

**SPECIFICATION**

**For**

SWITCHING POWER SUPPLY

**M/N : SNP-AF89-3**

STANDARD PRODUCT

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|                                 |                 |  |               |  |  |  |
|---------------------------------|-----------------|--|---------------|--|--|--|
| Reviewed by<br>Product Engineer | Jing<br>P-30-20 |  |               |  |  |  |
| Typed by<br>Document Assistant  | 王瑞英<br>09/19/20 |  |               |  |  |  |
| SKYNET ELECTRONIC               |                 |  | LAST REV. NO. |  |  |  |

## 1.0 INTRODUCTIONS

SNP-AF89-3 is a Class I input and 76.8W rated output switching mode desktop adaptor. Low no-load input power (<0.15W) and high average efficiency in active mode ( $\geq 89\%$ ) complies with level VI requirements. Also, the safety conformity covers IT and Medical applications.

## 2.0 INPUT SPECIFICATIONS

### 2.1 Input Voltage

The range of input voltage is 85VAC ~ 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 2A at 115VAC or 1A 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

<0.15W at no load and 115Vac/230Vac input voltage range.

## 3.0 OUTPUT SPECIFICATIONS

### 3.1 Load range

| output | min. load | rated load | peak load | voltage range    |
|--------|-----------|------------|-----------|------------------|
| +24V   | 0A        | 3.2A       | 4.6A      | +22.8V to +25.2V |

At factory, +24V output is set between +23.80V to +24.20V at 60% rated load and nominal line input.

\* Peak load is not promised to use over 5 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 89% typ. while measuring at nominal line and rated load. Also, the average efficiency in active mode is higher than 89% while measuring at nominal line. (100%、75%、50% and 25% of rated load)

The efficiency is higher than 79% while measuring at nominal line and 10% of rated load.

### 4.2 Hold up time

The hold up time is higher than 18mS 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 built-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

-20°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.

### 5.2 Storage temperature

-40°C to 85°C

### 5.3 Operating humidity

10% ~ 95% Non-Condensing .

### 5.4 Altitude

Will operate properly at any altitude between 0 to 5000m.

### 5.5 MTBF

>200Khrs(based on MIL-HDBK-217F, rated load, 50°C)

## 6.0 INTERNATIONAL STANDARDS

### 6.1 Safety standards (Label Voltage:100~240Vac)

ITE:

Designed to meet the following regulations :

UL/CSA/EN/IEC 62368-1

Medical:

ANSI/AAMI ES60601-1:2005/ (R) 2012 and A1:2012

CAN/CSA-C22.2 NO.60601-1(2014)

EN 60601-1:2006+A11:2011+A1:2013+A12:2014

IEC 60601-1:2005+A1:2012

### 6.2 EMI standards

Designed to meet the following limits :

FCC docket 20780 curve "B"

EN55011 Class "B"

EN55022 Class "B"

EN61000-3-2 Class A

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 Criterion A

EN61000-4-5 Line to Line 1KV Criterion A

Line to Ground 2 KV 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 10mS Criterion A

100% dips 5000mS Criterion B

100% dips 20mS Criterion B

### 6.4 Energy saving standards

Designed to meet the following standard:

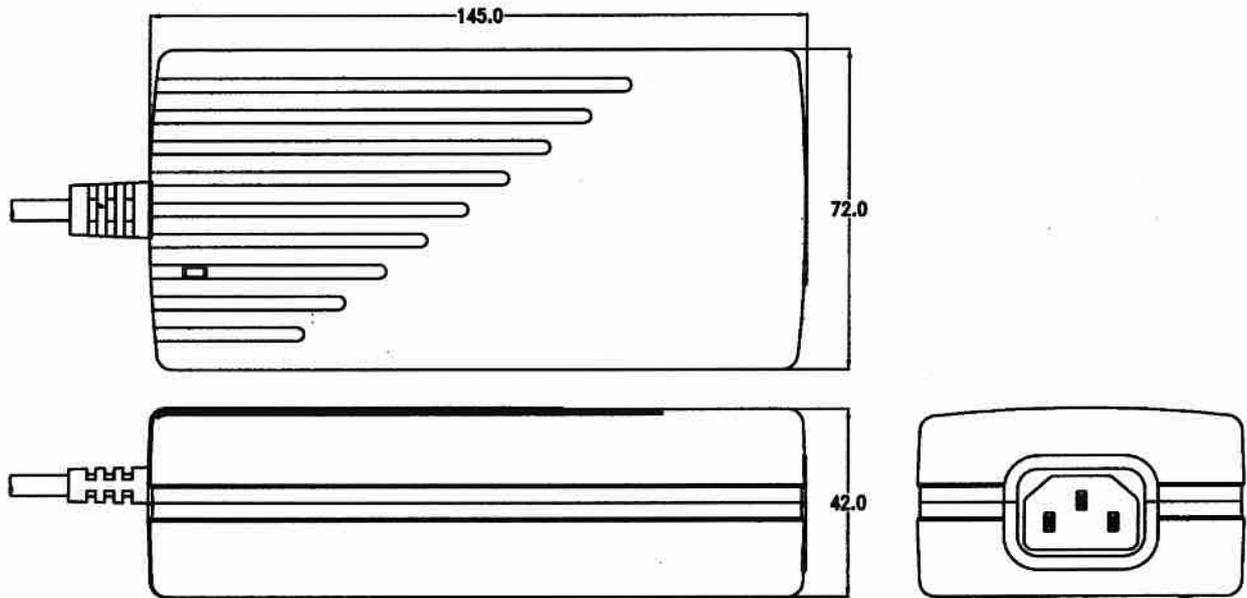
ErP : EC Code of Conduct Version 5(Tier2/2016)

(No load input power <0.15W , average efficiency >89% , 10% efficiency>79%)

DOE : EPS Efficiency Level VI

(No load input power <0.21 W , average efficiency >88%)

**7.0 MECHANICAL SPECIFICATION**



**7.1 Dimensions**

Dimensions shown in mm as above.

Tolerance specified is + -1mm (Excluding DC wire harness)

**7.2 Connectors**

AC inlet : Meet IEC320 C14 standard

DC output : Compare to HOSIDEN TCP8941-341177 but without quick lock or equivalent (Cable length : 1.5M approx.)

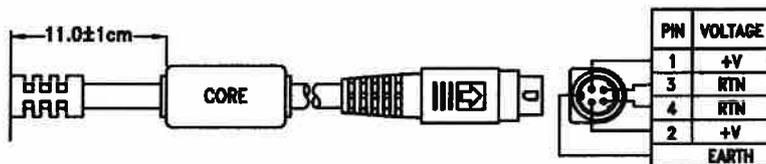
**7.3 Power on indicator**

Green light on top of Box

**7.4 Color**

Black

**7.5 DC power pin specification : (See drawing below)**



**7.6 Packing**

Net weight : 517 g approx. / unit

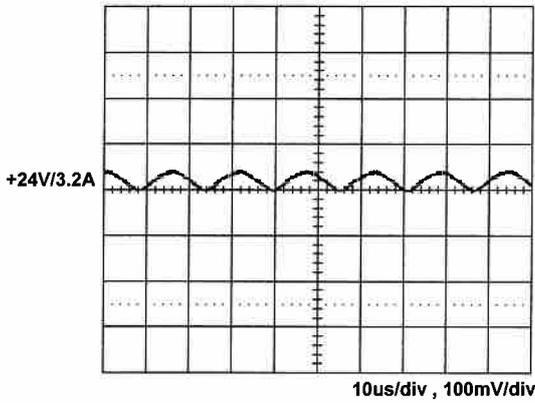
Carton size(mm) : 503 (L) x 362 (W) x 300 (H)

Quantity : 20 units / carton

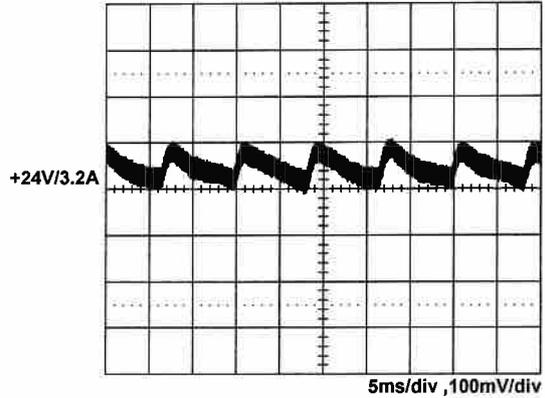
Gross weight : 13.0 kg approx. / carton

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

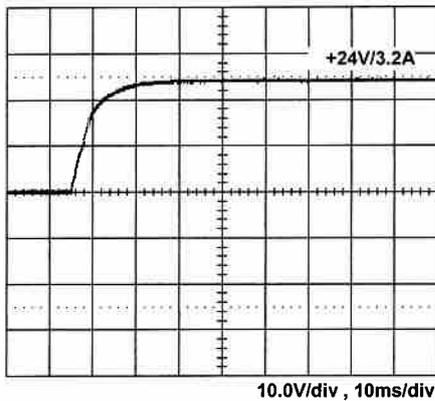
**8.1 Switching frequency ripple**



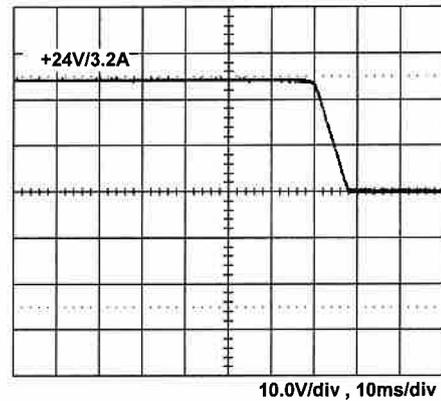
**8.2 Line frequency ripple**



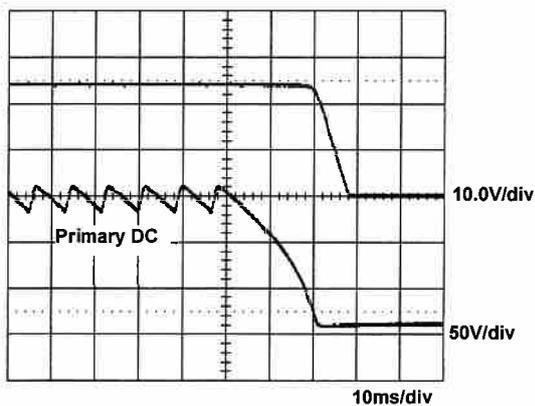
**8.3 Output turn on wave form**



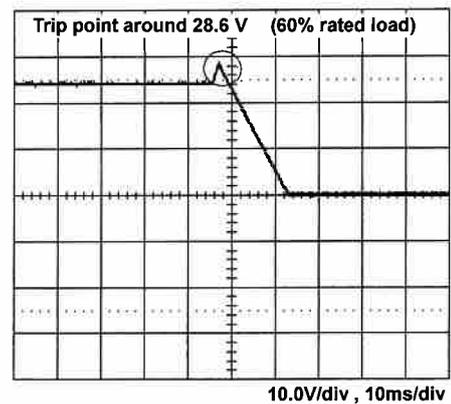
**8.4 Output turn off wave form**



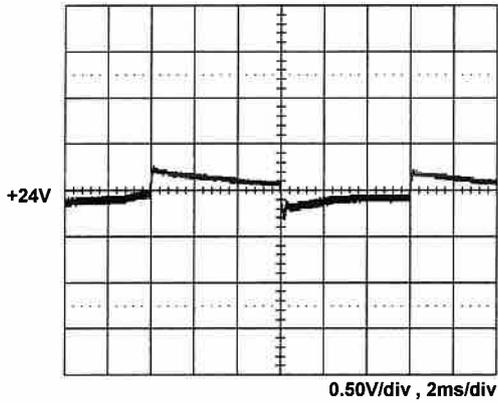
**8.5 Hold-up time**



**8.6 Over voltage protection**

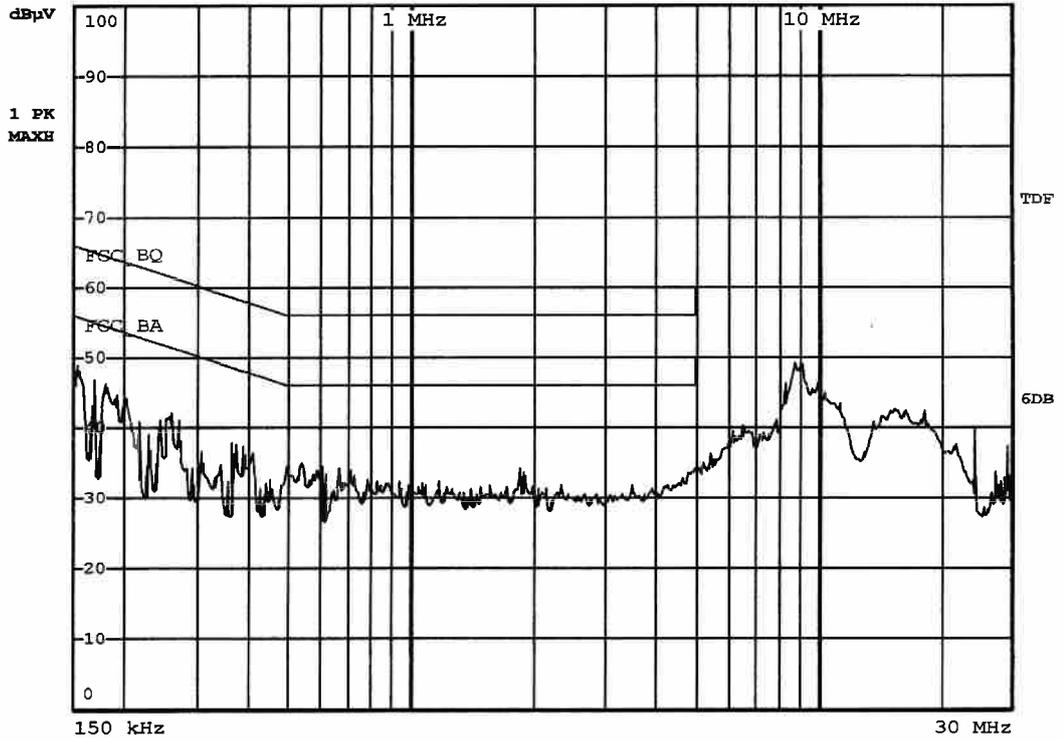


8.7 +24V Step response



+24V step from 0.64A to 3.2A

8.8 FCC B performance class B



8.9 EN55011/ EN55022 class "B"

