MINT1500

Single Output 500 Watts Medical Power Supply

- *3.3" x 7" x 1.5" Package, fits 1U application*
- *Up to 500W of AC-DC Power*
- *Universal Input 85-264 Vac*
- *Class I Input*
- *Standby and Fan output voltages*
- *Active Current Share*
- *Inhibit, Power Fail, Output OK signals*
- *Approved to IEC60601-1 3rd with 2 MOPP Isolation & EN60950-1 2nd Edition*
- *Efficiency 92% @ Low line & 94% for High Line*
- *Optional Cover*
- *Optional Fan with 2 orientations*

PRELIMINAEY

CONDOR

Description

A superior performance 500 Watt AC to DC power supply designed for Medical or industrial applications. Feature rich and highly efficient, MINT1500 product family with active current share for redundant applications can easily fit in 1U or 2U chassis and provides 350 Watts (275W on 12V) without cover for convection, or 500 Watts with moving air. Input & output monitoring alarms plus 12V/1A fan output and 5V standby voltage are standard features of the MINT1500 family. All models are CE marked to low voltage directive and approved to IEC60601-1 3rd edition, EN60950 2nd edition.

Model Number Key

MINT 1 500 X 12 14 E 01

Model	"01" = Standard. "02" and higher indicates a modified model.
Input Connector:	"Input Connector: E" = 3 Pin, "L"= terminal block, "I" = IEC, others
Output Connector:	"Screw Type "
Output Voltage:	"12" = 12Vdc, "24" = 24Vdc, "48" = 48Vdc
Model	"A" = U Chassis Only, "C"=with Cover, ", "T"=top fan Option, "E"= end fan option
Output Power:	"500" = 500 Watts
# of Outputs	"1" = Single Output
Product Family :	"M" = Medical, "I" = Internal, "NT" = New

Output Parameters

Model Number (4)	Volts (V)	Output Current w/airflow (1)	Output Current Convection	Total Regulation	Max. Ripple & Noise (2) (mV)	OVP Threshold
MINT1500A1214E01	12 V	41.6 A	22.9 A	±2%	160	13.8 ± 0.5V
MINT1500A2414E01	24 V	20.8 A	14.6 A	±2%	240	27.6 ± 1.0V
MINT1500A4814E01	48 V	10.4 A	7.3 A	±2%	240	55.2 ± 2.0V
MINT1500A5614E01	56 V	8.9 A	6.3 A	±2%	240	64.3 ± 2.0V

Notes:

1. 200 LFM forced air cooling required for non-convection ratings
2. Measured with noise probe directly across output terminals, and load terminated with 0.1µF ceramic and 10µF low ESR capacitors.
3. Consult factory for other voltages

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Specifications

All Specifications are typical at nominal input, full load at 25ºC unless otherwise stated

AC Input	85-264 Vac 47-63 Hz single phase 120 – 300 Vdc (External fuse required when DC input is applied)	**Turn On Time**	Less than 500 ms @115Vac
Input Current	**Typical** 115Vac: 5A, 230Vac:2.5A	**Hold-up Time**	16 ms at 500 W with output voltage drop out to 90%
Inrush Current	264 Vac, cold start: will not exceed 10A	**Over Temperature Protection**	Sensing transformer and heatsink temperature, Self recovering
Input Fuses	F1, F2: 10A, 250VAC	**Overload Protection**	120 to 140% of current rating, Cycling type
Earth Leakage Current	<275µA@264Vac, 60Hz, NC; <400µA SFC xx? value	**Short Circuit Protection**	Self recovering
Isolation	Input-Output: 4000Vac Input-Ground: 1800Vac, Output-Ground: 700Vdc	**Switching Frequency**	Variable PFC converter: 50-500 kHz LLC converter: 80-220 kHz
Efficiency	92% typical	**Overvoltage Protection**	OVP latch Type See Table
Power Factor Correction	minimum of 90%	**Operating Temperature**	-10 to +70C derate by 2.5%/C for ambient greater than 50C
Output Power	500W continuous With 200 LFM and up to 350 Watts for Convection Cooled, @ 100VAC, 50C Ambient . 275 Watts on 12V unit without cover	**Vibration**	Operating: 0.003g2/Hz, 1.5grms overall, 3 axes, 10 min/axis Non-Operating: 0.026 g2/Hz, 5.0grms overall, 3 axes, 1 hr/axis
Transient Response	500µs typ. for return to within 0.5% of nominal, 50% load step. Δi/Δt <0.2A/µS. Max Volt Deviation = 3%	**Storage Temperature**	-40 to +85℃
Ripple and Noise	See chart	**Operating Altitude**	up to 3000 meters
Output Voltage	See chart	**Non-operating Altitude**	-152 to 12,192 meters
Voltage Adjustability	+/-5% from nominal	**Relative Humidity**	5% to 95%, non-condensing
Minimum Load	Not required	**Dimensions**	W: 3.3”(83.8mm), L: 7.0”(177.8mm), H.1.5” (38.1mm)
Standby Voltage	5V / 200 mA with +/-5%regulation	**Weight**	0.6Kg and 0.7Kg with cover option
Current Share	Active Single wire for up to 5 supplies	**Fan Output**	12V/1A with +/-10% regulation with 0.1A or more on main output

EMI/EMC Compliance

Conducted Emissions	EN55011/22 Class B, FCC Part 15, Class B, 6 dB margin
Radiated Emissions	EN55011/22 Class A, FCC Part 15, Class A, 6 dB margin
Static Discharge Immunity	EN61000-4-2, 6kV Contact Discharge, 8kV air discharge
Radiated RF Immunity	EN61000-4-3, 3V/m.
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, 100%, 10ms; 30%, 500ms (80% load); 60%, 100ms (60% load); 100%, 5000ms Performance Criteria A; A; A; B.
Line Harmonic Emissions	EN61000-3-2, Class A, C & D

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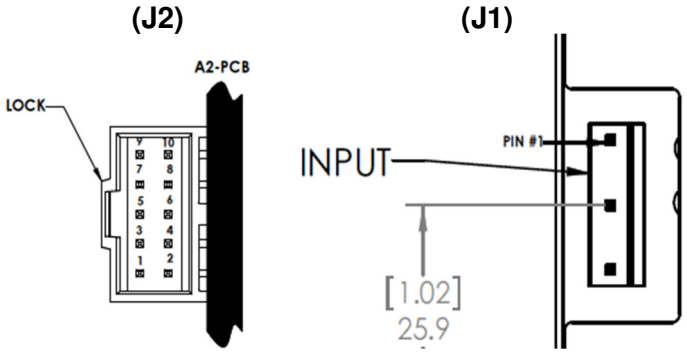
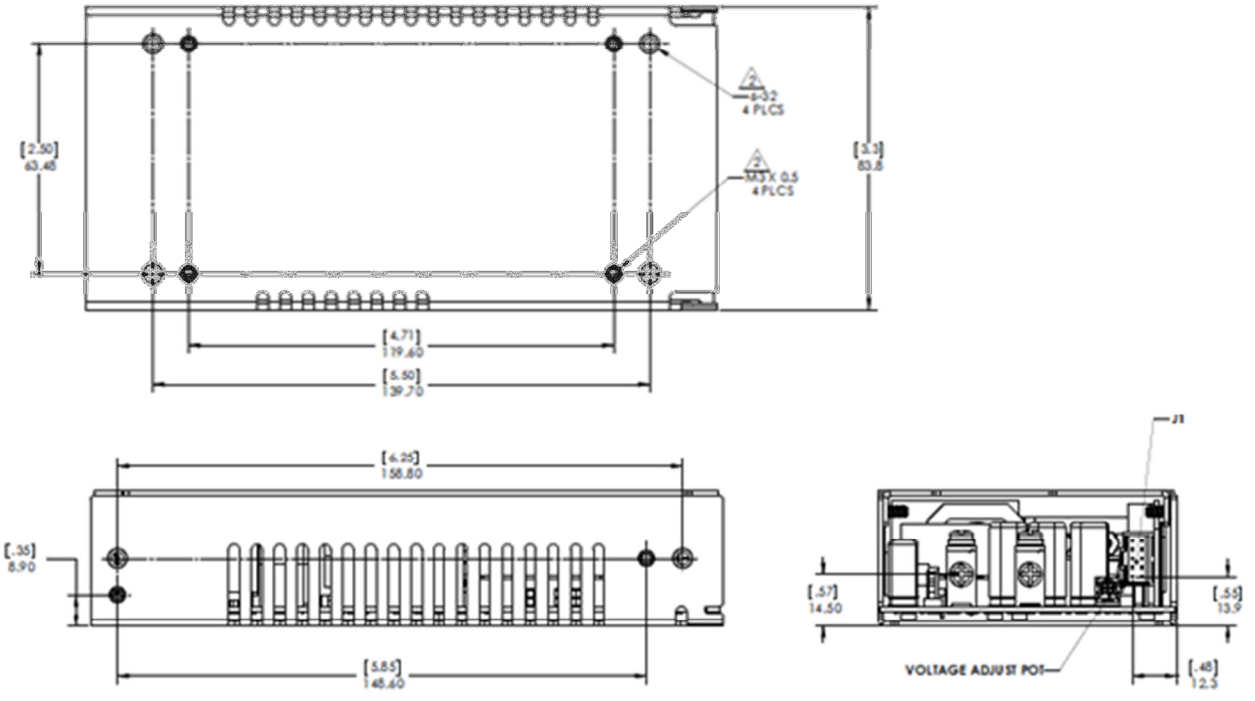
Mechanical Drawing and Connector information

Connectors and pin assignment

Connector	#	Pin assignment	Mating Connectors
Input (J1)	1	AC L	Amp 640445-5 pins 2 & 4 are removed. Mating connector is: 770849-5 pins 3-770522-1
	3	AC N	
	5	Ground	
Main output	1	V+	
	2	V-	
Fan output (J301)	1	12V Fan +	Molex 22-01-3027 Pins: 08-50-0114
	2	12V Fan -	
Signal (J2)	1	Remote sense +	Molex 90130-3110 Mating housing: Molex 90142-0010 Mating contact: Molex 90119-2109 or 90119-2120
	2	Remote sense -	
	3	+5V SB RTN	
	4	V-	
	5	+5V SB	
	6	Power_Good	
	7	Current Share	
	8	PS_Off	
	9	Enable	
	10	DC_OK	



Notice
1. All dimensions in inches (mm), tolerance is ±.02".
2. Mounting holes should be grounded for EMI purpose



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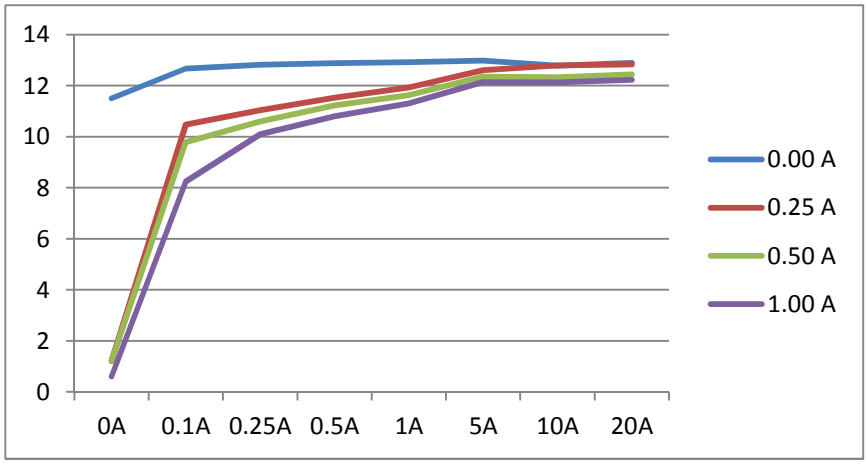
Auxiliary Signal Description and Functionality

Fan Output – J301:

J301 provides a 12V@1A output to support a system cooling fan. The fan output is always available when AC input and main output are present. The fan speed is a function of output power. The speed will increase with increase of load on main output. Note: The Fan output tracks the Main output and increase / decrease in proportion to the Main output.

	Typical Main Output Load for 24V version								
Fan Load (A)	0A	0.1A	0.25A	0.5A	1A	5A	10A	20A	
0.00 A	11.5	12.67	12.81	12.88	12.92	12.98	12.78	12.89	<-- fan volts
0.25 A	1.2	10.47	11.03	11.53	11.93	12.6	12.79	12.83	<-- fan volts
0.50 A	1.2	9.78	10.6	11.22	11.63	12.35	12.33	12.44	<-- fan volts
1.00 A	0.6	8.24	10.1	10.8	11.3	12.14	12.12	12.22	<-- fan volts

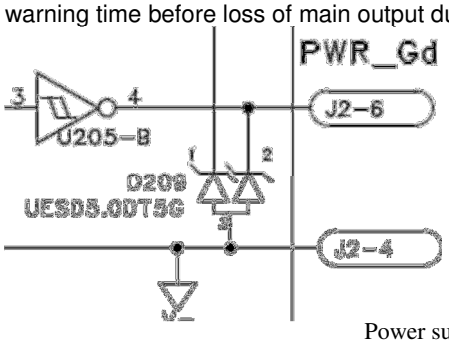


Power_Good, DC_OK , Inhibit Signals and Current Sharing – J2:

The signals provided by J2 allow the system designer to monitor and control the output of the MINT1500A series power supply.

1. Power_Good: - Output Signal – J2 Pin 6

During normal operation is Logic High, goes HIGH 100-500 ms after main output is in regulation, and goes LOW with 4ms warning time before loss of main output due to loss of AC input



Power supply

Figure 1

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

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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

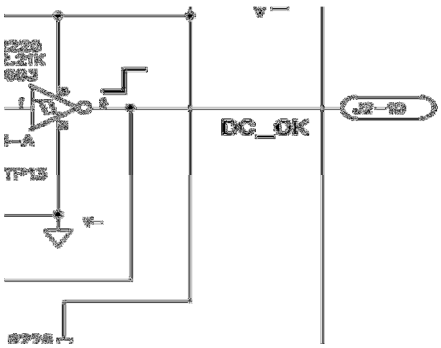

Fig. 2

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Logic High > 4.5V sourcing 16mA
Logic Low < 0.5V sinking 16mA

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: 43k 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: 43k to V-.

5. Current Sharing Bi-Directional Signal J2- Pin 7

Current share pins must be connected between the units for active sharing of load for a maximum of 5 supplies. See Fig. 3 for wiring connection.

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

Less than 250mV drop compensation due to cable loss of either side of main output

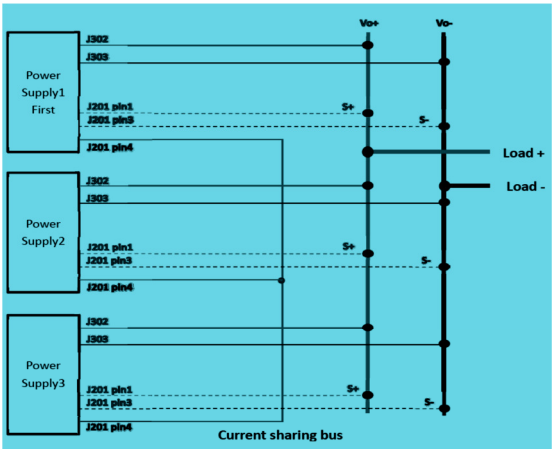
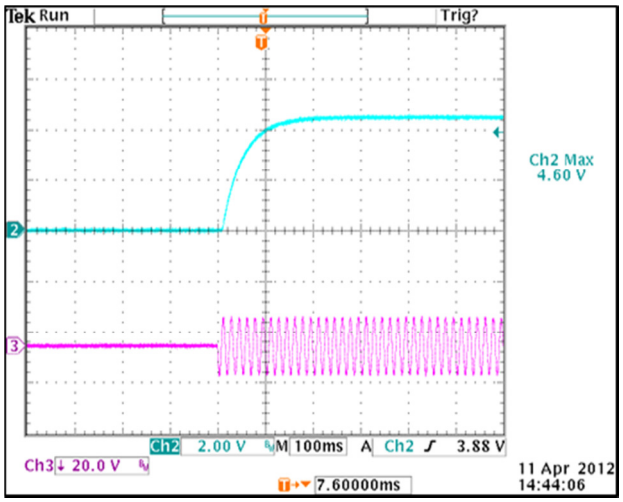


Figure 3

6. Stand-By Output J2- Pin5 For (+) and J2-Pin4 For (–)

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



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