



## SPECIFICATION

FOR MODEL NO. : PAA060F

60 WATTS SWITCHING POWER SUPPLY

VERSION 0.1

<AUG. 15, 2005>

DESCRIPTION	SPECIFICATION FOR SWITCHING POWER SUPPLY		
MODEL NO.	PAA060F		
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## 1. SCOPE

This specification describes a full range AC input voltage with single output voltage switching power adapter.

## 2. ELECTRICAL SPECIFICATION

### 2.1. AC INPUT REQUIREMENTS

#### 2.1.1. INPUT VOLTAGE

The operating range of the power adapter is 90 to 264Vac.

#### 2.1.2. INPUT FREQUENCY

The input frequency range is 47 to 63 Hz.

#### 2.1.3. EFFICIENCY

The power adapter efficiency is 80% min. At full load and with 115Vac input.

#### 2.1.4. INRUSH CURRENT

No Damage (Cold Start ).

#### 2.1.5. MAX. INPUT AC CURRENT

1.7A @90Vac,0.85A @180Vac.

### 2.2. DC OUTPUT REQUIREMENTS

#### 2.2.1. OUTPUT VOLTAGE

The output voltage under all conditions of rated input voltages and frequencies, of output loads from minimum to maximum and of environmental requirements shall remain within the following limit:

Normal Voltage	Limit
+12.0V	11.5 to 12.5

The output voltage is measured at the connector at the output end of the cable.

### 2.2.2. OUTPUT CURRENT

The minimum and maximum continuous output currents are listed in this section.

Output Voltage	Minimum (A)	Maximum (A)
12.0V	0.0	5.0

### 2.2.3. OVER CURRENT CONTROL

Over current protection will prevent damages to power supply when output is short-circuited continuously with 100 milliohms or less. The output current shall be internally limited to 150% Max or less at load condition. In the mean time, the temperature rise shall not exceed the limit specified in 4.5 Damage to the power supply must not occur if operated at short circuit.

### 2.2.4. OUTPUT RIPPLE / NOISE

Ripple is defined as a composite of a power line frequency component plus a high frequency component due to the power oscillator. Common mode noise, which may be observed due to oscilloscope connections, will be ignored. The output voltage ripple and noise limits under all conditions of rated input voltages and frequencies, of output loads from minimum to maximum, and to add 0.1uf and 10uf capacitors at output connector terminal for ripple and noise test.

The spec as follow table.

Normal Voltage	Ripple & Noise
+12.0V	200mV

### 2.2.5. OUTPUT POWER AND TURN-ON DELAY

The turn-on delay from application of AC input power to the establishment of rated DC power voltage should not exceed 3 seconds @ 115Vac under any conditions at CC mode test.

### 2.2.6. OUTPUT OVER VOLTAGE PROTECTION

The output shall be protected from over voltage fault at all conditions including open-loop by breakdown that is set to trip at 16Vdc maximum.

### 2.2.7. VOLTAGE HOLD-UP TIME

When the power supply is operated at 100% of maximum continuous output load, the minimum output holdup time after loss of input power shall be **8mS** for AC input voltage (115Vac, 60Hz) and at 60-degrees cut angle.

## 3. MECHANICAL REQUIREMENTS

### 3.1. PHYSICAL DIMENSIONS

The overall dimension of this switching power adapter is  
**108 mm (L) x 65 mm (W) x 31 mm (H) Max.**

## 4. ENVIRONMENTAL REQUIREMENTS

### 4.1. TEMPERATURE AND HUMIDITY

Operating Temperature Range	10	to +40
Non-operating Temperature Range	0	to +85
Operating Humidity	10 to 90% relative humidity (non-condensing)	
Non-operating Humidity	5 to 95% relative humidity (non-condensing)	

### 4.2. VIBRATION AND SHOCK

The power adapter shall withstand forces of 2G at variable recurrent frequencies of 20 to 30 Hz and a simulated transportation test. Transportation test will consist of a 1/2G vibration force at the resonant frequencies of the board or components.

The test will last for 15 min. The adapter will be tested in a configuration representative of the intended application with shipping cartons. The adapter must survive a 50G force for duration of 20 ms in all 3 orthogonal planes from normal mounting points.

### 4.3. DROP TEST

The power adapter shall successfully comply with the following drop test requirements: 6 random drops from a height of 70 cm onto concrete covered with 1/8 inch asphalt tile or similar material. No impairment of normal function, breaking away of any parts or change that would render power adapter potentially harmful shall occur.

#### **4.4. EMI**

##### **4.4.1. CONDUCTED EMI**

For 240 Vac input operation, the power adapter must below the CISPR 22, Class B limit for HF equipment and DP equipment with a 3 dB margin. For 120 Vac input operation, the power adapter must below the FCC part 15 sub-part B for Class B computing device with a 3 dB margin. For 100 Vac operation, the power adapter must below the VCCI limit by a 3 dB margin. Both conducted and radiated emissions shall be measured in the applicable system and complied with the required standards.

##### **4.4.2. RADIATED EMI AND EMC**

No peak emission in the frequency range 30 MHz to 1G Hz shall exceed Class B limit when measured per ANSI C63.4, CISPR 22 and VCCI measurement procedure.

#### **4.5. TEMPERATURE RISE**

The maximum temperature measured at any point on the enclosure surface shall not exceed 70 at room temperature of 25 i.e., the maximum temperature rise on the surface of enclosure shall not exceed 45 .

#### **4.6. SURGE WITHSTAND AND EFT**

The power supply shall withstand the line transient for both Common Modes at 2KV and Differential Mode at 2KV operations.

### **5. RELIABILITY**

#### **5.1. MEAN TIME BETWEEN FAILURES (MTBF)**

The MTBF for the power adapter shall equal or exceed 50,000 hours when operated at full rated load in an ambient temperature of 35 , and 100,000 hours when operated at full rated load in an ambient of 25 by MIL-HDBK-217F.

## 6. DIELECTRIC WITHSTAND TEST

### 6.1. HI-POT

Primary to Secondary 4242Vdc for 1 minute.

### 6.2. LEAKAGE CURRENT

3.5 mA Max., at 230 Vac input.