



Switching Power Supply Approval Sheet

Customer : 研華股份有限公司
Model : FSP230-AAAN3
Spec : 4PIN 鳳凰頭, 180', 1500mm
FSP P/N : 9NA2300109
Customer P/N : 96PSA-A230W24P4-3
Remark : RoHs Compliant

Item	Contents
01	Spec



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SPECIFICATION

AC Adapter
FSP230-AAAN3

P.E	R/D	APPROVED	REV.
Nancy	Neil Young	LJ Wei	02



Electrical Specification

History

REV.	Description	Date	Drawn	Mechanical	Electrical	Approved
<u>00</u>	SPEC ISSUE	Jan.17'18	Candy	Nancy	Neil	LJ Wei
<u>01</u>	Add : 1.11 CoC V5 (Tier 2) 1.12 PFC 4.11 MTBF 4.12 Temperature(2) 5.5 Altitude 5.7 Shock 5.8 Package Drop Revise : 1.10 Erp(Level VI)	Nov.30'19	Vivian	Zhiling Guo	Stephen Li	LJ Wei
<u>02</u>	Revise : 4.9 Temperature(1) 4.12 Temperature(2)	Jan.14'22	Vivian	Zhiling Guo	Stephen Li	LJ Wei

MODEL NO. **FSP230-AAAN3**

SHEET 1 OF 7



Electrical Specification

Electrical Requirements

1. Input Characteristics:

ITEM	CONDITION	SPECIFICATION
1.1 Rated Input Voltage:		100Vac~240Vac
1.2 Input Voltage Range:		90Vac to 264Vac
1.3 Input Frequency Range:		47Hz to 63Hz (± 1 Hz)
1.4 Input Current:	100Vac, 240Vac / 9.58A load	≤ 3 A
1.5 Input Current Harmonic:		IEC61000-3-2
1.6 Efficiency: (Warm up 10minutes later)	100Vac / 9.58A load 240Vac / 9.58A load	$\geq 90\%$ $\geq 92\%$
1.7 Power Saving:	115Vac, 230Vac / 10.4mA load(0.25W)	≤ 0.5 W
1.8 Inrush Current:	100Vac, 240Vac / 9.58A load	Shall be less than the rating of adapter critical component (including rectifiers, fuse surge and current limiting device)
1.9 DOE(Level VI):	(1)115Vac / 0A load (2)115Vac / 25%,50%,75%,100% load (Average Active Mode Efficiency , Warm up 30 minutes later)	≤ 0.21 W $\geq 88\%$ (DC Cable ≤ 1500 mm,14AWG)
1.10 Erp(Level VI):	(1)230Vac / 0A load (2)230Vac / 25%,50%,75%,100% load (Average Active Mode Efficiency , Warm up 30 minutes later)	≤ 0.21 W $\geq 88\%$ (DC Cable ≤ 1500 mm,14AWG)
1.11 CoC V5 (Tier 2):	(1)230Vac / 0A load (2)230Vac / 25%,50%,75%,100% load (3)230Vac / 10% load (Average Active Mode Efficiency , Warm up 30 minutes later)	≤ 0.15 W $\geq 89\%$ $\geq 79\%$ (DC Cable ≤ 1500 mm,14AWG)
1.12 PFC		With PFC

MODEL NO. **FSP230-AAAN3**

SHEET 2 OF 7



Electrical Specification

2. Output Characteristics:

※Measured at the end of DC cable.

ITEM	CONDITION	SPECIFICATION
2.1 Output Rated Voltage:		24V
2.2 Output Current:	at constant voltage mode	0A to 9.58A
2.3 Output Voltage Setting:	at the output end of DC cable	24V \pm 5%
2.4 Output Voltage Ripple and Noise: (0.1uF Ceramic Cap. and 35V 47uF Aluminum Cap. Paralleled between the end of output cable)	100Vac, 240Vac / 0A~9.58A load	\leq 350mVp-p
2.5 Turn-On Delay Time:	At 100Vac / 9.58A load, output voltage shall remain regulation	\leq 3Sec
2.6 Hold Up Time:	At 100Vac or 240Vac / 9.58A load, output voltage shall remain regulation	\geq 10ms
2.7 Rise Time:	At 100Vac / 9.58A load, DC output rise time from 5% to 95% of Vo	\leq 50ms
2.8 Dynamic Load Change:	(1) Output load step is : 【1】 0 % ~50 % 【2】 50 % ~100 % (2) S/R=0.5A/us (3) Frequency is 100Hz and 1KHz	24V \pm 10%
2.9 Overshoot:	100Vac, 240Vac / 0A and 9.58A load	24V \pm 10%

MODEL NO. **FSP230-AAAN3**

SHEET 3 OF 7



Electrical Specification

3. Protection Characteristics:

ITEM	CONDITION	SPECIFICATION
3.1 Short Circuit Protection:	When an internal fault occurs, or an external fault is applied to the power supply, such that an overload or short circuit is applied to the output, the power supply shall shut down and enter auto-recovery mode.	Shutdown and no damage
3.2 Over Voltage Protection:	The adapter will enter into shut down that means no output while over voltage happened at output terminal that caused by internal fault, the output trip voltage shall not exceed 37 volts. That will be return to normal state by AC reset.	Shutdown and no damage
3.3 Over Power Protection:	When an internal fault occurs, or an external fault is applied to the power supply, such that an overload or short circuit is applied to the output, the power supply shall shut down and enter auto-recovery mode.	Shutdown and no damage
3.4 Over Temperature Protection:	The power supply will enter into shut down while the abnormal thermal rise occurs. That will be return to normal state by AC reset.	No fire, no smoke

MODEL NO. **FSP230-AAAN3**

SHEET 4 OF 7



Electrical Specification

4. Environmental Characteristics:

ITEM	CONDITION	SPECIFICATION
4.1 Electric Fast Transients: Refer to IEC61000-4-4	Impulse: $\pm 1\text{kV}$ applied to L,N	Normal operation shall be continued
4.2 Lightning Surge: Refer to IEC61000-4-5	$\pm 1\text{kV}$ applied differential mode	Normal operation shall be continued
	$\pm 2\text{kV}$ applied common mode	Normal operation shall be continued
4.3 Electron Static Discharge: (Refer to IEC61000-4-2 Energy Storage Capacitor 150pF; Discharge Resistor 330 Ω)	Air Discharge: $\pm 15\text{KV}$ Contact Discharge: $\pm 8\text{KV}$	Normal operation shall be continued
4.4 Cooling:	Natural air cooling	
4.5 EMI: Adapter comply with the following national standards: EMI Conducted Emission EMI Radiated Emission	1. Full Load 2. The power supply with internal filter can meet.	FCC PART 15B CLASS B CISPR32 EN55032 CLASS B VCCI LEVEL II
4.6 Safety conforming: 4.6.1 Energy-related Products 【ErP】 Department of Energy 【DOE】		Regulated by customer Comply with ErP standard Comply with DOE standard
4.7 Leakage Current:	264Vac / 50Hz	$\leq 0.25\text{mA}$
4.8 Dielectric Strength: (Hi-Pot)	Between AC input and secondary applied DC 4242V / test time 1 minute / cut off current shall be less than 10mA	
4.9 Temperature(1):	Operating Storage	-20 to 40°C -20 to +80°C
4.10 Humidity:	Operating Storage	20% ~ 80% 10% ~ 90%
4.11 MTBF:	100Vac, 240Vac / 9.58A load	300,000 hours at 25°C, standard SR332
4.12 Temperature(2):	Operating 100Vac or 240Vac (See Note page 7)	-20°C to 40°C, 100% load 50°C, 85% load 60°C, 70% load 70°C, 55% load (Shall be less than the rating of adapter critical component , follow FSP specification (adapter))

MODEL NO. **FSP230-AAAN3**

SHEET 5 OF 7



Electrical Specification

5. Mechanical Characteristics:

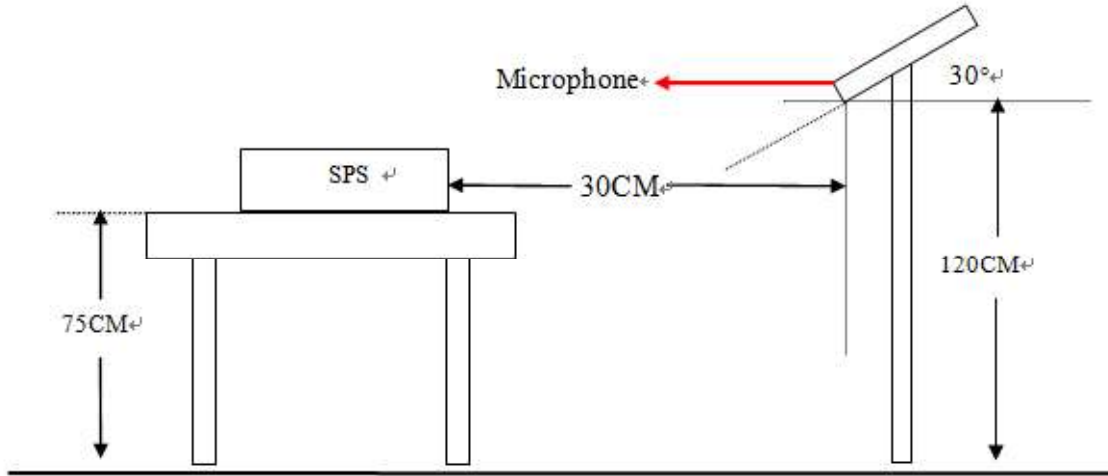
ITEM	CONDITION	SPECIFICATION
5.1 Dimension (Length x Width x Height):		177 X 86 X 32.2 mm
5.2 Adapter weight:		650g(typical)
5.3 Input AC socket Type:		IEC 320-C14 Type
5.4 Vibration Test:	(1) Non-operating, 0.01g ² /Hz at 5Hz slopping to 0.02g ² /Hz at 20Hz, And maintain 0.02g ² /Hz from 20Hz ~ 500Hz (2) PSD=3.13grms, 15 minutes/axis (3) Vibration duration:15minutes (4) Vibration waveform:Random (5) Force Direction X,Y,Z	Normal operation shall be continued.
5.5 Altitude:	Operating	5000M
5.6 Acoustic Noise:	(1) Position the microphone 30 centimeters above the x-y center of the AC adapter (2) Input voltage:110Vac/60Hz 220Vac/50Hz	The EUT < 30dB
5.7 Shock:	Operating: 10 G, 11 ms, half sine, one shock input in each of three mutually perpendicular axes, for a total of six shock inputs. Non-Operating: 20 G, 5 ms, half sine, one shock input in each of three mutually perpendicular axes, for a total of six shock inputs.	(1)The mechanical appearance and inner structure should not be damaged after test (2)No functional failure should be found during and after the test
5.8 Package Drop:	1 m height drop / 6 faces.	No mechanical damage and Hi-Pot test is pass

MODEL NO. **FSP230-AAAN3**

SHEET 6 OF 7

Electrical Specification

Note : Acoustic Noise



Note : Temperature(2)

Input Voltage : 100Vac or 240Vac

