

6U VPX AVIONICS POWER SUPPLY

VPX-6U-115-28-1000-A01

"VPX-6U-115-28-1000-A01" is a 1000 W 1" pitch AC/DC power supply for VPX 6U chassis. It is compatible with VPX standards and supports all VITA62.0 signals and features.

- 6U VPX form factor
- -40/+85 °C operating temperature range
- Standard VITA62.0 connectors
- Supports VITA46.11 Health Management protocol
- 3 Phase 115 VAC or 270 VDC input voltage
- EMI filter included
- Continuous built-in testing
- 28 VDC and 3.3 VDC outputs
- Status LED
- Optional RS485 interface
- Soft start with in-rush current control



The VPX-6U-115-28-1000-A01 is a robust 1000 W AC/DC power supply designed for VITA 46.0 and VITA 65 systems, conforming to VPX and VITA62.0 standards. It operates with a 3-phase 115 VAC or 270 VDC input voltage, delivering outputs of 28 VDC and 3.3 VDC. This power supply is conduction-cooled via the card edge and includes over-voltage, over-current, and over-temperature protections, ensuring reliable performance under varying conditions. It also supports current sharing for parallel operation, enabling the use of multiple units to increase total output current. Additional features include an operating temperature range of -40 to +85°C, EMI filtering, built-in continuous testing and optional RS485 interface.



The electrical specifications highlight its capability to handle a maximum input voltage of 140 VAC or 330 VDC, with continuous output currents up to 40 A. The VPX-6U-115-28-1000-A01 is designed to meet harshest environmental standards, including MIL-STD-810G for vibration, shock, and temperature extremes, as well as MIL-STD-461F for EMI and EMC. Mechanically, it measures 233.4 x 168.5 x 24.7 mm and weighs 1.6 kg. The unit includes standard VITA62.0 connectors and supports the VITA46.11 Health Management protocol, for ease of management and operation.



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Product Overview

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1. PRODUCT OVERVIEW

VERTE Elektronik VPX-6U-115-28-1000-A01 is a 1000 W 1" pitch AC/DC power supply for VPX 6U chassis. It is compatible with VPX standards and supports all VITA62.0 signals and features. VPX Power Supply is conduction-cooled through the card edge. Its input voltage is 3 phase 115 VAC or 270 VDC. Its output voltages are 28 VDC and 3.3 VDC. It has over-voltage, over-current and over-temperature protections. It has also current share function to use multiple VPX Power Supplies in parallel.

1.1. Capabilities

- 6U VPX form factor
- 1000 W rated power output
- -40/+85 °C operating temperature range
- Standard VITA62.0 connectors
- Supports VITA46.11 Health Management protocol
- 3 Phase 115 VAC or 270 VDC input voltage
- EMI filter included
- 28 VDC and 3.3 VDC outputs
- Soft start with in-rush current control

1.2. Features

- Optional RS485 interface
- Module paralleling for high current
- Continuous built-in testing
- Status LED

Electrical Specifications

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2. ELECTRICAL SPECIFICATIONS

Table 1: Absolute Maximum Ratings

PARAMETER	VALUE	UNIT
Input Voltage (AC)	140	V _{AC}
Input Voltage (DC)	330	V _{DC}
Continuous Output Current	40	A
Operating Temperature (with Thermal Interface)	-40 to +85	°C
Ambient Temperature (Air Cooled Configuration)	-40 to +71	°C
Storage Temperature	-40 to +105	°C

Table 2: Recommended Operating Conditions

PARAMETER	UNIT	MIN	TYP	MAX
Input Voltage (AC)	V _{AC}	100	115	130
Input Voltage (DC)	V _{DC}	240	270	300
Operating Thermal Interface Temperature	°C	-40		+85

Table 3: Electrical Specifications

PARAMETER	UNIT	MIN	TYP	MAX
Rise Time	ms		10	
Accuracy of Current Measurement	% of programmed current		5	
Current Measurement Range	% of rated max current		130	
Accuracy of Voltage Measurement	% of 28 V _{DC}		5	
28V Voltage Measure Range	V _{DC}		40	
3.3V Voltage Measure Range	V _{DC}		5	
Accuracy of On-Board Temperature Measurement	°C		3	

Table 4: Environmental Specifications

DESCRIPTION	PROCEDURE
Vibration	MIL-STD-810G, Method 514.6, Operational, Ground Platform, Tracked Vehicles
Shock	MIL-STD-810G, Method 516.6, Procedure 1
Acceleration	MIL-STD-810G, Method 513.6, Procedure 1
High Temperature	MIL-STD-810G, Method 501.5, Procedure 1 MIL-STD-810G, Method 501.5, Procedure 2
Low Temperature	MIL-STD-810G, Method 502.5, Procedure 1 MIL-STD-810G, Method 502.5, Procedure 2
Temperature Shock	MIL-STD-810G, Method 503.5, Procedure 1-C
Altitude	MIL-STD-810G, Method 500.5, Procedure 2
Sand and Dust	MIL-STD-810G, Method 510.5, Procedure 1 & Procedure 2
EMI & EMC	CE102, CS101, CS114, CS115, CS116, RE102, RS103 (MIL-STD 461F)
Input Power Characteristics	MIL-STD-704F, Aircraft Electric Power Characteristics



Figure 1: VPX-6U-115-28-1000-A01

Detailed Structure

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3. DETAILED STRUCTURE

3.1. Pinout

Table 5: P0 Connector Pinout

Pin No	Rated Current	Pin Name	Description
P7	40A	+DCIN/ACL/L1	+270V _{DC} or AC Phase 1 Input
P6	40A	+DC_IN/L2	+270V _{DC} or AC Phase 2 Input
P5	40A	-DC_IN/L3	+270V _{DC} return or AC Phase 3 Input
P4	40A	-DC_IN/ACN	+270V _{DC} return or AC Neutral
P3	40A	POS_FILT_OUT	Not used
P2	40A	NEG_FILT_OUT	Not used
P1	40A	CHASSIS	Chassis ground

Table 6: P1 Connector Pinout

Pin No	Rated Current	Pin Name	Description
P10	40A	PO1	28V _{DC} Output
P9	40A	PO2	28V _{DC} Output
A9	<1A	PO1_SENSE	Remote sense for 28V _{DC} Output
B9	<1A	PO2_SENSE	Not used
C9	<1A	PO3_SENSE	Not used
D9	<1A	UD0	Not used
A8	<1A	PO1_SENSE_RTN	Remote sense return for 28V _{DC} Output
B8	<1A	PO2_SENSE_RTN	Not used
C8	<1A	PO3_SENSE_RTN	Not used
D8	<1A	UD1	Not
A7	<1A	PO1_SHARE	Share bus for 28V _{DC} Output
B7	<1A	PO2_SHARE	Not used
C7	<1A	PO3_SHARE	Not used
D7	<1A	SIGNAL_RETURN	Return path for signal lines
P8	40A	POWER_RETURN	Return path for power lines
P7	40A	POWER_RETURN	Return path for power lines
A6	<1A	SM2	I2C B clock line

B6	<1A	SM3	I2C B data line
C6	<1.5A	-12V_AUX	Not used
D6	<1A	SYSRESET*	Reset signal for the system
A5	<1A	GAP*	Geographical address parity bit
B5	<1A	GA4*	Geographical address
C5	<1A	SM0	I2C A clock line
D5	<1A	SM1	I2C A data line
A4	<1A	GA3*	Geographical address
B4	<1A	GA2*	Geographical address
C4	<1A	GA1*	Geographical address
D4	<1A	GA0*	Geographical address
A3	<1A	UD2	Not used
B3	<1.5A	+12V_AUX	Not used
C3	<1A	NED	Not used
D3	<1A	NED_RETURN	Not used
P6	40A	PO3	Not used
P5	40A	PO3	Not used
P4	40A	POWER_RETURN	Return path for power lines
P3	40A	POWER_RETURN	Return path for power lines
A2	<1A	VBAT	Not used
B2	<1A	FAIL*	Fail output
C2	<1A	INHIBIT*	Inhibit input
D2	<1A	ENABLE*	Enable input
A1	<1A	UD3	RS485 line
B1	<1A	UD4	RS485 line
C1	<1A	UD5	Not used
D1	<1A	UD6	Not used
P2	40A	3.3V_AUX	3.3V _{DC} Output
P1	40A	POWER_RETURN	Return path for power lines

3.2. Protections

The VPX Power Supply has some general protection features.

Table 7: Error Table

Error Type	Description
Input Voltage Low Error	An error is generated when the input voltage drops below 240 V _{DC}
Input Voltage High Error	An error is generated when the input voltage goes above 300 V _{DC}
Output Voltage High Error	An error is generated when the output voltage goes above 32 V _{DC}
Output Current High Error	An error is generated when the output voltage goes above 38 A
Temperature High Error	An error is generated when the ambient temperature goes above 100 °C

3.3. Multiple Module Paralleling

In order to increase output current capability, VPX Power Supply has paralleling feature for its 28 V output. VPX Power Supply uses its current share pin which defined in VITA62.0 standard. With that function, up to 3 modules can be safely paralleled.

3.4. VITA62.0 Control Signals

Table 8: Discrete Input Signals

Pin Name	Description
ENABLE*	Active low input signal. It turns off both 28V and 3.3V Aux outputs when ENABLE* is high. Pulling this pin to low state, activated 3.3V Aux output. In that case, status of 28V output depends on the INHIBIT* signal.
INHIBIT*	Active low input signal. When ENABLE* signal is in low state, INHIBIT* is used to control 28V output. When it is in high state, 28 V output is activated. When it is in low state, 28 V output is deactivated.
SYSRESET*	Active low open drain output signal. When output voltages are not ready, VPX Power Supply pulls SYSRESET* to low state.
FAIL*	Active low open drain output signal. When there is error on the VPX Power Supply, this signal is pulled to low state.
Geographical Addressing	VPX Power Supply has geographical address pins as defined in VITA46
Current Share	For current sharing for multiple modules, all of their Current Share pins must be tied together.

Mechanical Specifications

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4. MECHANICAL SPECIFICATIONS

Table 9: Mechanical Specifications

PARAMETER	VALUE	UNIT
Dimensions	233.4x 168.5 x 24.64(max) (L×W×H)	mm
Weight	1.6	kg

4.1. Connector Interface

Table 11: Mating Connectors

CONNECTOR	DESCRIPTION
2314581-1	Input Power Connector
2309390-2	Output Power and Signal Connector

4.2. VPX Power Supply Dimensions

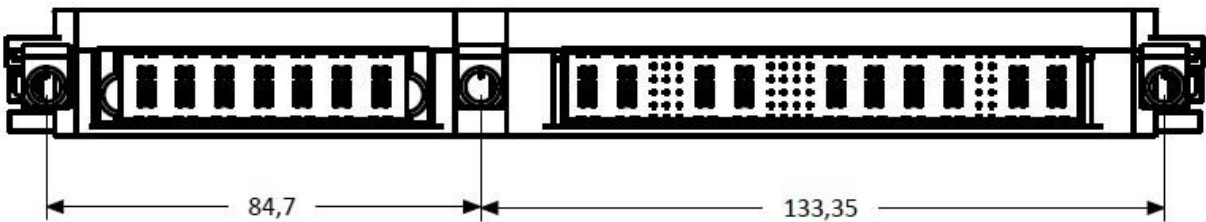


Figure 2: Front View

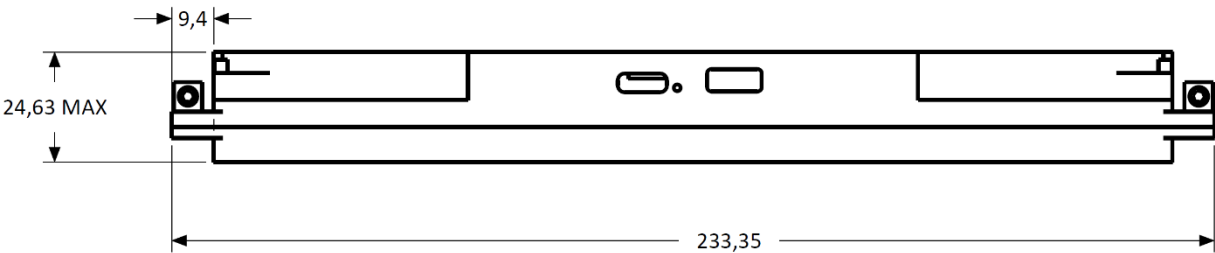


Figure 3: Back View

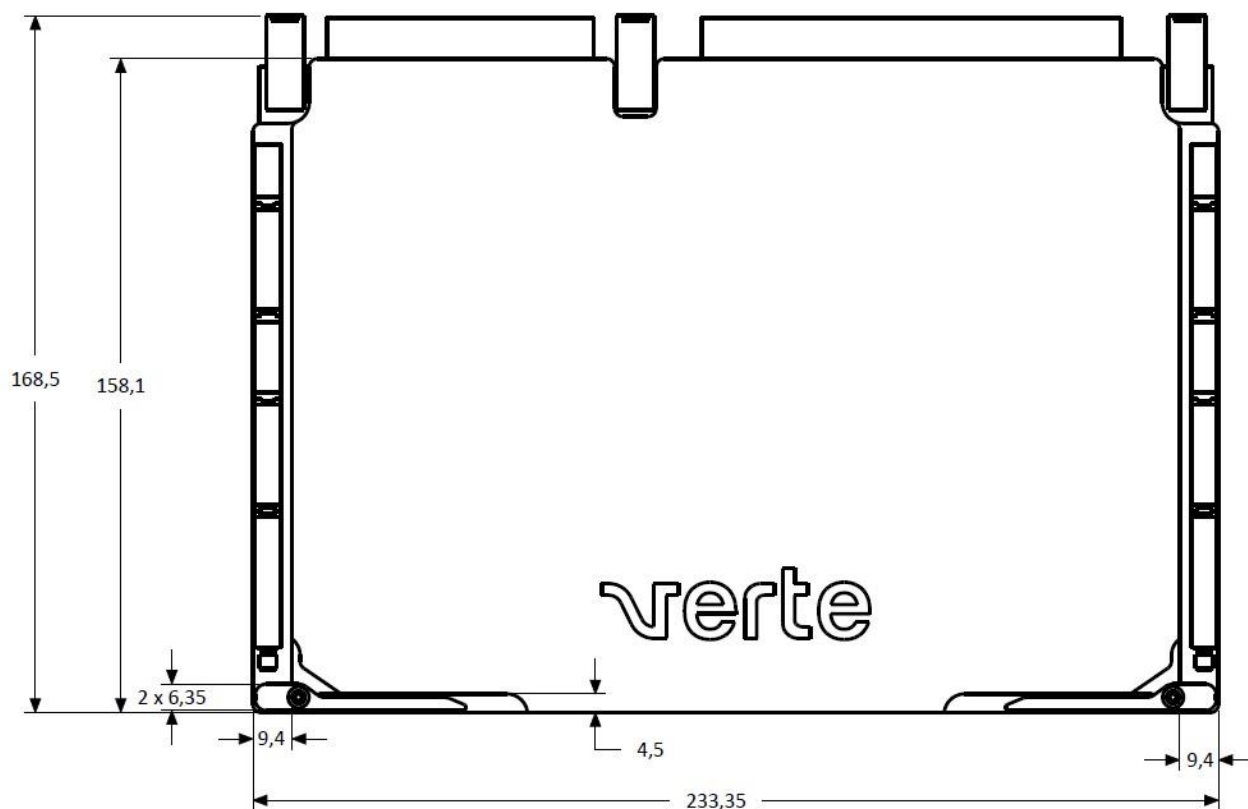


Figure 4: Top View

All dimensions in mm.