

# VPX283UC640-SA

## Overview

3U VPX DC-DC Power Converter Card  
 28Vdc Input, 2 Outputs  
 640W Max Combined Output

## Market(s)

Defense

## Typical Application(s)

Embedded Computing, C4ISR



## Product Highlights

The VPX283UC640-SA is a single-slot (5HP) power card for interoperable systems in alignment with the SOSA™ Technical Standards. This power converter offers filtered 28Vdc input and two outputs (+12V and +3.3V\_AUX DC). This COTS military power supply solution is designed to the applicable VITA 62 Modular Power Supply and VITA 48.2 conduction-cooled requirements. It is designed to meet applicable portions of both the MIL-STD-810F vibration/shock requirements and the MIL-STD-461G EMI requirements. The VPX283UC640-SA provides users with high efficiency (up to 92%) and high power (up to 640W). Additionally, the redundant IPMB bus and I2C functionality allows users to monitor sensor data (temperature, voltage, current, counter), obtain device ID, and retrieve self-test results per VITA 46.11 and SOSA™ Technical Standards.

## Features

- 28Vdc per MIL-STD-704F
- 2 Output Voltages, 640W
- Single Slot 5HP VITA 48.2 VPX Power Card
- MIL-STD-461G EMI \*
- ANSI/VITA 46.11 Tier 2 IPMC \*
- Redundant IPMB bus connections

\* Designed to meet applicable portions of this standard. Contact Aegis Power Systems, Inc. for specific details.

**Table 1: Maximum Continuous Operating Ratings**

Parameter	Rating	Unit	Notes
Vin max range	18 to 36	Vdc	28Vdc Nominal
Temperature	-40 to +85	°C	Baseplate @ wedgelocks (85C @ 500W total output) (75C @ 640W total output)
Input power	711	W	@ 640W out (28VDC input)
Combined output power	640	W	See Table 2 for DC output variations
Efficiency	90	%	Typical @ nominal conditions

## About Us

Aegis Power Systems, Inc. specializes in the design, development, and manufacture of AC-DC and DC-DC power supplies for high-performance, rugged, critical, and specialty applications. Markets served include defense, industrial, communications, aircraft, shipboard, rack mount, embedded computing, and electric vehicle applications.

[Contact us](#) to find out if this item can be configured or redesigned to meet your specific technology need.

## SPECIFICATIONS

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

Parameter	Notes
<b>Input Voltage</b>	Designed to meet MIL-STD-704F Table IV (DC Normal Operation) 22Vdc to 29Vdc, 28 Vdc nominal, continuous operation during Figure 13 (Normal DC voltage transients) 50 Vdc max.
<b>Input Current</b>	32.3A max @ 22Vdc, 25.4A typical @ 28Vdc input (640W out).
<b>Input Power</b>	711W max @ 640W out.
<b>Total Output Power</b>	640W max. all outputs combined (see Table 4).
<b>Output Voltages</b>	(see Table 2).
<b>Efficiency</b>	88.5% minimum, 90% typical, 92% max.
<b>Start-Up Time</b>	1 second maximum.
<b>Voltage Set Point</b>	+/- 5% V Out nominal (for any combination).
<b>Line/Load Regulation</b>	+/- 5% V Out nominal (for any combination).
<b>Output Ripple</b>	50mVpk-pk Max. (20 MHz BW) all except; +/-12 Vdc 120mVpk-pk Max.
<b>Current Limit</b>	Short circuit protected with automatic recovery.
<b>Temperature</b>	-40°C to +75°C Operating baseplate @ 640W output (+85°C Operating baseplate @ 500W output). -40°C to +125°C Storage.
<b>Cooling</b>	Conduction cooling through wedgelocks to customer rack.
<b>Package</b>	Single slot pluggable slide in rack card.
<b>Dimensions</b>	3U x 5hp x 168.49mm (see mechanical drawing page) (VITA 48.2 Table 3).
<b>Weight</b>	1.65 lbs. (typical).
<b>Connectors</b>	1ea TE Connectivity 6450849-7 or equivalent (see Table 5).
<b>Vibration</b>	Designed to meet – ANSI/VITA 47-2005 (R2007), Section 4.4.3 Vibration Class V3. MIL-STD-810F, Method 514.5, Procedure I.
<b>Shock:</b>	Designed to meet - ANSI/VITA 47-2005 (R2007), Section 4.5.2 Operating Shock Class OS2. ANSI/VITA 47-2005 (R2007), Section 4.5.3 Bench Handling Shock. MIL-STD-810F, Method 516.5, Procedure I.
<b>Humidity</b>	0 – 95% non-condensing per ANSI/VITA 47-2005 (R2007), Section 4.6 Humidity.
<b>EMI</b>	Designed to meet MIL-STD-461G conducted emissions (external EMI filter may be required).
<b>System Management</b>	VITA 46.11 IPMI I2C interface with monitoring & dual IPMB bus (see Table 6).

*Specifications subject to change without notice.*

**Table 2: Voltage Output (Nominal)**

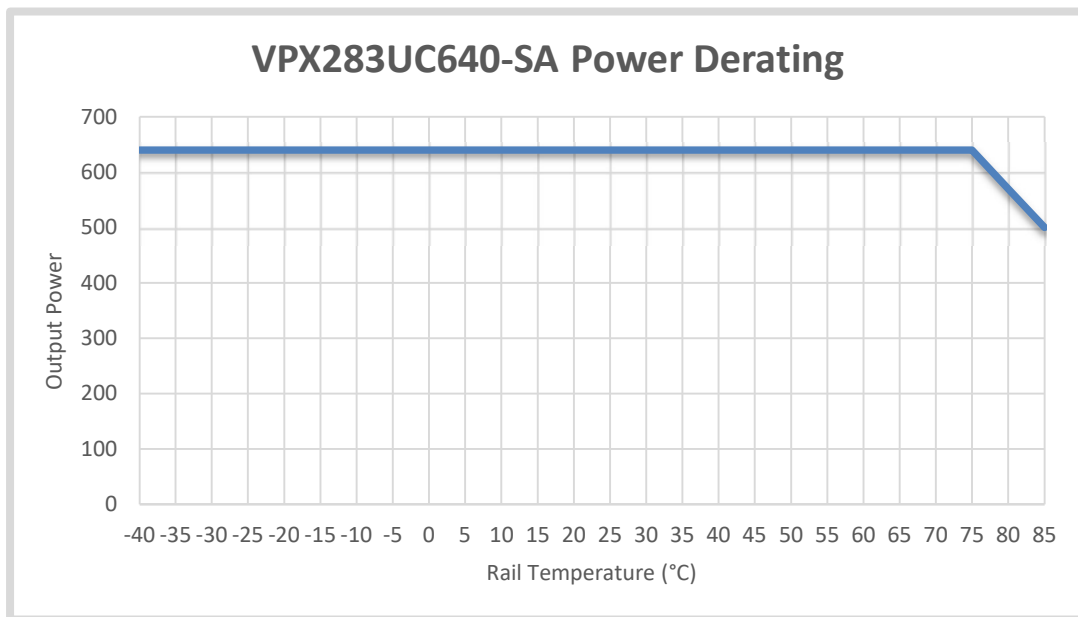
VPX283UC640-XX	VS1	3.3V_AUX
VPX283UC640-SA	+12VDC @ 625W	+3.3VDC_AUX @ 66W

Output power levels indicate maximum power available per output.  
 Total combined power of all outputs on VPX283UC640-SA cannot exceed 500W @ 85°C / 640W @ 75°C (Temperature measured on the unit's baseplate @ wedge locks)

**Table 3: ENABLE / INHIBIT**

Control Inputs		Power Outputs	
ENABLE	INHIBIT	3.3V_AUX	VS1
High	High	Off	Off
High	Low	Off	Off
Low	High	On	On
Low	Low	On	Off

**Table 4: Power Derating**



**Table 5: Connector Specifications**

**TE Connectivity Connector 6450849-7 or equivalent**

Contact Designation		Conductor Circuit
P1	40A	-DC_IN/ACN
P2	40A	+DC_IN/ACL
LP1	20A	CHASSIS
A1	<1A	(NC)
B1	<1A	(NC)
C1	<1A	GA2*
D1	<1A	(NC)
A2	<1A	(NC)
B2	<1A	FAIL*
C2	<1A	INHIBIT*
D2	<1A	ENABLE*
A3	<1A	(NC)
B3	<1.5A	(NC)
C3	<1A	(NC)
D3	<1A	(NC)
A4	<1.5A	(NC)
B4	<1.5A	(NC)
C4	<1.5A	(NC)
D4	<1.5A	(NC)
A5	<1A	GA0*
B5	<1A	GA1*
C5	<1A	SM0 (I2C/SCL)
D5	<1A	SM1 (I2C/SDA)
A6	<1A	SM2 (I2C/SCL)
B6	<1A	SM3 (I2C/SDA)
C6	<1.5A	(NC)
D6	<1A	SYSRESET*
A7	<1A	(NC)
B7	<1A	(NC)
C7	<1A	(NC)
D7	<1A	SIGNAL_RETURN
A8	<1A	+12VDC SENSE
B8	<1A	+3.3V_AUX SENSE
C8	<1A	+12VDC SENSE
D8	<1A	SENSE_RETURN
P3	40A	+12VDC (VS1)
P4	40A	POWER_RETURN
P5	40A	POWER_RETURN
LP2	20A	+3.3V_AUX
P6	40A	+12VDC (VS1)

\* Use of a trailing asterisk indicate a logic signal which is active when at the less positive level of its allowable range

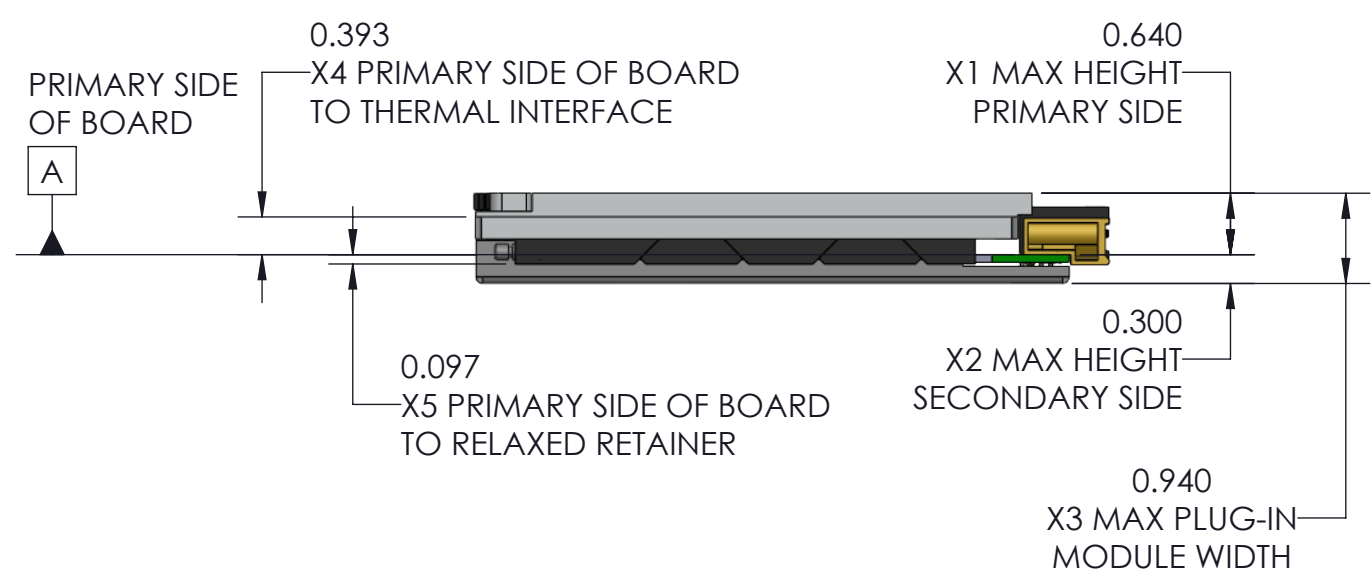
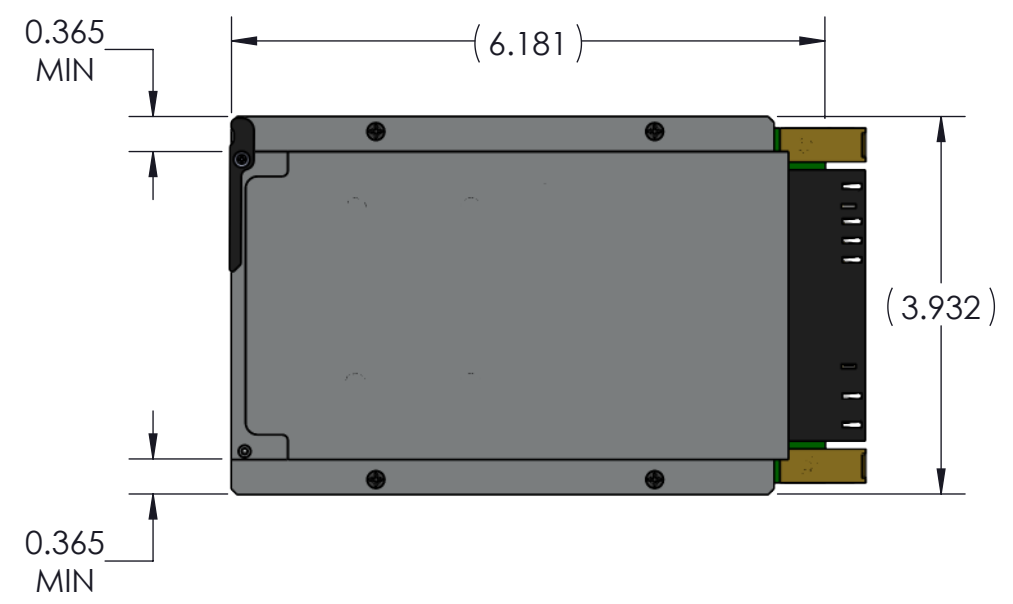
**Table 6: IPMI Commands**

The following three VITA 46.11 IPMI commands are currently implemented in firmware:

- Get Device ID Command (App (06h) (01h))**  
 This command will return the hardware revision, firmware/software revision, command interface revision, system serial number for the power supply.
- Get Self-Test Results Command (App (06h) (04h))**  
 This command will initiate the power supply to verify all available sensor readings are within specified operating ranges. It will report successful if there are no errors, or it will report the sensor that was out of range.
- Get Sensor Reading Command (S/E (04h) (2Dh))**  
 This command will return the data from one of the available sensors. The following sensors are available:

Self-test Sensor Threshold	Sensor Number	Available Data Sensors	Data Reply Format
OT = 90C	00h	BASEPLATE TEMPERATURE	2 BYTE HEX
OV/UV = +/-5%	01h	VS1 OUTPUT VOLTAGE	2 BYTE HEX
OV/UV = +/-5%	05h	+3.3V_AUX OUTPUT VOLTAGE	2 BYTE HEX
OC = 120% Nom.	07h	VS1 OUTPUT CURRENT	2 BYTE HEX
OC = 120% Nom.	08h	+3.3V_AUX OUTPUT CURRENT	2 BYTE HEX
N/A	0Ah	TURN-ON COUNTER	2 BYTE HEX

DWG NO.		2		SH	REV
REVISIONS					
ZONE	REV	DATE		APPROVED	
	A01	INITIAL RELEASE		DD/MM/YY	XX



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UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 FRACTIONAL ± N/A  
 DEGREES: ± .5  
 TWO PLACE DECIMAL ± .02  
 THREE PLACE DECIMAL ± .005

CONTRACT NO.		
APPROVALS	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.	RP	
Q.A.	MH	

**AEGIS POWER SYSTEMS  
MURPHY, NORTH CAROLINA**

TITLE:  
**VPXxx3UCxx-**  
 AEGIS P/N: VPXxx3UCxx-

MATERIAL: SEE NOTE 3  
 FINISH: SEE NOTE 4  
 DO NOT SCALE DRAWING

COMMENTS:  
 GENERATED:BY SOLIDWORKS

SIZE	FSCM NO.	DWG. NO.	REV
<b>B</b>	06ES8	VPXxx3UCxx	
SCALE: 1:2		SHEET 1 OF 1	