

SynQor®



VPX

MILITARY AC-DC & DC-DC POWER SUPPLIES

VITA 62 Compliant
High Efficiency

Field Proven



- ▶ **VITA 62 Compliant**
- ▶ **High efficiency: 90% at full load**
- ▶ **3U: 500 W total output power**
- ▶ **6U: Up to 1000 W total output power**
- ▶ **Active current share through backplane**
- ▶ **MIL-STD-461F, MIL-STD-704F, MIL-STD-810G, & MIL-STD-1275 (B,D) Compliant**
- ▶ **Qualified to the most stringent VITA-47 levels**



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MILITARY AC-DC & DC-DC POWER SUPPLIES



- ▶ **VITA 62 Compliant**
- ▶ **MIL-STD Compliant**
 - MIL-STD-461 – MIL-STD-704
 - MIL-STD-810 – MIL-STD-1275
- ▶ **Standard VITA 62 Controls**
- ▶ **Conformal Coating Options**
- ▶ **Input EMI Filtering**
- ▶ **Over-current, over-voltage and over-temperature protection**
- ▶ **Operating Temperature: -40°C to 85°C (at card edge)**
- ▶ **Remote Sense**
- ▶ **Optional I²C Function**
 - Supports IPMI / PMBus / VITA 46.11
 - Input Reverse Polarity Protection

VPX MODULE QUALIFICATION (VITA 47 COMPLIANT)

Test Name	Method
Random Vibration	MIL-STD-810, 514.6 - Procedure I, Class V3
Shock	MIL-STD-810, 516.6 - Procedure I, VI, Class OS2
Altitude	MIL-STD-810, 500.5 - Procedure I, II, III
Fungus Resistance	MIL-STD-810, 508.6
Corrosion Resistance	ASTM G85, Annex A4
Humidity	MIL-STD-810, 507.5 - Procedure II
High Temperature	MIL-STD-810, 501.5 - Procedure I, II
Low Temperature	MIL-STD-810, 502.5 - Procedure I, II
Temperature Cycling	MIL-STD-202, 107 - Class C4
ESD	EN61000-4-2, Level 4; 15 kV Air Discharge



3U & 6U VPX AC-DC & DC-DC

Model 28V _{in} - Transient Suppression EMI filtering	Total Output Power	Typical Outputs				Weight
		VS1	VS2	VS3	AUX	
VPX-6U-DC28T-001	800W	+12V @ 67A		+5.0V @ 30A	+3.3 VAUX @ 15A, +12 VAUX @ 1A, -12 VAUX @ 1A	3.8 lb

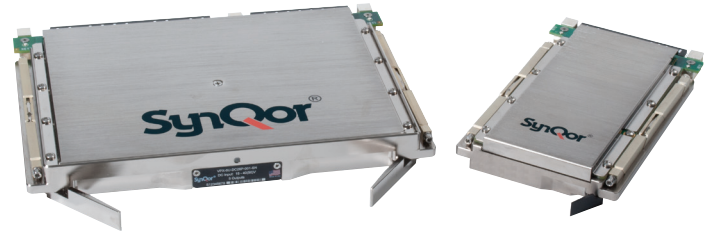
INPUT VOLTAGE SPIKE SUPPRESSION Method	
Module Operates through these Spikes	
Input Voltage Spike (Centered on V _{in})	
±250V, 100µs, E _{max} = 15mJ	MIL-STD-1275D
±200V, 10µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06); DEF-STAN 61-5
±400V, 5µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06)
±600V, 10µs, R _s = 50Ω	RTCA/DO-160E

INPUT VOLTAGE SURGE SUPPRESSION Method	
Module Operates through these Surges	
Input Surge Voltage and Duration	
60V, 550 ms, R _s = 0 Ω	MIL-HDBK-704A
80V, 100 ms, R _s = 0 Ω	MIL-HDBK-704A; RTCA/DO-160E
100V, 80 ms, R _s = 0 Ω	MIL-STD-1275D; DEF-STAN 61-5 (Part 6)/5
110V, 5 ms, R _s = 0 Ω	DEF-STAN 61-5 (Part 6)/5
Module shuts down and restarts for these Surges	
202V, 350 ms, R _s = 0 Ω	MIL-STD-1275D; DEF-STAN 61-5 (Part 6)/6

Model 28V _{in} Passive EMI filtering	Total Output Power	Typical Outputs				Weight
		VS1	VS2	VS3	AUX	
VPX-6U-DC28P-001	1000W	+12V @ 80A		+5.0V @ 30A	+3.3 VAUX @ 15A, +12 VAUX @ 1A, -12 VAUX @ 1A	3.6 lb
VPX-3U-DC28P-001	500W	+12V @ 40A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb
VPX-3U-DC28P-002	500W	+12V @ 40A	+3.3V @ 25A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb
VPX-3U-DC28P-003	500W	+12V @ 40A	+3.45V @ 20A	+5.2V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb

Model 34-75 V _{in} Passive EMI filtering	Total Output Power	Typical Outputs				Weight
		VS1	VS2	VS3	AUX	
VPX-3U-DC48P-001	600W	+12V @ 50A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb

INPUT VOLTAGE SPIKE SUPPRESSION METHOD	
Module Operates through these Spikes	
Input Voltage Spike (Centered on V _{in})	
±250V, 100µs, E _{max} = 15mJ	MIL-STD-1275D
±200V, 10µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06); DEF-STAN 61-5
±400V, 5µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06)
±600V, 10µs, R _s = 50Ω	RTCA/DO-160E



Model 270V _{in} Passive EMI filtering	Total Output Power	Typical Outputs				Weight
		VS1	VS2	VS3	AUX	
VPX-6U-DC270P-001	730W	+12V @ 50A		+5.0V @ 30A	+3.3 VAUX @ 40A, +12 VAUX @ 1A, -12 VAUX @ 1A	3.8 lb
VPX-3U-DC270P-001	400W	+12V @ 33A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb

INPUT VOLTAGE SPIKE SUPPRESSION METHOD	
Module Operates through these Spikes	
Input Voltage Spike (Centered on V _{in})	
±200V, 10µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06); DEF-STAN 61-5
±400V, 5µs, R _s ≤ 0.5Ω	MIL-STD-461C (CS06)
±600V, 10µs, R _s = 50Ω	RTCA/DO-160E



Model 85-264 V _{rms} Passive EMI filtering	Total Output Power	Typical Outputs				Weight
		VS1	VS2	VS3	AUX	
VPX-6U-ACUNV-1-C-001	630W	+12V @ 52.5A		+5.0V @ 40A	+3.3 VAUX @ 20A, +12 VAUX @ 1A, -12 VAUX @ 1A	3.6 lb
VPX-3U-ACUNV-1-C-001	300W	+12V @ 25A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb
VPX-3U-ACUNV-1-C-N01	300W	+12V @ 25A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	1.6 lb
VPX-3U-ACUNV-1-CH-001	300W	+12V @ 25A	+3.3V @ 20A	+5.0V @ 30A	+3.3 VAUX @ 6A, +12 VAUX @ 1A, -12 VAUX @ 1A	2.0 lb

POWER SUPPLY FEATURES



CONTROL FEATURES

ENABLE*	Standard VITA 62 control signal, enables +3.3V_AUX.
INHIBIT*	Standard VITA 62 control signal, disables all outputs other than +3.3V_AUX.
FAIL*	FAIL* Output indicates if one of the outputs is outside the specified voltage range.
SYSRESET*	SYSRESET* Output indicates startup is completed and power outputs are ready.

PARALLEL OPERATION

+12V_MAIN, +3.3V_MAIN, +5V_MAIN	All main outputs include active sharing. On the 28V input VPX modules, sharing on the +12V_MAIN requires that VPX cards operate from the same input source and sharing does not provide glitch-free redundancy.
+3.3V_AUX	Active current sharing is implemented on the 270V input VPX module. On the 28V input modules, active sharing on +3.3V_AUX is not provided, but an OR'ing MOSFET is implemented and modules can be paralleled.
+12V_AUX, -12V_AUX	Active current sharing is not supported on these two auxiliary outputs. However, both outputs have OR'ing MOSFETs or OR'ing diodes implemented, so that they can be operated in parallel.

For more information see the datasheet on our website.

MIL-COTS CONVERTER AND FILTER SCREENING

Screening	Process Description	S-Grade	M-Grade
Baseplate Operating Temperature		-55°C to +100°C	-55°C to +100°C
Storage Temperature		-65°C to +135°C	-65°C to +135°C
Pre-Cap Inspection	IPC-A-610, Class III	Yes	Yes
Temperature Cycling	MIL-STD-883F, Method 1010, Condition B, 10 Cycles		Yes
Burn-In	100°C Baseplate	12 Hours	96 Hours
Final Electrical Test	100%	25°C	-55°C, +25°C, +100°C
Final Visual Inspection	MIL-STD-883F, Method 2009	Yes	Yes

VITA 62 CONTROL STATES

ENABLE*	INHIBIT*	+3.3V_AUX	VS1, VS2, VS3, +12V_AUX, -12V_AUX
HIGH	HIGH	OFF	OFF
LOW	HIGH	ON	ON
HIGH	LOW	OFF	OFF
LOW	LOW	ON	OFF

MILITARY-GRADE VPX DC POWER SUPPLY

Series	Package Size (U)	Input Range	Mil Std Filtering	Output Voltage Combination Code	Packaging Options
VPX	3U 6U	DC28: 28V	P: P - MIL-STD-704 T: T - MIL-STD-704 MIL-STD-1275 DEF-STAN 61-5 (P6)/6	001 002 003	Y1: Screening S: S-Grade (MCOTS) M: M-Grade (MCOTS)
		DC48: 48V			Y2: Conformal Coating N: No Conformal Coating C: Conformal Coating
		DC270: 270V			Y3: I ² C Function []: No I ² C 2: I ² C

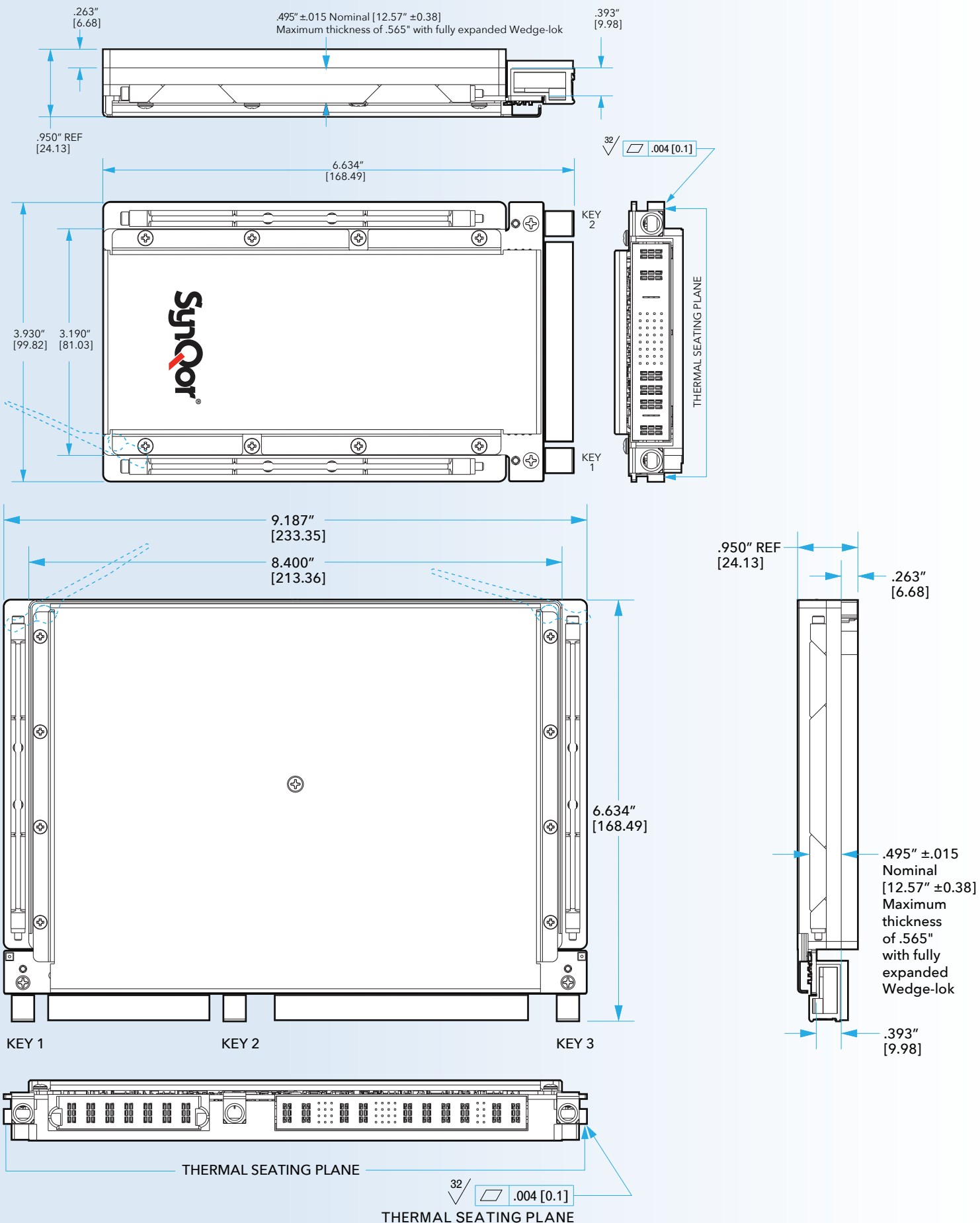
Part Numbering Example: VPX-3U-DC28P-001-MC2 For valid part numbers, refer to the website or contact your local sales representative.

MILITARY-GRADE VPX AC POWER SUPPLY

Series	Package Size (U)	Input Range	Number of Phases	Mil Std Filtering	Output Voltage Combination Code	Packaging Options
VPX	3U 6U	ACUNV: AC Universal Input	1: Single Phase	C: Clamped Passive Filter CH: Clamped Passive Filter with Hold-up	001 N01	Y1: Screening S: S-Grade (MCOTS) M: M-Grade (MCOTS)
						Y2: Conformal Coating N: No Conformal Coating C: Conformal Coating
						Y3: I ² C Function []: No I ² C 2: I ² C

Part Numbering Example: VPX-3U-ACUNV-1-C-001-SN For valid part numbers, refer to the website or contact your local sales representative.

3U & 6U VPX AC-DC & DC-DC POWER SUPPLY MECHANICALS





VITA 62 COMPLIANT VPX MILITARY AC-DC & DC-DC POWER SUPPLIES



Headquartered in Boxborough, Massachusetts, at the location of its manufacturing operations, SynQor is a privately owned U.S. AS9100 and ISO9001 company. SynQor's converters feature a patented two-stage power topology that greatly improves efficiency and optimizes the power dissipated by the converter. With a design center in Dallas, Texas, and sales/marketing offices throughout the World, SynQor is the technology, quality and service leader for power conversion modules and systems.

SynQor's rugged DC-DC converters, AC-DC converters, filters and systems are designed for a wide range of industrial and military applications including those required to withstand harsh environments: railway and transportation systems, industrial motion control, information displays, factory automation, critical military and power generation systems.

The Military series of Rack Mount Power Supplies, VPX, Hi-Rel and Mil-COTS DC-DC converters and EMI filters brings SynQor's field proven high-efficiency synchronous-rectifier technology to the Military/Aerospace industry.

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