VPX3000

3 Slot chassis for conduction cooled 3U VPX payloads

■ **Embedded Computing for Business-Critical Continuity™**

Small form factor 3U 3 slot OpenVPX chassis

- 3 Slot VITA 65 compliant backplane with full mesh data plane
- 1000BaseX control plane
- Supports conduction cooled 3U VPX modules
- Natural convection cooled enclosure with cold plate
- Customizable Interface Adapter Board (IAB)
- Built in SATA SSD
- DC or AC power option

VPX3000 is a convection cooled, fanless enclosure that accepts up to three 3U convection cooled VPX modules. It includes a configurable I/O Adapter Board (IAB) that is designed to mate with Emerson's iVPX7225 processor blade, itself based on the Intel (R) 3rd generation Core mobile chipset. The IAB routes I/O from the payloads to the front of the enclosure and is designed to be customizable. VPX3000 includes a VITA-62 compliant power supply slot fitted with either an AC or DC power supply with a MIL-38999 connector power input connector and a front panel switch.

Two Data Plane Fat Pipes from each slot are connected in a full mesh configuration. Two Control Plane Ultra Thin Pipes from each slot are routed to the IAB as 1000Base-T interfaces. USB 2.0 and a Display Port interface is also routed to the IAB in all variants.

VPX3000 has been designed to minimise Size, Weight and Power (SWaP) and yet provide an intensely powerful system level solution including power, storage and processor elements. A rugged variant, targeted at Mil/Aero/Government applications includes three MIL-38999 connectors for I/O from each slot. An alternative variant includes commercial connectors on the IAB and is targeted towards industrial and development applications.

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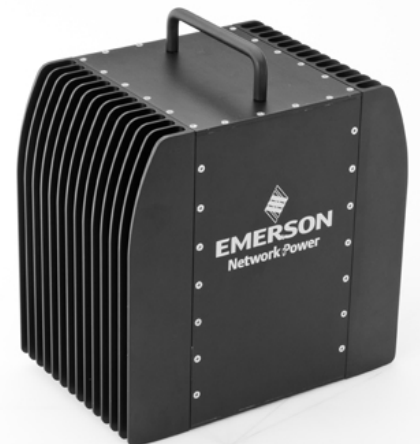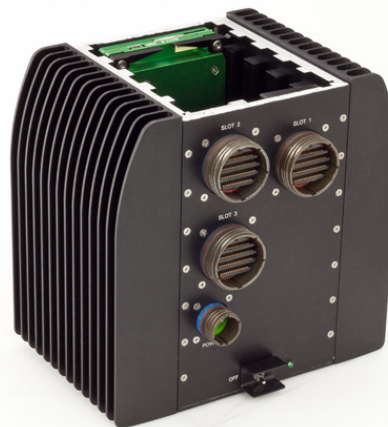
POWER SUPPLY

- AC or DC power supply option
- Power supplies in Rugged variants compliant to MIL-STD 461F for susceptibility and emissions
- Power supplies in Commercial variants compliant to Class A susceptibility and emissions for the locale (FCC, VCCI, CE, KC, AS/NZ) [EN55022 or equivalent]
- AC supplies compliant with EN60950
- DC supply compliant to MIL-STD 1275D
  - 19-36VDC, 400W
- AC supply compliant to MIL-STD 704F
  - 90-264VAC, 47-400Hz, 400W
- All supplies provide following subset of VITA 62 defined power rails:
  - +5V (VS3) output @200W
  - +12V (VS1) output @ 200W
  - +3V (VBAT)

BACKPLANE

- 1" slot pitch
- Compliant to following VITA 65 Payload/Peripheral Slot Profiles
  - SLT3-PAY-2F2U-14.2.3
  - SLT3-PAY-1F1F2U-14.2.4
  - SLT3-PAY-2F-14.2.7
  - SLT3-PER-2F-14.3.1
  - SLT3-PER-1F-14.3.2
  - SLT3-PER-1U-14.3.3
- Full mesh connectivity between 2F Data Plane ports, or 1F Data Plane and 1F Expansion Plane
- 2U (1000Base-X) Control Plane routed to IAB
- Supports 3 SBC's in peer-peer configuration
- Supports 1 SBC and up to 2 Peripheral Modules
- Supports 1 VITA 62-compliant power supply slot

OTHER BACKPLANE CONNECTIVITY

- SM0, SM1 bussed between Payload and PSU slots
- +3VBAT, +5V, +12V routed from PSU slot to all Payload slots
- All other signals on each Payload slot routed to IAB

INTERFACE ADAPTER BOARD (IAB) DETAILS

- 6x 1000BASE-X to 1000Base-T PHY's (2 from each Payload slot)
- 3x DisplayPort re-drivers
- 3x SATA ports terminated on-board (1x from each slot)
- All other signals routed to front panel connectors

STORAGE

- 1 xxxGB SATA SSD drive connected to slot one Payload
- Minimum/maximum 32GB/500GB per slot

BRUGGED IAB FRONT PANEL CONNECTIONS

- 3 Meritec Hercules MIL-38999 with 44 10Gb differential pairs. One per slot, aligned with iVPX7225:
  - 2x 1000BaseT
  - 2x RS-232/422/485 (4-wire)
  - 3x USB 2.0
  - 1x DisplayPort
  - 2x SATA
  - 24x (12 diff pairs) XMC I/O
  - 7x GPIO
- 1x Meritec MIL-38999 for AC/DC power
- Separate keying for AC versus DC
- Recessed On/Off switch
- Optional retaining screw for captive 38999 cap

COMMERCIAL IAB FRONT PANEL CONNECTIONS

- 6x RJ45 1000BASE-T – 2x per slot
- 3x USB 2.0 Type A – 1x per slot
- 3x Mini DisplayPort – 1x per slot
- 4x RJ45 RS-232/422/485
  - 2x from Slot 1 (COM0/1)
  - 1x from each of Slot2/3
- 1x Meritec MIL-38999 for AC/DC Power
  - Separate keying for AC versus DC
- Recessed On/Off switch

MECHANICAL

- Blade insertion vertical from top of enclosure
- Includes mounting holes/lugs for cold plate/ bulkhead mounting
- Supports vertical or horizontal mounting

EMC COMPLIANCE

- Rugged variants with MIL-38999 I/O connectors:
  - MIL-STD-461F
    - CE102
    - CS101, CS114, CS115, CS116
    - RE102
    - RS101, RS103
- Commercial/Industrial variants:
  - Class A (FCC, VCCI, CE, KC, AS/NZ) [EN55022 or equivalent]

SAFETY STANDARDS

- Commercial AC variant compliant to EN60950

ROHS COMPLIANCE

- All variants RoHS 2 compliant
- Rugged variants (with MIL-38999 connectors) are RoHS 5/6 (leaded solder)
- Commercial variants are RoHS 6/6

ENP2-C AND ENP3-C VARIANTS ARE AVAILABLE FOR THIS PRODUCT LINE.

Environmental Requirements			
Ruggedization Level	ENP2-C	ENP3-C	NOTES
Cooling Method	Natural Convection	Natural Convection	
Operating Temperature	-40°C to +55°C -40°C to +30°C	-40°C to +55°C -40°C to +30°C	Up to 60W total Up to 120W total
Storage Temperature	-50°C to +100°C	-50°C to +100°C	
Vibration Sine (10 min/Axis)	5G, 15 to 2000Hz	10G, 15 to 2000Hz	
Vibration Random (1 Hr/Axis)	$0.04g^2$/Hz, 15 to 2000Hz (8GRMS)	$0.1g^2$/Hz, 15 to 2000Hz (12GRMS)[1]	MIL-STD 810F, Method 514.6
Shock	30g/11ms	40g/11ms	MIL-STD 810G, Method 516.6 Procedure 1
Humidity	to 95% RH[2]	to 95% RH[2]	MIL-STD 810G, Method 507.5 Procedure II
Altitude	-1500 to 50000ft	-1500 to 50000ft	MIL-STD 810G, Method 500.5 Procedure II
Salt Fog	5% for 48 hours	5% for 48 hours	MIL-STD 810G, Method 509.5
Sand and Dust	N/A		MIL-STD 810G, Method 510.5 Procedure I and II
Rain/ Waterproof	N/A		MIL-STD 810G, Method 506.6 Procedure III
Fungus	N/A		MIL-STD 810G, Method 508.6
Explosion Proof	N/A		MIL-STD 810G, Method 511.5 Procedure I
Fluid Contamination	N/A		MIL-STD 810G, Method 504

Note 1: +3db/octave 15-300Hz, Flat .1g2 300-1000Hz, -6db/octave 1000Hz – 2000Hz [MIL-STD 810F Figure 514.5C-8]
Note 2: Non-condensing. (240 hrs @ 95%RH)

Ordering Information

Part Number	Description
VPX3000-AC-IAB1	3 Slot Rugged Chassis for conduction cooled 3U VPX Payloads, AC power, ENP3-C
VPX3000-DC-IAB1	3 Slot Rugged Chassis for conduction cooled 3U VPX Payloads, DC power, ENP3-C
VPX3000-AC-IAB2	3 Slot Commercial Chassis for conduction cooled 3U VPX Payloads, AC power, ENP2-C
VPX3000-DC-IAB2	3 Slot Commercial Chassis for conduction cooled 3U VPX Payloads, DC power, ENP2-C
VPX3000-CBL-IO-S	MIL-38999 to I/O breakout cable assembly, shielded 0.6m
VPX3000-CBL-AC	MIL-38999, AC keying to pigtail leads (1m)
VPX3000-CBL-DC	MIL-38999, DC keying to pigtail leads (1m)
IVPX7225-02250813	3U VPX, Conduction, cooled processor payload based on Dual-Core 2.5GHz 3555LE, 8GB DDR3L, .85" PITCH, ENP3

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- Precision Cooling
- Racks & Integrated Cabinets
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