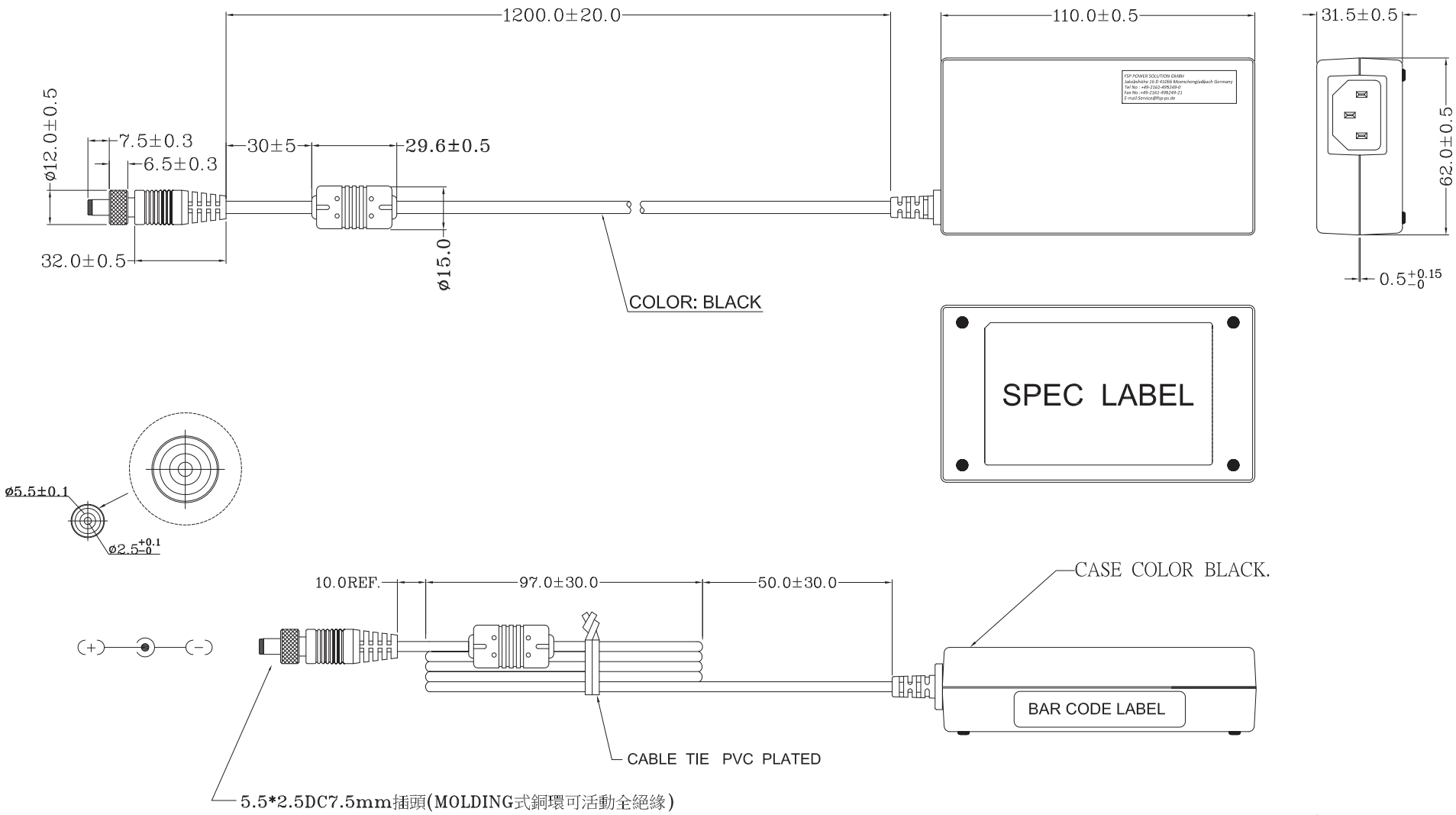

P/N.:9NA0605345

MODEL NO.: G.P,FSP060-DIBAN2(F66004)		TITLE: ASSY	SHEET: 1 OF 1	REV:01
R&D(5)	PE	DRAWN	DATE	
Benson	Victoryu	ANGELH	JUN.02.2015	
INTERIOR COUNTERSIGN:			朱雅婷；陳定伶	

未標註之公差值為±0.5
UNIT:mm

Mechanical Drawing〈外觀/機構圖〉