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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: **EA1030CR Series**

This product is AC to DC switching power transfer device, it can provide for a **13~20V, 2.3A max & 30W 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

Nominal line input : 110V/60Hz , 230V/50Hz

2-2. Input Frequency

47~63 Hz

2-3. Input Current

a. **1.0A** (Max.) @ Rated AC input with full load.

b. **0.5A**(Max.) @ Rated AC input with full load.

2-4. Efficiency

75% typical at normal line input and full load output

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 (**T2A/250V**)

2-7. Inrush Current

≅ **30A** at 110 Vac

≅ **60A** at 240 Vac At cold start, maximum load.

2-8. Line Regulation

This line regulation is less than **± 1%**, of rated output voltage @ full load.

2-9. Hold Up Time

≥ 8.3 mSec., @ Normal line, with full load.

2-10. Rise Time

≤ 50 mSec., @ Rated AC 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 100Vac from start up.

3-0. Output Requirements

3-1. Output Voltage and Current

Output Voltage (Vdc)	Current Min.(A)	Current Max.(A)
+14V	0	2.14A
+15V	0	2.0A
+16V	0	1.87A
+18V	0	1.66A
+20V	0	1.50A

3-2. Load Regulation

Voltage (Vdc)	Tolerance (%)
Rated output voltage	+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
Rated output voltage	1.0% 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

140% Max. of rated voltage

(Output clamped with zener diode , do not test with external DC source.)

3-6. Short-Circuit Protection

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-HDBK-217F)

The power supply shall be designed and produced to have a mean time between failures (MTBF) of 30,000 operating hours at 90% confidence-level while operating under the testing conditions.

Test condition : Input: 220Vac 45 minutes on , 15 minutes off

Output: 80% of rated load

Temperature : 40 +/- 5

Quantity : 45 pcs

Result : without failure after 30 days burn-in

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 10,000Ft (operation) and 40,000Ft (non operation)

6-0. Safety

6-1. Hi-Pot Test

4242 Vdc 5mA 3 Sec. between primary and secondary circuit

6-2. Insulation Test

500Vdc, 3 Sec. between primary and secondary circuit

IR should \geq 50 M Ω .

6-3. Leakage Current

\leq 250 uA, at 240Vac/50 Hz

6-4. Safety

I.T.E : UL/CUL, TUV

Audio/Video : UL/CUL,TUV

6-5. EMS

Items	Specification	Reference
ESD	Contact: \pm 4KV	IEC 61000-4-2
	Air: \pm 8KV	
RS	Frequency: 1KHz Field Strength: 3V/M	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 :	

6-6. EMI

Comply with Standards
CISPR 22, EN 55022 Class B

7-0. Mechanical Characteristics

7-1. Physical Size : 100 mm (L) * 45 mm (W) * 31 mm (H)

7-2. Enclosure material : 94V-1 minimum

7-3. Output Cable (Reference) : UL1185 #18

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) : 220 g