



Aras Power Technologies

SPECIFICATION

**ARP-2215-00BG
220W Power Supply
Rev. 02**



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Revision History

Rev.	Description of Changes	Author / Owner	Approved	Date
0A	First release	Jack	Jack	2012-06-28
0B	1. Add pin assignment drawing 2. Add AC Fail spec.	Jack	Jack	2012-08-08
01	1. Change +3.3V OCP from 16A ~ 21A to 19A ~ 24A 2. Correct safety requirement 3. Production release	Jack	Jack	2013-01-11
02	1. Change +3.3V OCP from 19A ~ 24A to 19A ~ 26A	Jack	Jack	2015-01-09



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1.0 GENERAL DESCRIPTION

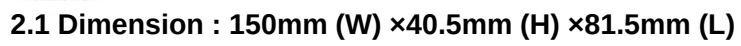
The ARP-2215-00BG is a commercial grade, 5 outputs 220W switching power supply. The ARP-2215-00BG is designed with active power factor correction to meet EN61000-3-2 standards.

1.1 Scope

The specification herein is intended to describe, as possible, the function and performance of the ARP-2215-00BG power supplies. All specifications within this document are only applied to the power supply, unless otherwise noted.

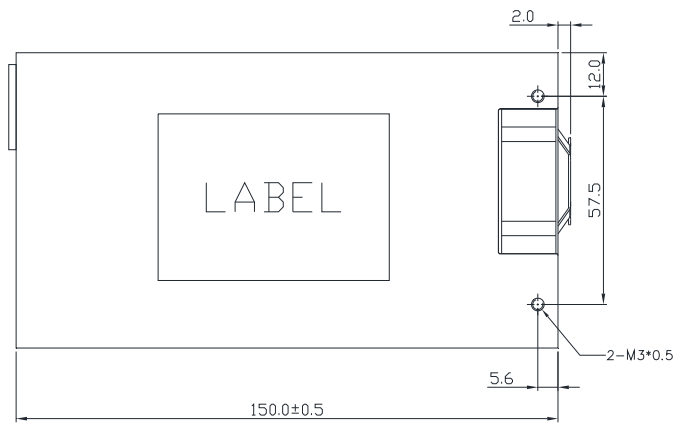
2.0 MECHANICAL SPECIFICATIONS

The product drawing of the subject supply indicates the form factor, location of the mounting holes, location, and other physical specifications. Any mechanical specifications shall be covered within the product drawing and treated as a supplement to this document.



40.5 ± 0.5

AIR FLOW

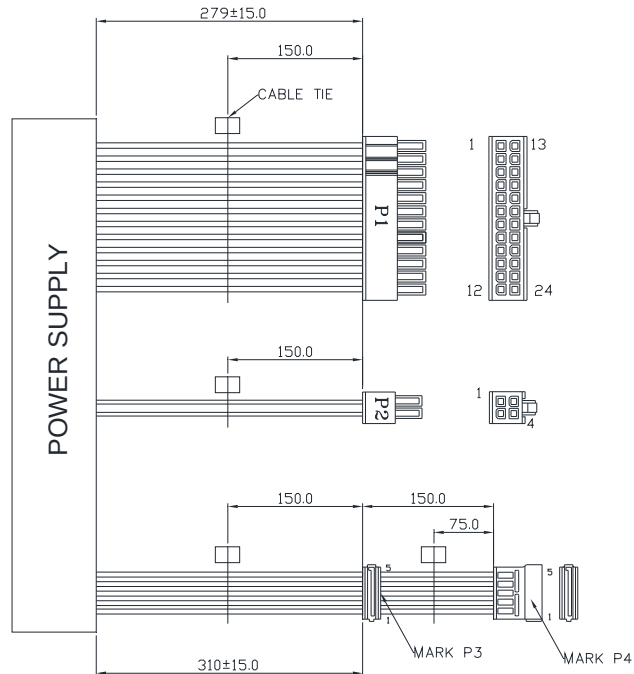




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2.2 PIN Assignment :

CONN.	SOURCE	VENDOR	DESCRIPTION	VENDOR P/N
P1	1 nd	MOLEX	HOUSING 24 PDS.	39-01-2240
			TERMINAL	39-00-0039
	2 nd	WST	HOUSING 24 PDS.	P24-142002
			TERMINAL	142002PS-2
	3 rd	EQUIV		
P2	1 nd	MOLEX	HOUSING 4 PDS.	39-01-2040
			TERMINAL	39-00-0039
	2 nd	WST	HOUSING 4 PDS.	P4-142002
			TERMINAL	142002PS-2
	3 rd	EQUIV		
P3	1 nd	MOLEX	HOUSING 05 PDS.	67582-0000
			TERMINAL	67581-0000
	2 nd	WST	HOUSING 5 PDS.	PS-112702T00
			TERMINAL	#112702PL
	3 rd	EQUIV		
P4	1 nd	MOLEX	HOUSING 05 PDS.	67582-0000
			TERMINAL	67581-0000
	2 nd	WST	HOUSING 5 PDS.	PS-112707
			TERMINAL	112707PS-00
	3 rd	EQUIV		



P1(24 pin)

CONN. NO	RATING	WIRE COLOR	WIRE TYPE
PDS. 1	+3.3V	ORANGE	UL1007 20 AWG
PDS. 2	+3.3V	ORANGE	UL1007 20 AWG
PDS. 3	GND	BLACK	UL1007 20 AWG
PDS. 4	+5V	RED	UL1007 20 AWG
PDS. 5	GND	BLACK	UL1007 20 AWG
PDS. 6	+5V	RED	UL1007 20 AWG
PDS. 7	GND	BLACK	UL1007 20 AWG
PDS. 8	PWDK(PG)	GRAY	UL1007 24 AWG
PDS. 9	+5VSB	PURPLE	UL1007 20 AWG
PDS. 10	+12V	YELLOW	UL1007 20 AWG
PDS. 11	+12V	YELLOW	UL1007 20 AWG
PDS. 12	+3.3V	ORANGE	UL1007 20 AWG
PDS. 13	+3.3V	ORANGE	UL1007 20 AWG
	+3.3VS	BROWN	UL1007 24 AWG
PDS. 14	-12V	BLUE	UL1007 24 AWG
PDS. 15	GND	BLACK	UL1007 20 AWG
PDS. 16	PSDN	GREEN	UL1007 24 AWG
PDS. 17	GND	BLACK	UL1007 20 AWG
PDS. 18	GND	BLACK	UL1007 20 AWG
PDS. 19	GND	BLACK	UL1007 20 AWG
PDS. 20	AC_FAIL	WHITE	UL1007 24 AWG
PDS. 21	+5V	RED	UL1007 20 AWG
PDS. 22	+5V	RED	UL1007 20 AWG
PDS. 23	+5V	RED	UL1007 20 AWG
PDS. 24	GND	BLACK	UL1007 20 AWG

P2 (4 pin)

CONN. NO	RATING	WIRE COLOR	WIRE TYPE
PDS. 1	GND	BLACK	UL1007 20 AWG
PDS. 2	GND	BLACK	UL1007 20 AWG
PDS. 3	+12V	YELLOW	UL1007 20 AWG
PDS. 4	+12V	YELLOW	UL1007 20 AWG

P3 (SATA)

CONN. NO	RATING	WIRE COLOR	WIRE TYPE
PDS. 1	+12V	YELLOW	UL1007 20 AWG
PDS. 2	GND	BLACK	UL1007 20 AWG
PDS. 3	+5V	RED	UL1007 20 AWG
PDS. 4	GND	BLACK	UL1007 20 AWG
PDS. 5	+3.3V	ORANGE	UL1007 20 AWG

P4 (SATA)

CONN. NO	RATING	WIRE COLOR	WIRE TYPE
PDS. 1	+12V	YELLOW	UL1007 20 AWG
PDS. 2	GND	BLACK	UL1007 20 AWG
PDS. 3	+5V	RED	UL1007 20 AWG
PDS. 4	GND	BLACK	UL1007 20 AWG
PDS. 5	+3.3V	ORANGE	UL1007 20 AWG



3.0 ELECTRICAL SPECIFICATIONS

3.1 Output Electrical Specifications

The subject power supply shall meet electrical specification below, over the full operating temperature range , line input range , any static load condition, and under the specified dynamic load conditions.

3.1.1 Voltage Regulation Tolerances

The power supply output voltages must stay within the voltage limits when operating at steady state loading condition. The output is measured at the output connector terminal.

Table 1

PARAMETER	MIN	NOM	MAX	UNITS	TOLERANCE
+5V	+4.75	+5.00	+5.25	V _{rms}	+5/-5%
+12V	+11.4	+12.00	+12.6	V _{rms}	+5/-5%
+3.3V	+3.135	+3.30	+3.465	V _{rms}	+5/-5%
-12V	-10.8	-12.00	-13.2	V _{rms}	+10/-10%
+5Vsb	+4.75	+5.00	+5.25	V _{rms}	+5/-5%

3.1.2 Output Ripple/Noise

The maximum allowed ripple/noise output of the power supply is listed below table. It is measured over a bandwidth of DC to 20MHz at the power supply output connectors. A 10 μ F tantalum capacitor in parallel with a 0.1 μ F ceramic capacitor are placed at the point of measurement.

Table 2

PARAMETER	MAX Pk-Pk	UNITS
+5V	50	mV
+12V	120	mV
+3.3V	50	mV
-12V	120	mV
+5Vsb	50	mV

3.1.3 OUTPUT TRANSIENT LOAD RESPONSE

+5V ,+12V and +3.3V must be within specification for a step change in current as specified below. The outputs will be tested one section at a time with all other sections at maximum load. The test transition will be from IA to IB and IB to IA. The step current will have a nominal transition time of 0.5 amp per microsecond for +5V and +3.3V and 0.1 amp per microsecond for +12V.

+5Vdc:

IA: 16.0 amps

IB: 11.0 amps

Volts variation: 400 mV max (p-p)

Duration: 10 ms max

+12Vdc:

IA: 16.0 amps

IB: 9.6 amps

Volts variation: 450 mV max (p-p)

Duration: 10 ms max

+3.3Vdc:

IA: 14.0 amps

IB: 10.0 amps

Volts variation: 400 mV max (p-p)

Duration: 10 ms max



3.2 Maximum OUTPUT Ratings

3.2.1 Output Ratings

The following table defines current ratings. The power supply shall meet static voltage regulation requirement for the minimum loading conditions.

Table 4 Load Range

Voltage	Minimum Continuous	Maximum Continuous
+5V	0.5A	16A
+12V	0.66A	16A
+3.3V	0.2A	14A
-12V	0A	0.8A
+5Vsb	0A	2.5A

Note 1: Total outputs shall not exceed 220W.

Note 2: Total combined output of 3.3V and 5V is 110W max.

Table 5 Cross load table

	+3.3V	+5V	+12V	-12V	+5Vsb	3.3V&5V Watts	Total Watts
Load 1	14	12.76	7.33	0.8	2.5	110	220.06
Load 2	0.2	11	0.66	0	0	55.66	63.58
Load 3	0.2	16	1.6	0	0	80.66	99.86
Load 4	14	0.5	0.66	0	0	48.7	56.62
Load 5	0.2	1	16	0	0	5.66	197.66
Load 6	0.2	0.5	0.66	0	0	3.16	11.08

3.2.2 No Load Operation

The power supply will work normally at no load condition.

3.2.3 Hold-up Time(@Full Load)-----T1

In the event that the power is removed or interrupted , the output voltages shall remain within specifications for a minimum of 17mS at full load condition.(Refer to Diagram on Figure 1, T1)

3.2.4 Rise Time -----T2

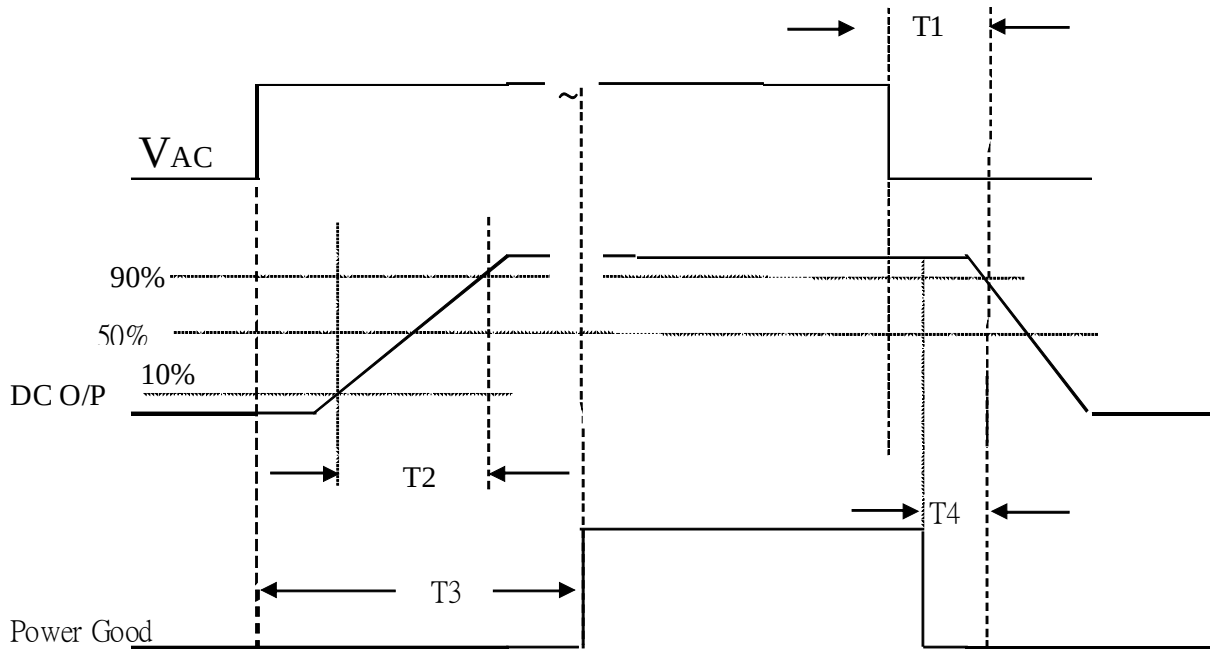
(10% to 90% of final output value @Full Load)

Input Voltage	Output	Rise time(Max)
115VAC&230VAC	+5VDC	20msec
115VAC&230VAC	+12VDC	20msec
115VAC&230VAC	+3.3VDC	20msec

(Refer to Diagram on Figure 1, T2)



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Timing define: T₁→Hold up Time , min:17mS
T₂→Rise Time, max:20mS
T₃→Power Good delay time,100mS ~ 500mS
T₄→Power Good off time,1mS min.

3.2.5 Power Good

TTL/CMOS compatible output goes high more than 100ms and less than 500ms after +12V reaches within regulation range. The signal will fall to a low state 1ms min. ahead when +12V goes below 95% of the rated voltage.

3.2.6 PS0N

The Power output will be turned on when this signal is pulled low by the system. The output will be turned off when this signal is pulled high (TTL) or open. The +5Vsb will be always on when the AC input is activated.

3.2.7 AC Fail

AC Fail is an active low signal from the power supply. When AC input has dropped to some voltage below 90Vrms, AC Fail shall be pulled low. After AC Fail is pulled low, the PG output shall maintain output regulation for a minimum of 150 mS. The system load after AC Fail becomes low are to be no greater than 5V/3A, 12V/1A, 3.3V/0A and -12V/0.1A.

3.2.8 Shutdown Recovery

Power supply protected in the event of excessive operating ambient, and recovers by reset the AC input or PS0N signal high and low cycle.



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3.2.9 Over Current Protection

The subject power supply has Over Current Protection (OCP) on the following output rail. The OCP is defined below table of each rail output. The supply shall provide latch mode protection.

Parameter	Min.	Max.	Unit.
+5V	19	24	A
+12V	19	24	A
+3.3V	19	26	A

3.2.10 Over Voltage Protection

The supply shall provide latch mode Over voltage protection as defined below.

Parameter	Min.	Max.	Unit.
+5V	5.5	6.8	VDC
+12V	13.4	15.6	VDC
+3.3V	3.5	4.8	VDC

3.2.11 Short Circuit Protection

Output short circuit is defined as a short circuit load of load of less than 0.1 ohm.

In the event of an output short circuit condition, the power supply shall latch off without damage. The power supply shall reset to normal operation after the short circuit has been removed and the power switch has been turned off, for a minimum of 10 seconds.

3.3 Input Electrical Specifications

3.3.1 Voltage Range

RANGE	MIN.	MAX.	UNITS
Full Range	90	264	VAC

3.3.2 Frequency Range

47~63Hz

3.3.3 Inrush Current (Max @ Cold Start , 25 deg. C)

115VAC	No Damage
230VAC	No Damage

3.3.4 Input Line Current (Max.)

115VAC	5A max.
230VAC	3A max.

3.3.5 Harmonic Current

This unit shall comply with EN61000-3-2 standards.

3.4 Efficiency

	Full Load (100%)	Typical Load (50%)
115VAC	80%	81%
230VAC	82%	83%



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	+3.3V	+5V	+12V	-12V	+5Vsb	3.3V&5V Watts	Total Watts
Full Load (100%)	6.05	6.91	12.88	0.4	1.24	54.515	220.075
Typical Load (50%)	3.02	3.45	6.44	0.2	0.62	27.216	109.996

4.0 ENVIRONMENTAL REQUIREMENTS

The subject power supplies shall be compliant to each item in this specification for the following environmental conditions.

4.1 Temperature Range

OPERATING	+0 Deg C TO +50 Deg C
STORAGE	-40 Deg C to +85 Deg C

4.2 Humidity

OPERATING	0-95% RH. Non - Condensed
STORAGE	0-95% RH. Non - Condensed

4.3 Shock

The subject power supplies shall withstand the following imposed conditions w/o 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.

Operation: 10G, 11msec , half-sine wave , in both directions , on three mutually perpendicular axes.

4.4 Vibration

Sine wave shall be excited at a 0.25 G maximum acceleration. Frequency shall be 10-250hz, swept at one octave/min, with a fifteen minute dwell at all resonant points, where resonance is defined as those exciting frequencies at which the device under test experiences excursions two times larger than non-resonant excursions , Plane of vibration shall be along three mutually perpendicular axes.

4.5 Reliability

4.5.1 MTBF(Mean Time Between Failures)

The subject power supplies shall have a MTBF rating of 100,000 hrs(according to MIL-HBK-217D)under the following condition Full rated load with air flow condition;115V AC Input; Ground Benign; 25degC ambient.

5.0 SAFETY

5.0.1 Leakage Current

The subject power supplies shall comply with Max. 0.25mA at 240Vac/50Hz.

5.0.2 Safety Requirements

The power supply shall be approved/licensed/certified as the following safety standards,

- a) UL/cUL
- b) CB Report

5.0.3 Isolation (HI-POT)

Primary to Safety ground :1800Vac/50Hz, 3 sec, Cut-off current:10mA

6.0 ELECTROMAGNETIC COMPATIBILITY



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6.0.1 Line Conducted and Radiated EMI

The subject power supplies shall meet FCC Part 15 CLASS A and CE CISPR 22 EN55022 Class A requirements.

6.1 Immunity

The power supply shall comply with EN 55024:1998+ A1:2001+A2:2003 and CISPR24:

- EU EMC Directive (2004/108/EC) (CE Compliance) (CE mark required)
- EN55024:1998 A1:2001+A2:2003 (ITE Specific Immunity)
- EN 61000-4-2 –Electrostatic Discharge
- EN 61000-4-3 –Radiated RFI Immunity
- EN 61000-4-4 –Electrical Fast Transients
- EN 61000-4-5 –Electrical Surge
- EN 61000-4-6 –RF Conducted
- EN 61000-4-8 –Power frequency magnetic field immunity
- EN 61000-4-11 –Voltage Dips, Short Interrupts and Fluctuations