



APPROVAL SHEET

Power supply

MODEL NO: SP-AD-090WS1-EU



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1 Description

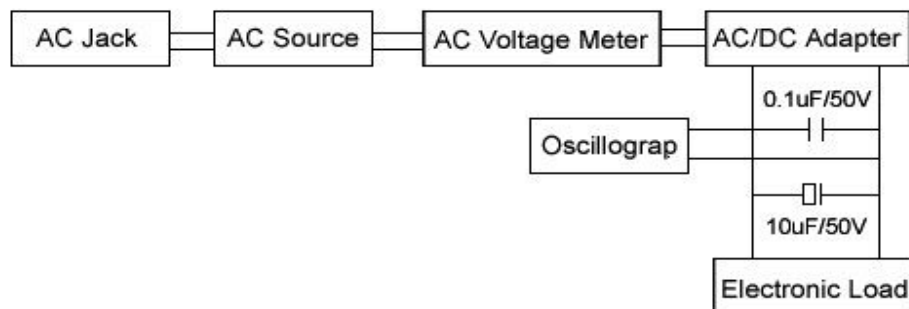
AC/DC switching mode power supplies provide 90 Watts of Max output power
Its extreme slim, the thickness like a finger, so it won't take more space for your laptop bag

2 Specification

- 1.Input:100-240V
- 2.Output Voltage: 15V/16V/18V/19V/20V DC at 4.5 A max or 22V/24V DC at 3.75 A max
- 3.USB Output: 5V-1A
- 4.With 8 output pin can use for mostly netbook/Laptop models.

3 Test Circuit

If the test is to be made on a specified circuit, be sure to use the following circuit.



4 Input Characteristics

4.1 Input Voltage:

Nominal Voltage:100-240Vac

Variation Range :90-264Vac

4.2 Input Frequency:

Nominal Frequency:50/60Hz

Variation Frequency:47-63Hz



4.3 Input Current:

The maximum input current shall be less than 4.5A at 100~240Vac input

4.4 Efficiency:

88% min. measured at 100Vac and 240Vac input voltage, full load

5 Output Characteristics

5.1 Output Power

Output Voltage	Load Range		Regulation	Rated power
15V	0A	4.5A	14.5 ~ 15.5V	67W
16V	0A	4.5A	15.5 ~ 16.5V	72W
18V	0A	4.5A	17.5 ~ 18.5V	81W
18.5V	0A	4.5A	18 ~ 19V	84W
19V	0A	4.5A	18.5 ~ 19.5V	86W
19.5V	0A	4.5A	19 ~ 20V	88W
20V	0A	4.5A	19.5 ~ 20.5V	90W
22V	0A	3.75A	21.5 ~ 22.5V	83W
24V	0A	3.75A	23.5 ~ 24.5V	90W

5.2 Rated Power

This adapter is capable to support 90 Watts continuously at all specified conditions.

5.3 Ripple & Noise Voltage

Voltage	12V/15V/16V/18V/19V at full load	
Ripple & noise voltage	150mV	

The ripple and noise are as follows when measure with Max. Bandwidth of 20MHz and Parallel 10uF/0.1uF,crossed connected at testing point.



5.4 Hold-UP Time

The voltage reach down to 2V at CC mode more than 1ms after at AC voltage turned off.

5.5 Output voltage rise time

The rise time of all outputs voltage shall be less than 500mS measured from 10% point to 90% point.

5.6 Turn on delay time

3 second maximum from ac input to all outputs within regulation.

6 Environmental Requirement

6.1 Thermal Performance

Operating : 0°C~40°C

Non-operating :-20°C~70°C

6.2 Humidity

Operating : 35% to 85%RH.

Non-operating : 5% to 95%RH.

6.3 Vibration

Operating: 5Hz to 500z sweep at 1.5G constant acceleration for 2 hours on each of the perpendicular axes x, y and z.

6.4 Power ON/OFF cycling

The power supply shall be designed to withstand a minimum of 10000 on/off cycles and 3 second on/off period.

6.5 Stress Analysis

All the components have any stress actual not exceed 90 percent.



7 Mechanical Requirement

7.1 Dimension: 148(L)x69(W)x19(H) MM

7.2 Weight: 330g

7.3 Output Cord: 1.2M EU AC Cable

7.4 Plug:

(M1) 15V 6.0 x 3.0 mm

(M2) 16V 5.5X2.5 mm

(M4) 18.5V 4.8X1.7 mm

(M5) 19V 5.5 x 2.5 mm

(M6) 19V 5.0X3.0 mm

(M8) 19.5V 6.5X4.3X1.0 mm

(M15)19V 5.5x1.7mm

(M16) 19V 5.5x2.1mm



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8 Pictures:





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RoHS Declaration of Conformity

Spire hereby declares under our sole responsibility that the product:

Part number: **SP-AD-090WS1-EU**

Description: AC Input: AC100--240V 1.8A;

Output voltage: 15V/16V/18V/19V/20V

DC at 4.5 A max or 22V/24V DC at 3.75 A

max,Power:90W MAX,USB Output: 5V/1A



Is tested and approved in compliance with the EUROPEAN COUNCIL ROHS DERECTIVE.

(Restriction of Hazardous Substances) which will restrict the use of certain substances in electrical and electronic products: including lead (Pb), mercury, cadmium, hexavalent chromium, and certain halide-containing flame retardants. The directive applies to all electrical and electronic products, their component parts that are placed on the market after July 1, 2006.

Spire Coolers Corp.
PM Engineering Dept.

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