

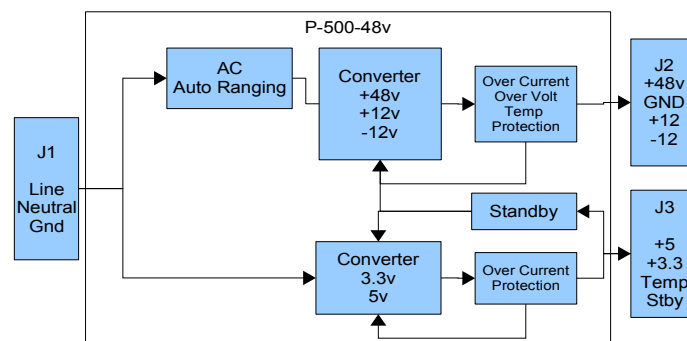
Features

- 500W of power for audio amplification
- Automatic AC input Range Selection
 - 88-130 VAC
 - 200-270VAC)
- Output Voltages
 - 48v @ 12.5 amps
 - +5v @ 2.5 amps
 - +12v @ 0.5 amps
 - -12v @ 0.5 amps
 - +3.3 @ 1.5 amps
- Efficiency > 84%
- Over Current Protection for shorted loads
- Over Temperature Protection
- Standby Operation with +3.3v Active
- Safety Certified
 - ANSI/UL 60065
 - CAN/CSA-C22.2 No.60065-03
- Designed to FCC B emissions

PRODUCT DESCRIPTION:

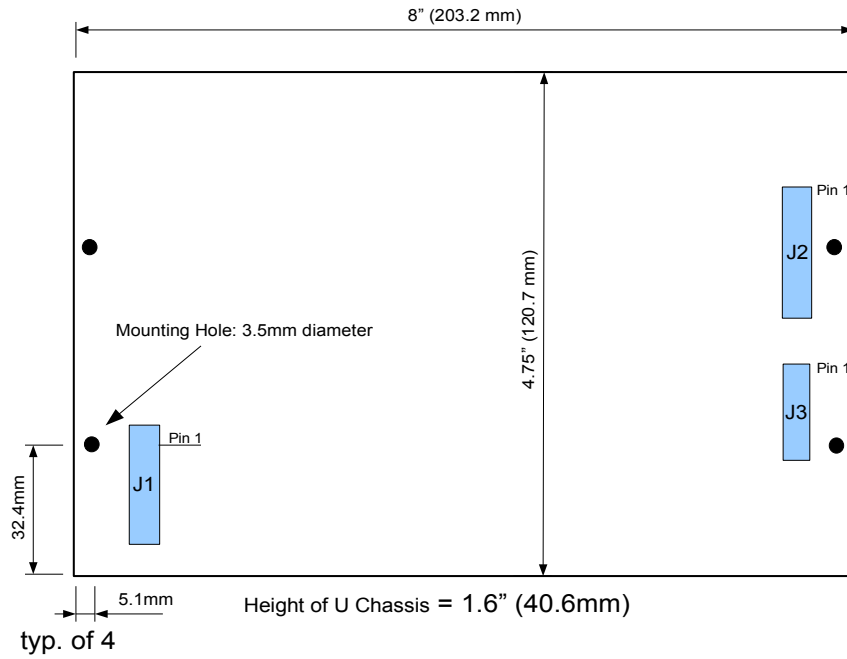
Designed from the ground up to power your complete audio system. This power supply can provide a total of 500W of audio power. It also provides +5v, +/-12v, +3.3v for other system components including pre-amps and DSPs. The supply has an automatically selected AC input range that will allow supply operation from 88-130VAC or 200-270VAC operation. The supply is fully protected against short circuits on the outputs and over temperature conditions. It has output over current and over temperature protection. In addition, the power supply can go into a low power Standby state that shuts off the main converter and 5v output, leaving the 3.3v output active for continued audio system monitor.

Block Diagram



Mounting Diagram

Figure 1: P-500-48 Outline and Mounting Hole Locations



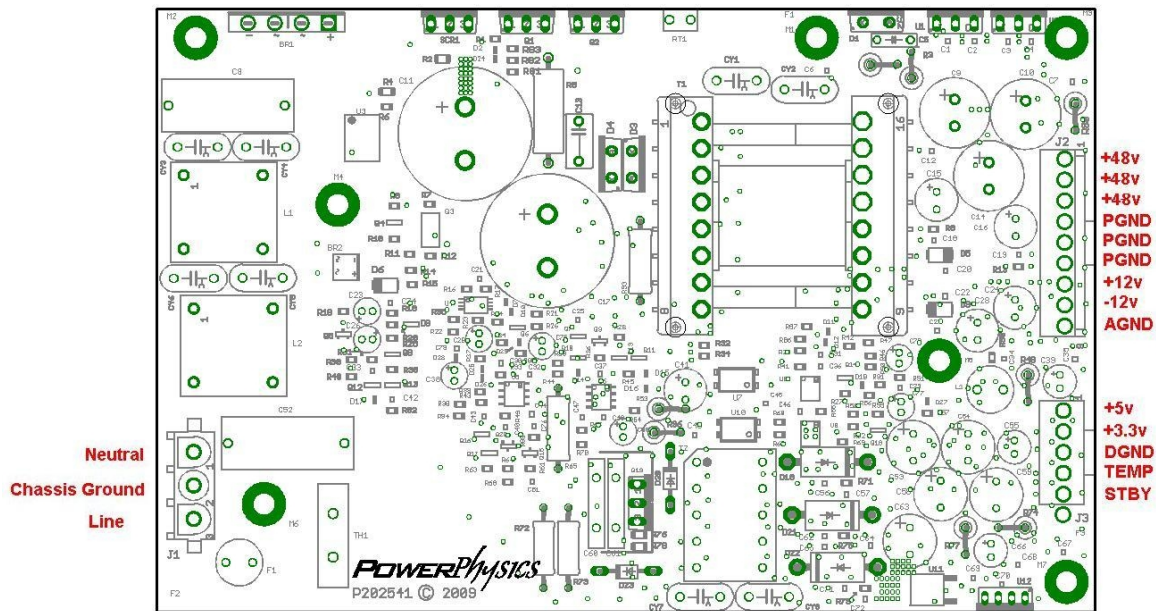
P-500-48 ELECTRICAL SPECIFICATIONS:

Unless otherwise specified, VAC=120v, Ta=25 °C

<i>Parameters</i>	<i>Symbols</i>	<i>Test Condition/ Comment</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
Output Voltage	V _o			48		V
Max Continuous Current	I _{lim}	P _o = 550 watts (note 1)		12.5	-	A
Maximum Current	I _{max}	(note 2)		13.5		A
Max Power	P _{max}	Continuous operation for 1 min	500	-	550	W
Output Power Continuous	P _{oc}		-	150	-	W
Output Voltage Regulation	V _{reg}	0 < P _o < P _{max}		2		%
Input Voltage	V _{ac}	Two operating ranges	88/200		130/270	V _{rms}
Efficiency	Eff	P _o = P _{max} , V _{ac} = 220V		84		%
Standby Power	P _{stby}	I _{3.3} = 0.5A, V _{ac} = 220v			5	W
Leakage Current	I _{LEAK}	V _{ac} = 220v			1.3	mA
+5V Output	V ₅	Current ≤ I _{5max}	4.85	5	5.15	V
+5V Current	I _{5max}	Maximum continuous operation		2.5		A
+12v Output	V ₁₅	Current ≤ I _{12max}	12.4	12	12.6	V
+12v Current	I _{15max}	Maximum continuous operation		0.5		A
-12v Output	V ₋₁₂	Current ≤ I _{-12max}	-12.4	-12	12.6	V
-12v Current	I _{15max}	Maximum Continuous operation		0.5		A
+3.3v Output	V _{3.3}	Current ≤ I _{3.3max}	3.2	3.3	3.4	V
+3.3v Current	I _{3.3max}	Maximum continuous operation		1.5		A

- Note 1: Time less than 2 seconds. If operated above this current for more than 2 seconds, the supply will trigger over current protection.
- Note 2: Above this value the output voltage will droop.

CONNECTOR PIN OUT



AC Power Connector (J1: AMP 350789-1 / MOLEX 10-84-4030)

Pin	SIGNAL
1	Neutral
2	CHASSIS GND
3	Line

Output Power Connector (J2: 1x9 pin JST B9P-VH.)

Pin	SIGNAL
1	+48v
2	+48v
3	+48v
4	POWER GND
5	POWER GND
6	POWER GND
7	+12
8	-12
9	AGND

Auxiliary Power and Temp (J3 (1x5 JST B5P-VH) optionally (1x6 JST B5P-VH))

Optionally, a six pin header may be populated to bring out an extra -5v.

Pin	SIGNAL
1	+5v
2	+3.3v
3	AGND
4	TEMP MONITOR
5	STANDBY
6	-5 (optional)

POWER SUPPLY FUNCTIONAL DESCRIPTION:

MAIN OUTPUT SUPPLY:

The power supply will provide 48v up to 10.4 amps of average output current for 1 minute of operation using a properly heat sinked configuration. The supply will handle a certain amount of overload operation before either over current or over temperature protection will be enabled.

AUTOMATIC AC INPUT RANGE SELECTION:

The Power supply automatically detects the AC voltage operating range. The supply will operate at full power from 100VAC-130VAC or 200VAC-260VAC. The wide input range ensures that the supply will work in any world wide AC environment.

OVER CURRENT OPERATION:

For output powers up to 500W, The supply will provide continuous operation until thermal limits. For momentary durations (i.e. Less than 2 seconds), the supply can provide a maximum of 13.5 amps of output current. Above this limit the output 48v will droop. If the current draw over 12.5 amps is maintained continuously for more than 2 seconds, the primary over current protection will be enabled and the supply will shut down and then restart after approximately one second.

TEMPERATURE PROTECTION:

Each power supply has a robust temperature protection circuit to protect the supply. During over temperature conditions, the +48v and +/-12v output voltages of the main converter will droop to regulate the heat-sink temperature at 80°C.

There is a TEMP MONITOR pin that can be used to monitor the temperature of the power supply for off board thermal management techniques, ie amplifier control. The Graph below shows the TEMP MONITOR voltage versus % Of maximum temperature.

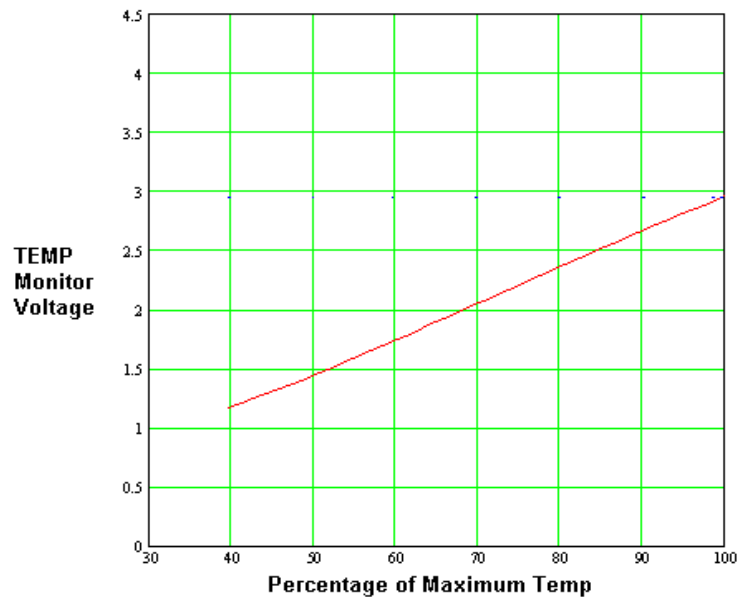


Figure 2: TEMP MONITOR VOLTAGE vs. % MAX TEMP

Quantitatively the following equation will provide the above curve.

$$TEMPVOLT(T) = 5v / (1 + (10k * e^{((1/(T+273) - 1/298) * 4100)}) / 3.01k)$$

Where T is in Celsius.

STANDBY OPERATION:

The power supply has a standby mode of operation. By pulling the STANDBY pin high, the power supply will turn off the +48v, +12v, and -12v, and +5v outputs leaving the +3.3v output active. The input circuit for this pin is shown below. To put the unit into STANDBY, the STANDBY pin voltage needs to be higher than approximately 2v. One way to drive this signal is to use a 1k pullup resistor and tie it to 3.3v. An transistor can then be used to pull this 1k resistor to ground to return from standby operation. This auxiliary supply will pull less then 5 watts from the AC line (220VAC) with a 0.75 amp load on the 3.3v output. **If the STANDBY pin is unconnected, the power supply will default to the ON position.**

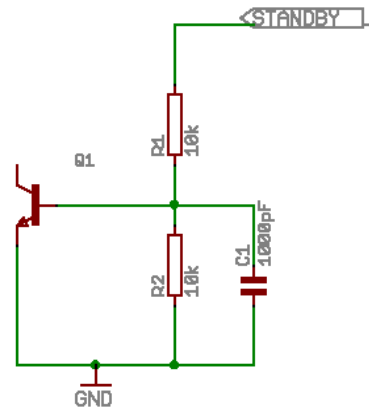


Figure 3: STANDBY pin Circuit