



# APPROVAL SHEET

## Power supply

MODEL NO: SP-AD-090W-LCD-EU



|                                                                                            |                   |
|--------------------------------------------------------------------------------------------|-------------------|
| <b>Article No. : SP-AP-SU-A166</b><br><b>Issue Date :2012-12-8</b><br><b>Version : A/0</b> | <b>Audited by</b> |
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|-------------------|-------------------|
| <b>Checked by</b> | <b>Drafted by</b> |
|-------------------|-------------------|

**Spire Corp.**

**Tel.: +86-755-26801567 Fax: +86-755-26801561**

**[Http://www.spire-corp.com](http://www.spire-corp.com)**

**[Http://www.spirepower.com](http://www.spirepower.com)**

**[Http://www.spirecoolers.com](http://www.spirecoolers.com)**



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## **Contents**

|          |                                       |          |
|----------|---------------------------------------|----------|
| <b>1</b> | <b>Description.....</b>               | <b>3</b> |
| <b>2</b> | <b>Specification.....</b>             | <b>3</b> |
| <b>3</b> | <b>Test Circuit.....</b>              | <b>3</b> |
| <b>4</b> | <b>Input Characteristics.....</b>     | <b>3</b> |
| <b>5</b> | <b>Output Characteristics.....</b>    | <b>4</b> |
| <b>6</b> | <b>Environmental Requirement.....</b> | <b>6</b> |
| <b>7</b> | <b>Mechanical Requirement.....</b>    | <b>6</b> |
| <b>8</b> | <b>Pictures.....</b>                  | <b>7</b> |



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## 1 Description

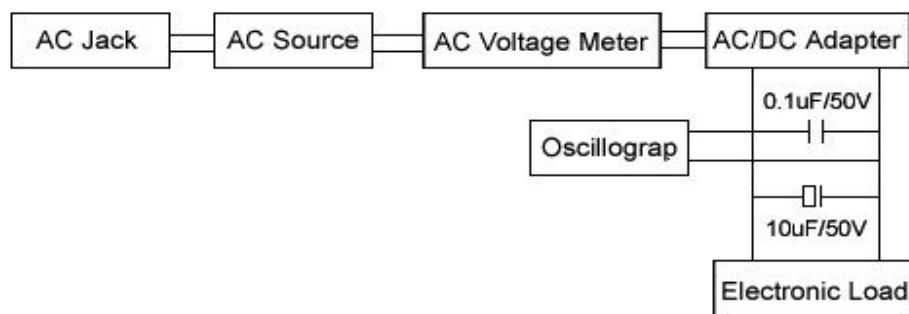
AC/DC switching mode power supplies provide 90 Watts of Max output power

## 2 Specification

- 1.Input:100-240V
- 2.Output Voltage: 15V/16V/18V/19V/20V DC at 4.5 A max
- 3.USB Output: 5V-2A
- 4.With 10 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**

| <b>Output Voltage</b> | <b>Load Range</b> |      | <b>Regulation</b> | <b>Rated power</b> |
|-----------------------|-------------------|------|-------------------|--------------------|
| 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                |

### **5.2 Rated Power**

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

### **5.3 Ripple & Noise Voltage**

|                        |                              |  |
|------------------------|------------------------------|--|
| Voltage                | 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:** 125.5\*52.5\*33MM

**7.2 Weight:** 280g

**7.3 Output Cord:** 1.2M EU AC Cable

**7.4 Plug:**

(M1) 15V 6.3 x 3.0 mm

(M2) 16V 5.5X2.5 mm

(M3) 16V 6.5X4.4 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 6.5X4.4 mm

M15)19V 5.5X1.5mm

(M20) 18.5V 7.4X5.0mm

(M21) 19.5V 7.4X5.0mm



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8 Pictures:





**Spire Corp.**

Spire Coolers Corp.  
FL7/8 Building B houhai Blvd  
Dongjiaotou Industrial Park Shekou  
Nanshan, Shenzhen, China  
Tel.: +86-0755-26801567  
Fax: +86-0755-26801561  
W.: www.spire-corp.com



### **RoHS Declaration of Conformity**

Spire hereby declares under our sole responsibility that the product:

Part number: **SP-AD-090W-LCD-EU**

Description: Input Voltage: AC100--240V

Automatic 90W Univesal AC Adapter f with LCD Display

Output Voltage : 5V/16V/18V/19V/20V DC at 4.5 A max

Power: 90W MAX

Output USB: 5V2A (FOR I PAD1 . IPAD2 )

With 10 output pin can use for mostly netbook/Laptop models.



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.

Nanshan, Shenzhen

