

# SPECIFICATION

## High Quality Switching Desktop Adapter

**Universal AC Input  
150W 12VDC Output**



Dimensions:  
174 \* 84 \* 42 mm

**P/N: A120125CHL**

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

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

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Company Name

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## 1. Scope

This document describes basic electrical characteristics and mechanical characteristics of a 150W power adapter.

## 2. Electrical

### 2.1 INPUT REQUIREMENT

#### 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.

Input Range	Minimum	Nominal	Maximum	Unit
	90 V	100V- 240V	264V	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

It shall be limited to a level below the I<sub>2t</sub> of the fuse and the bridge diode. No damage.

#### 2.1.4 INPUT CURRENT

Maximum steady state input current shall not exceed 2.5A for any line voltage specified in 2.1.1.

#### 2.1.5 LEAKAGE CURRENT

0.7mA max. at 240Vac .

#### 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
240Vac/50Hz 100Vac/60Hz	0A	≤ 0.35 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 4.0A / 250V (Time lag type) shall be installed on the input line side near the input connector.

## 2.3 OUTPUT REQUIREMENT

### 2.3.1 OUTPUT POWER

The total power, under steady state conditions, shall not exceed 150W at 100-264VAC, and 135W at 90-100VAC.

### 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
+12.0V	11.4V	12.6V	0A	12.5A

**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 0.1 $\mu$ F ceramic disk capacitor and a 22 $\mu$ F electrolytic capacitor for general testing purpose.

Output Voltage	Maximum Ripple & Noise (Vp-p)
+12.0V	180mV

**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 and Current	Maximum OVP Trip Voltage
+12.0V 12.5A	20.0V

**Table 4 – Over Voltage Protection**

The power supply provides output over voltage protection by latch-off via zener diode. No damage shall occur to end device in a protection event.

### 2.3.5 OVER POWER PROTECTION

After the supply reaches temperature equilibrium, over power protection shall operate at 105% ~ 150% of rated power within one hour burn-in and once temperature reaches equilibrium, as defined in section 2.3.1.

### 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 POTECTION

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 automatically recover when the fault condition is removed.

## 2.4 PERFORMANCE REQUIREMENT

### 2.4.1 EFFICIENCY

Efficiency (watt out / watt in) shall be a minimum of 87.0% 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 3.0 seconds of turn on at 100Vac or greater.

### 2.4.3 HOLD-UP TIME

Hold-up time shall be a minimum of 8.0mS at 115Vac / 60Hz input.

### 2.4.4 DYNAMIC LOAD

Power supply shall operate within regulation defined at following conditions:

Rate output voltage: +/-10%

Step load change: from 0 to 6.25A and 6.25 to 12.5A on the output

Dwell Time: 100Hz & 1 KHz 50% duty

Slew rate: 2.5A/usec

## 3 ENVIRONMENTAL SPECIFICATION

### 3.1 TEMPERATURE

Operation within specification: 0 to 40 degrees C

Storage: -20 to 80 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

Operating: 10-250Hz, 0.25G peak to peak, 3 axes, 15 min sweep

Storage: 10-300Hz, 2.0G peak to peak, 3 axes, 15 min sweep

### 3.4 ALTITUDE

Sea level to 5000 meters

## 4 APPLICATION STANDARD & RELATED SPECIFICATION

### 4.1 STANDARD & SAFETY CERTIFICATION

#### 4.1.1 SAFETY STANDARD

Agency	Certification required
U.S.A	UL60950-1
Canada	C22.2 No. 60950-1
CB	IEC-60950-1
Europe	EN 60950-1
Australia	AS/NZS 60950-1

Unless otherwise specified, the supply is designed to meet IEC 60950-1 and/or equivalent safety standards for use in Information Technology Equipment. Unit also complies to UL60065 (7th Edition).

#### 4.1.2 FCC REQUIREMENTS

Power supply shall comply with the radiated and conducted emission requirements for FCC Class B.

#### 4.1.3 CISPR REQUIREMENTS

Power supply shall comply with the radiated and conducted emission requirements for CISPR 22 Class B.

### 4.2 IMMUNITY

#### 4.2.1 ELECTROSTATIC DISCHARGE (ESD), EN 61000-4-2

The power supply shall compliance to EN61000-4-2, withstand the following ESD conditions at any point on the power supply enclosure when tested as following condition.

+/- 8KV discharge by air & +/- 4KV discharge by contact, no damage.

The storage capacitance shall be 150 pF and the discharge resistance shall be 330 ohms. The power supply shall meet all discharge requirements for the CE Mark designation.

#### 4.2.2 RADIATED FIELD IMMUNITY, EN 61000-4-3

Power supply shall withstand following condition:

Frequency Range: 80 - 1000MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1 kHz

#### 4.2.3 FAST TRANSIENT IMMUNITY, EN 61000-4-4

Power supply shall withstand EN 61000-4-4 +/-1kV requirements.

#### 4.2.4 SURGE IMMUNITY, EN 61000-4-5

Power supply shall withstand 1kV (L – L) and 2kV (L – PE) without functional failure.

#### 4.2.5 CONDUCTED IMMUNITY, EN 61000-4-6

Power supply shall withstand following condition:

Frequency Range: 0.15 - 80MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1 kHz

#### 4.2.6 VOLTAGE DIPS AND INTERRUPTIONS, EN 61000-4-11

Power supply shall meet EN61000-4-11 requirements.

#### 4.2.7 LEAKAGE CURRENT

Power supply touch current shall not exceed 3.5 mA at input voltage of 264Vac / 60Hz.

#### 4.3.3 DIELECTRIC STRENGTH

The power supply shall withstand following Hi-pot test without breakdown.

4242 Vdc input(L & N) to output for 3 seconds.

2121 Vdc primary(L & N) to PE(primary earth ground) for 3 seconds.



7 LABEL

**TOP** Switching Adapter  
MICROSYSTEMS

P/N: A120125CHL  
Input: 100~240V 1.7A 50-60Hz  
Output: 12V  $\equiv$  12.5A

入力: AC100-240V 50-60Hz  
出力: DC12V 7.5A

UL US LISTED E176899

TUV GS RoHS LPS

CE  $\times$  FC

**WARNING**  
RISK OF ELECTRIC SHOCK DO NOT OPEN  
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S/N: TCH-YYWWXXXX Made in China