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VPX270-500

3u x 4HP x 168.49mm

VPX DC-DC
Power Converter Card

270Vdc Input
6 Output, 500W Max Combined Output

(Document Rev A02, 06/20/2016)

Features

- 270Vdc per MIL-STD-704A-F
- 6 Output Voltages, 500W
- MIL-STD-810F Environmental *
- MIL-STD-461E EMI *
- Single Slot VPX Power Card

Table 1: Maximum Ratings

Parameter	Rating	Unit	Notes
Vin max range	160 to 420	Vdc	
Temperature	–40 to +85	°C	Baseplate temperature
Input power	550	W	@ 500W out (270VDC input)
Combined output power	500	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 270Vdc VPX270-500 power card with six outputs at 500W 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 VPX power supplies using conventional technology, the single-slot VPX270-500 provides users with higher efficiency (up to 93%), and higher power (up to 500W). It also has alignment keys that offer keying options when using multiple power supplies in one chassis.

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, continuous operation 160Vdc to 420Vdc, 270 Vdc nominal.
DC input line current:	3.44A max @ 160Vdc; 2.04 A typical @ 270Vdc input (500W out).
Input power:	550W max @ 500W out
Output power:	500W max. all outputs combined.
Output voltages:	See table 2.
Efficiency:	89% minimum, 91% typical, 93% max
Start up time:	120 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 +75°C Operating baseplate temperature 500W. –40°C to +85°C Operating baseplate temperature 450W. –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:	3U x 4hp x 168.49mm (see mechanical drawing page).
Weight:	1.2 lbs (typical)
Connector:	1ea TE Connectivity 6450849-7 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:	

Table 2: Voltage Outputs

	V1	V2	V3	V4	V5	V6
VPX270-500	+12VDC @ 480W	+3.3VDC @ 66W	+5VDC @ 150W	-12VDC_AUX @ 18W	3.3VDC_AUX @19.8W	+12VDC_AUX @18W

* V1-V6 output power levels indicate maximum power available per output. Total combined power of all outputs on VPX270-500 cannot exceed 500W
** Output voltage variants possible. VPX270-500 can be configured with one to six outputs (one can be negative) (-48VDC to +48VDC)
Contact AEGIS sales for details.

Table 3: ENABLE / INHIBIT

Control Inputs		**Power Outputs**	
ENABLE	**INHIBIT**	**3.3V_AUX**	**PO1, PO2, PO3, +12V_AUX, and -12V_AUX**
High	High	Off	Off
High	Low	Off	Off
Low	High	On	On
Low	Low	On	Off

VPX270-500 - Connector Pin Out Assignment

TE Connectivity Connector 6450849-7 or equivalent

Pin Number	*Rated Current (A)*	*Pin Name*
P1	40A	**-DC_IN/ACN**
P2	40A	**+DC_IN/ACL**
LP1	20A	**CHASSIS**
A1	<1A	UD1
B1	<1A	UD2
C1	<1A	UD3
D1	<1A	UD4
A2	<1A	VBAT*
B2	<1A	FAIL*
C2	<1A	INHIBIT*
D2	<1A	ENABLE*
A3	<1A	UD0
B3	<1.5A	**+12V_AUX**
C3	<1A	NED*
D3	<1A	NED_RETURN (Common)
A4	<1.5A	**3.3V_AUX**
B4	<1.5A	**3.3V_AUX**
C4	<1.5A	**3.3V_AUX**
D4	<1.5A	**3.3V_AUX**
A5	<1A	GA0*
B5	<1A	GA1*
C5	<1A	SM0
D5	<1A	SM1
A6	<1A	SM2
B6	<1A	SM3
C6	<1.5A	**-12V_AUX**
D6	<1A	SYSRESET*
A7	<1A	PO1_SHARE*
B7	<1A	PO2_SHARE*
C7	<1A	PO3_SHARE*
D7	<1A	SIGNAL_RETURN (Common)
A8	<1A	PO1_SENSE*
B8	<1A	PO2_SENSE*
C8	<1A	PO3_SENSE*
D8	<1A	SENSE_RETURN (Common)
P3	40A	**PO3 (5V)**
P4	40A	POWER_RETURN (Common)
P5	40A	POWER_RETURN (Common)
LP2	20A	**PO2 (3.3V)**
P6	40A	**PO1 (12V)**

*. Pin out if configured, otherwise leave as no connection (NC)
** 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 C2 (INHIBIT) TO PIN SIGNAL_RETURN. 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

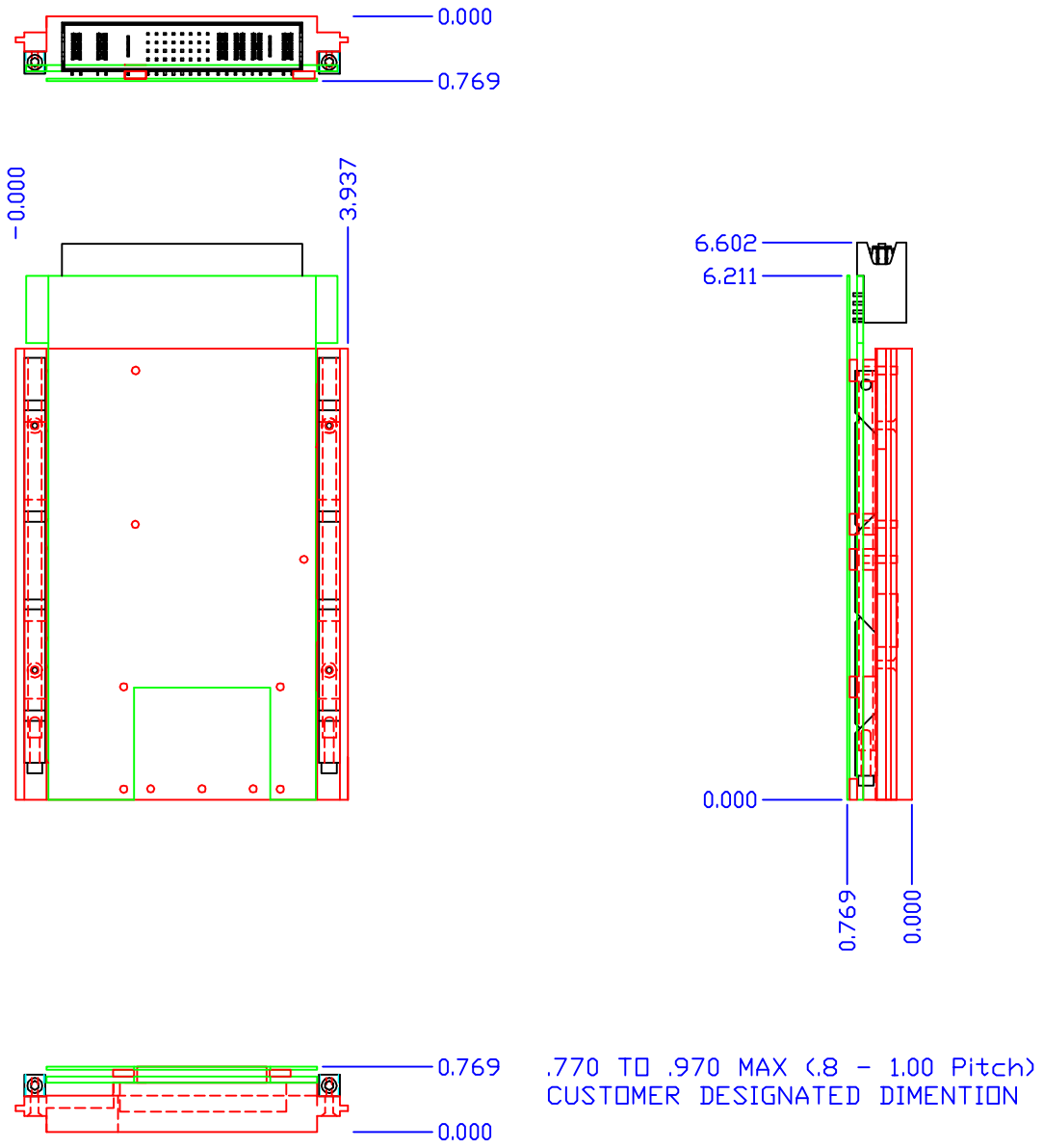
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1994.
2. MATERIAL: 6063-T651 ALUMINUM ALLOY PER QQ-A-250/11.
3. FINISH: CLEAR CHEMICAL FILM (ROHS COMPLIANT) PER MIL-C-5541F, CLASS 3, IAW MIL-DLT-81706, TYPE II, CLASS 3.
4. SURFACE A & C FLATNESS: SURFACES TO BE FLAT TO 0.010" T.I.R. WITH NOT MORE THAN 10% OF SPECIFICATION AREA OF CAVITATION.
5. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.

DWG NO.	SH	REV

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
	A01	INITIAL RELEASE	04/11/16	TLO

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



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NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± N/A DECIMALS .XX ± .02 .XXX ± .005 DEGREES ± .5

MATERIAL: SEE NOTE 2

FINISH: SEE NOTE 3

DO NOT SCALE DRAWING

CONTRACT NO.	
APPROVALS	DATE
DRAWN TLO	04/11/16
CHECKED	
PROJ. ENG.	
MFG.	
QUALITY	

AEGIS POWER SYSTEMS
MURPHY, NORTH CAROLINA

TITLE: VPX270-500

AEGIS P/N: MSMVPX270-M01

SIZE	FSCM NO.	DWG NO.	REV
D	06ES8	MSMVPX270-500-M03	A01

SCALE 1/1 SHEET 1 OF 2