

## VME650A

### VME DC-DC Power Converter Card

(Document Rev A01, 09/19/16)



**28Vdc Input  
4 Output, 650W Max Combined Output Power**

### Features

**Table 1: Maximum Ratings**

- 28Vdc per MIL-STD-704A-F \* and MIL-STD-1275A/B/D \*
- 4 Output Voltages, 650W
- MIL-STD-810F Environmental \*
- MIL-STD-461E EMI \*
- Dual Slot VME Power Card
- CE Marked (Low Voltage Directive 2006/95/EC)

Parameter	Rating	Unit	Notes
Vin max range	18 to 36	Vdc	
Temperature	-40 to +85	°C	Ambient air temperature
Input power	755	W	@ 650W out (28VDC input)
Combined output power	650	W	See Table 2 for DC output variations

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

### Product Highlights

This dual slot filtered 28Vdc VME650A power card with four outputs at 650W maximum power, is a COTS military power supply solution designed to meet portions of MIL-STD-810F vibration and shock requirements and designed to meet portions of MIL-STD-461E EMI requirements. When compared to VME power supplies using conventional technology, the dual-slot VME650A-001 provides users with higher efficiency (87%), lower weight (4.14 pounds), and higher power (up to 650W). It also has a keyed connector that offers keying options when using multiple power supplies in one chassis. The VME650A is a drop-in replacement for the existing VME550A power card.

**AEGIS Power Systems, Inc.** specializes in the front end design, development, and manufacture of Rapid Response Custom Switching Power Supplies for defense, industrial, telecommunication, electric powered vehicle and Mil-Cots military power supply applications.

## SPECIFICATIONS

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

<b>DC input voltage:</b>	Designed to meet MIL-STD-704A-F & MIL-STD-1275A/B/D, continuous operation 22Vdc to 33Vdc, 28Vdc nominal. 100Vdc 50msec transient.
<b>DC input line current:</b>	34.4A max @ 22Vdc; 27.0A typical @ 28Vdc input (650W out).
<b>Input power:</b>	640W max @ 550W out, 755W max @ 650W out.
<b>Output power:</b>	650W max. output. (All outputs combined).
<b>Output voltages:</b>	See table 2.
<b>Efficiency:</b>	86% minimum, 87% typical.
<b>Start up time:</b>	500 millisecond maximum.
<b>Voltage set point/ Line/Load regulation:</b>	+/- 2% Vout nominal (for any combination).
<b>Temperature regulation:</b>	+/- 0.01% / °C.
<b>Output ripple:</b>	50mV pk-pk Max. (20 MHz BW) all except; +/-12 Vdc 100mV pk-pk Max.
<b>Current Limit:</b>	Short circuit protected with automatic recovery.
<b>Temperature:</b>	-40°C to +85°C Ambient air temperature 650W. -55°C to +100°C Non-operating.
<b>Cooling:</b>	Convection. Customer provided 1200lfm air flow across attached cooling fins.
<b>Package:</b>	Dual slot pluggable slide in rack card.
<b>Dimension:</b>	6U x 8hp x 160mm (see mechanical drawing).
<b>Weight:</b>	4.14 lb. Typical.
<b>Connector:</b>	1ea Positronics PCIH47M400A1 or equivalent (see pin assignments page).
<b>Vibration:</b>	Designed to meet MIL-STD-810F, Method 514.5, Procedure I.
<b>Shock:</b>	Designed to meet MIL-STD-810F, Method 516.5, Procedure I.
<b>Humidity:</b>	0 – 95% non-condensing.
<b>EMI:</b>	Designed to meet MIL-STD-461E (CE101, CE102, and CS101).
<b>Safety Approvals:</b>	CE Mark (Low Voltage Directive 2006/95/EC).

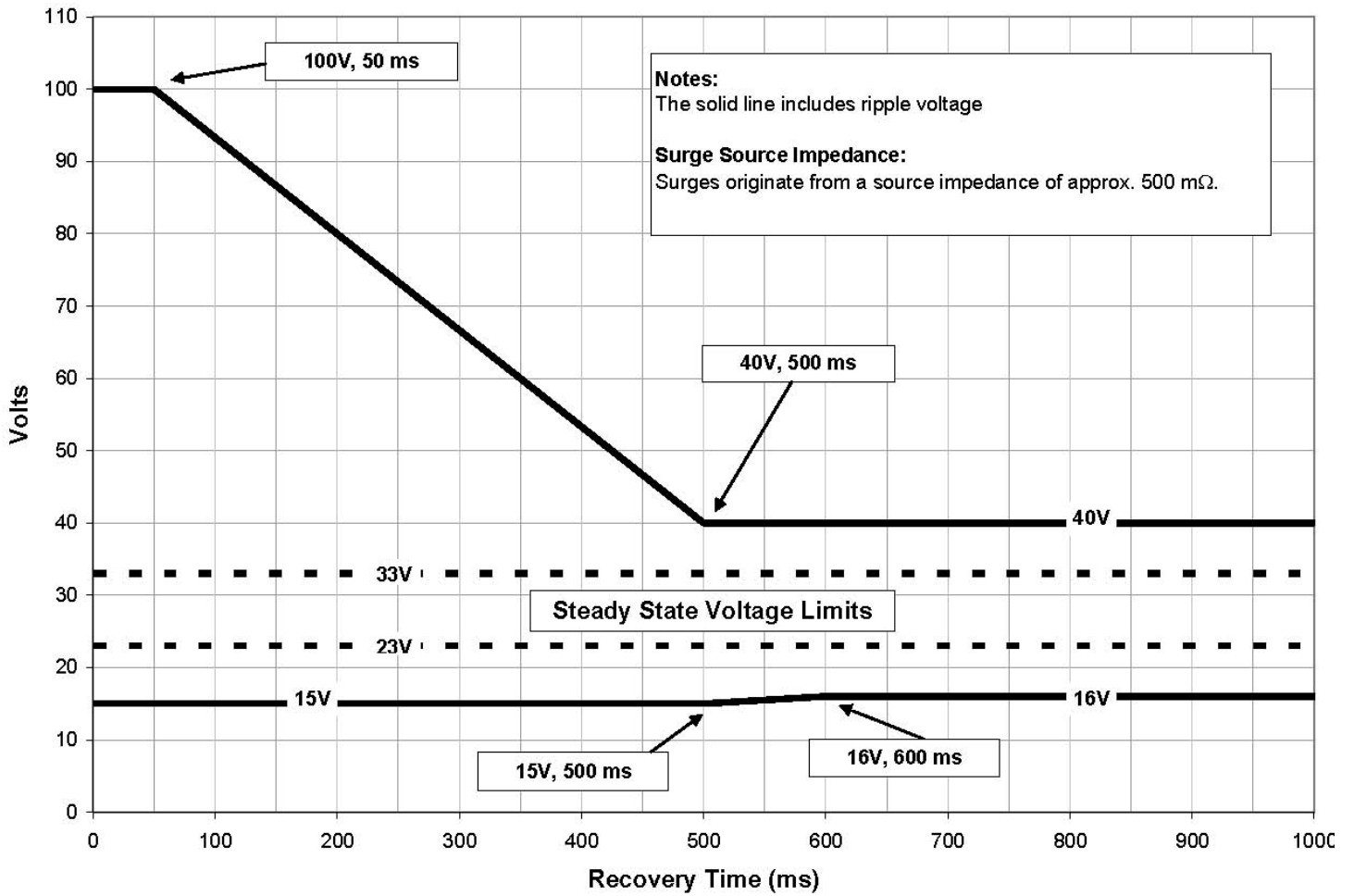
**Table 2: Voltage Outputs**

	<b>V1</b>	<b>V2</b>	<b>V3</b>	<b>V4</b>
<b>VME650A-001-XXX</b>	+5VDC @ 224W	+3.3VDC @ 224W	+12VDC @ 112W	-12VDC @ 112W
<p>* V1-V4 output power levels indicate maximum power available per output. Total combined power of all outputs on VME650A cannot exceed 650W  ** Output voltage variants possible. VME650A can be configured with one to six outputs (one can be negative) (-48VDC to +48VDC)  Contact AEGIS sales for details.</p>				

**Table 3: Customer selected options**

<b>-XXX</b>	<b>Custom Options</b>
-000	No Options
-001	Conformal coating on PWB
-002	Metric wedgelocks
-003	Split inhibit control for V1/V3 and V2/V4
-004	Connector keyed (position #1)
-005	Connector keyed (position #2)
-006	Connector keyed (position #3)
-007	Conformal coating & Split inhibit for V4
-008	ESD pin removed
-009	70k ft. operational altitude

Figure 1: Transient Immunity



## VME650A-001-000 Connector Pin Out Assignment

Positronic Connector P/N PCIH47M400A1 or Equivalent

<b>Pins 1, 2, 3, 4</b>	<b>+5 Vdc</b>
Pins 5, 6, 7, 8	+5 V RTN (Common)
Pins 9, 10, 11, 12	+3.3 V RTN (Common)
<b>Pins 13, 14, 15, 16</b>	<b>+3.3 Vdc</b>
<b>Pin 17</b>	<b>+12 Vdc</b>
Pin 18	+12 V RTN (Common)
Pin 19	-12 Vdc
<b>Pin 20</b>	<b>-12 V RTN (Common)</b>
Pin 21	NC
<b>Pin 22</b>	<b>POWER OK RTN (Common)</b>
Pins 23, 24, 25, 26	NC
Pins 27, 28, 29	NC
Pin 30	NC
Pin 31	NC
Pin 32	NC
Pins 33, 34, 35, 36	NC
Pins 37, 38	NC
<b>Pin 39</b>	<b>Inhibit (Connect pin to negative input to disable)</b>
Pins 40, 41	NC
<b>Pin 42</b>	<b>Power OK, (Open collector = Fail)</b>
Pins 43, 44	NC
<b>Pin 45</b>	<b>Chassis Ground</b>
<b>Pin 46</b>	<b>Positive Input</b>
<b>Pin 47</b>	<b>Negative Input</b>
Pin 48, 49	(Available for unique keying of supply)

\*\* ALL PINS DESIGNATED NC SHOULD HAVE NO CONNECTION ON THE BACKPLANE

\*\* ALL OUTPUT RTN PINS (COMMON) SHOULD BE TIED TOGETHER ON BACKPLANE

\*\* ALL PINS OF THE SAME VOLTAGE SHOULD BE TIED TOGETHER ON THE BACKPLANE (i.e. ALL 4 OF THE +5V PINS SHOULD BE TIED TOGETHER)

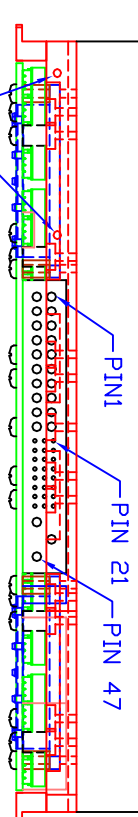
\*\* TO DISABLE ALL OF THE DC OUTPUTS FROM THIS CARD-CONNECT PIN 39 (INHIBIT) TO PIN 47 (NEGATIVE INPUT). THIS CAN BE ACCOMPLISHED USING A FET, TRANSISTOR, RELAY OR SWITCH THAT CAN SINK AT LEAST 15mA

\*\* POWER OK SIGNAL IS AN OPEN-COLLECTOR TRANSISTOR OUTPUT. IT WILL BE LOW WHEN ALL OUTPUT VOLTAGES ARE WITHIN THEIR REGULATION WINDOW – IF ANY VOLTAGE IS INCORRECT POWER OK WILL BE HIGH. THIS OUTPUT IS REFERENCED TO THE COMMON DC OUTPUT RETURN AND CAN BE PULLED UP TO ANY OF THE DC OUTPUT VOLTAGES. SELECT A PULL-UP RESISTOR TO LIMIT THE CURRENT THROUGH THE TRANSISTOR TO LESS THAN 50mA. (Example – use a 1K pull-up for 5mA of current when pulled up to +5V output.)

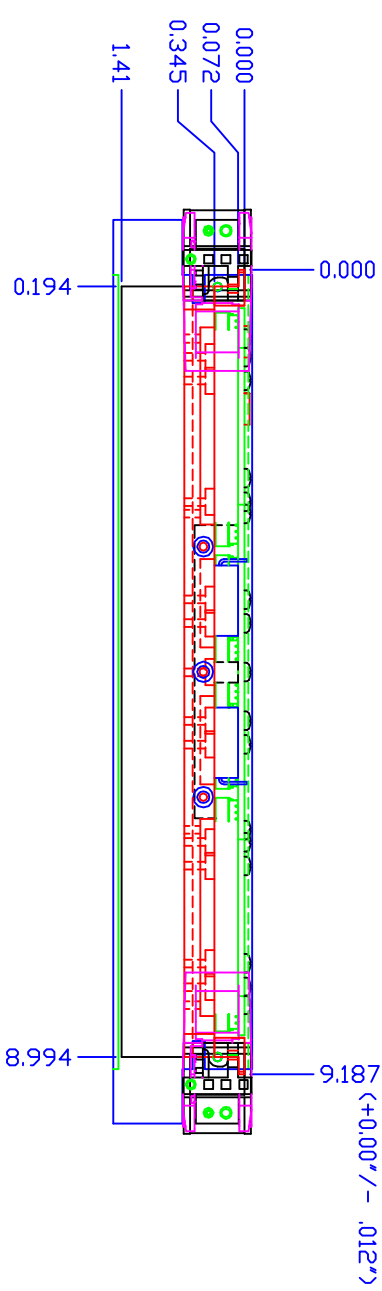
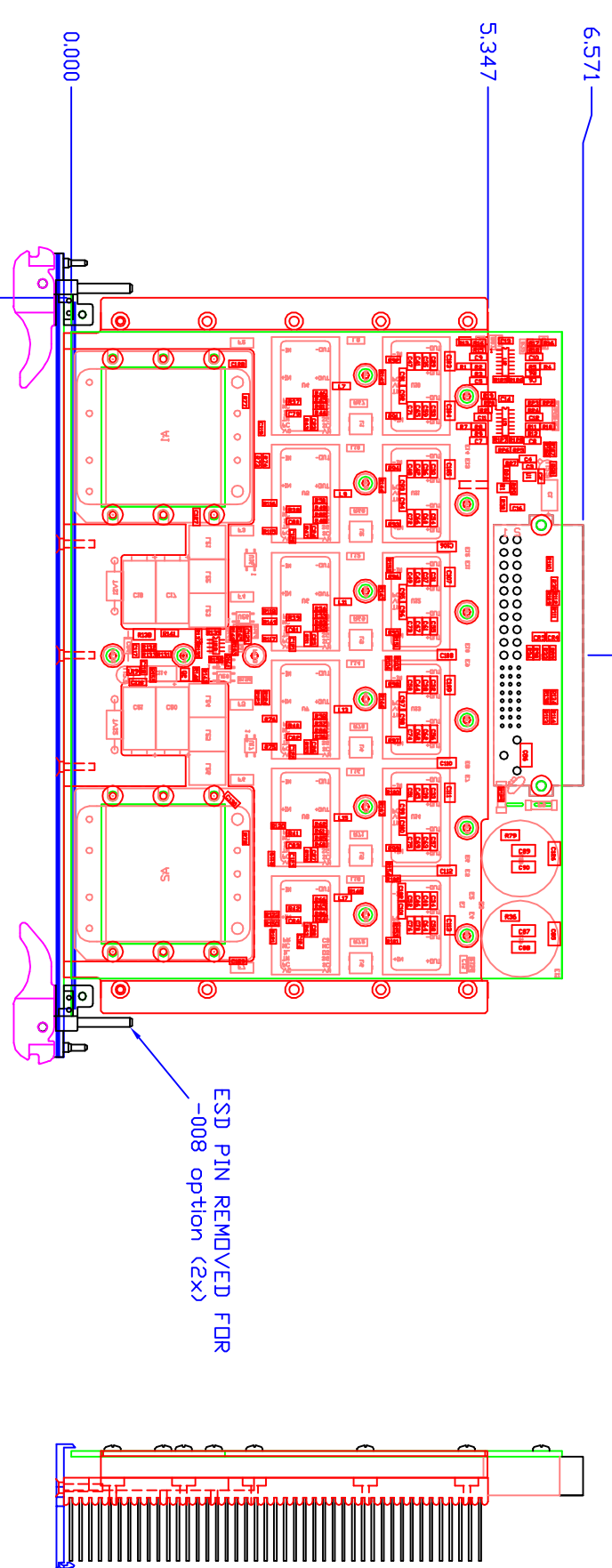
NOTES: UNLESS OTHERWISE SPECIFIED  
 1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1994.

ZONE	REV	DESCRIPTION	DATE	APPROVED
		INITIAL RELEASE	01/14/09	NVS
	D02	UPDATED HEATSINK AND PWB	11/09/09	NVS
	D03	UPDATED TO REV D03 PWB	02/10/10	NVS
	E03	UPDATED TO REV E03 PWB	04/04/11	NVS
	E04	ADDED SIDE RAILS TO HEATSINK	06/18/13	NVS
	E05	UPDATED WIDTH TOLERANCE	09/18/14	NVS

CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY.



4-40 HOLE FOR KEYING BLOCK



UNLESS OTHERWISE SPECIFIED, DIMENSIONS IN INCHES FRACTIONS DECIMALS ANGLES DEGREES		CONTRACT NO.	
* N/A	XX * .02	* 5	
	XXX * .005		
MATERIAL	SEE NOTE 2	APPROVALS	DATE
FINISH	SEE NOTE 3	JFS	08/20/07
DO NOT SCALE DRAWING		DRWN	
		CHECKED	
		PROJ. ENG.	
		MFG.	
		QUALITY	
APPLICATION		SIZE	F304
		DWG NO.	VM650A-H00
		SCALE	1/1
		SHEET	1 OF 1
		REV	E05

A

B

C

D

A

B

C

D