



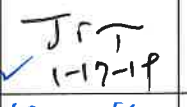
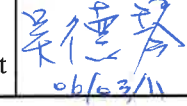
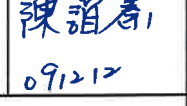
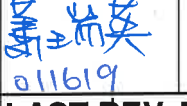
# SPECIFICATION

For

SWITCHING POWER SUPPLY

M/N : SNP-A159-M

STANDARD PRODUCT

Reviewed by Product Manager						
Typed by Document Assistant						
<b>SKYNET ELECTRONIC</b>				<b>LAST REV. NO.</b>		

## 1.0 INTRODUCTIONS

SNP-A159-M is a Class I input and 150W rated / 200W peak output switching mode desktop adaptor with active PFC. Low no-load input power ( $< 0.5W$ ) and high average efficiency in active mode ( $\geq 87\%$ ) complies with the EPA energy star stage V requirements. Also, the safety conformity covers Medical applications.

## 2.0 INPUT SPECIFICATIONS

### 2.1 Input Voltage

The range of input voltage is 90VAC ~ 264VAC, nominal line is 115V/230V.

This is class I power supply.

### 2.2 Input frequency

The range of input frequency is 47Hz ~ 63Hz.

### 2.3 Input current

The maximum input current is 4A at 115VAC or 2A at 230VAC.

### 2.4 Inrush current

The inrush current will not exceed 40A at 115VAC input or 80A at 230VAC input, with cold start, 25°C.

### 2.5 No-load input power

No-load input power is less than 0.5W at 115Vac/230Vac.

### 2.6 Power Factor

PF  $> 0.9$  at 115Vac/230Vac and rated load.

## 3.0 OUTPUT SPECIFICATIONS

### 3.1 Load range

output	min. load	rated load	peak load	voltage accuracy
+24V	0A	6A	7.2A	+22.8V to +25.2V

At factory, +24V output is set between +22.8V to +25.2V at 60% rated load and nominal line input.

\* Peak load is not promised to use over 10 sec. at nominal line, otherwise the life-time will be reduced.

### 3.2 Ripple and noise

The peak to peak ripple and noise for each output is less than 200mV at rated load, nominal line. Measuring is done by 20MHz bandwidth limited oscilloscope and terminated each output with a 0.47uF +10uF capacitor.

### 3.3 Line regulation

The line regulation is less than + -0.5% while measuring at rated load and + -10% of nominal line input voltage changing.

### 3.4 Load regulation

The load regulation is less than + -3% which is measured by changing the output load + -40% from 60% rated load and nominal line input.

## 4.0 GENERAL FEATURES

### 4.1 Efficiency

The efficiency is 87% typ. while measuring at nominal line and rated load.

Also, the average efficiency in active mode is higher than 87%. while measuring at nominal line. (100%、75%、50% and 25% of rated load)

### 4.2 Hold up time

The hold up time is higher than 20mS at 115VAC input and rated load, which is measured from the end of the last charging pulse to when the main output drops down to 95% output voltage.

### 4.3 Protection

#### 4.3.1 Over voltage protection

The build-in crowbar circuit will shut down the outputs to avoid damaging the external circuits. The trip point of over voltage protection is around +26V to +31V. To recover from over voltage protection, cycle the AC line OFF and ON is necessary.

#### 4.3.2 Short circuit and over load protection

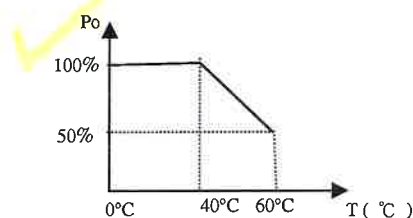
The power supply will generate a hiccup mode to protect itself against short circuit or over load conditions, and will automatically return to normal after fault conditions are removed.

## 5.0 ENVIRONMENT SPECIFICATIONS

### 5.1 Operating temperature

0°C to 60°C, 0°C to 40°C no derating, above 40°C, derate at 2.5% per degree from 40°C to 60°C.

Output derating curve



### 5.2 Storage temperature

-40°C to 80°C

### 5.3 Operating humidity

10% to 95% Non-Condensing

### 5.4 Altitude

Will operate properly at any altitude between 0 to 3000m.

## 6.0 INTERNATIONAL STANDARDS

(Label 100 ~ 240VAC)

### 6.1 Safety standards

Designed to meet the following standards :

ANSI/AAMI ES60601-1 : 2005 (cULus)

EN 60601-1 : 2006 (TUV)

### 6.2 EMI standards

Designed to meet the following limits :

FCC docket 20780 curve "B"

EN55011 class "B"

EN61000-3-2 class D

EN61000-3-3

### 6.3 EMS standards

Designed to meet the following limits :

EN61000-4-2	8KV contact, 15KV air discharge	Criterion A
EN61000-4-3	10V/M with 80% AM	Criterion A
EN61000-4-4	2KV (100KHz)	Criterion A
EN61000-4-5	Line to Line 1KV	Criterion A
	Line to Ground 2KV	Criterion A
EN61000-4-6	10V with 80% AM	Criterion A
EN61000-4-8	30A/M	Criterion A
EN61000-4-11	30% dips 500ms	Criterion A
	60% dips 200ms	Criterion B
	100% dips 5000ms	Criterion B
	100% dips 20ms	Criterion B
	100% dips 10ms	Criterion A

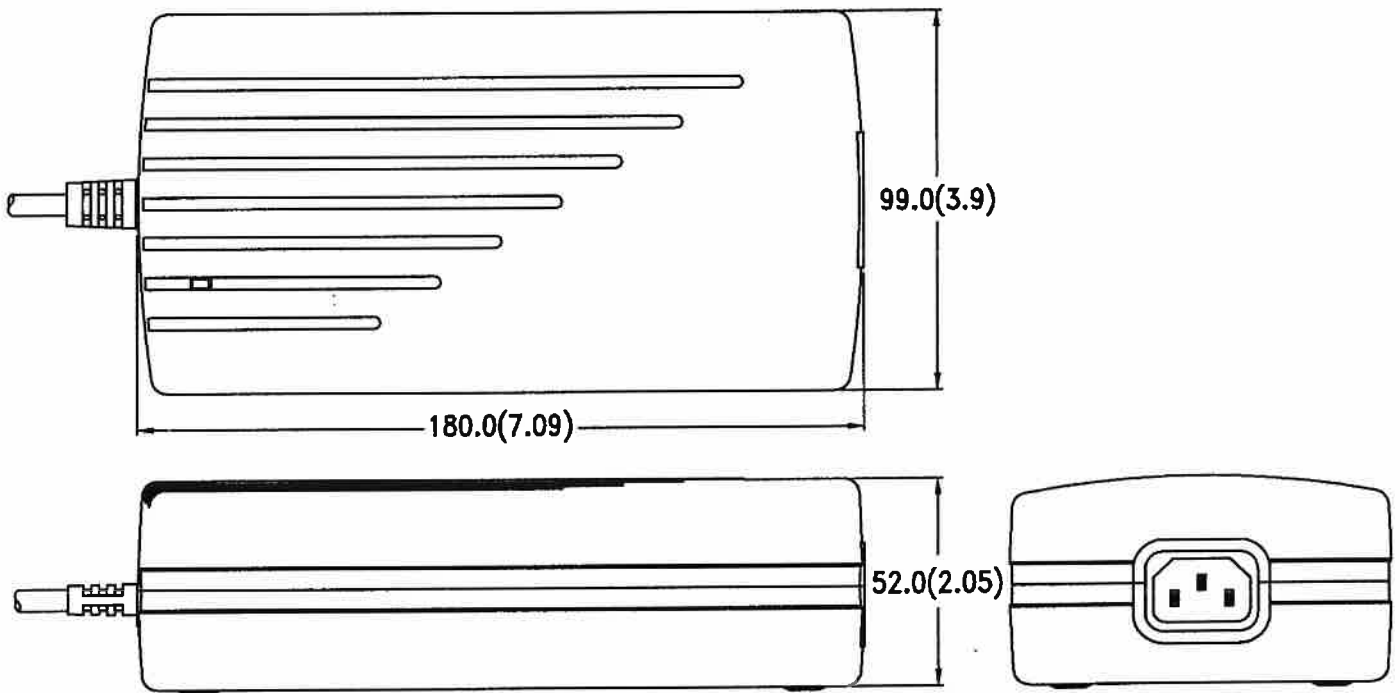
### 6.4 Energy saving standards

Designed to meet the following standard:

Energy Star Ver. 2.0 Level V

CEC Level V

**7.0 MECHANICAL SPECIFICATION**



**7.1 Dimensions**

Dimensions shown in mm (inch) as above. Tolerance specified is + -1mm.

**7.2 Connectors**

AC inlet : Meet IEC60320-1 C14 standard.

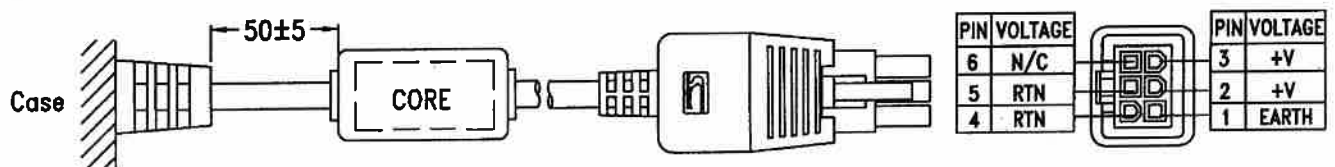
DC output : MOLEX 5557-06 or equivalent, with cable length of 150 cm (5ft) approx.

**7.3 Power on indicator: Green light**

Green light on the top of box.

**7.4 Case color: Black**

**7.5 DC output cable and pin assignment**

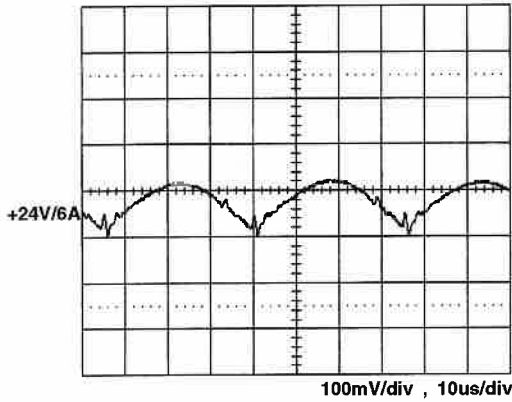


**7.6 Packing**

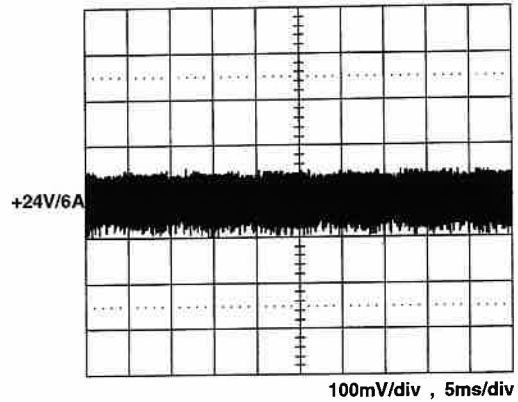
- Net weight : 1020 g approx. / unit
- Carton size (mm) : 402 (L) x 326 (W) x 371 (H)
- Quantity : 10 units / carton
- Gross weight : 13.0 kg approx. / carton

**8.0 PERFORMANCE** (input voltage is 115VAC, unless others specified)

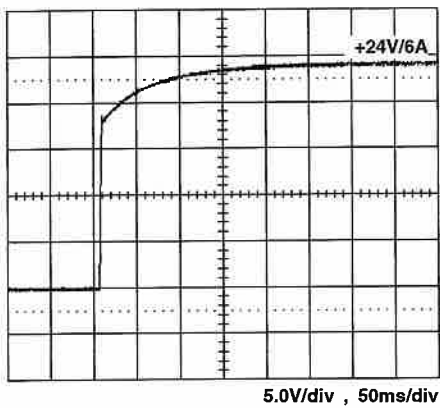
**8.1 Switching frequency ripple**



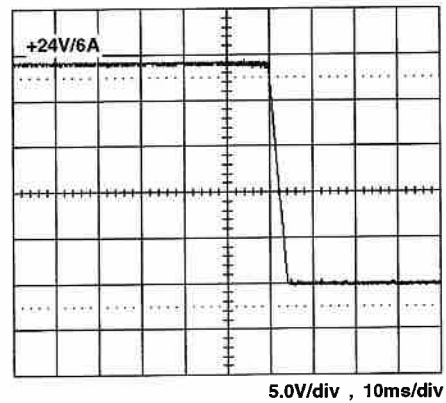
**8.2 Line frequency ripple**



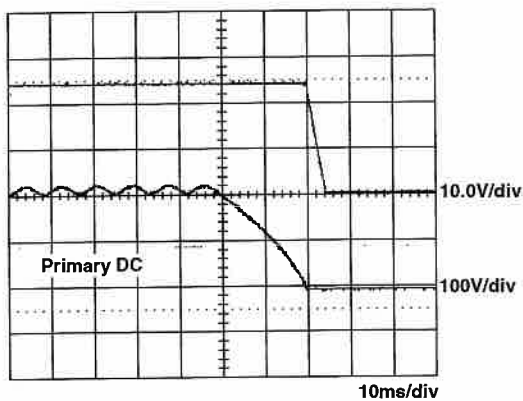
**8.3 Output turn on wave form**



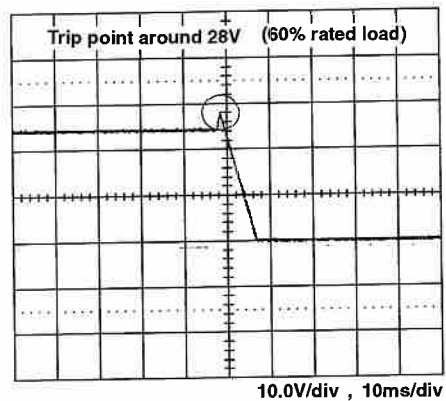
**8.4 Output turn off wave form**



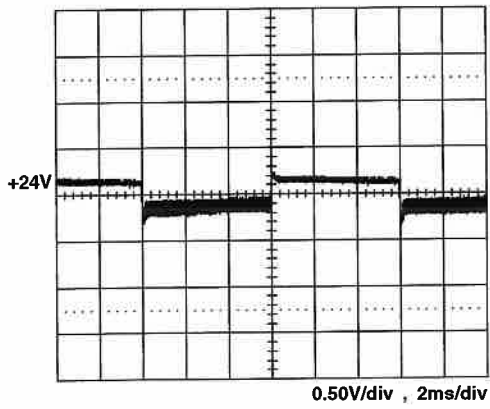
**8.5 Hold-up time**



**8.6 Over voltage protection**

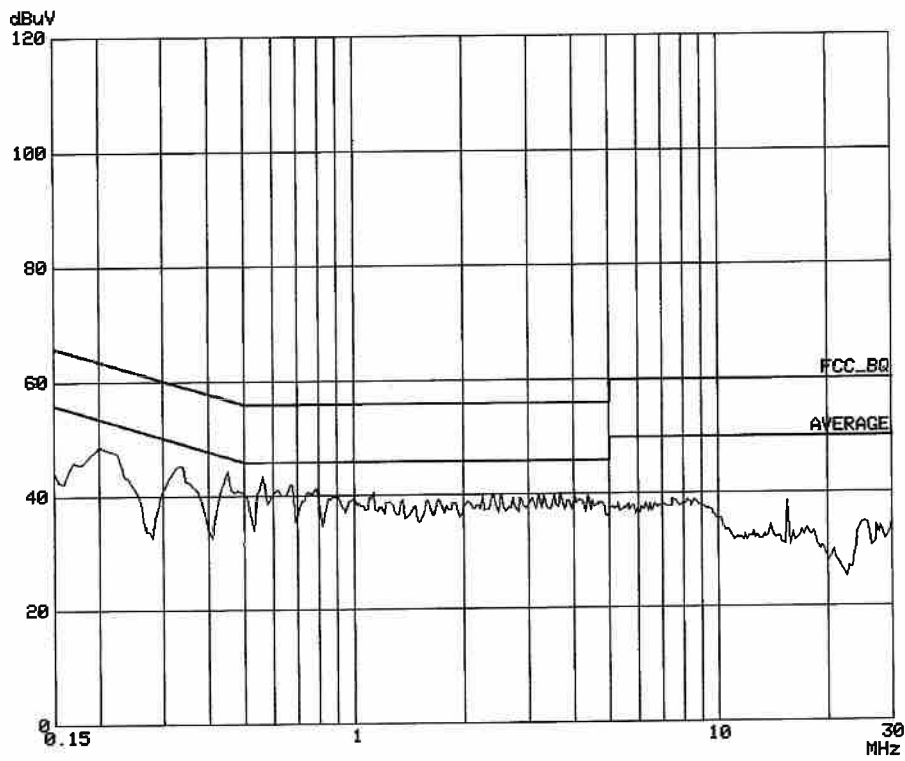


8.7 +24V step response



+24V step from 1.2A to 6A

8.8 FCC B performance



8.9 EN 55011 class "B"

