



# **IDEAL**POWER

experts in power conversion

Ideal Power Ltd Product Specification Document

|                     |                |
|---------------------|----------------|
| <b>Description</b>  | Ext. PSU       |
| <b>Model Number</b> | 5211012C-24-3A |
| <b>Revision</b>     | A1             |
| <b>Notes</b>        | -              |

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**Ideal Power Ltd**

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## 1-0. General Description

The purpose of the document is to specify a Single phase AC input, single output switching power supply. This specification is suitable for: EA11012C Series

This product is AC to DC switching power transfer device, it can provide for a 24V, 3.75 A max & 90W max DC output with constant voltage source.

This Specification defines the input, output, performance characteristics, environment, noise and safety requirement for a power supply.

## 2-0. Input Requirements

### 2-1. Input Voltage

Rated Voltage 100-240 Vac +/- 10% full range.

Normal line input 115Vac/60Hz, 230Vac/50Hz.

### 2-2. Input Frequency

47~63 Hz

### 2-3. Input Current

a. 2.0A(Max.) @ 100Vac input with full load.

b. 1.0A(Max.) @ 240Vac input with full load.

### 2-4. Energy saving standards:

2-4-0. Designed to meet the following standard :

CEC level V

#### 2-4-1. Efficiency

Efficiency  $\geq$  87% ( avg. ) normal input & 25%, 50%, 75% ,100% of max output load

#### 2-4-2 No Load Power Consumption.

No Load Watt  $\leq$  0.5W at normal line input.

### 2-5. Configuration

2-wire AC input (Line ,Neutral)

### 2-6. Input Fuse

The hot line side of the input shall have a fuse, rating (3.15A/250V)

### 2-7. Inrush Current

$\leq$  60A at 110 Vac At cold start, maximum load.

$\leq$  120A at 220 Vac At cold start, maximum load.

### 2-8. Line Regulation

This line regulation is less than  $\pm 1\%$ , of rated output voltage @ full load .

### 2-9. Hold Up Time

$\geq 10$  mSec., @ Normal line, with full load.

### 2-10. Rise Time

$\leq 50$  mSec.,@ 100-240VAC input, with full load from 10% to 90% of output voltage.

### 2-11. Turn-ON Time

The output voltage should rise to 90% of rated output voltage in less than 3 SEC.  
from AC apply to 110Vac start up.

### 2-12. Harmonic Standard and Power Factor

The adapter complied with IEC 61000-3-2 class D harmonic standard while input power over than 75W. The P.F. shall  $>0.95$  @100Vac input and  $>0.9$  @240Vac input.

## 3-0. Output Requirements

### 3-1. Output Voltage and Current

| Output Voltage (Vdc) | Current Min.(A) | Current Max.(A) |
|----------------------|-----------------|-----------------|
| +24V                 | 0               | 3.75A           |

### 3-2. Load Regulation

| Voltage (Vdc) | Tolerance (%) |
|---------------|---------------|
| +24V          | +5/, -5       |

### 3-3. Dynamic Load Regulation

$\pm 5\%$  excursion for 50% - 100% or 100% - 50% load change of DC output at any frequency up to 1KHz(duty 50%)

### 3-4. Ripple & Noise

The power supply shall not exceed the following limits on the indicated voltage for 60Hz or 50Hz ripple, Switching frequency ripple and noise and dynamic load variations measured with a 20MHz bandwidth

| Output | Ripple/Noise                      |
|--------|-----------------------------------|
| +24V   | 1.5% max. of rated output voltage |

Input condition : for rated voltage , Output condition : for max load

Ripple / Noise: 60Hz ripple + switching ripple and noise

Ripple & Noise are measured at the end of output cable which are added a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor

### 3-5. Over Voltage Protection

150% Max. of rated voltage.

The output voltage shall be shutdown and latch-off when OVP occurred.

### 3-6. Over Current Protection

110%-150% of rated output current.

The adapter can withstand continuous short at DC output and no damage.

It will enter into normal condition if the fault condition is removed.

### 3-7. Stability

2% Max. at constant load with constant input (after 30 minutes of operation).

### 3-8. Temperature Rise

Less than 45°C on top/bottom case at normal AC input & 80% load of DC output at environment temperature 25°C.

### 3-9. Drop-out (Power Line Disturbance)

Output voltage shall remain within the specified regulation range, through the absence of a line input during 1/2 cycle, at full load and normal AC line input

### 3-10. Voltage Isolation

The DC ground will be isolated from the AC neutral and AC line.

#### 4-0. Reliability

##### 4-1. MTBF (MIL-STD-781C)

The power supply shall be designed and produced to have a mean time between failure ( MTBF) of 30,000 hours

#### 5-0. Environment

##### 5-1 Temperature

- a. Operating : 0 to 40 °C
- b. Storage : -20 to 85 °C

##### 5-2 Humidity

- a. Operating : 10 to 90 %
- b. Storage: 5 to 90 %

##### 5-3 Altitude

From sea level to 5,000 Meter ( operation ) and 5,000 Meter ( non operation )

#### 6-0. Safety

##### 6-1. Hi-Pot Test

3000Vac/4242VDC, 3mA 2Sec. between primary side and secondary side.

##### 6-2. Insulation Test

500Vdc, 3Sec. between primary and secondary circuit  
IR should  $\geq 50 \text{ M}\Omega$ .

##### 6-3. Leakage Current

$\leq 250\mu\text{A}$  at 240Vac/50 Hz

##### 6-4. Safety

UL/CUL, TUV, CB, CCC, CE, FCC

#### 6-5. EMS

| Items | Specification                                                | Reference     |
|-------|--------------------------------------------------------------|---------------|
| ESD   | Contact: $\pm$ 4KV                                           | IEC 61000-4-2 |
|       | Air: $\pm$ 8KV                                               |               |
| RS    | Frequency: 80~1000MHz<br>Field Strength: 3V/M , 80% AM(1KHz) | IEC 61000-4-3 |
| EFT   | 1.0 KV on input AC power ports.                              | IEC 61000-4-4 |
| SURGE | Line to Line: $\pm$ 1KV (peak)                               | IEC 61000-4-5 |
|       | Line to F.G : $\pm$ 2KV (peak)                               |               |

#### 6-6. EMI

|                            |
|----------------------------|
| Comply with Standards      |
| CISPR 22, EN 55022 Class B |

#### 7-0. Mechanical Characteristics

7-1. Physical Size : 137mm (L) \* 59 mm (W) \* 34 mm (H)

7-2. Enclosure material : 94V-0 minimum

7-3. Output Cable : UL2464 #16/2C

#### 7-4. Vibration Test

The vibration frequencies are set at 20Hz, with total amplitude of 1.5mm  
Along the 3 directions namely X-Y-Z. The each direction should be vibrated  
for 60 minutes, after testing no abnormal electrical or mechanical should occur.

#### 7-5. Drop Test (Referencing to CSA C22.2 No.950/UL1950/UL1310/EN60950)

Products shall be dropped from a height of 900 mm onto a horizontal surface  
consists of hardwood at 13mm thick, mounted on two layers of plywood each  
19mm to 20mm thick, all supported on a concrete or equivalent non-resilient  
floor. Upon conclusion of test, the equipment need not be operational.

7-6. Net Weight (Reference) : 450 g







