

VPX Power System

VPX6U23S01-270-000



Features

- 6U VPX, 1.0" single slot pitch
- Wide input range
- Main DC output: +12V/180A
- Auxiliary DC output: +3.3V/40A
- Efficiency up to 95%
- Ultra low ripple & noise
- Remote voltage sensing optional on outputs
- Configurable for parallel operation
- VITA 46.11 system management
- Input-output isolation 3000VDC
- Standard case is conduction cooled at card edge
- Optional crowbar overvoltage protection
- Programmable regulated current limit
- Overvoltage, overload, and overtemperature protection
- Meets MIL-STD-704F
- Meets MIL-STD-461G, CE101, CE102, CS101, CS114, CS115, CS116
- ENABLE*, INHIBIT* controls per VITA 62.0
- Output voltage FAIL* signal
- Diagnostic LEDs
- Conformal coated PCB

Absolute Maximum Ratings

Parameter	Notes	Min	Max	Units
Input Voltage		210	400	V
Maximum Continuous Operating Power	Card Cage Rail @ 55°C		2289	W
	Card Cage Rail @ 85°C		1228	W
Operating Temperature	Measured at Card Cage Rail	-40 ⁴	85	°C
Storage Temperature		-55	105	°C
Isolation Voltage	Input to Output		3000	V
Isolation Voltage	Input to Case		3000	V
Isolation Voltage	Output to Case		500	V

Input Characteristics

Parameter	Notes	Min	Typical	Max	Units
Nominal Operating Input Voltage		250	270	280	V
Turn-On Threshold				200	V
Turn-Off Threshold			160		
Input No Load Current	Enable Asserted (Input On) and Inhibit De-asserted (Output On)			35	W
Inrush Capacitance	Low input capacitance options available			40	μF

⁴Powered on at -40C. Self-heating increased card cage rail temperature during test.



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Output Characteristics; +12VDC/180A Output

Parameter	Notes	Min	Typical	Max	Units
Voltage Set Point	100% Output Load	11.88	12.00	12.12	V
Line Regulation			0	±0.5	%
Load Regulation	0 - 100% Output Load		0.10	±2	%
Ripple/Noise (pk-pk) ⁵			25	50	mV _{P-P}
Ext. Load Capacitance	Testing to higher values available upon request	0		19,000	μF
Load Current Range		0		180	A
Overvoltage Protection	Optional crowbar set to 13.87VDC	14.67	15.44	16.21	V
Overcurrent Protection	Programmable regulated current limit and overload threshold			186	A
Transient Response	See Figure Below				

⁵Ripple and noise measured at backplane, no external capacitors, using Tektronix probe TPR1000, and 20MHz Bandwidth

Output Characteristics; +3.3VDC_AUX/40A Output

Parameter	Notes	Min	Typical	Max	Units
Voltage Set Point	100% Output Load	3.267	3.30	3.333	V
Line Regulation			0	±0.5	%
Load Regulation	0 - 100% Output Load		0.10	±2	%
Ripple/Noise (pk-pk) ⁵			40	50	mV _{P-P}
Ext. Capacitive Load		0		19,000	μF
Load Current Range		0		40	ADC
Overvoltage Protection	Optional crowbar set to 4.02VDC	4.11	4.33	4.55	VDC
Overcurrent Protection	Programmable regulated current limit and overload threshold			45	ADC
Transient Response	See Figure Below				

⁵Ripple and noise measured at backplane, no external capacitors, using Tektronix probe TPR1000, and 20MHz Bandwidth

General Characteristics

Parameter	Notes	Units
Efficiency	See Figures Below	%
Humidity	VITA 47.2 (non-condensing)	% RH
Vibration	VITA 47.2, Class V2	
Shock	VITA 47.2, Class OS1, Sawtooth	
Altitude	VITA 47.2	Ft
ESD ²	VITA 47.2 (150pF + 330Ω)	kV

²Testing not complete.

Indicators

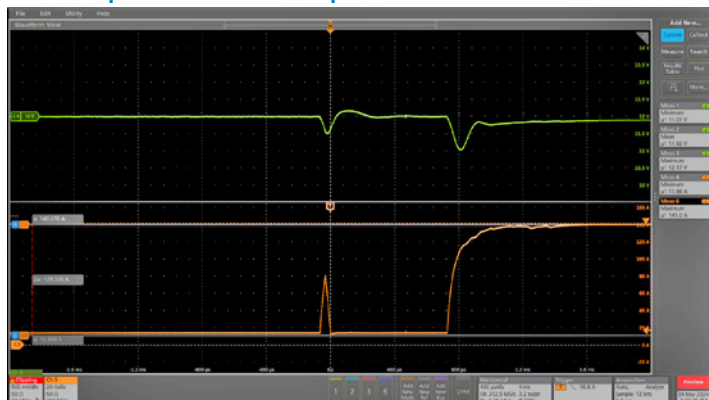
Indicator Name	Description
Input OK (Green LED)	Indicates input power is within specification
3.3V Output OK (Green LED)	Indicates 3.3V output is enabled and within specification
12V Output OK (Green LED)	Indicates +12V output is enabled and within specification
Over Temp (Red LED)	Indicates power supply is nearing over temperature point

Alignment Keys

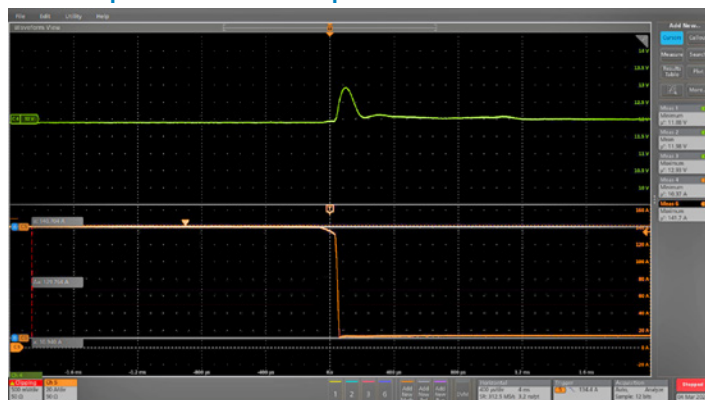
- Key 1 : 315 degrees
- Key 2: 0 degrees
- Key 3: 45 degrees

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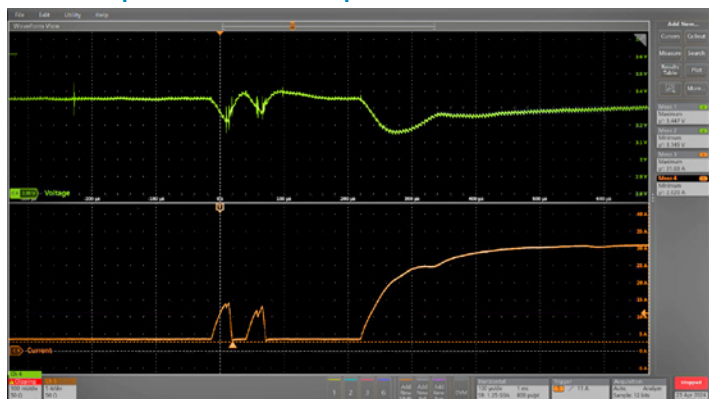
12V Output Transient Response; Turn ON; 142A



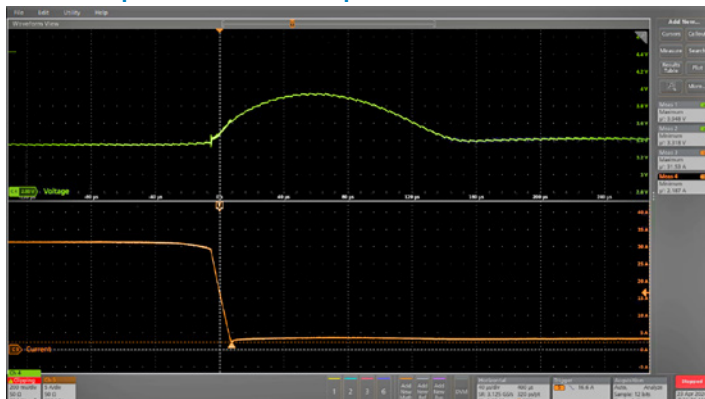
12V Output Transient Response; Turn OFF; 142A



3.3V Output Transient Response; Turn ON; 32A

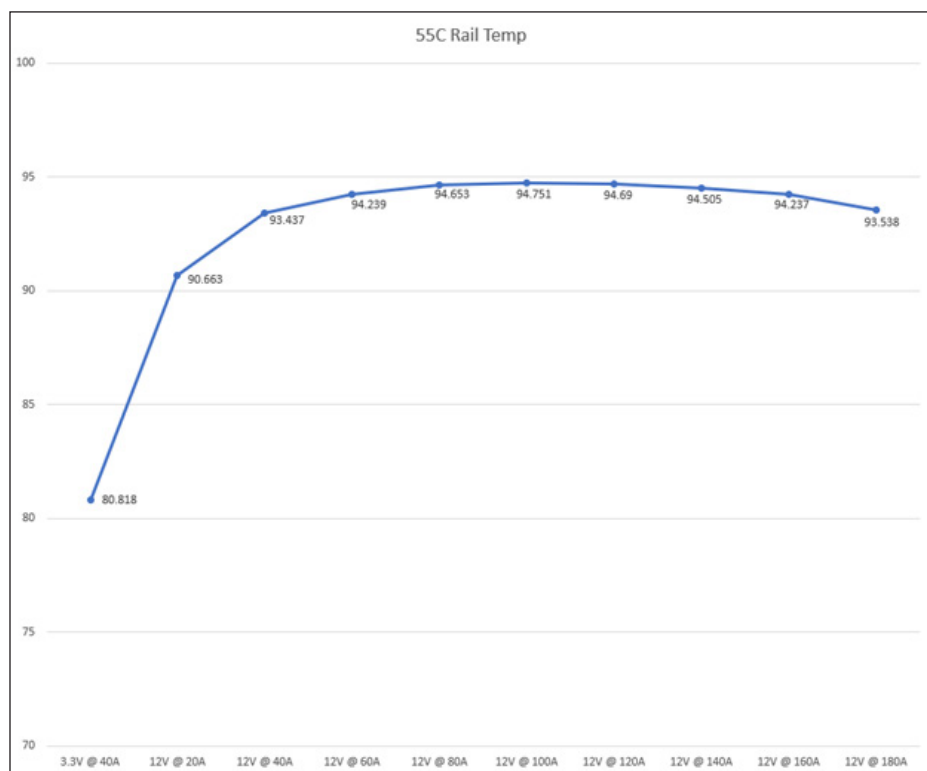
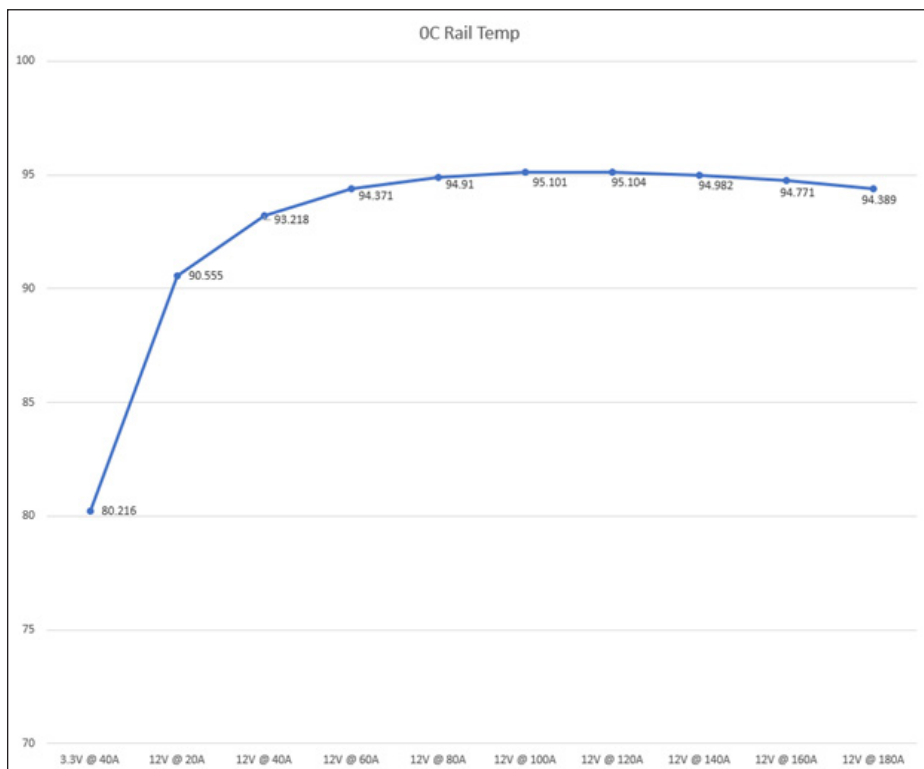


3.3V Output Transient Response; Turn OFF; 32A



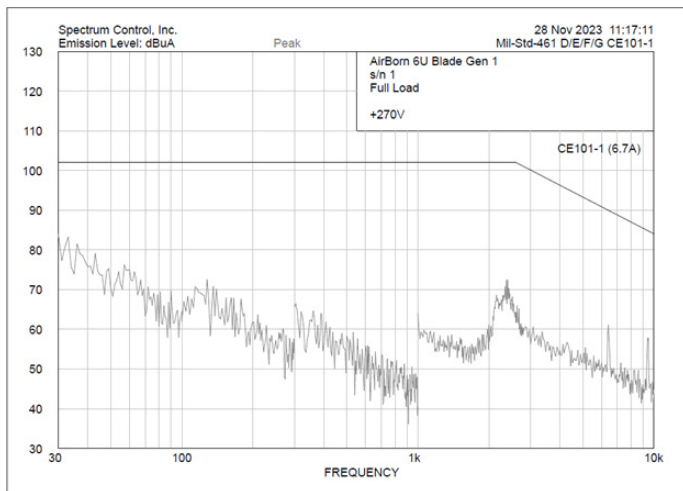
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Efficiency Charts

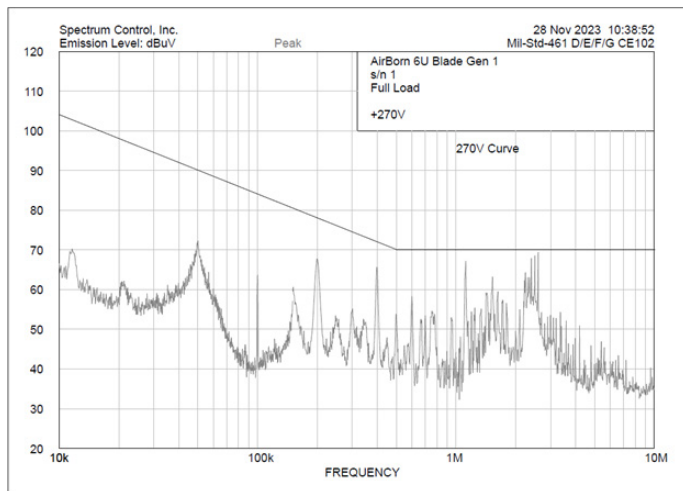


VPX Power System

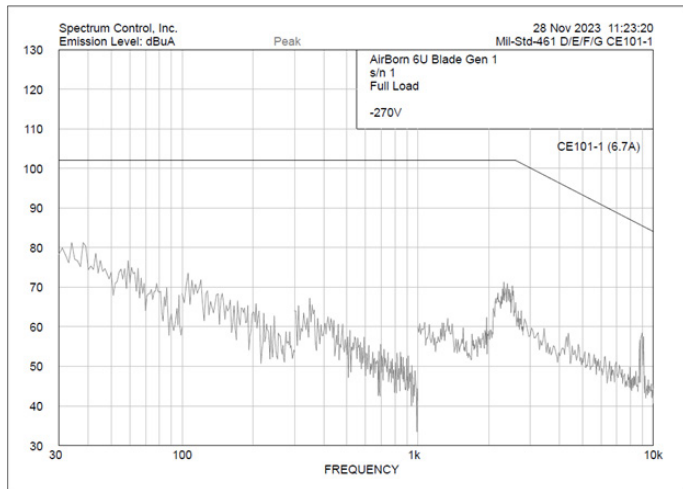
Compliance CE101 Positive Rail; 160A load on 12VDC; 30A load on 3.3VDC



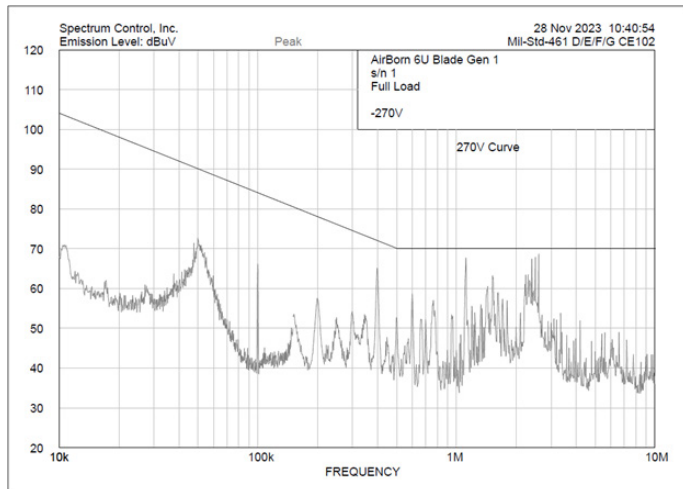
Compliance CE102 Positive Rail; 160A load on 12VDC; 30A load on 3.3VDC



Compliance CE101 Negative Rail; 160A load on 12VDC; 30A load on 3.3VDC



Compliance CE102 Negative Rail; 160A load on 12VDC; 30A load on 3.3VDC



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6U P0 Connector Pin Out

Pin Number	DC Input	Description
P7	+DCIN	Positive DC Input
P6	+DCIN	Positive DC Input
P5	-DCIN	DC Input Return
P4	-DCIN	DC Input Return
P3	N/C	N/A
P2	N/C	N/A
P1	CHASSIS	CHASSIS

TE: 2364867-1 connector with TE: 2313445-1 spacers installed on power supply.

6U P1 Connector Pin Out

Pin Number	Pin Name	Signal	Description
P10	PO1	+12VDC (Vs1, Vs2)	+12V in VPX output systems
P9	PO2	+12VDC (Vs1, Vs2)	+12V in VPX output systems
A9	PO1_SENSE	SENSE, +12VDC	Main Output Voltage Sense. Consult AirBorn
B9			Not Used
C9			Not Used
D9			Not Used
A8	PO1_SENSE_RTN	SENSE_RTN, +12VDC	Return for Main Output Voltage Sense. Consult AirBorn
B8			Not Used
C8			Not Used
D8			Not Used
A7	PO1_SHARE	SHARE_1	CAN BUS HIGH – 120 Ohm differential signal used for signaling between cards. To be terminated with 120 Ohm resistor to B7 on backplane in two locations near pins A7 and B7 pins at power supply locations on geographical ends of backplane
B7	PO2_SHARE	SHARE_2	CAN BUS LOW – 120 Ohm differential signal used for signaling between cards. To be terminated with 120 Ohm resistor to A7 on backplane in two locations near pins A7 and B7 pins at power supply locations on geographical ends of backplane
C7			Not Used
D7	SIGNAL_RETURN	SIGNAL_RETURN	Reference for backplane control IO, including IPMI, Discrete IO and CAN BUS
P8	POWER_RETURN	POWER_RETURN	Return for Main Output and Aux Output power
P7	POWER_RETURN	POWER_RETURN	Return for Main Output and Aux Output power
A6	SM2	SM2	IPMB_SCL
B6	SM3	SM3	IPMB_SDA
C6	-12V_AUX	-12V_AUX	-12V_AUX Output
D6	SYSRESET*	SYSRESET*	System Reset, held low to SIGNAL_RETURN until 3.3V_AUX is powered. Driving low externally will initiate a reset
A5	GAP*	GAP*	Geographic Address Parity

TE: 2314578-1 connector on power supply.

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6U P1 Connector Pin Out (Continued)

Pin Number	Pin Name	Signal	Description
B5	GA4*	GA4*	Geographic Address 4
C5	SM0	SM0	IPMA_SCL
D5	SM1	SM1	IPMA_SDA
A4	GA3*	GA3*	Geographic Address 3
B4	GA2*	GA2*	Geographic Address 2
C4	GA1*	GA1*	Geographic Address 1
D4	GA0*	GA0*	Geographic Address 0
A3	UD2	NVMRO	Tie to SIGNAL_RETURN to allow EEPROM writes
B3	+12V_AUX	+12V_AUX	+12V Aux in VPX output systems
C3	NED	NED	Crowbar 12V logic signal referenced to POWER_RETURN. Tie together when operating with outputs in parallel
D3			Not Used
P6	PO3	+12VDC, (Vs1, Vs2) OR N/C	Main 12V output in VPX output systems
P5	PO3	+12VDC, (Vs1, Vs2) OR N/C	Main 12V output in VPX output systems
P4	POWER_RETURN	POWER_RETURN	Return for Main Output and Aux Output power
P3	POWER_RETURN	POWER_RETURN	Return for Main Output and Aux Output power
A2	VBAT	VBAT	Not connected with default configuration
B2	FAIL*	FAIL*	Driven low when a PSU module failure has occurred
C2	INHIBIT*	INHIBIT*	Tie to SIGNAL_RETURN to disable all outputs other than 3.3V_AUX
D2	ENABLE*	ENABLE*	Tie to SIGNAL_RETURN to allow operation, including Aux supplies
A1			Not Used
B1			Not Used
C1	UD5	3.3V_AUX SENSE (UD5)	3.3V_AUX Output Voltage Sense. Consult AirBorn
D1	UD6	3.3V_AUX_SENSE_RTN (UD6)	Return for 3.3V_AUX Output Voltage Sense. Consult AirBorn
P2	3.3V_AUX	3.3V_AUX	3.3V_Aux output voltage
P1	POWER_RETURN	POWER_RETURN	Return for 3.3V_Aux output voltage

TE: 2314578-1 connector on power supply.

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2D ICD Drawing

