

# SPECIFICATION

**Desktop Power Adaptor  
Universal AC Input  
48W 12VDC Output**

**P/N: A120040CH1**

\*\*\* Specification Approval \*\*\*

This specification (total 7 pages including cover page) in its entirety is approved by:

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Company Name	Print Name	Signature	Date
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Specification subject to change without prior notice.



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## 1. SCOPE

This document describes basic electrical characteristics and mechanical characteristic of a 48W power adapter.

## 2. ELECTRICAL SPECIFICATION

### 2.1 INPUT

#### 2.1.1 INPUT VOLTAGE RANGE

Power adapter shall operate within input specification from 90Vac to 264Vac or provide automatic switching between high line and low line input ranges. The table below shows common input voltage range.

Minimum	Nominal	Maximum	Unit
90	100-240	264	Vac, rms

Table 1 - Input Voltage Range

#### 2.1.2 INPUT FREQUENCY RANGE

The power adapter shall operate within specification from 47 to 63 Hz.

#### 2.1.3 AC INRUSH CURRENT

Peak inrush current should not exceed 70A at 240Vac, 50Hz, 25C cold start. It shall not interrupt line fuse or cause damage to the power adapter either at cold or warm start.

Peak inrush current should not exceed 70A at 100Vac, 60Hz, 25C, cold start. It shall not interrupt line fuse or cause damage to the power adapter either at cold or warm start.

The inrush current must be limited to the extent that no damage is done to the supply under any specified line, load, and temperature conditions. The inrush current shall not cause any external protection devices (i.e. fuses) to trip.

#### 2.1.4 INPUT CURRENT

Maximum steady state input current shall not exceed 1.5A for any line voltage specified in 2.1.1.

#### 2.1.5 LEAKAGE CURRENT

3.5mA max. at 240Vac 60Hz.

#### 2.1.6 INSULATION RESISTANCE

Insulation resistance shall be more than 100M ohm between primary and secondary.

#### 2.1.7 LOW POWER CONSUMPTION

Vin	Load	Power consumption
230Vac/50Hz 115Vac/60Hz	0A	≤ 0.3 W

Note: No load (0A) current draw complies to EPA standard Version 2.0 Energy Star EPS specification.

## 2.2 INPUT PROTECTION

### 2.2.1 INPUT CURRENT PROTECTION

A fuse with rating of 2A / 250V (time lag type) shall be installed on the input line side near the input connector and no any electrical components before.

## 2.3 OUTPUT REQUIREMENT

### 2.3.1 OUTPUT POWER

The total output power, under steady state conditions, shall not exceed 48W.

Power supply will meet and be tested to IEC60950-1 LPS (Limited Power Source, section 2.5 in the standard) requirements. The LPS designation will be included on the adapter label.

### 2.3.2 OUTPUT VOLTAGE AND CURRENT

Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance as defined in Table 2. Output voltage(s) shall be measured at the load side of output connector.

Output Voltage	Voltage Range		Current Range	
	Lower Limit	Upper Limit	Minimum Load	Full rated load
+12V	11.4V	12.6V	0A	4.0A

Table 2 - Output Voltage and Current

### 2.3.3 RIPPLE AND NOISE

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth and 1:1 scope probe, Output shall be bypassed at the connector with a 0.1µF ceramic disk capacitor and a 10µF electrolytic capacitor for general testing purpose.

Output Voltage	Maximum Ripple & Noise (Vp-p)
+12V	170mV

Table 3 – Ripple and Noise

### 2.3.4 OVER VOLTAGE PROTECTION

The power adapter shall provide with over voltage protection such that under any single component failure.

Output Voltage	Maximum OVP Trip Voltage
+12V	+18V

Table 4 – Over Voltage Protection

The power supply provides output over voltage protected in latch off by zener diode, and no damage to customer device.

### 2.3.5 OVER CURRENT PROTECTION

The power supply shall be protected when operating any output in overload condition (set @ max load: 4.8A-7.2A). The power adapter shall be shut down and no any damage when the over current condition occurs on the output, and It will be auto-recovered when the failure is removed.

### **2.3.6 OVERSHOOT**

During turn on or turn off, the output overshoot shall not exceed nominal output voltage by more than 10%, and output shall not change its polarity with respect to its return line.

### **2.3.7 SHORT CIRCUIT PROTECTION**

Power adapter shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the power adapter shall result from a continuous or intermittent short circuit condition. It will be auto-recovered when the failure is removed.

### **2.3.8 LIMITED POWER SOURCE**

The power supply shall comply with the limited power source requirement as defined in IEC 60950-1 section 2.5 standard.

## **2.4 PERFORMANCE**

### **2.4.1 EFFICIENCY**

Efficiency (watt out / watt in) shall be a minimum of 86.5% at active average mode, which complies to EPA standard Version 2.0 Energy Star EPS specification.

### **2.4.2 TURN ON DELAY TIME**

Output shall reach steady state within 3 seconds of turn on at 100Vac or greater.

### **2.4.3 HOLD-UP TIME**

Hold-up time shall be a minimum of 8mS at 115Vac / 60Hz input.

### **2.4.4 DYNAMIC LOAD**

Power adapter shall operate within regulation defined in section 2.3.2 at following conditions:

Step load change: from 2.0A to 4.0A Load on the output.

Dwell Time: 100Hz & 1 KHz 50% duty.

Slew rate: 0.5A/usec

## **3. ENVIRONMENTAL**

### **3.1 TEMPERATURE**

Operation: -10 to 40 degrees C.

Storage: -20 to 85 degrees C

### 3.2 HUMIDITY

Operation: 10% to 90% relative humidity, non-condensation.

Storage: 5% to 95% relative humidity, including condensation.

### 3.3 VIBRATION AND SHOCK

The power supply shall be designed to withstand normal transportation vibration per MIL-STD-810F, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

### 3.4 ALTITUDE

Sea level to 2000 meters.

## 4. APPLICABLE STANDARDS

### 4.1 STANDARD & SAFETY CERTIFICATION

#### 4.1.1 SAFETY STANDARD:

Note: Always reference the latest published documents from the following agencies.

Agency	Certification	Countries
UL	UL60950-1	US
cUL	C22.2 No. 60950	Canada
TUV	EN 60950-1 2nd Ed.	Germany
CE	IEC/EN 60950-1 2nd Ed.	EU

( All certification marks need to be shown on data-plate )

#### 4.1.2 EMI

VCCI Class-B

FCC 15(Class-B, 115Vac operation)

CISPR 22 Class-B limits

EN55022 (1998+A1:2000+A2:2003 Class-B limits)

47 CFR Part 15, Subpart B, Class B limits

EN 61000-3-2 Power line Harmonics

EN 61000-3-3 Flicker Emissions

GB 9254 ITE Emissions Latest Edition

GB 17625.1 Harmonics Latest Edition

#### 4.1.3 IMMUNITY

EN 55024: 1998+A1:2001+A2:2003

Electrostatic Discharge: 61000-4-2

RF Immunity: 61000-4-3

Electrical Fast Transients: 61000-4-4

Surge: 61000-4-5

Voltage Sags and Interrupts: 61000-4-11

Conducted Immunity: 61000-4-6

#### **4.1.4 ENVIRONMENT STANDARDS**

RoHS regulation.

The RoHS compliance symbol will be included on the dataplate.

#### **4.1.5 ENERGY STAR**

EPS complies to EPA standard Version 2.0 Energy Star EPS specification.

### **5. MECHANICAL**

#### **5.1 INPUT CONNECTOR AND OUTPUT CABLE**

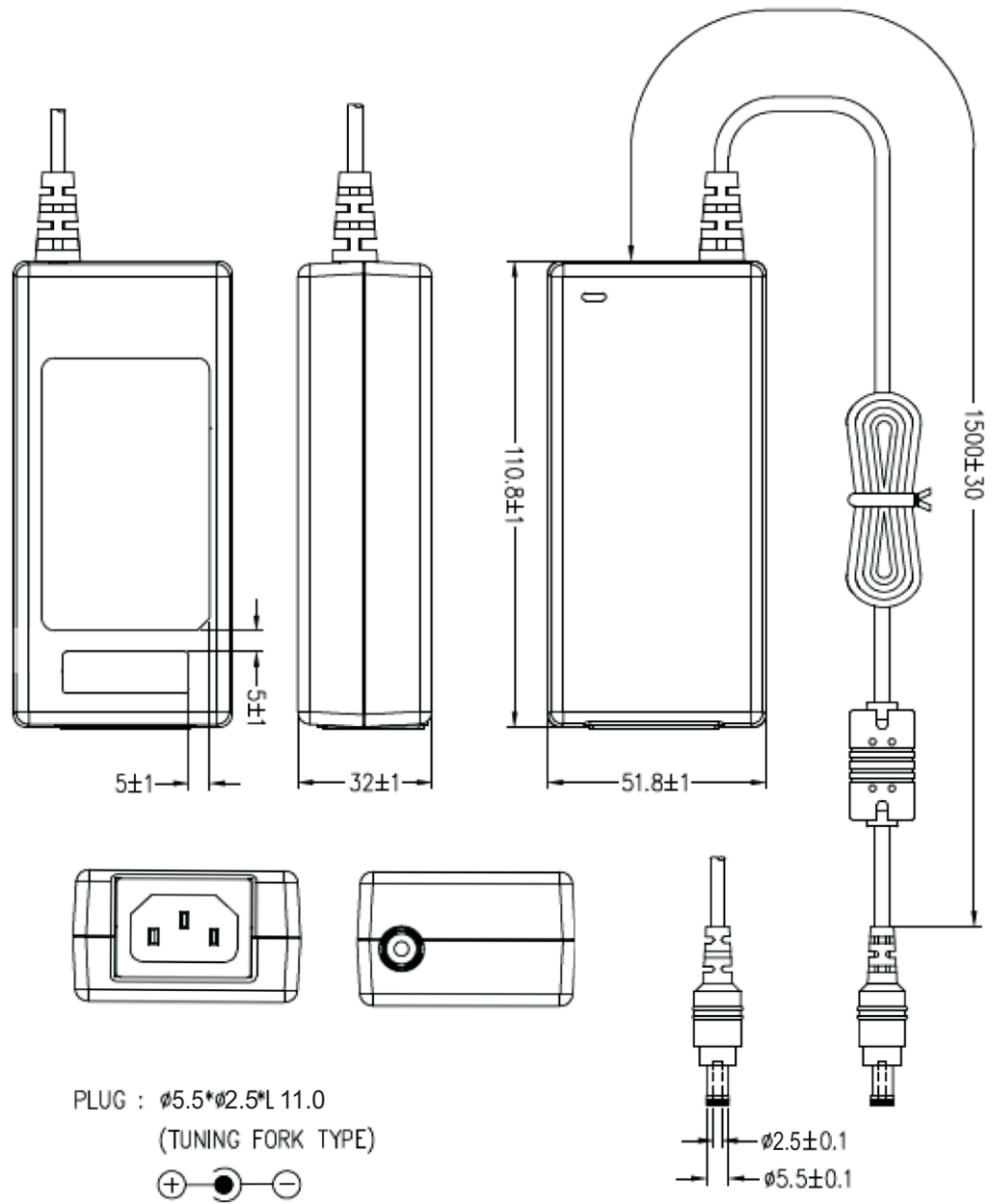
##### **5.1.1 INPUT CONNECTOR**

AC Input connector shall be IEC 320 C14 power connector.

##### **5.1.2 OUTPUT PLUG AND CABLE**

The output cable shall be UL1180 #18AWG 1500 +/-0.3mm with overmolded ferrite bead core, and black in color. The DC Power Plug shall be 2.5\*5.5\*11.0mm.

### 6. DRAWING



### 7. LABEL

