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VME650

VME DC-DC Power Converter Card

(Document Rev A01, 09/19/16)



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

Features

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

Table 1: Maximum Ratings

Parameter	Rating	Unit	Notes
Vin max range	18 to 36	Vdc	
Temperature	-40 to +85	°C	Baseplate 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 single slot very thin (4HP) filtered 28Vdc VME650 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 the MIL-STD-461E EMI requirements. When compared to VME power supplies using conventional technology, the single-slot VME650 provides users with higher efficiency (87%), lower weight (2.7 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 VME650 is a drop-in replacement for the existing VME550 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. Contact Aegis Power Systems for details on Mil-Specs that this product is designed to meet.

SPECIFICATIONS

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

DC input voltage:	Designed to meet MIL-STD-704A-F, MIL-STD-1275A/B/D, continuous operation 22Vdc to 33Vdc, 28 Vdc nominal. 100Vdc 50 msec transient.
DC input line current:	34.4A max @ 22Vdc; 27.0A typical @ 28Vdc input (650W out).
Input power:	640W max @ 550W out, 755W max @ 650W out.
Output power:	650W max. (All outputs combined).
Output voltages:	See table 2.
Efficiency:	86% minimum, 87% typical.
Start up time:	500 millisecond maximum.
Voltage set point/ Line/Load regulation:	+/- 2% Vout nominal (for any combination).
Temperature regulation:	+/- 0.01% / °C.
Output ripple:	50mV pk-pk Max. (20 MHz BW) all except; +/-12 Vdc 100mV pk-pk Max.
Current Limit:	Short circuit protected with automatic recovery.
Temperature:	-40°C to +85°C Operating baseplate temperature 650W. -55°C to +100°C Non-operating.
Cooling:	Conduction cooling through wedgelocks attached to customer rack.
Package:	Single slot pluggable slide in rack card.
Dimension:	6U x 4hp x 160mm (see mechanical drawing page).
Weight:	2.7 lb. Typical.
Connector:	1ea Positronics PCIH47M400A1 or equivalent (see pin assignments 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 (CE101, CE102, and CS101).
Safety Approvals:	CE Mark (Low Voltage Directive 2006/95/EC).

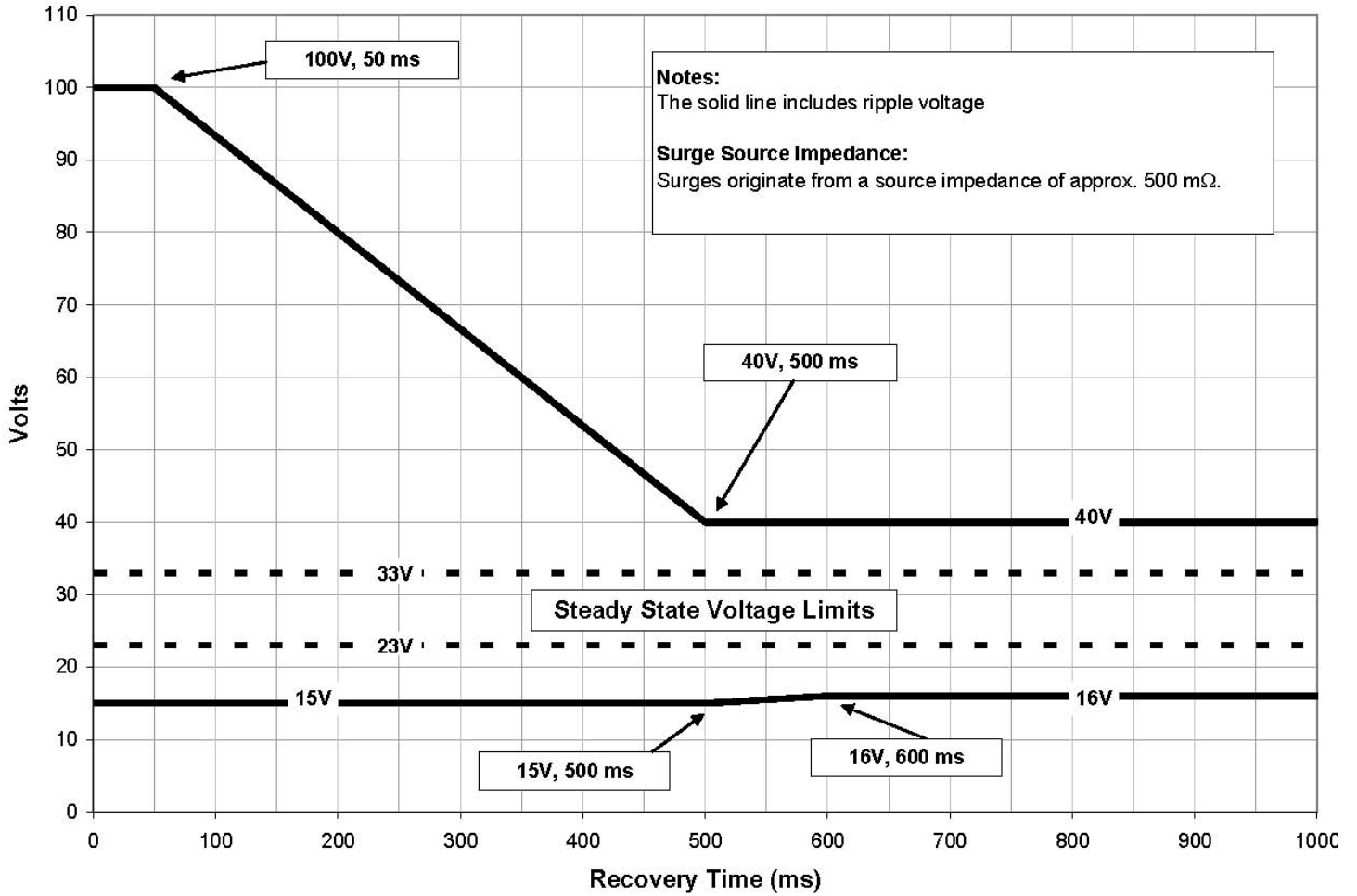
Table 2: Voltage Outputs

	V1	V2	V3	V4
VME650-001-XXX	+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 VME650 cannot exceed 650W ** Output voltage variants possible. VME650 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

-xxx	Custom Options
-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



VME650-001-000 - Connector Pin Out Assignment

Positronic Connector P/N PCIH47M400A1 or Equivalent

Pins 1, 2, 3, 4	+5 Vdc
Pins 5, 6, 7, 8	+5 V RTN (Common)
Pins 9, 10, 11, 12	+3.3 V RTN (Common)
Pins 13, 14, 15, 16	+3.3 Vdc
Pin 17	+12 Vdc
Pin 18	+12 V RTN (Common)
Pin 19	-12 Vdc
Pin 20	-12 V RTN (Common)
Pin 21	NC
Pin 22	POWER OK RTN (Common)
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
Pin 39	Inhibit (Connect this pin to negative input pin to disable)
Pins 40, 41	NC
Pin 42	Power OK, (Open collector = Fail)
Pins 43, 44	NC
Pin 45	Chassis Ground
Pin 46	Positive Input
Pin 47	Negative Input
Pins 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)

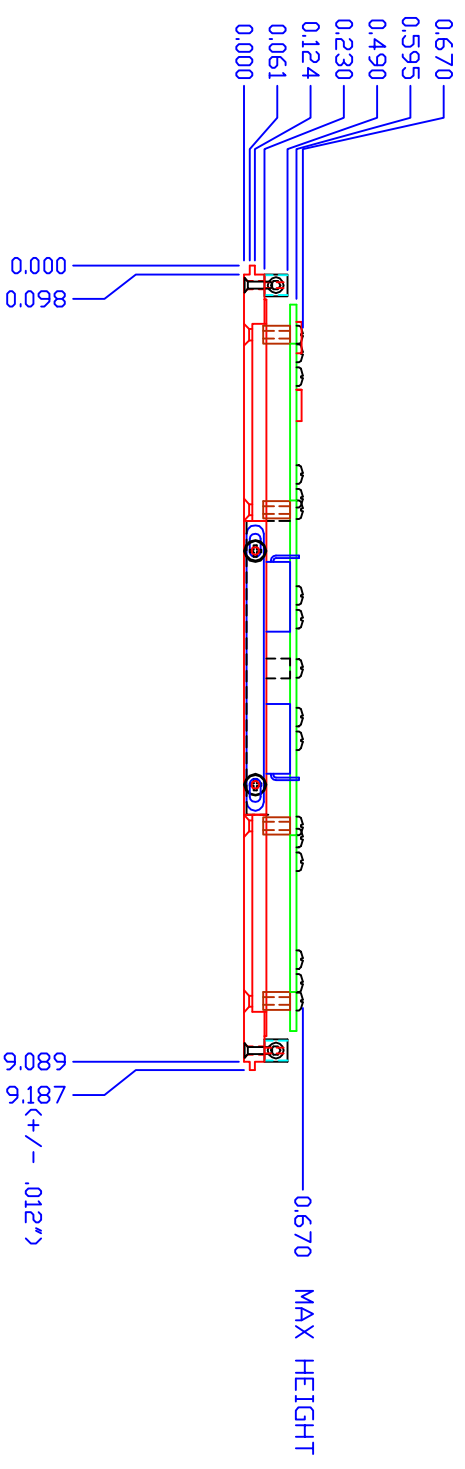
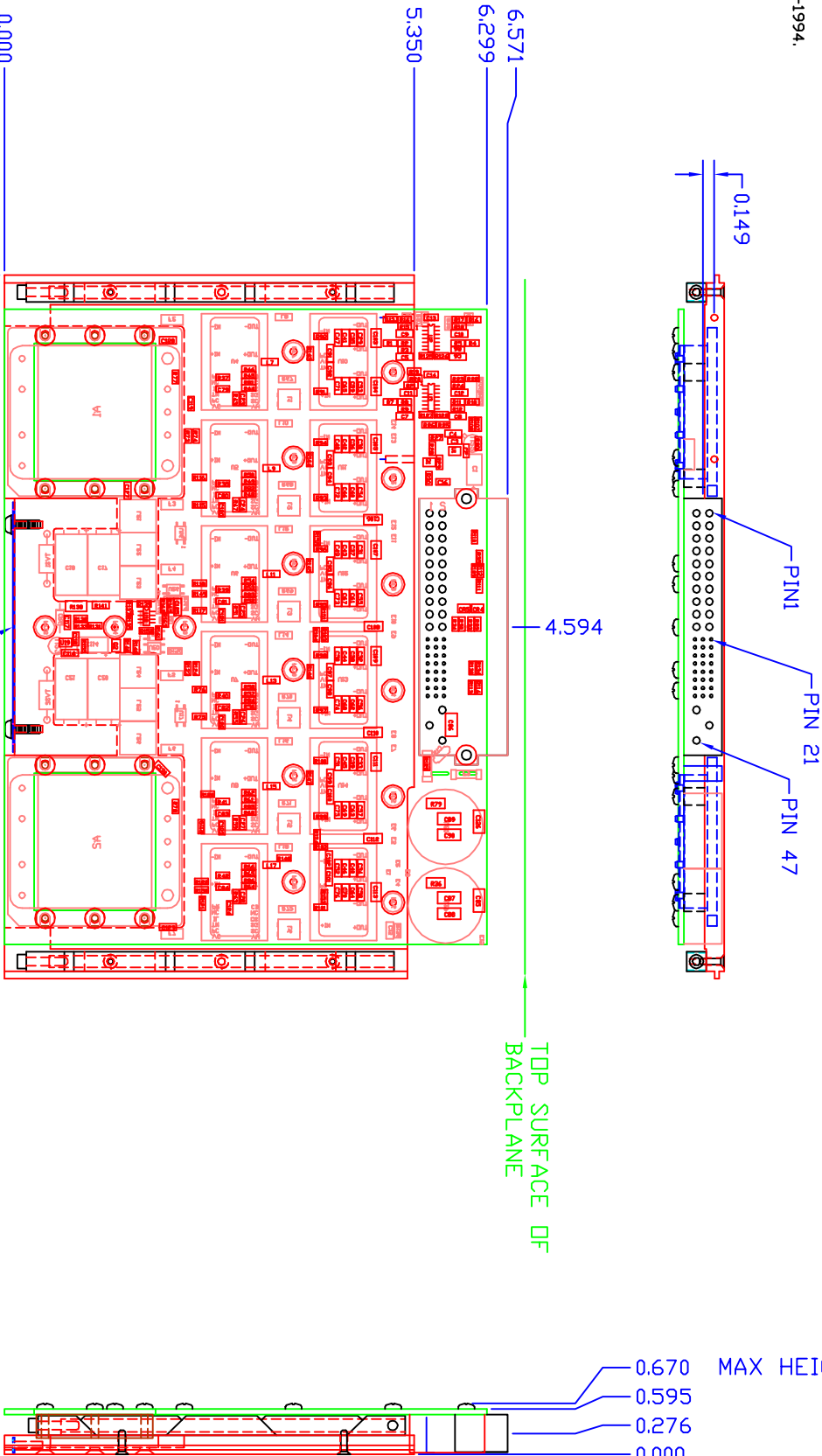
** TO DISABLE ALL OF THE DC OUTPUTS FROM THIS CARD-CONNECT PIN 39 (INHIBIT) TO PIN 47 (NEGATIVE INPUT). THIS CAN BE ACCOMPLISHED USING A FET, TRANSISTOR, RELAY OR SWITCH THAT CAN SINK AT LEAST 15ma

** 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.
 2. MATERIAL.
 3. FINISH.

ZONE	REV	DESCRIPTION	DATE	APPROVED
A01	REV	INITIAL RELEASE	XX/XX/XX	JFS
A02	REV	RECESSED HANDLE, P/N NAME CHG	03/05/07	JFS
A03	REV	UPDATED TO SHOW INPUT INDUCTORS	07/03/07	JFS
A04	REV	MOVED ONE KEYING HOLE LOCATION	07/25/07	JFS
A05	REV	ADDED KEYING BLOCK	11/18/08	MVS
C01	REV	UPDATED FOR REV C01 PVB	01/14/09	MVS
D02	REV	UPDATED FOR REV D02 PVB	10/28/09	MVS
D03	REV	UPDATED FOR REV D03 PVB	02/18/10	MVS
E02	REV	UPDATED FOR REV E02 PVB	08/18/11	MVS
E03	REV	UPDATED WIDTH TOLERANCE	08/27/14	MVS

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



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UNLESS OTHERWISE SPECIFIED, DIMENSIONS IN ANGLES FRACTIONS DECIMALS DECIMALS		CONTRACT NO.	
* N/A	XX ± .02	APPROVALS	
XXX ± .005	* .5	DESIGNED BY	DATE
SEE NOTE 2	SEE NOTE 2	DRAWN	MVS 08/18/11
SEE NOTE 3	SEE NOTE 3	CHECKED	
USED ON		PROJ. ENG.	
APPLICATION		WFG	
		QUALITY	
		SCALE	1/1
		SHEET	1 OF 1

TITLE		AEGIS POWER SYSTEMS	
VME650-XXX MECH LAYOUT		MURPHY, NORTH CAROLINA	
AEGIS P/N: VME650-XXX		DWG NO. VME650-M00	
SIZE	FSDH NO.	DWG NO.	REV
D	06ES8	VME650-M00	E03