



## **Andyosn International Co.,Ltd.**

# **Power Supply**

## **Switching Power Supply Specifications**

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*Model Name: AD-M0800A2-60*

*Revision: V1.0*

*Date: June 2008.11.11*

*Address: 3 Floor, No.153, Sec.3,Pei Shen Road, Shen Keng Hsiang , Taipei Hsien, Taiwan*

*TEL: 886-2-26626259*

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# Table of Contents

## 1. General

### Scope

This specification defines the performance characteristics of a single phase peak **800** watts, **8** output power supply. This specification also defines world wide safety and electromagnetic compatibility requirements for the power supply which is intended for use in computer products.

## 2. Input Characteristics

### 2.1 Input Voltage

Nominal Voltage	Voltage Variation Range
-----	-----
230Vac	180-264Vac
115Vac	100-132Vac

### 2.2 Input Frequency

Nominal Frequency	Frequency Variation Range
-----	-----
50/60 Hz	47 Hz to 63 Hz

The power supply must operate at above frequency with both 100-120/200-240Vrms input voltage range.

### 2.3 Max. Input AC Current

Max. Input Current	Measuring Range
-----	-----
<b>10A</b>	100-132Vac
<b>6A</b>	180-264Vac

### 2.4 Inrush Current

Less than the ratings of it's critical components (Including bulk rectifiers. Fuses and surge limiting device) .

### 2.5 Efficiency

**800W** provides an efficiency of 80% minimum when measured at full load under 115V-60Hz.condition. at 20% load efficiency of 82% minimum.

## 3. Output characteristics

Normal Operation Output (LABEL SPEC)

Output Voltage	Load Range		Regulation	Ripple & Noise Peak-to-Peak Max.
	MIN	MAX		
1. +5V	0A	30A	+3%~ -3%	50mV
2. +12V1	0A	22A	+3%~ -3%	100mV
3. +12V2	0A	22A	+3%~ -3%	100mV
4. +12V3	0A	36A	+3%~ -3%	100mV
5. +12V4	0A	36A	+3%~ -3%	100mV
6. -12V	0A	0.5A	+5%~ -5%	100mV
7. +5Vsb	0A	3A	+3%~ -3%	50mV
8. +3.3V	0A	30A	+3%~ -3%	50mV

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- \*. *The max load can't be over 170W when both DC +5V and +3.3V are used.*
- \*. *The max load can't be over 780W when both DC 12V1., 12V2., 12V3., 12V4 are used.*
- \*. *The max load can't be over 780W when both DC +5V, +12V, +3.3V are used.*

### **3.1 Hold-up Time**

DC output rise time is less than **16 ms** at nominal line full load.

### **3.2 PG-OK**

PG-OK is a power good signal and be asserted high by power supply to indicate that the +5 VDC and +3.3VDC outputs are above the under-voltage thresholds of the power supply. When this signal is asserted high, there should be sufficient mains energy stored by the converter to guarantee continuous power operation within specification.

+3.3VDC output voltage falls below the under-voltage threshold, or when mains power has been removed for a time sufficiently long so that power supply operation is no longer. See Figure 1 for a representation of the timing characteristics of the PG-OK, PS-ON, and germane power rail signals.

### **3.3 3.3V Sense**

A default 3.3V sense line should be implemented pin 13 of the connector.

## **4. Protection**

### **4.1 Output Protection**

#### **4.1.1 Over Voltage Protection**

The +5V/+12V/+3.3V DC output are protected against the over voltage condition. Maximum value can't be over 7V at 5V terminal, 15.6V at 12V and 4.3V at 3.3V.

#### **4.1.2 Over Power Protection**

The power supply can be used electronic circuit to limit the output current against exceeding **110%~130%** of surge output or protected against excessive power delivery since short circuit of any output or over total power at nominal line.

#### **4.1.3 Short Circuit Protection**

Short circuit placed on any DC output will shut down all DC outputs latch. Standby power will be auto recovery.

## **5. Start Stability**

### **5.1 No Load Start**

When power is applied to **800W** with no load connected or under minimum load connected, neither damage to power supply nor hazards to users will occur.

### **5.2 Cold Start**

The power supply shall operate properly when first applied at normal in put. voltage and or so maximum load after 4 hours storage at 0°C

## **6. Environments**

### **6.1 Temperature and Humidity**

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### 6.1.1 Operating

Temperature 0 to 40°C

Relative Humidity 20 to 90%

### 6.1.2 Storage

Temperature 0°C to 60°C

Relative Humidity 20 to 95% no condensing

### 6.2 Altitude

The power supply can operate normally at any altitude between 0 to 100000 feet.

### 6.3 Vibration and Shock

6.3.1 Sweep and resonance search for each of X, Y, Z, axis at the sweep. RATE of 1/OCTAE/Min.

Frequency	Duration	Result
5-2KHz	30minutes	Pass
5-2KHz	30minutes	Pass

## 7. Conducted EMI

CE (Standard CISPR 22 Class B & FCC Part 15 Class B)

## 8. Product Safety

### 8.1 Safety Requirement

UL(CUL), TUV, CB, FCC

### 8.2 Leakage Current

The AC leakage current is less than 3.5mA when the power supply connect to 254Vac-50Hz.

### 8.3 Insulation Resistance

The insulation resistance should be not less than 2M ohm after applying of 500VDC for 1 minute.

### 8.4 Dielectric Voltage Withstand

The power supply shall withstand for 1 minute without breakdown the application of a 60Hz 1500V AC voltage applied between both in put line and chassis (20mA DC cut-off current). Main transformer shall similarly withstand 3000Vac applied between both primary and secondary windings for a minimum of one minute.

## 9. Power Good Signal

A TTL compatible signal the purpose of initiating an orderly start-up procedure under normal input operating conditions. During power up, this signal is asserted (low) until +5V is under regulation and AC reaches min. line specification range. After all voltage are going appropriate level, the system may have a turn on delay of 100mS, but no greater than 500mS. During power off the signal should go to low level before +5V is out of regulation. The low is 0 to 0.8V and high level is 4.75 to 5.25V. The "power Good" signal can drive up to 6 standard TTL loads

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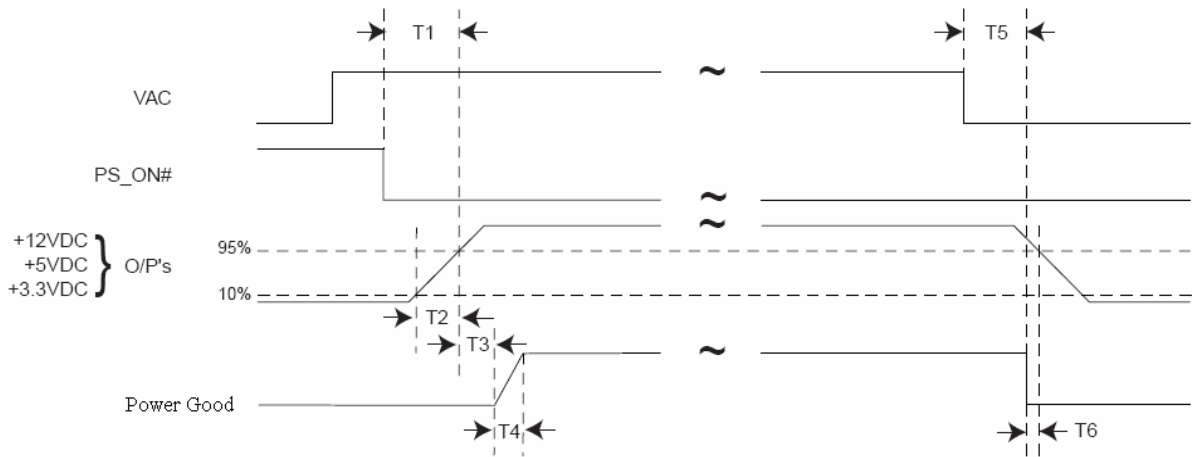


Figure 1

- \*T1: Turn on time ( <500ms Max. )
- \*T2: Rise time ( 0.2ms ~ 20ms )
- \*T3: Power good turn on delay time ( 100ms ~ 500ms)
- \*T4: Switch on time ( < 10ms )
- \*T5: power hold-on time ( > 16 ms )
- \*T6: Power good turn off delay time ( > 1.0 ms ) PS-ON/OFF
- \* Power on-off cycle:

When the power supply is turned off for a minimum of 1.0 sec. And turn on again, the power good signal will be asserted.

## 10. Harmonics

If the product added PFC shall meet requirement for EN61000-3-3: 1955 standard of class D, test at 220Vac 50Hz..



**Andyosn International Co.,Ltd.**

## **Power Supply**

### **Switching Power Supply Specifications**

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*Model Name: AD-M0900A2-60*

*Revision: V1.0*

*Date: June 2008.11.11*

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## 1. General

### Scope

This specification defines the performance characteristics of a single phase peak **900** watts, **8** output power supply. This specification also defines world wide safety and electromagnetic compatibility requirements for the power supply which is intended for use in computer products.

## 2. Input Characteristics

### 2.1 Input Voltage

Nominal Voltage	Voltage Variation Range
230Vac	180-264Vac
115Vac	100-132Vac

### 2.2 Input Frequency

Nominal Frequency	Frequency Variation Range
50/60 Hz	47 Hz to 63 Hz

The power supply must operate at above frequency with both 100-120/200-240Vrms input voltage range.

### 2.3 Max. Input AC Current

Max. Input Current	Measuring Range
12A	100-132Vac
7A	180-264Vac

### 2.4 Inrush Current

Less than the ratings of it's critical components (Including bulk rectifiers. Fuses and surge limiting device) .

### 2.5 Efficiency

**900W** provides an efficiency of 80% minimum when measured at full load under 115V-60Hz.condition. at 20% load efficiency of 82% minimum.

## 3. Output characteristics

Normal Operation Output (LABEL SPEC)

Output Voltage	Load Range MIN MAX	Regulation	Ripple & Noise Peak-to-Peak Max.
1. +5V	0A 30A	+3%~ -3%	50mV
2. +12V1	0A 30A	+3%~ -3%	100mV
3. +12V2	0A 30A	+3%~ -3%	100mV
4. +12V3	0A 36A	+3%~ -3%	100mV
5. +12V4	0A 36A	+3%~ -3%	100mV
6. -12V	0A 0.5A	+5%~ -5%	100mV
7. +5Vsb	0A 3A	+3%~ -3%	50mV
8. +3.3V	0A 30A	+3%~ -3%	50mV

- \*. *The max load can't be over 170W when both DC +5V and +3.3V are used.*
- \*. *The max load can't be over 880W when both DC 12V1., 12V2., 12V3., 12V4 are used.*
- \*. *The max load can't be over 880W when both DC +5V, +12V, +3.3V are used.*

### **3.1 Hold-up Time**

DC output rise time is less than **16 ms** at nominal line full load.

### **3.2 PG-OK**

PG-OK is a power good signal and be asserted high by power supply to indicate that the +5 VDC and +3.3VDC outputs are above the under-voltage thresholds of the power supply. When this signal is asserted high, there should be sufficient mains energy stored by the converter to guarantee continuous power operation within specification.

+3.3VDC output voltage falls below the under-voltage threshold, or when mains power has been removed for a time sufficiently long so that power supply operation is no longer. See Figure 1 for a representation of the timing characteristics of the PG-OK, PS-ON, and germane power rail signals.

### **3.3 3.3V Sense**

A default 3.3V sense line should be implemented pin 13 of the connector.

## **4. Protection**

### **4.1 Output Protection**

#### **4.1.1 Over Voltage Protection**

The +5V/+12V/+3.3V DC output are protected against the over voltage condition. Maximum value can't be over 7V at 5V terminal, 15.6V at 12V and 4.3V at 3.3V.

#### **4.1.2 Over Power Protection**

The power supply can be used electronic circuit to limit the output current against exceeding **110%~130%** of surge output or protected against excessive power delivery since short circuit of any output or over total power at nominal line.

#### **4.1.3 Short Circuit Protection**

Short circuit placed on any DC output will shut down all DC outputs latch. Standby power will be auto recovery.

## **5. Start Stability**

### **5.1 No Load Start**

When power is applied to **900W** with no load connected or under minimum load connected, neither damage to power supply nor hazards to users will occur.

### **5.2 Cold Start**

The power supply shall operate properly when first applied at normal in put. voltage and or so maximum load after 4 hours storage at 0°C

## **6. Environments**

### **6.1 Temperature and Humidity**

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### 6.1.1 Operating

Temperature 0 to 40°C

Relative Humidity 20 to 90%

### 6.1.2 Storage

Temperature 0°C to 60°C

Relative Humidity 20 to 95% no condensing

### 6.2 Altitude

The power supply can operate normally at any altitude between 0 to 100000 feet.

### 6.3 Vibration and Shock

6.3.1 Sweep and resonance search for each of X, Y, Z, axis at the sweep. RATE of 1/OCTAE/Min.

Frequency	Duration	Result
5-2KHz	30minutes	Pass
5-2KHz	30minutes	Pass

## 7. Conducted EMI

CE (Standard CISPR 22 Class B & FCC Part 15 Class B)

## 8. Product Safety

### 8.1 Safety Requirement

UL(CUL), TUV, CB, FCC.

### 8.2 Leakage Current

The AC leakage current is less than 3.5mA when the power supply connect to 254Vac-50Hz.

### 8.3 Insulation Resistance

The insulation resistance should be not less than 2M ohm after applying of 500VDC for 1 minute.

### 8.4 Dielectric Voltage Withstand

The power supply shall withstand for 1 minute without breakdown the application of a 60Hz 1500V AC voltage applied between both in put line and chassis (20mA DC cut-off current). Main transformer shall similarly withstand 3000Vac applied between both primary and secondary windings for a minimum of one minute.

## 9. Power Good Signal

A TTL compatible signal the purpose of initiating an orderly start-up procedure under normal input operating conditions. During power up, this signal is asserted (low) until +5V is under regulation and AC reaches min. line specification range. After all voltage are going appropriate level, the system may have a turn on delay of 100mS, but no greater than 500mS. During power off the signal should go to low level before +5V is out of regulation. The low is 0 to 0.8V and high level is 4.75 to 5.25V. The "power Good" signal can drive up to 6 standard TTL loads.

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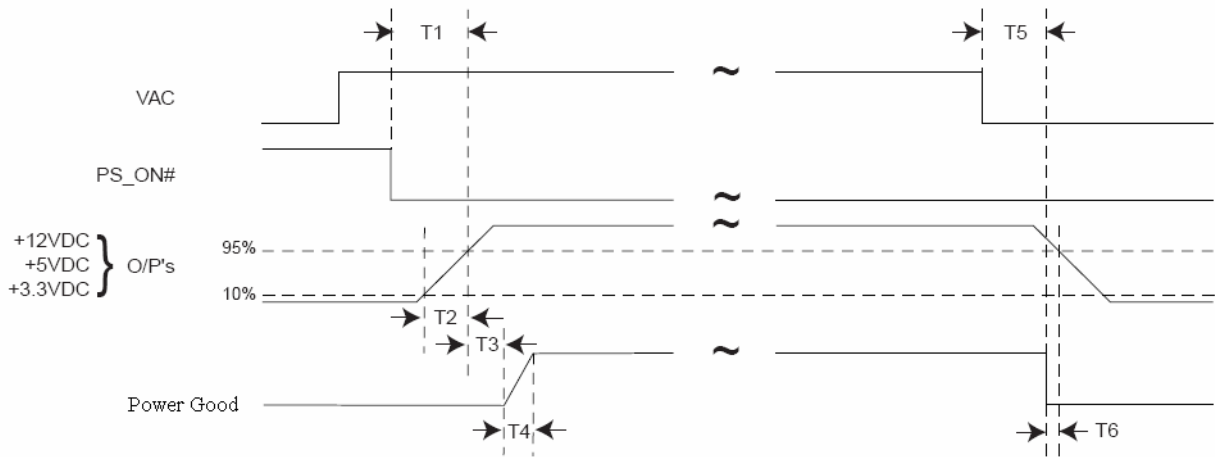


Figure 1

\*T1: Turn on time ( <500ms Max. )

\*T2: Rise time ( 0.2ms ~ 20ms )

\*T3: Power good turn on delay time ( 100ms ~ 500ms)

\*T4: Switch on time ( < 10ms )

\*T5: power hold-on time ( > 16 ms )

\*T6: Power good turn off delay time ( > 1.0 ms ) PS-ON/OFF

\* Power on-off cycle:

When the power supply is turned off for a minimum of 1.0 sec. And turn on again, the power good signal will be asserted.

## 10. Harmonics

If the product added PFC shall meet requirement for EN61000-3-3: 1955 standard of class D, test at 220Vac 50Hz..



**Andyosn International Co.,Ltd.**

## **Power Supply**

### **Switching Power Supply Specifications**

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*Model Name: AD-M1000A2-60*

*Revision: V1.0*

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### Scope

This specification defines the performance characteristics of a single phase peak **1000** watts, **8** output power supply. This specification also defines world wide safety and electromagnetic compatibility requirements for the power supply which is intended for use in computer products.

## 2. Input Characteristics

### 2.1 Input Voltage

Nominal Voltage	Voltage Variation Range
230Vac	180-264Vac
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### 2.2 Input Frequency

Nominal Frequency	Frequency Variation Range
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The power supply must operate at above frequency with both 100-120/200-240Vrms input voltage range.

### 2.3 Max. Input AC Current

Max. Input Current	Measuring Range
13A	100-132Vac
8A	180-264Vac

### 2.4 Inrush Current

Less than the ratings of it's critical components (Including bulk rectifiers. Fuses and surge limiting device) .

### 2.5 Efficiency

**1000W** provides an efficiency of 80% minimum when measured at full load under 115V-60Hz.condition. at 20% load efficiency of 80% minimum.

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## **5. Start Stability**

### **5.1 No Load Start**

When power is applied to **1000W** with no load connected or under minimum load connected, neither damage to power supply nor hazards to users will occur.

### **5.2 Cold Start**

The power supply shall operate properly when first applied at normal in put. voltage and or so maximum load after 4 hours storage at 0°C

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### **6.1 Temperature and Humidity**

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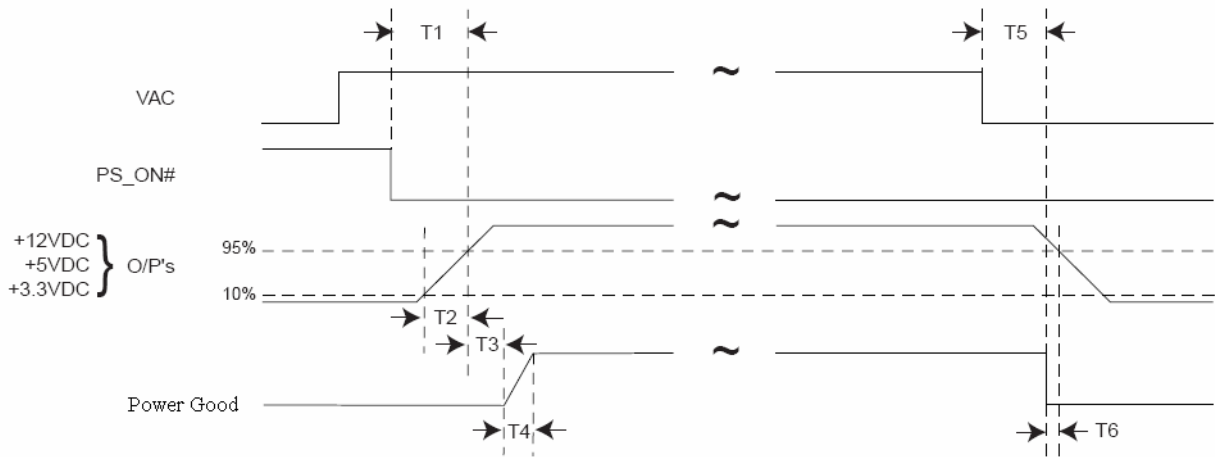


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\*T6: Power good turn off delay time ( > 1.0 ms ) PS-ON/OFF

\* Power on-off cycle:

When the power supply is turned off for a minimum of 1.0 sec. And turn on again, the power good signal will be asserted.

## 10. Harmonics

If the product added PFC shall meet requirement for EN61000-3-3: 1955 standard of class D, test at 220Vac 50Hz..