

SPECIFICATION

High Quality 700W Switching Power Supply

P/N: P80700G PF

*** Specification Approval ***

This specification (total 10 pages including drawings) is approved in entirety by:

Company Name

Print Name

Signature

Date

Specification subject to change without prior notice.



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1. General Requirements

This power supply is designed for entry level server computer systems. There are eight DC outputs: +5V, +12V1, +12V2, +12V3, +12V4, -12V, +3.3V & +5VSB and it will provide power to all system components.

2. Input Requirements

2.1 Harmonics

The power supply shall incorporate universal power input active power factor correction, which shall reduce line harmonics in accordance with the EN61000-3-2 and JEIDA MITI standards.

2.2 AC Inlet Connector

The AC input connector shall be an IEC 320 C-14 power inlet.

2.3 AC Input Voltage Specification

The power supply must operate within all specified limits over the following input voltage range. Harmonic distortion of up to 10% THD must not cause the power supply to go out of specified limits.

AC Input Rating

Parameter	Min.1	Min.2	Nom.	Max.	Unit
Vin (Full range)	90-103	103-110	110-220	264	Vrms
Vin Frequency	47			63	Hz
Full Load	80%	100%	100%	100%	Watts
			10-5		Arms

Note: Power factor correction (PFC) >0.95 at full load.

2.4 Efficiency

This model is designed for protecting environment and saving energy.

The below details are the key features:

Its pre-condition is not only improving the efficiency of this power supply but also saving energy for users

Meanwhile, this design of the model also have been taken different users have different computers as well as different power into consideration. Then in order to satisfying the demand of most of users, we designed the power supply with only 20% voltage and its efficiency also can up to 80% or above

at least; for the power supply with 50% voltage, then it can up to 85%-87%; if this power supply with 100% voltage, the minimum efficiency can up to 81% or above.

2.5 AC Inrush Current

The maximum inrush current of the power supply shall be 60A@110Vac and 120A@220Vac respectively (25°C ambient temperature and cold start).

3. DC Output

3.1 Voltage /Current

Load range 1

Output Voltage	Minimum Load	Maximum Load	Peak Load	Load Reg.	Cross Reg.	Line Reg.	Ripple & Noise
+3.3V	1.5A	24A		±5%	±5%	±1%	50mV p.p
+5V	1.0A	24A		±5%	±5%	±1%	50 mV p.p
+12V1	0.5A	18A	20A	±5%	±5%	±1%	120 mV p.p
+12V2	0.5A	18A	20A	±5%	±5%	±1%	120 mV p.p
+12V3	1A	18A	20A	±5%	±5%	±1%	120 mV p.p
+12V4	0.5A	18A	20A	±5%	±5%	±1%	120 mV p.p
-12V	0A	0.5A		±10%	±10%	±2%	120 mV p.p
+5V _{SB}	0.1A	2.5A	3.0A	±5%	±5%	±1%	50mV p.p

Note:

- A. Maximum continuous total DC output power should not exceed 630W.
- B. Maximum continuous combined load on +3.3V and +5V outputs should not exceed 140W.
- C. Maximum peak total DC output power should not exceed 700W.
- D. Peak power and current loading shall be supported for a minimum of 12 second.
- E. Maximum combined current for the 12V outputs shall be 47.5A.
- F. Ripple and noise measurements shall be made under all specified load conditions through a single pole low pass filter with 20MHz cutoff frequency. A 0.1uF ceramic disk capacitors in parallel with a 10uF tantalum are placed at the point of measurement. See Figure 1.

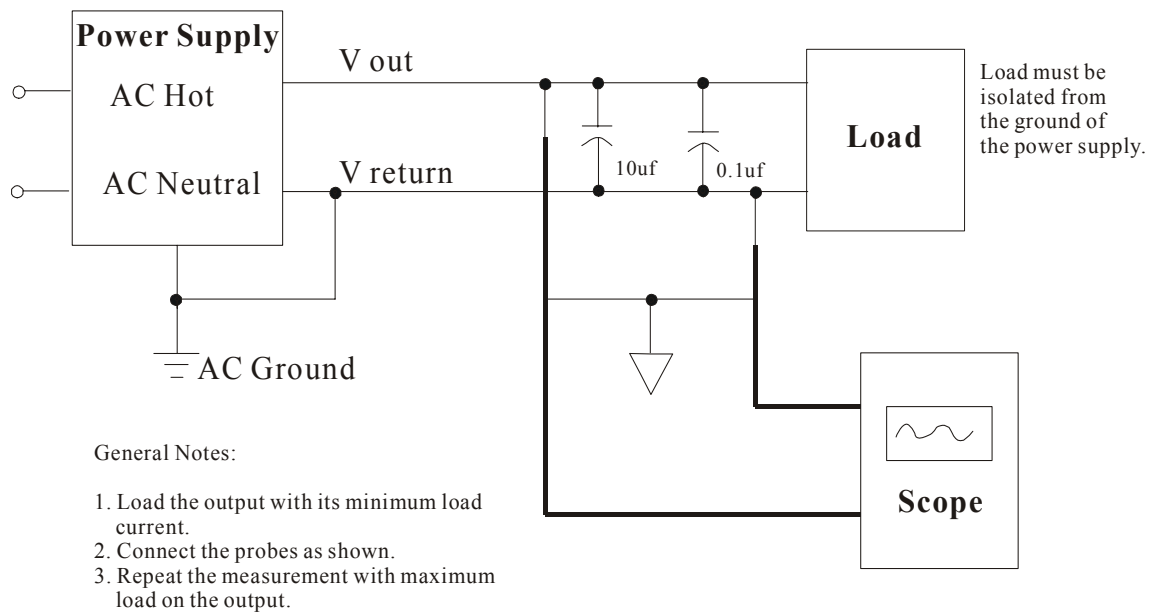


Figure 1. Differential Noise Test Setup

3.2 DC Connectors

3.2.1 Baseboard Power Connector

Connector housing: 24-Pin WST P/N: P24-I42002K8 or equivalent

Contact: Molex 44476-1111 or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color	Pin	Signal	Cable Color
1	+3.3VDC	Orange	11	+3.3VDC	Orange
2	+3.3VDC	Orange	12	-12VDC	Blue
3	COM	Black	13	COM	Black
4	+5VDC	Red	14	PS_ON	Green
5	COM	Black	15	COM	Black
6	+5VDC	Red	16	COM	Black
7	COM	Black	17	COM	Black
8	PWR OK	Gray	18	Reserved	N.C.
9	+5VSB	Purple	19	+5VDC	Red
10	+12V4DC	Yellow/Blue Stripe	20	+5VDC	Red
1	+12V4DC	Yellow/Blue Stripe	3	+5VDC	Red
2	+3.3VDC	Orange	4	COM	Black

3.2.2 Workstation Power Connector for High Power Graphics Cards

For workstation systems with high-powered graphics cards an additional power connector to the baseboard may be needed. This connector supplies additional +12V power for the higher power level graphics cards used in workstation applications.

Connector housing: 6-Pin Molex 45559-0002 or equivalent

Contacts: Molex 39-00-0207 or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color	Pin	Signal	Cable Color
1	+12V1DC	Yellow/Black Stripe	4	COM	Black
2	+12V1DC	Yellow/Black Stripe	5	COM	Black
3	+12V1DC	Yellow/Black Stripe	6	COM	Black

Connector housing: 6-Pin Molex 45559-0002 or equivalent

Contacts: Molex 39-00-0207 or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color	Pin	Signal	Cable Color
1	+12V2DC	Yellow	4	COM	Black
2	+12V2DC	Yellow	5	COM	Black
3	+12V2DC	Yellow	6	COM	Black

3.2.3 +12V Power Connector

Connector housing: Molex 39-01-2040 or equivalent

(Mating motherboard connector is Molex 39-29-9042 or equivalent)

Pin and Cable Color Assignment

Pin	Signal	Cable Color	Pin	Signal	Cable Color
1	COM	Black	3	+12V3DC	Yellow/Green Stripe
2	COM	Black	4	+12V3DC	Yellow/Green Stripe

3.2.4 Processor Power Connector

Connector housing: 8-Pin Molex 39-01-2080 or equivalent

Contact: Molex 44476-1111 or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color	Pin	Signal	Cable Color
1	COM	Black	5	+12V3DC	Yellow/Green Stripe
2	COM	Black	6	+12V3DC	Yellow/Green Stripe
3	COM	Black	7	+12V3DC	Yellow/Green Stripe
4	COM	Black	8	+12V3DC	Yellow/Green Stripe

3.2.5 Peripheral Power Connector

Connector housing: Amp 1-480424-0 or equivalent

Contact: Amp 61314-1 contact or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color
1	+12V4DC	Yellow/Blue Stripe
2	COM	Black
3	COM	Black
4	+5VDC	Red

3.2.6 Floppy Power Connector

Connector housing: Amp 171822-4 or equivalent

Pin and Cable Color Assignment

Pin	Signal	Cable Color
1	+5VDC	Red
2	COM	Black
3	COM	Black
4	+12V4DC	Yellow/Blue Stripe

3.2.7 Serial ATA Power Connector

Pin and Cable Color Assignment

Pin	Signal	Cable Color
1	+3.3VDC	Orange
2	COM	Black
3	+5VDC	Red
4	COM	Black
5	+12V4DC	Yellow/Blue Stripe

3.3 Remote On/Off Control

The power supply DC outputs (with the exception of +5 VSB which is always available) are enabled with an active-low, TTL-compatible signal (“PS-ON”). When PS-ON is pulled to TTL low, the DC outputs are enabled. When PS-ON is pulled to TTL high or open-circuited, the DC outputs are disabled. PS-ON may be active by either electronic means or a mechanical switch.

3.4 Rise Time

The output voltage shall rise from 10% to within regulation limits within 0.1 to 25ms.

3.5 Overshoot t Turn-On/Turn-Off

The output voltage overshoot upon the application or removal of the input voltage under the conditions specified in section 2.3 shall less than 10% above the nominal voltage.

3.6 Hold-up Time

The power supply will maintain output regulation despite a loss of a minimum of 16 ms while under full load. Test to be performed at nominal input voltage.

3.7 Power Good Signal

A “power good” signal is asserted by the supply to indicate that the +5VDC output is within regulation limits.

Power Good Signal Characteristics:

Signal Type:	Open collector TTL compatible
Logic level low:	<0.8V while sinking 5mA
Logic level high:	>2.4V while sourcing 500uA
High state impedance:	1K (from output to common)
POK delay:	100-1000ms
Power fall warning time:	1ms minimum

4. Protection Circuits**4.1 Over Current Protection (OCP)**

The power supply shall have current limit to prevent the +3.3V, +5V, and +12V outputs from exceeding the values shown in below enclosed table. If the current limits are exceed the power supply shall shutdown and latch off. The latch will be cleared by toggling the PSON# signal or by an AC power interruption. The power supply shall not be damaged from repeated power cycling in this condition. -12V and 5VsB shall be protected under over current or shorted conditions so that no damage can occur to the power supply. All outputs shall be protected so that on damage occurs to the power supply under a shorted output condition.

Voltage	Over Current Limit
+3.3V	110% minimum, 150% maximum
+5V	110% minimum, 150% maximum
+12V	110% minimum, 150% maximum

4.2 240VA Protection

System designs may require user access to energized areas of the system. In these cases the power supply may be required to meet regulatory 240VA energy limits for any power rail. Since the +12V rail combined power exceeds 240VA it must be divided into separate channels +12V rails do not necessarily need to be independently regulated outputs. They can share a common power conversion stage. The +12V rail is split into four rails. Refer to section 6.4 for how the 12V rail is spilt between different output connectors.

Voltage	Over Current Limit
+3.3V	110% minimum, 150% maximum
+5V	110% minimum, 150% maximum
+12V1	Peak current minimum, 20A maximum
+12V2	Peak current minimum, 20A maximum
+12V3	Peak current minimum, 20A maximum
+12V4	Peak current minimum, 20A maximum

4.3 Over Voltage Protection

The power supply over voltage protection shall be locally sensed. The power supply shall shutdown and latch off after an over voltage condition occurs. This latch shall be cleared by toggling the PSON# signal or by an AC power interruption. The below enclosed table contains over voltage limits. The values are measured at the output of the power supply's connector. The voltage shall never exceed the maximum levels when measured at the power pins of the power supply connector during any single point of fail. The voltage shall never trip any lower than the minimum levels when measured at the power pins of the power supply connector.

Output Voltage	MIN(V)	MAX(V)
+3.3V	3.76	4.3
+5V	5.5	7.0
+12V1,2,3,4	13.4	15.6

4.4 Short Circuit Protection

A short circuit on any DC output will cause the power to latch. The power supply will withstand a continuous short circuit to the output without damage or overseers to the unit. The +5VSB can be shorted indefinitely and will recover automatically when the short is removed.

4.5 Over Power Protection (OPP)

The power supply shall go shutdown when the total output load is over 110~160% of rating.

5 Physical Environment

5.1 Operation Conditions

The power supply shall be capable of continuous operation and meet all electrical specification without need for adjustment when subjected to the following environmental conditions:

	Temp. vs. Load Condition	Humidity
Operation	0~30° @ Full Load	10%~90%RH
	40° @ 90% Rated Load	
	50° @ 80% Rated Load	
Storage	-20°~80°	5%~90%RH

* No degradation of the power supply shall occur during shipping or storage at the specified condition.

5.2 Shocks and Vibration

The power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Storage -40G, 11mSec. half-sine wave pulse in both directions on three mutually perpendicular axes.

Operating -10G, 11mSec. half-sine wave pulse in both directions on three mutually perpendicular axes.

Vibration Operation-Sine wave excited, 0.25G maximum acceleration, 10-250 Hz, swept at one octave/minute. Fifteen-minute dwell at all frequencies at which the device under test experience excursions two times large than non-resonant excursions.

6. Regulatory Compliance

6.1 Safety Requirements

Pending

6.2 Dielectric Strength

Primary to Secondary: 1500 VAC for 1~3 seconds.

Primary to Frame Ground: 1500 VAC for 1~3 seconds.

6.3 Insulation Resistance

Primary to Secondary: 20 Meg. ohm Minimum.

Primary to Frame Ground: 20 Meg. ohm Minimum.

6.4 Ground Leakage Current

The power supply ground leakage current shall be less than 3.5mA.

The power supply grounding continuity shall be less than 100mΩ when the test current is at 25A.