



FEATURES AND BENEFITS



3.3" X 7" X 1.5" Package, Ideal for 1U Applications	Approved to IEC60601-1, 3 rd Edition & EN60950 2 nd Edition
Up to 500W W/Air, 350W Convection Cooled	2 X MOPP Isolation
Universal Input 90 To 270 Vac	93% Efficiency @ 230V Input, 92% @ 115V Input
Active Current Share	Optional Cover
Class I Input	3 Mounting Orientations
Standby and Fan Output Voltages	3 Year Warranty
Inhibit, Power Fail, Output Ok Signals	Low Inrush Current



MODEL SELECTION

Model Number	Volts	Output Current w/200LFM air	Convection	Fan Output	5V Standby Output	Ripple & Noise ¹	Total Regulation	OVP Threshold
MIN1500A2414E01	24V	20.8A	14.6A	12Vdc/0.8A	5V@200mA	1%	±2%	27.6 ± 1.0V
MIN1500A4814E01	48V	10.4A	7.3A	12Vdc/0.8A	5V@200mA	1%	±2%	55.5 ± 2.0V
MIN1500A5614E01	56V	8.9A	6.3A	12Vdc/0.8A	5V@200mA	1%	±2%	64.3 ± 2.0V

Notes: 1. Measured with noise probe directly across output terminals with 0.1µF ceramic and 10µF low ESR capacitors. For main output load of less than 5%, total noise & ripple will increase to 2%.

INPUT

AC Input	90-270Vac, 47-63Hz agency approved from 90Vac to 264Vac 120-300Vdc (External fuse required for DC input) Power supply is protected against brown out condition
Input Current	115Vac: 5A, 230Vac: 2.5A
Inrush Current	270Vac, cold start: will not exceed 15A
Input Fuses	F1, F2: T10A, 250Vac, provided on all models
Earth Leakage Current	<275µA@264Vac, 60Hz, NC; <450µA SFC
Efficiency	92% typical at 115Vac, 93% typical at 230Vac

OUTPUT

Output Voltage	See models chart
Output Power	500W continuous with 200 lfm airflow, up to 350W convection cooled @ 100Vac, 50°C ambient
Turn On Time	<500mS @115Vac
Hold-up Time	20 mS minimum at full load & 100 Vac input
Ripple and Noise	See models chart
Total Regulation	Main Output: ±2%. 12V Fan Output: ±10% (with >0.1A load on main o/p) 5Vsb Output: ±2%
Switching Frequency	PFC: Variable, 50-500kHz Main Converter: Variable 40-180 kHz, 65Khz typical
Minimum Load	Not required



PROTECTION

Overvoltage Protection	Hiccup Mode, Self-recovering see models chart for trip ranges
Short Circuit Protection	Self-recovering
Overtemperature Protection	Provided, self-recovering Automatic power shutdown at TC 135°C/115°C
Overload Protection	120% to 140% of current rating, Hiccup Mode

ENVIRONMENT

Operating Temperature	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing
Weight	680g. 750g w/cover
Dimensions	W: 3.3" x L: 7.0" x H: 1.5" W: 84mm x L: 178mm x H: 38mm With Fan Option: Top Mount: 3.3" x 7.0" x 2.09" With IEC: 3.3" x 8.15" x 1.58"
Altitude	Operating: Up to 3000m (derate 5°C for natural Convection Cooling Applications) Non-operating: -150 to 12,000m
Storage Temperature	-40°C to +85°C
Vibration	Operating: 0.003g ² /Hz, 1.5grms overall, 3 axes, 1 hr/axis Operating: 0.026g ² /Hz, 5.0grms overall, 3 axes, 10 min/axis
Shock	Operating: Half-sine, 40gpk, 8ms, 3 axes, 6 shocks total

ISOLATION

Isolation	Input-Output: 4000Vac, 2 x MOPP Input-Ground: 1800Vac, 1 x MOPP Output-Ground: 700Vdc
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AUXILIARY SIGNALS

Power Good	Inhibit	PS Off	DC OK	Current Sharing
Signal goes HIGH 100-250mS after main output is in regulation, and goes LOW with 7ms warning time before loss of main output due to loss of AC input (Output is measured above 90% nominal voltage)	Logic High or Open = On Low/ground = Off	Low or Open = ON Logic High = OFF	During normal operation, this signal is logic HIGH. Signal will go LOW for output less than 90% of nominal	Active single wire, for up to 3 units in parallel

EMI/EMC COMPLIANCE

Conducted Emissions	EN55011/22 Class B, FCC Part 15, Subpart B, Class B
Radiated Emissions	EN55011/22 Class A; FCC Part 15, Subpart A, Class A
Static Discharge Immunity	EN61000-4-2, Criteria A, 6kV Contact Discharge, 8kV air discharge
Radiated RF Immunity	EN61000-4-3, 3V/m;10V/M Criteria A, B
EFT/Burst Immunity	EN61000-4-4, 2kV/5kHz
Line Surge Immunity	EN61000-4-5, 1kV differential, 2kV common-mode
Conducted RF Immunity	EN61000-4-6, 3Vrms
Power Frequency Magnetic Field Immunity	EN61000-4-8, 3A/m
Voltage Dip Immunity	EN61000-4-11, 0% Vin, 10mS; 40% Vin, 100mS (60% load); 70% Vin, 500mS (80% load); 0% 5000mS; Criteria A, B
Line Harmonic Emissions	EN61000-3-2, Class A, and D Meets Class C for 500 Watt output
Flicker Test	EN61000-3-3, Complies

RELIABILITY

MTBF	Over 500,000 hours, 25°C Ambient, 115Vac input
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SAFETY

Safety Standards	EN/CSA/UL/IEC 60601-1, 3rd Edition
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ISOLATION SPECIFICATIONS

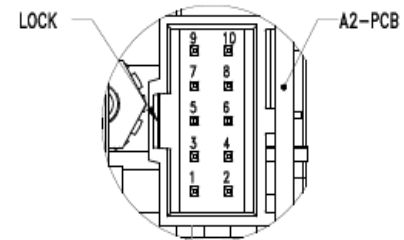
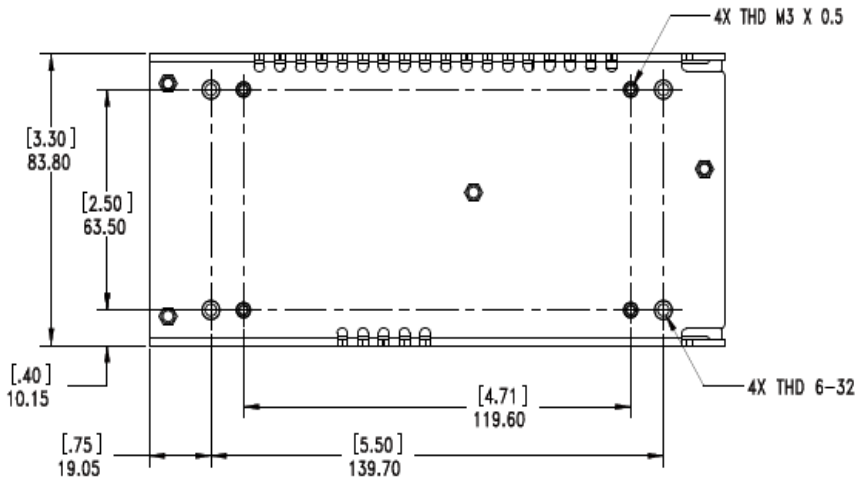
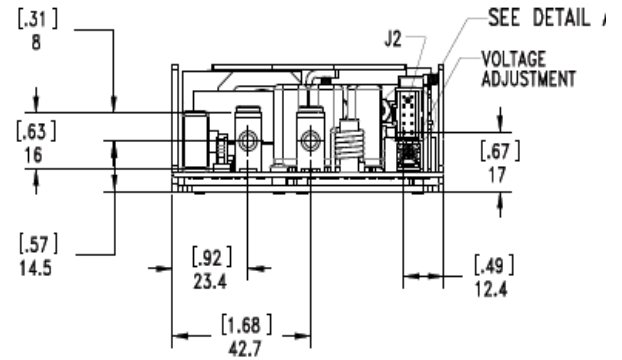
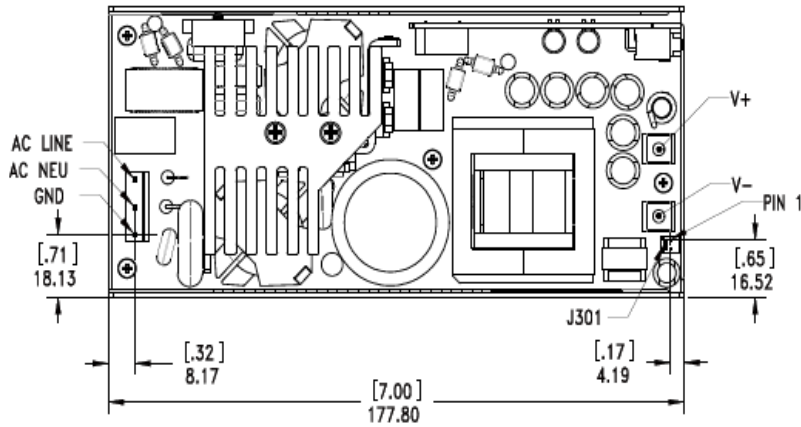
Parameter	Conditions/Description	Min	Nom	Max	Units
Insulation Safety Rating	Input/Ground Input/Output Output/Ground		1 MOPP 2 MOPP Operational		
Electric Strength Test Voltage	Input/Ground Input/Output Output/Ground	1800 4000 700	-	-	Vac Vac Vac

CONNECTOR INFORMATION

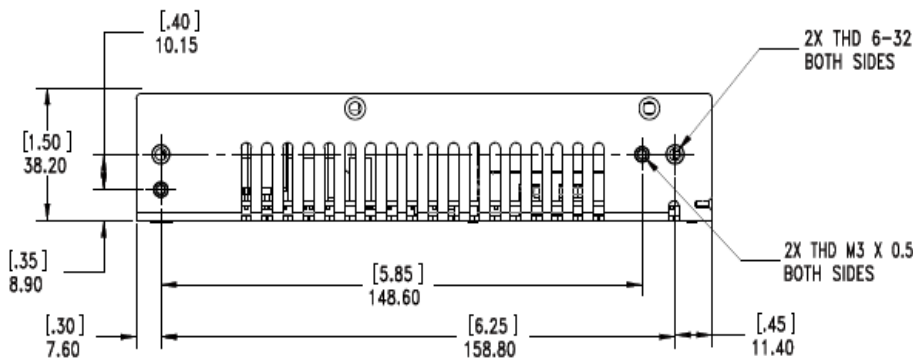
Input Connector J1 (E Version))	DC Output Connector	Fan Output Connector J301	Signal Connector J2 (see Detail B on prior page)	
PIN 1) GROUND PIN 3) AC NEUTRAL PIN 5) AC LINE	(2) Buss Bars (M5 x 0.5 Screws): 1) +Vout 2) RTN	PIN 1) +12Vfan PIN 2) RTN	PIN 1) Remote Sense + PIN 2) Remote Sense - PIN 3) +5Vsb RTN PIN 4) RTN PIN 5) +5Vsb	PIN 6) Power_Good PIN 7) Current Share PIN 8) PS_Off PIN 9) Enable PIN 10) DC_OK
Mating Connector: AMP 770849-5 or 647402-5 Pins= 3-770522-1 or 3-647409-1	Mating Connector: #M3 Spade or Ring Lugs	Mating Connector: AMP 1375820-2, 3-640441-2, or Molex 22-01-3027 Pins = AMP 1375819-1 or Molex 08- 50-0114	Mating Connector: Molex 90142-0010 Pins = 90119-2109 or 2120	



MECHANICAL DRAWINGS



DETAIL SEE DETAIL A
SCALE 4 : 1



FAN OPTIONS

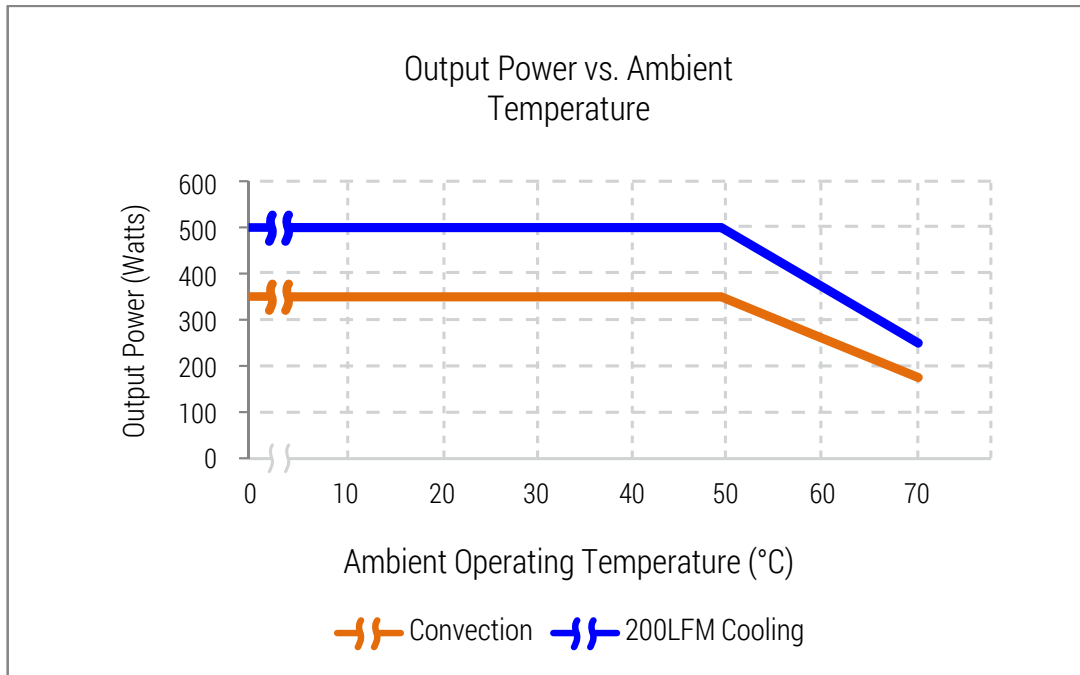
CONSULT FACTORY



CHARACTERISTIC CURVES

OUTPUT VS. TEMPERATURE

350W convection cooled and 500W continuous with 200 LFM airflow. Derate output power to 50% at 70°C



POWER_GOOD, DC_OK, INHIBIT SIGNALS AND CURRENT SHARING – J2

1. Power_Good: - Output Signal – J2 Pin 6

During normal operation is Logic High, goes HIGH 100-250 ms after main output is in regulation, and goes LOW with 7ms warning time before loss of main output due to loss of AC input. Note: Power_Good signal is a combination of AC OK (Internal) and DC_OK such that failure of either one will cause the Power_Good signal to go low

Logic High: >4.5V sourcing 16mA

Logic Low: <0.5V sinking 16mA

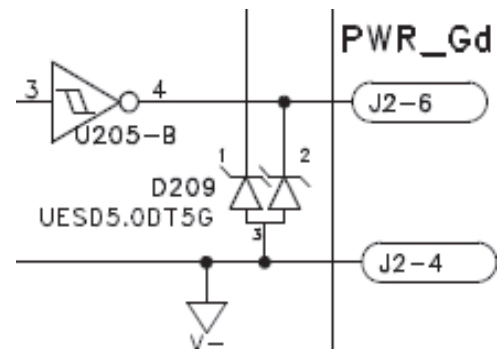


Figure 1



2. DC_OK: Output signal – J2 Pin 10

During normal operation, this signal is logic High. It will go logic Low for output less than 90% of its nominal rated voltage

Logic High: >4.5V sourcing 16mA

Logic Low: <0.5V sinking 16mA

Figure

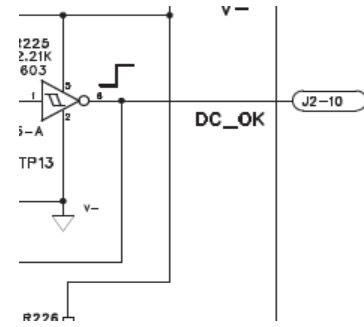


Figure 2

3. Enable: Input signal – J2 Pin 9

Logic High or Open = ON

Low/ground = OFF

Logic High >3.4V

Logic Low <1.2V

Internal pull up resistor: 43KW to 5V

4. PS_Off: Input signal – J2 Pin 8

Logic Low or Open = ON

Logic High = OFF

Logic High >3.4V

Logic Low <1.2V

Internal pull down resistor: 43KW to V-

5. Remote Sense Output Signal – J2 Pin 1 (+Sense), J2 Pin 2 (-Sense)

Less than 250mV voltage drop compensation due to cable loss on each side of main output. See Figure 3 for wiring connection



6. Stand-By Output – J2 Pin5 (+), J2 Pin 4 (-)

The standby output is always available when AC input is present. It is rated for 5V/0.2A

5VSB Always present when AC is On

