1PH404A

AC-DC VME Power Supply Card

(Document Rev A5, 11/30/2015)

Market: Military, Industrial

Application: Electronic Equipment Rack

Features

- 115/220Vac per MIL-STD-704F*
- 3 or 4 Output, 375W combined
- MIL-STD-810F Environmental *
- MIL-STD-461E EMI *
- Dual Slot VME Power Card

* Designed to meet portions of the standard. Contact Aegis Power for details.

Product Highlights

This dual slot 8HP (1.6") wide 6U high filtered ac-dc power supply converter card can be configured with three or four outputs available (+5Vdc, 3.3Vdc, and +12Vdc) or (+5Vdc, 3.3Vdc, +12Vdc and -12Vdc). This Military Mil-COTS ac-dc power supply solution is designed to meet portions of Mil-Std-704F input requirements, MIL-STD-810F vibration and shock requirements, and MIL-STD-461E EMI requirements. When compared to VME power supplies using conventional technology, this dual slot forced fan cooled ac-dc power supply converter provides users with higher efficiency (86% with 220Vac input), lower weight (4.1 lbs. typical), and higher power (up to 375W all outputs combined).

AEGIS Power Systems, Inc. specializes in the front end design, development, and manufacture of Rapid Response Custom Switching Power Supplies for Mil-COTS, defense, industrial, telecomm, aircraft, shipboard, rack mount, and electric powered vehicle applications. Contact Aegis Power Systems for details on Mil-Specs that this product is designed to meet.

Table 1: Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
<th>Unit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vin max range</td>
<td>95 - 250</td>
<td>Vac</td>
<td>360Hz - 440Hz</td>
</tr>
<tr>
<td>Temperature</td>
<td>+85</td>
<td>°C</td>
<td>Refer to Figure 1</td>
</tr>
<tr>
<td>Output Power</td>
<td>375</td>
<td>W</td>
<td>All outputs combined</td>
</tr>
<tr>
<td>Input power</td>
<td>455/450</td>
<td>W</td>
<td>115Vac/220Vac Input</td>
</tr>
<tr>
<td>+5.0Vdc output</td>
<td>200</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>+3.3Vdc output</td>
<td>150/50</td>
<td>W</td>
<td>Depends on output configuration</td>
</tr>
<tr>
<td>+12.0Vdc output</td>
<td>60/125</td>
<td>W</td>
<td>Depends on output configuration</td>
</tr>
<tr>
<td>-12.0Vdc output</td>
<td>12</td>
<td>W</td>
<td></td>
</tr>
</tbody>
</table>
**SPECIFICATIONS**

(Typical at 25°C, nominal line and 100% load, unless otherwise specified.)

**Input voltage:** 115/220Vac Nominal (95Vac - 250Vac), 400Hz (360Hz - 440Hz). Transient 70Vac to 270Vac, 100mSec. Designed to meet MIL-STD-704F Normal and Abnormal Range.

**Input line current:** 4.1A @ 115Vac, 2.1A @ 220Vac.

**Input power:** 455W @ 115Vac, 450W @ 220Vac, Typical.

**Power Factor:** 0.99 Typical @ 360Hz - 440Hz.

**Output power:** 375W Max. all outputs combined. See Fig 1 for output power derating.

**Holdup Time:** 2mSec Typical.

**Output voltages:** See table 2. See Figure 1 for output power derating.

**Output ripple:** See table 2.

**Current Limit:** Short circuit protected with automatic recovery.

**Efficiency:** 83%/115VAC, 86%/220VAC, Typical at full load.

**Start up time:** 500 mSec. Max.

**Voltage set point:** ± 2.5%.

**Line regulation:** ± 2.5%.

**Load regulation:** ± 2.5%.

**Temperature regulation:** ± 0.01% / °C.

**Temperature rating:** –40°C to +85°C Operating baseplate temperature max. See Figure 1.

**Cooling:** Customer provided forced fan air across attached cooling fins on power card.

**Package:** Dual slot pluggable slide-in card with attached cooling fins.

**Dimensions:** 6U high x 8HP wide (1.6") x 160mm deep. (See mechanical drawing).

**Weight:** 4.1 lbs. Typical.

**Connector:** 1ea Positronics PCIM30W15M400A1 or equivalent (see pin assignment page).

**Vibration:** Designed to meet MIL-STD-810F, Method 514.5, Procedure I.

**Shock:** Designed to meet MIL-STD-810F, Method 516.5, Procedure I.

**Humidity:** 0 – 95% non-condensing.

**EMI:** Designed to meet MIL-STD-461E (CE102 and CS101).

Specifications subject to change without notice.
### Table 2: Voltage Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Vdc out</th>
<th>Watts out</th>
<th>Amps out</th>
<th>Ripple (20MHz BW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PH404A-001*</td>
<td>+5.0 Vdc</td>
<td>200 W</td>
<td>40 A</td>
<td>50mVp-p</td>
</tr>
<tr>
<td></td>
<td>+3.3 Vdc</td>
<td>150 W</td>
<td>45 A</td>
<td>50mVp-p</td>
</tr>
<tr>
<td></td>
<td>+12 Vdc</td>
<td>60 W</td>
<td>5 A</td>
<td>150mVp-p</td>
</tr>
<tr>
<td></td>
<td>-12 Vdc</td>
<td>12 W</td>
<td>1 A</td>
<td>150mVp-p</td>
</tr>
<tr>
<td></td>
<td>*Max total power all outputs combined 375W.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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<tr>
<th>Part Number</th>
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<th>Watts out</th>
<th>Amps out</th>
<th>Ripple (20MHz BW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PH404A-002*</td>
<td>+5.0 Vdc</td>
<td>200 W</td>
<td>40.0 A</td>
<td>50mVp-p</td>
</tr>
<tr>
<td></td>
<td>+3.3 Vdc</td>
<td>50 W</td>
<td>15.1 A</td>
<td>50mVp-p</td>
</tr>
<tr>
<td></td>
<td>+12 Vdc</td>
<td>125 W</td>
<td>10.4 A</td>
<td>150mVp-p</td>
</tr>
<tr>
<td></td>
<td>*Max total power all outputs combined 375W.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1: 1PH404A Power De-rating for Temperature and Input Voltage**

1PH404A Power Derating  
600LFM airflow across cooling fins.

115Vac / 220Vac  
65°C, 375W, 115Vac  
70°C, 375W, 220Vac  
115Vac 220Vac  
85°C, 300W, 220Vac  
85°C, 250W, 115Vac
Connector Pin Out Assignment

30 Pin Positronic Connector
P/N PCIM30W15M400A1 or Equivalent

Connector J1:

Pin 1   V1 Return
Pin 2   V2 Return
Pin 3   V1 Return
Pin 4   V2 Return
Pin 5   V1 Return
Pin 6   V3 Return
Pin 7   V1 Pos Out
Pin 8   V2 Pos Out
Pin 9   V1 Pos Out
Pin 10  V2 Pos Out
Pin 11  V1 Pos Out
Pin 12  V3 Pos Out
Pin 13  V4 Return
Pin 14  V4 Neg Out
Pin 15  V1 Pos Sense
Pin 16  V1 Share Pos
Pin 17  V1 Share Neg
Pin 18  V1 Neg Sense
Pin 19  V3 Share Pos
Pin 20  V3 Share Neg
Pin 21  No Connection
Pin 22  No Connection
Pin 23  No Connection
Pin 24  V2 Share Pos
Pin 25  V2 Share Neg
Pin 26  V2 Neg Sense
Pin 27  V2 Pos Sense
Pin 28  Chassis Ground
Pin 29  AC Neutral
Pin 30  AC Line Input

CAUTION:
Contact AEGIS Power Systems before connecting power supply units in parallel or connecting the Share Pins.