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Embedded Computing & I/O Solutions

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Depend on Acromag

Experience counts – especially when engineering the right embedded solution. And with more than 60 years experience, Acromag can help you reduce your costs and increase your productivity.

Acromag: The I/O Leader

Acromag is focused on developing embedded computing solutions that provide the best long term value in the industry. Compare and you will find that Acromag offers an unmatched balance of price, performance, and features.

60+ Years of I/O Experience

With over 60 years of industrial I/O design experience, Acromag stands alone in the high-performance bus-board market. Developing VMEbus I/O boards since 1984, we combine our process control expertise with extensive experience in embedded computing. This background gives us unrivaled insight to many unique concerns when interfacing computer systems to various sensors and controllers in a wide range of applications.

Acromag processor, FPGA, and I/O products are commonly used in these industries:

- military/defense
- transportation
- semiconductors
- communication
- aerospace
- manufacturing
- scientific
- research labs

Quality You Can Count On

We take every measure to guarantee dependable operation with ISO9001 and AS9100 certified quality management. State-of-the-art manufacturing with industrial-grade components adds extra ruggedness. Advanced inspection and testing further ensure that Acromag I/O performs at or beyond their rated specs.

Technical Support

Drawing on a wealth of embedded I/O experience, our sales engineers are well qualified to support you in the use of our products in your end-applications. We take pride in our highly experienced staff that excels at after-sale technical support.

Global Representation

Great care has been put into building a team of highly skilled representatives and distributors. They are located around the world to service your needs.

Online Ordering

Find full documentation and pricing information online. You can get quotes and even order directly on our website.

2 YEAR WARRANTY

RoHS Compliant

ISO9001 AS9100

MADE IN USA

MEMBER VITA Open Standards, Open Markets

COTS

Experience
Reliability
Extended Temperature
Extended Life Cycle

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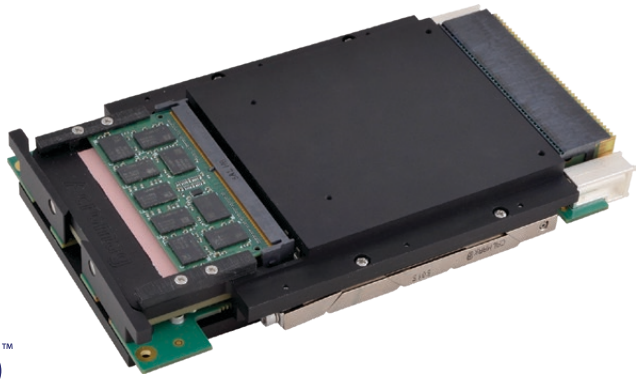
VPX Processor Boards

VPX6600 3U AcroExpress® VPX CPU Air or Conduction-Cooled

CE 2 YEAR WARRANTY RoHS Compliant



OpenVPX™

6th Generation Intel® Xeon® CPU ◆ Up to 32GB DDR4 ECC RAM ◆ Conduction-Cooled Option

Description

The AcroExpress® VPX6600 is a high performance 3U OpenVPX™ single board computer based on the 6th Generation Skylake Intel® Xeon® E processor and PCH. Designed for COTS applications this SBC utilizes the Intel C230 series PCH chipset for extensive I/O support. Heat is managed with a fully integrated heatsink for advanced cooling management. The VPX6600 doesn't consume I/O space and offers specialized I/O on P2.

Intel 6th Generation

Whether you're looking for a tech refresh to update your legacy systems or starting a new application, Intel processors deliver significant performance advancements such as: enhanced microarchitecture, integrated graphics, and expanded memory performance with up to 32GB of high-bandwidth DDR4 memory and ECC memory controllers. This board is designed and manufactured to meet VITA 46.0 and has at least a 7-year life expectancy.

Cutting-edge technology features programmable power limits, allowing the user to "dial-down" the maximum power consumption of the CPU in systems where power is a concern.

The VPX6600 also takes advantage of Intel Advanced Vector Extensions 2.0 for enhanced performance on floating point-intensive applications and Hyper-Threading Technology that enables each core to use two software threads for more efficient use of the CPU.

Memory

Supports either one or two DDR4 ECC SODIMMs, for a total of up to 32GB removable memory. The SODIMMs are firmly attached to the module with screws for easy replacement and surrounded by heat sink material to provide a mechanically and thermally robust mechanism. These processors feature a M.2 Flash storage site perfect for solid-state storage application.

Operating System Software

The VPX6600 is supported for use with Microsoft Windows® 7/8/10, VxWorks™ and Linux®.

Extensive Support

Acromag has more than 60 years of experience working with defense, aerospace, scientific, and industrial applications. We are committed to providing embedded computing solutions with the best long-term value in the industry.

These boards are designed and manufactured in the USA with a 2-year warranty and a life expectancy of at least 7 years.

Key Features & Benefits

- 6th Generation Intel Xeon:
  - Quad Core Xeon E3-1505M V5 (47W)
- Up to -40 to 85°C extended operating range
- Programmable CPU power for heat sensitive applications
- Intel C230 series CM236 PCH chipset
- Up to 32GB of high-speed DDR4 memory with SODIMM lock-down mechanism (permits user removal or upgrades)
- Front panel I/O includes (air-cooled version):
  - dual USB 3.0 ports
  - mini-display port
- Backplane I/O includes:
  - PCIe x4 data plane
  - PCIe x4 expansion plane
  - PCIe x4 or x4 SATA III expansion plane
  - 1 Gb Ethernet 1000Base-T port
  - 2 Gb Ethernet 1000Base-BX ports
  - 2 RS-232/422/485 ports
  - 2 USB 3.0 ports
  - 2 USB 2.0 ports
  - 2 DisplayPort 1.2 ports
  - 2 SATA III ports
  - Audio: analog stereo line in and line out
- Power-on self-test (POST) code LCD display

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VPX Processor Boards

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VPX6600 3U AcroExpress® VPX CPU Air or Conduction-Cooled

Performance Specifications

AcroExpress Processor & Memory

Processor
Intel Xeon E processor.
(6th generation, codename Skylake). The CPU allows programming a lower power limit in the BIOS setup allowing use in applications where less power is available or heat removal is an issue.

E3-1505M V5: 2.8GHz, quad core, 8Mb cache, 47W.

Chipset
Intel C230 series CM236 PCH chipset.

Memory
32GB of 2133 DDR4 ECC memory.

Flash Storage
M.2 site available for onboard Flash.

Software Support

Drivers for Microsoft® Windows® 7/8/10, VXWorks and Linux® are available for download from their respective providers.

Fabric Port

The VPX6600 provides 3 ports of x4 Gen 3 PCIe where 1-x4 port is used on the Data Plane and 2-x4 ports are used on the Expansion Plane. All ports fully comply with the PCIe specifications as defined by PCI-SIG and are routed to the P1 backplane connector as defined by VITA 46.4. The Data Plane and Expansion Plane interfaces can be used to interconnect multiple VPX6600's or to provide PMC/XMC support using the VPX4810 or VPX4814.

Bus Compliance

VITA 65 module profile
MOD3-PAY-1F2F2U-16.2.2-4.

VITA 46.0 / 46.4 / 46.6.

VITA 48.1 / 48.2.

Form Factor

3U VPX 1" pitch (VITA 48.1).

Environmental

Operating temperature
Air-cooled: 0 to 70°C *.

Conduction-cooled: -40 to 85°C.

* w/ 300 lfm airflow; depends on application - see manual for details

Storage temperature
-40 to 85°C.

Relative humidity
5% to 95% at 60°C non-condensing.

Shock
50g peak-to-peak, 11ms duration, MIL-STD-202G Method 213B.

Vibration
11.96 grms, 50-20,000 Hz, each axis, MIL-STD-202G Method 214A.

Power Inputs from backplane:
5V: 10.4A typical, 14.4A maximum.
3.3V: 1.3A typical.

Ordering Information

VPX6600-LF
3U VPX carrier card, CPU module Intel E3-1505M, air-cooled.

VPX6600-CC-LF
3U VPX carrier card, CPU module Intel E3-1505M, conduction-cooled.

Call factory for battery-less operation and other options.

Accessories

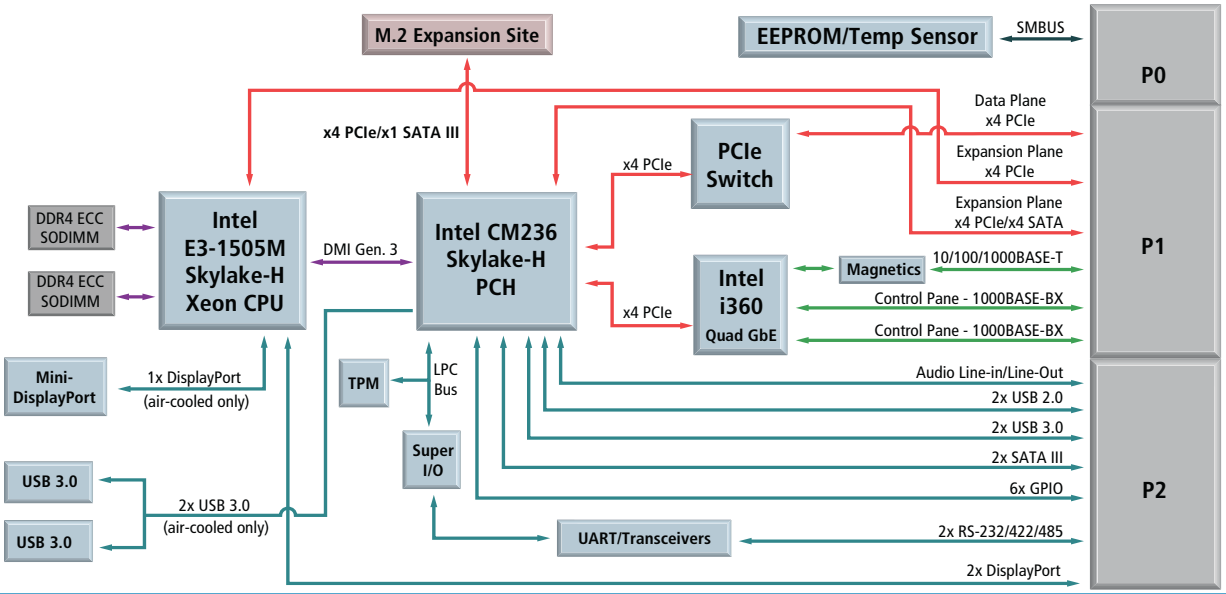
VPX6600-RTM-LF
3U VPX rear transition module for conduction-cooled boards.

Software Development Tools

VPX6600-BSP-VXW
Board support package includes driver and integration directions for VxWorks.

Related Products

VPX Carrier Cards



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VPX Processor Boards

VPX6860 6U AcroExpress® VPX CPU Air or Conduction-Cooled

CE 2 YEAR WARRANTY RoHS Compliant

OpenVPX™

Intel® Xeon® E3 CPU ◆ AcroPack® and XMC I/O slots ◆ 32GB DDR4 ECC RAM ◆ Dual 40 GbE Ports

Description

The AcroExpress® VPX6860 is a high performance 6U OpenVPX™ single board computer based on the 6th Generation Intel® Xeon® processor (formerly Skylake) and PCH. XMC and AcroPack expansion slots add flexibility for on-board FPGA processing, I/O interfaces, and other functions.

Designed with numerous I/O connections this board is perfect for COTS applications requiring high-bandwidth computing with low power consumption.

Intel Processor Technologies

Whether you're looking for a tech refresh to update your legacy systems or starting a new application, the Intel Xeon processor delivers significant performance advancements. Take advantage of the enhanced microarchitecture, integrated graphics, and expanded memory performance. Innovative new technologies yield significant improvements in virtualization, power management, security, and processing speed.

- Intel® Hyper-Threading Technology
- Enhanced Intel® SpeedStep Technology (EIST)
- Intel® Virtualization Technology
- Intel® Trusted Execution Technology (TXT)
- Intel® Turbo Boost Technology
- Intel® Active Management Technology
- Intel® Matrix Storage Technology
- Intel® Configurable TDP Technology
- Thermal Management

Memory

This board accommodates one or two DDR4 ECC SODIMMs, for a total of up to 32GB removable memory. The SODIMMs are firmly attached to the module with screws for easy replacement and surrounded by heat sink material to provide a mechanically and thermally robust mechanism. Two M.2 expansion slots provide on-board data storage capabilities.

Extensive Support

Acromag has more than 60 years of experience working with defense, aerospace, scientific, and industrial applications. We are committed to providing embedded computing solutions with the best long-term value in the industry. These boards are designed and manufactured in the USA with a 2-year warranty and a life expectancy of at least 7 years.

Key Features & Benefits

- Intel Xeon Quad Core Xeon E3-1505M V5 (47W)
- Intel C230 series CM236 PCH chipset
- Up to -40 to 85°C extended operating range
- Programmable CPU power for heat sensitive apps.
- Up to 32GB of high-speed DDR4 memory
- XMC module expansion site
- AcroPack/mPCIe module expansion site
- Two M.2 expansion slots w/ SATA III, PCIe NVMe x4
- Front panel I/O includes (air-cooled version):
  - dual USB 3.0 ports
  - Mini-DisplayPort
  - RJ45 10/100/1000BASE-T port
- Backplane I/O includes:
  - 1 x16, 2 x8, or 4 x4 PCIe Gen3 on expansion plane
  - 2x 40 GBASE-KR4/10GBASE-KX4 on data plane
  - 2x 10/100/1000BASE-T on control plane
  - 2x 1000BASE-BX on control plane
  - 4x RS-232/422/485
  - 2x USB 3.0
  - 2x USB 2.0
  - 2x DisplayPort 1.2
  - 2x SATA III
  - Audio: analog stereo line in and line out
  - 8 GPIO (4 inputs, 4 outputs)
- Battery-less operation option
- Rear transition module available

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VPX Processor Boards

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Performance Specifications

AcroExpress Processor & Memory

Processor
Intel Xeon processor (6th generation, codename Skylake). E3-1505M V5: 2.8GHz, quad core, 8Mb cache, 47W. PCIe Gen3 x16.

Chipset
Intel CM236 PCH chipset. 4 x PCIe Gen3 x4.

Memory
Two SODIMMs. Up to 32GB of 2133MHz DDR4 ECC.

Flash Storage
Two M.2 sites (42-80mm). SATA III or PCIe NVMe x4 interface.

Real Time Clock
RTC has 256 bytes of battery backed RAM.

XMC, AcroPack Mezzanine Interface

XMC Interface
One XMC mezzanine site, PCIe x8 Gen 2 or 3. I/O to VPX P3 and P4 per VITA 46.9 P3w3 X38s+P4w1 X12d+X8d.

XMC Connectors
P15, P16: VITA 42 or VITA 61 for PCIe Gen 3.

AcroPack Interface
One AcroPack/mPCIe site. I/O to VPX P5.

AcroPack Connector
Front panel I/O: 50-pin CHAMP.

I/O Interfaces

Ethernet Interfaces
Control plane: Intel i350 Quad Gigabit Ethernet Controller. Configured as 2x 1000BASE-BX and 2x 1000BASE-T ports.

Data plane: Intel XL710 Dual 40Gigabit Ethernet Controller. Two 40GBASE-KR4 ports (contact factory for 10GBASE-KX4).

Expansion Plane
2 x8 PCIe from Gen3 switch.

Front Panel I/O (air-cooled only)
2x USB 3.0.
Mini-DisplayPort.
RJ45 1000BASE-T.

P6 Backplane I/O
2x DisplayPort, 4x RS-232/422/485, 2x SATA III, 2x USB 3.0, 2x USB 2.0, 8x GPIO, audio in/out.

Trusted Platform Module (TPM)
Version 2.0 of Trusted Computing Group (TCG) spec.

Electrical / Mechanical

Form Factor
6U VPX: 9.187" (233.35mm) x 6.299" (160.0mm).
Pitch: 1" pitch (VITA 48.1).

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
MOD6-PAY-4F1Q2U2T-12.2.1-15.
VITA 46.0 / 46.4 / 46.6. VITA 48.1 / 48.2.

FRU EEPROM with temperature monitor.

XMC Compliance
Complies with ANSI/VITA 42.0, 42.3, 61.0 specifications for XMC modules with PCI Express interface.

PCI Express
Conforms to PCI Express Base Specification, Rev. 3.1.

PCIe 8-lane (x8) Gen 3 interface operates at a bus speed of 8 Gbps per lane per direction.

Power Requirement
12V (VS1): 3.5A idle, 6.5A typical, 8A maximum.

Environmental

Operating Temperature Range
Air-cooled: 0 to 70°C (300 lfm airflow min.)
Conduction-cooled: -40 to 85°C
Storage: -40 to 85°C.

Relative Humidity
5 to 95% non-condensing.

Shock
Designed to comply with VITA 47 Class OS1.
30G, 11ms half sine; 50G, 3mS half sine.

Vibration
Designed to comply with VITA 47 Class V1.
Sinusoidal: 10-500Hz, 5G, 2 Hours/axis.
Random: 10-500Hz, 5G-rms, 2 Hours/axis.

Certifications
CE compliant.

MTBF
Consult factory.

Software Support

Operating Systems
Drivers available for Linux® and Windows®.

BIOS
AMI Aptio Skylake Core UEFI BIOS. PXE boot support.

Power ON Self-Test (POST)
POST codes output to 2-digit LED for debugging.

Ordering Information

Go to on-line ordering page >

VPX6860-42-20: Intel Xeon E3 CPU, VITA 42 XMC, air-cooled.

VPX6860-42-50: Intel Xeon E3 CPU, VITA 42 XMC, conduction-cooled.

VPX6860-61-20: Intel Xeon E3 CPU, VITA 61 XMC, air-cooled.

VPX6860-61-50: Intel Xeon E3 CPU, VITA 61 XMC, conduction-cooled.

VPX6861-42-20: Intel Xeon E3 CPU, VITA 42 XMC, air-cooled, no battery.

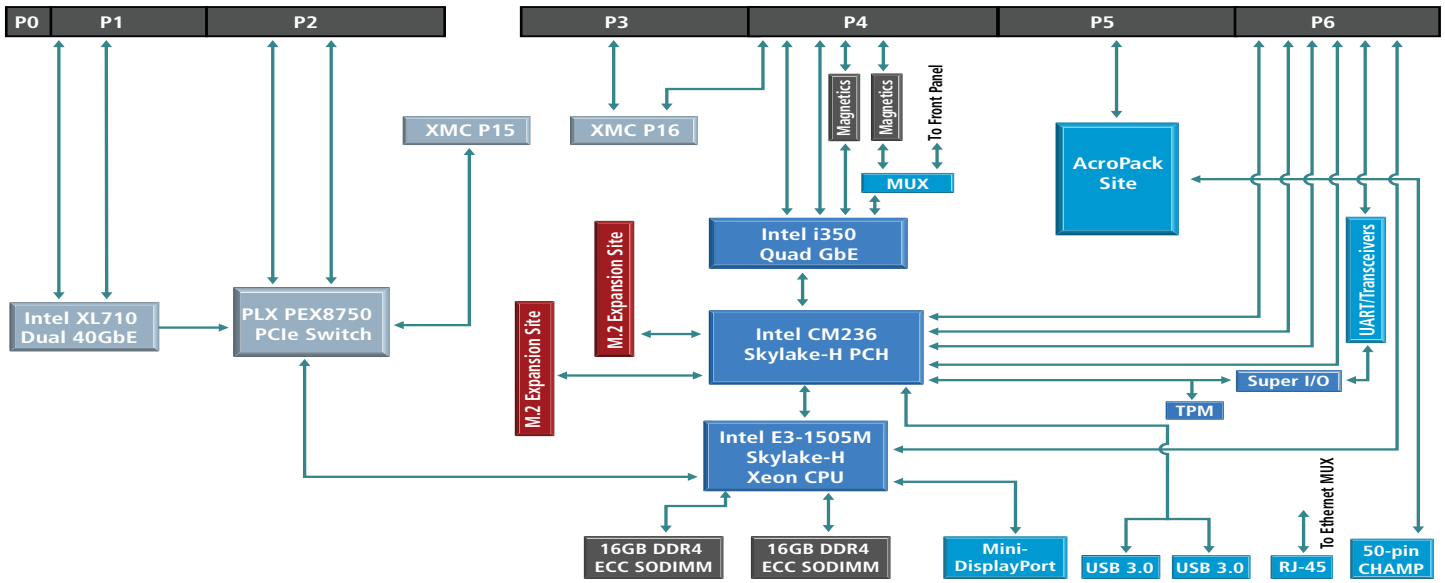
VPX6861-42-50: Intel Xeon E3 CPU, VITA 42 XMC, conduction-cooled, no battery.

VPX6861-61-20: Intel Xeon E3 CPU, VITA 61 XMC, air-cooled, no battery.

VPX6861-61-50: Intel Xeon E3 CPU, VITA 61 XMC, conduction-cooled, no battery.

Accessories

VPX6860-RTM-LF: Rear transition module.



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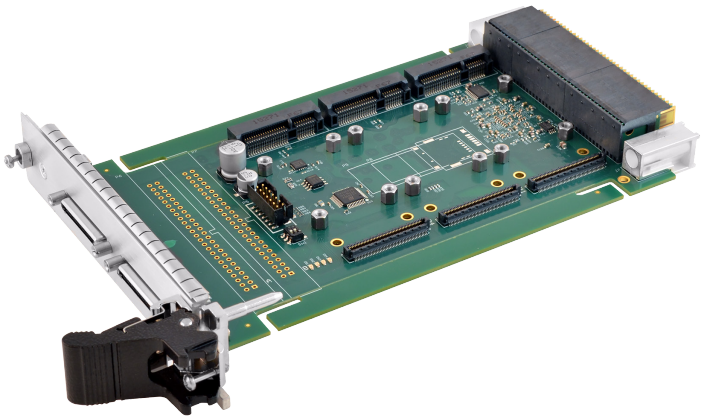
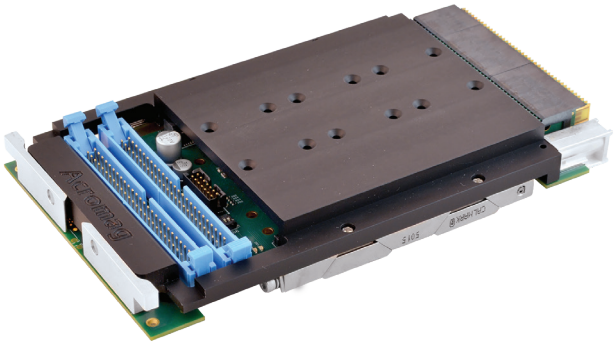
AcroPack® Carriers

VPX4500 Series VPX Carrier Cards for AcroPack® Modules

CE 2 YEAR WARRANTY RoHS Compliant





Air-cooled and conduction-cooled versions ◆ 3U Format ◆ Three AcroPack slots ◆ PCIe Gen 1 interface

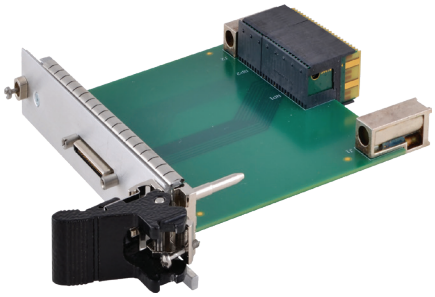
Description

Models
VPX4500E-LF: Air-cooled
VPX4500-CC-LF: Conduction-cooled

The VPX4500 is a 3U VPX carrier for Acromag AcroPack (AP) mezzanine modules.

The carrier board provides a modular approach to system assembly since each carrier can be populated with any combination of analog input/output, digital input/output, communication, AcroPack or some third-party mPCIe compliant modules.

The modularity allows the user to create a board which is customized to the application. This saves money and space; a single carrier board populated with AP modules may replace several dedicated function VPX boards. The VPX4500 carrier board provides impressive functionality at low cost.



VPX4500-RTM-LF

Model VPX4500E-LF is an air-cooled product that supports three AcroPack sites. Two of the sites provide field I/O connections through front panel mounted 50 pin shielded connectors. The third site provides field I/O connections through the VPX backplane.

Model VPX4500-CC-LF is a conduction-cooled product that supports three AcroPack sites. Two of the sites provide field I/O connections through 50 pin ribbon cable connectors. The third site provides field I/O connections to the VPX backplane.

Model VPX4500-RTM-LF is a rear transition module used with both the VPX4500E-LF and the VPX4500-CC-LF carriers to provide access to the slot C AcroPack field I/O signals.

The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This tech-refresh design offers a compact size, low-cost I/O, the same functionality and memory map of the existing Industry Pack mezzanine modules.

Key Features & Benefits

- Three AcroPack or mini-PCIe module slots support any combination of I/O functions.
- PCI Express version 2.1 compliant.
- Fused +1.5V, +3.3V, +5V, +12V, and -12V DC power is provided. A fuse is present on each supply line serving each AcroPack module.
- Front panel SCSI-2 connectors for the field I/O signals using VPX4500E-LF.
- Extended temperature range.
- Standard 14-pin Xilinx JTAG programming header.
- Software development tools for VxWorks®, Linux®, and Windows® environments.

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Bulletin #8400-900e

AcroPack® Carriers

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Performance Specifications

PCI Express Bus Compliance

This device meets or exceeds all written PCI Express specifications per revision 2.1.

Includes a PCIe Gen 2 switch to expand the single host PCIe port to three ports, one to each device. (AcroPack or mini-PCIe).

The host port consists of four PCIe lanes, each of the mini-PCIe sites have one lane each.

Ease of Use

A unique carrier and site number is set via slot address. This provides the capability to distinguish a particular AcroPack module from others when multiple instances of the same module are used in a system.

A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules. The JTAG ports of the two AcroPack modules are daisy-chained.

General

Form Factor
3U VPX bus 6.299" (160mm) x 3.937" (100.0mm).

Pitch
VPX4500-LF (air-cooled): 1" pitch.
VPX4500-CC-LF (conduction-cooled): 1" pitch.

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
FRU EEPROM with temperature monitor.

AcroPack Interface
One AcroPack module in single VPX slot.

3.3V, 5V and ±12V provided for AcroPack modules via the VPX backplane.

Power Requirements

Power
+3.3 Volts (±10%): 0.55mA typical.

+12 Volts (±5%): 25mA Typical.

The VPX4500 has two DC/DC converters to provide the power supply voltages to the AcroPack modules that are not present at the host interface. The +1.5 Volt supply is sourced from the 5 Volt host power.
The -12 Volt supply is sourced from +12 Volt host power.

Physical

Physical Configuration
PCIe x4 lane.

Field I/O Connector
VPX4500-CC-LF: Two 50-pin male headers.

VPX4500-LF: Two 50-pin Champ 0.8mm connectors.

Environmental

Operating temperature
-40 to +85°C.

Storage Temperature Range
-55 to 125°C.

Relative Humidity
5 to 95% non-condensing.

Vibration
0.05g RMS (20 - 2000Hz) random, operating 6g RMS per Hz spectrum.

Shock
30g each axis, 11ms.

Ordering Information

Carrier Cards

VPX4500-LF: VPX carrier card, 3U, three AcroPack slots.

VPX4500-CC-LF: Conduction-cooled version of VPX-4500.

See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories

VPX4500-RTM-LF: Rear transition module

5028-378: Termination panel, SCSI-2 connector, 50 screw terminals

5025-552: Termination panel, DIN-rail mountable panel

5025-550-x: Non-shielded flat 50-pin female to 50-pin female cable. x = length in feet, 12 ft. max.

5025-550-4: Non-shielded flat 50-pin female to 50-pin female cable. 4 feet long

5025-550-7: Non-shielded flat 50-pin female to 50-pin female cable. 7 feet long

5025-550-10: Non-shielded flat 50-pin female to 50-pin female cable. 10 feet long

5028-372: Round cable, shielded, SCSI-2 to CHAMP. 0.8mm, 2 meters long.

5028-619: Cable, 50-pin CHAMP to pigtail, 36 inches long

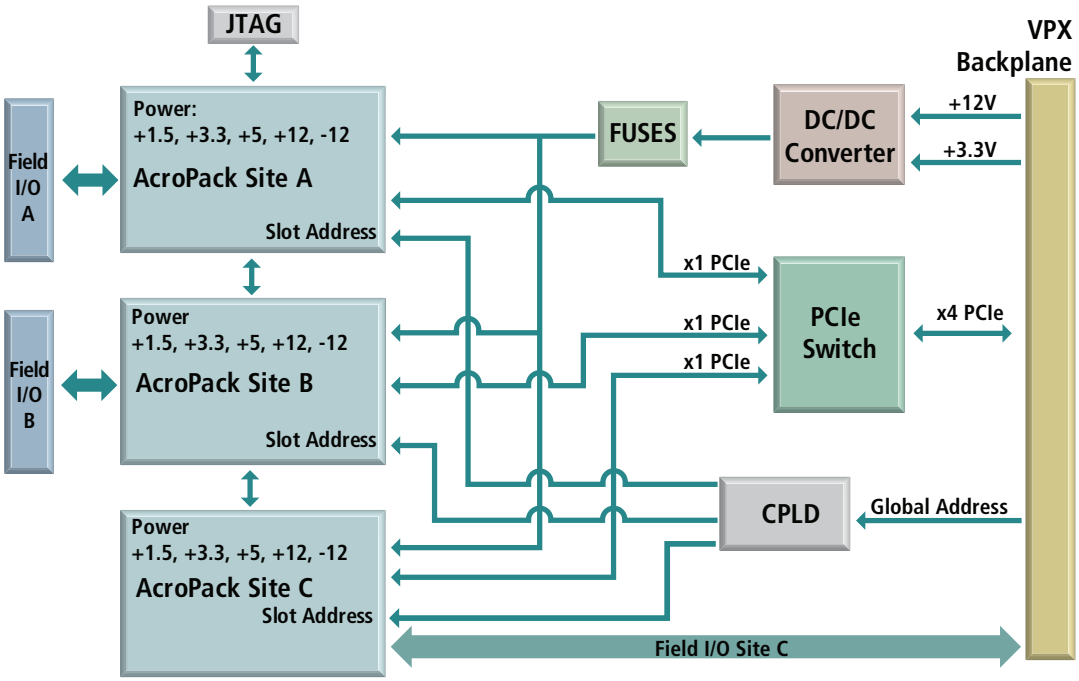
5028-620: Cable, 50-pin CHAMP to pigtail, 70 inches long

Software *(see software documentation for details)*

APSW-API-VXW: VxWorks software support package

APSW-API-WIN: Windows DLL driver software support pkg

APSW-API-LNX: Linux support (website download only)



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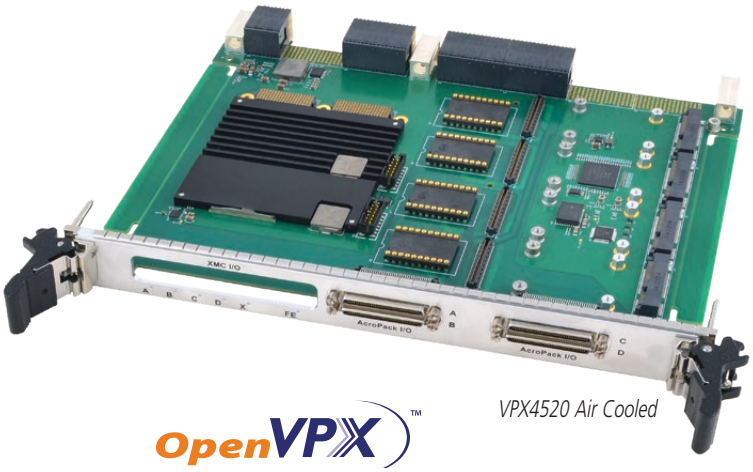
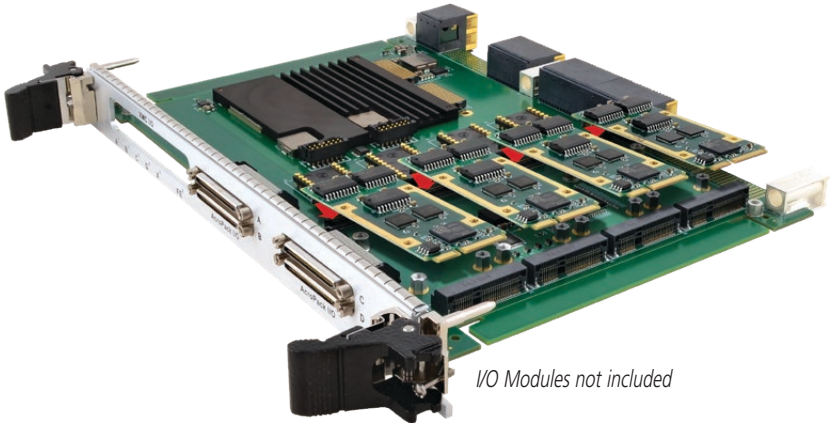
AcroPack® Carriers

VPX4500 Series VPX Carrier Cards for XMC and AcroPack® Modules

CE 2 YEAR WARRANTY RoHS Compliant



VPX4520 Air Cooled



I/O Modules not included

OpenVPX™

PCIe x16 Gen 3 interface via Expansion plane ◆ One XMC and Four AcroPack slots ◆ 6U form factor

Description

Models

VPX4520-42-20: Vita 42, Air-cooled.
VPX4520-42-30: Vita 42, Air-cooled, Ext. Temp.
VPX4520-42-50: Vita 42, Conduction-cooled.
VPX4520-61-20: Vita 61, Air-cooled.
VPX4520-61-30: Vita 61, Air-cooled, Ext. Temp.
VPX4520-61-50: Vita 61, Conduction-cooled.

The VPX4520 carrier card provides a simple and cost-effective solution for interfacing one XMC and four AcroPack modules to a VPX computer system.

Connect to the OpenVPX™ compatible system via Expansion plane for a direct PCIe connection over the VPX backplane. This allows host processors access to a high-performance, low latency interconnect to the AcroPack and XMC modules on the carrier card.

By inserting AcroPack or XMC industrial I/O developers can now leverage hundreds of available functions currently unavailable in a VPX platform.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4520 is available in two versions: air-cooled and conduction-cooled.

The VPX4520 is a member of a 6U OpenVPX mezzanine carrier card family that supports a simple and cost-effective solution for interfacing XMC or AcroPack modules to OpenVPX computer systems.

Key Features & Benefits

- OpenVPX™ compatible via expansion plane connection
- Support upstream/downstream PCIe links
- Supports use of prXMC single board computers
- Optional backplane configuration for one 16-lane port, two 8-lane ports, or four 4-lane ports
- Supports standard VITA 42 and rugged VITA 61 XMC modules on 25W mezzanine site
- XMC site supports PCIe x8 Gen 3 interface
- 68 pin HD CHAMP front I/O connectors
- Supports 78-bits (39 pairs) of XMC I/O to backplane per pattern X38s+X8d+X12d of VITA 46.9
- Conforms to VITA 42.0, 42.3, 46.0, 46.4, 48, 65
- Supports front or rear panel XMC I/O
- Supports front or rear panel AcroPack I/O
- ±12V AUX power to XMC site

VPX4520 Conduction Cooled

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Tel: 844-878-2352 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

Bulletin #8400924c

AcroPack® Carriers

ISO9001
AS9100
MADE IN USA

Performance Specifications

NOTE: Specifications below only for VPX4520 carrier. See AcroPack and XMC data sheets for additional specifications.

PCI Express Bus Compliance

This device meets or exceeds all written PCI Express Base specifications per revision 3.1.

Includes a PCIe Gen 3 capable PCIe switch used to expand backplane PCIe port to multiple ports supporting various expansion cards. (AcroPack or mini-PCIe).

Downstream PCIe switch used to provide four one-lane PCIe ports to AcroPack devices.

Ease of Use

A unique carrier and site number is set via slot address. This provides the capability to distinguish a particular AcroPack module from others when multiple instances of the same module are used in a system.

A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules. The JTAG ports of the four AcroPack modules are daisy-chained together.

There is a separate 14-pin Xilinx JTAG header provided for accessing devices on an XMC mezzanine module.

General

Form Factor
6U VPX bus 6.299" (160mm) x 9.173" (233.0mm).

Pitch
1".

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
MOD6-PER-1Q-12.3.5-n Expansion Plane PCIe Gen1/2/3.

FRU EEPROM with temperature monitor.

Mezzanine Sites
One VITA 42 or VITA 61 XMC module.

XMC site is PCIe Gen 3 and 8 lanes wide.

Front panel I/O support for each AcroPack site with 68-pin CHAMP connector (air-cooled only).

Front panel I/O support for XMC module (air-cooled only).

Rear I/O support for the AcroPack site with 50 I/O lines. (conduction-cooled only).

XMC rear I/O compliance is P3w3-X38s+P4w1-X12d+x8d.

Power Requirements

Power For Carrier Board Only
+12V (VS1) - 0.9A typical, 1.5A maximum.

Environmental

Air-Cooled Operating Temperature
Standard models: 0 to 70°C.
Extended temperature models: -40 to 85°C.

Conduction-Cooled Operating Temperature Range
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

Storage Temperature Range
-55 to 125°C.

Relative Humidity
5 to 95% non-condensing.

Vibration
Designed to comply with VITA 47 Class V1.

Shock
Designed to comply with VITA 47 Class OS1.

Ordering Information

Carrier Cards

Go to on-line ordering page >

VPX4520-42-20
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 42 XMC, air-cooled.

VPX4520-42-30
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 42 XMC, extended temp.

VPX4520-42-50
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 42 XMC, conduction-cooled.

VPX4520-61-20
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 61 XMC, air-cooled.

VPX4520-61-30
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 61 XMC, extended temp.

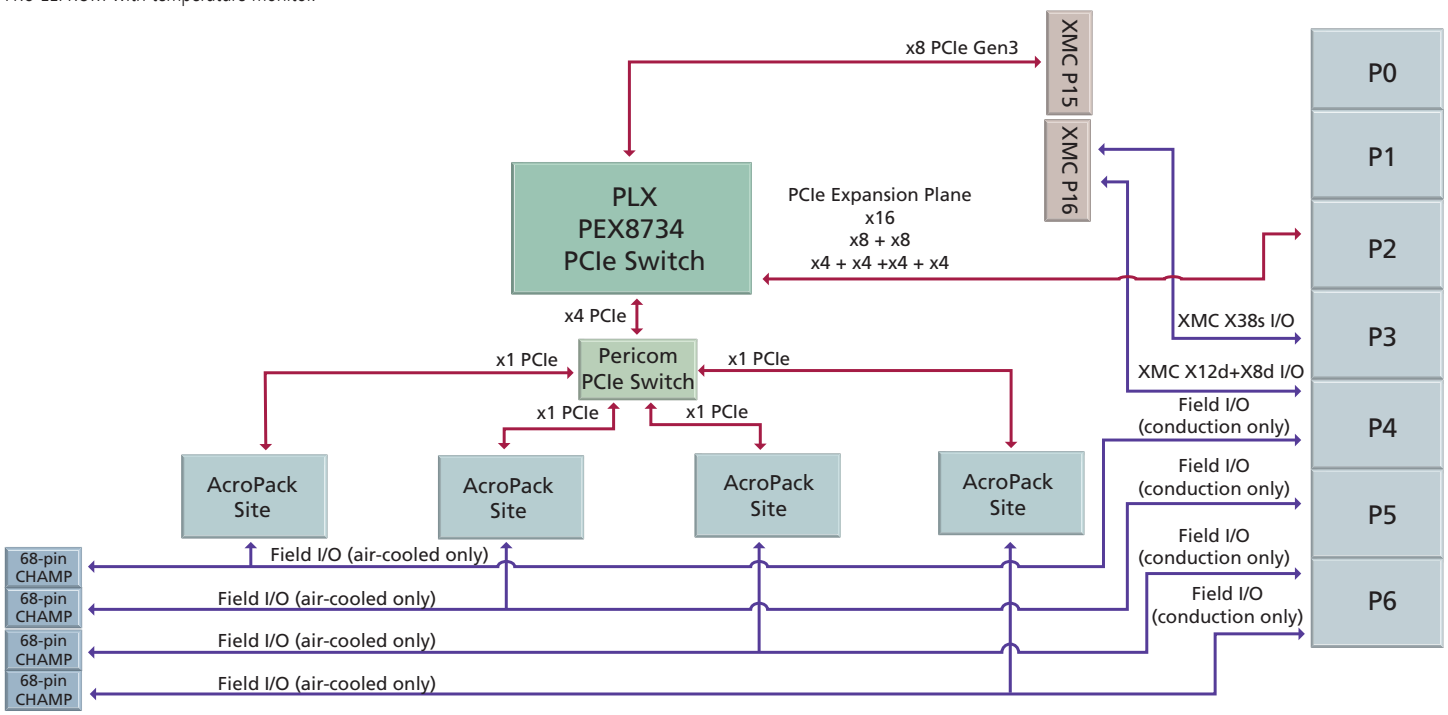
VPX4520-61-50
VPX 6U carrier, expansion plane, hosts four AcroPacks and one Vita 61 XMC, conduction-cooled.

See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories

5025-288
Termination panels, DIN-rail mountable, SCSI-3 connector, 68 screw terminals

5028-420
Round cable, shielded, male SCSI-3 connector to 68-pin CHAMP 0.8mm, 2 meters long.



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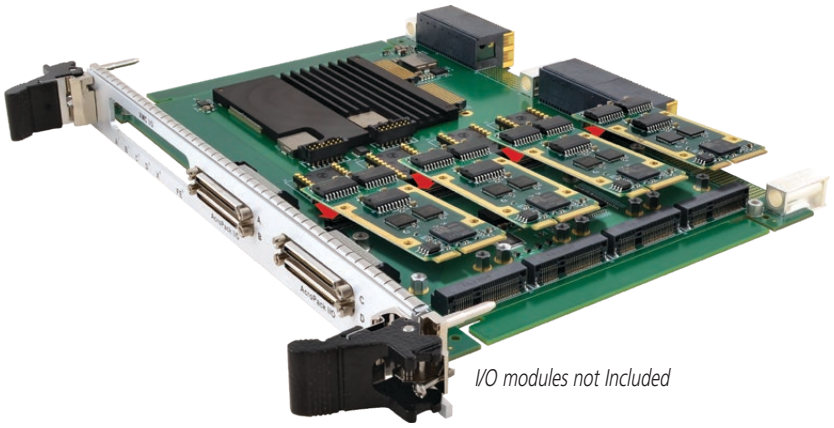
AcroPack® Carriers

VPX4500 Series VPX Carrier Cards for XMC and AcroPack® Modules

CE 2 YEAR WARRANTY RoHS Compliant

VPX4521 Air Cooled

OpenVPX™



I/O modules not Included

PCIe x16 Gen 3 interface via Data plane ◆ One XMC and Four AcroPack slots ◆ 6U form factor

Description

Models

VPX4521-42-20: Vita 42, Air-cooled.
VPX4521-42-30: Vita 42, Air-cooled, Ext. temp.
VPX4521-42-50: Vita 42, Conduction-cooled.
VPX4521-61-20: Vita 61, Air-cooled.
VPX4521-61-30: Vita 61, Air-cooled, Ext. temp.
VPX4521-61-50: Vita 61, Conduction-cooled.

The VPX4521 carrier card provides a simple and cost-effective solution for interfacing one XMC and four AcroPack modules to a VPX computer system.

Connect to the OpenVPX™ compatible system via Data plane for a direct PCIe connection over the VPX backplane. This allows host processors access to a high-performance, low latency interconnect to the AcroPack and XMC modules on the carrier card.

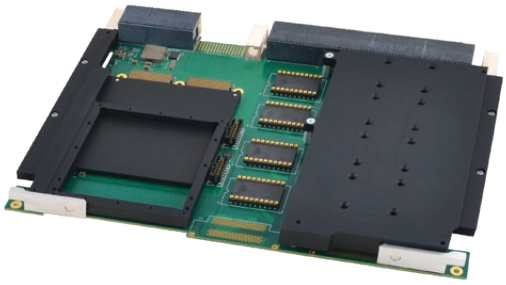
By inserting AcroPack or XMC industrial I/O and configurable FPGA modules, developers can now leverage hundreds of available functions currently unavailable in a VPX platform.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4521 is available in two versions: air-cooled and conduction-cooled.

The VPX4521 is a member of a 6U OpenVPX mezzanine carrier card family that supports a simple and cost-effective solution for interfacing XMC or AcroPack modules to OpenVPX computer systems.

Key Features & Benefits

- OpenVPX™ compatable Data plane connection
- Support for upstream/downstream PCIe links
- Supports use of prXMC single board computers
- Optional backplane configuration for one 16-lane port, two 8-lane ports, or four 4-lane ports
- Supports standard VITA 42 and rugged VITA 61 XMC modules on 25W mezzanine site
- XMC site supports PCIe x8 Gen 3 interface
- 68 pin HD CHAMP front I/O connectors
- Supports 78-bits (39 pairs) of XMC I/O to backplane per pattern X38s+X8d+X12d of VITA 46.9
- Conforms to VITA 42.0, 42.3, 46.0, 46.4, 48, 65
- Supports front or rear panel XMC I/O
- Supports front or rear panel AcroPack I/O
- ±12V AUX power to XMC site



VPX4521 Conduction Cooled

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Bulletin #8400925d

AcroPack® Carriers

ISO9001
AS9100
MADE IN USA

Performance Specifications

NOTE: Specifications below only for VPX4521 carrier. See AcroPack and XMC data sheets for additional specifications.

PCI Express Bus Compliance

This device meets or exceeds all written PCI Express Base specifications per revision 3.1.

Includes a PCIe Gen 3 capable PCIe switch used to expand backplane PCIe port to multiple ports supporting various expansion cards. (AcroPack or mini-PCIe).

Downstream PCIe switch used to provide four one-lane PCIe ports to AcroPack devices.

Ease of Use

A unique carrier and site number is set via slot address. This provides the capability to distinguish a particular AcroPack module from others when multiple instances of the same module are used in a system.

A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules. The JTAG ports of the four AcroPack modules are daisy-chained together.

There is a separate 14-pin Xilinx JTAG header provided for accessing devices on an XMC mezzanine module.

General

Form Factor
6U VPX bus 6.299" (160mm) x 9.173" (233.0mm).

Pitch
1".

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
MOD6-PER-4F-12.3.1-n Data Plane PCIe Gen1/2/3.

FRU EEPROM with temperature monitor.

Mezzanine Sites
One VITA 42 or VITA 61 XMC module.

XMC site is PCIe Gen 3 and 8 lanes wide.

Front panel I/O support for each AcroPack site with 68-pin CHAMP connector (air-cooled only).

Front panel I/O support for XMC module (air-cooled only).

Rear I/O support for the AcroPack site with 50 I/O lines. (conduction-cooled only).

XMC rear I/O compliance is P3w3-X38s+P4w1-X12d+x8d.

Power Requirements

Power For Carrier Board Only
+12V (VS1) - 0.9A typical, 1.5A maximum.

Environmental

Air-Cooled Operating Temperature
Standard models: 0 to 70°C.
Extended temperature models: -40 to 85°C.

Conduction-Cooled Operating Temperature Range
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

Storage Temperature Range
-55 to 125°C.

Relative Humidity
5 to 95% non-condensing.

Vibration
Designed to comply with VITA 47 Class V1.

Shock
Designed to comply with VITA 47 Class OS1.

Ordering Information

Carrier Cards

Go to on-line ordering page >

VPX4521-42-20
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 42 XMC, air-cooled.

VPX4521-42-30
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 42 XMC, extended temp.

VPX4521-42-50
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 42 XMC, conduction-cooled.

VPX4521-61-20
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 61 XMC, air-cooled.

VPX4521-61-30
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 61 XMC, extended temp.

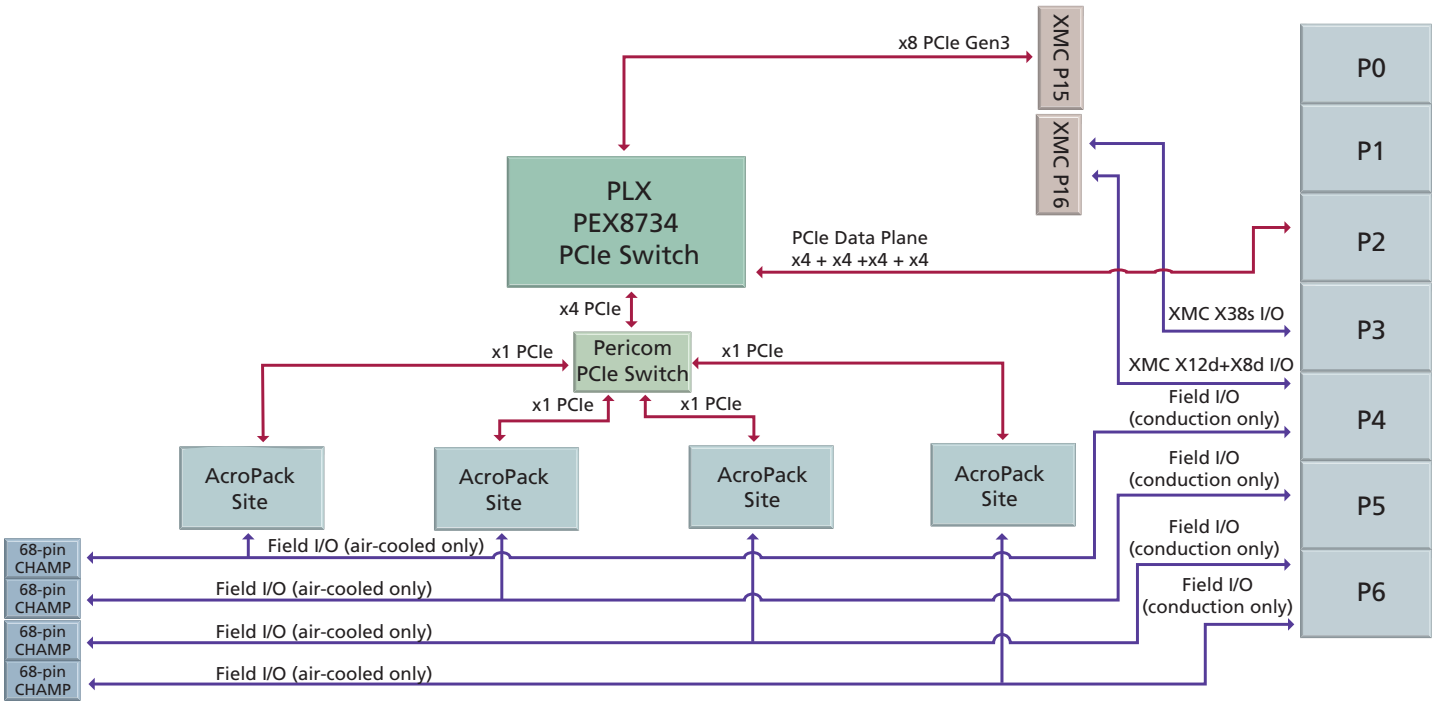
VPX4521-61-50
VPX 6U carrier, data plane, hosts four AcroPacks and one Vita 61 XMC, conduction-cooled.

See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories

5025-288
Termination panels, DIN-rail mountable, SCSI-3 connector, 68 screw terminals

5028-420
Round cable, shielded, male SCSI-3 connector to 68-pin CHAMP 0.8mm, 2 meters long.



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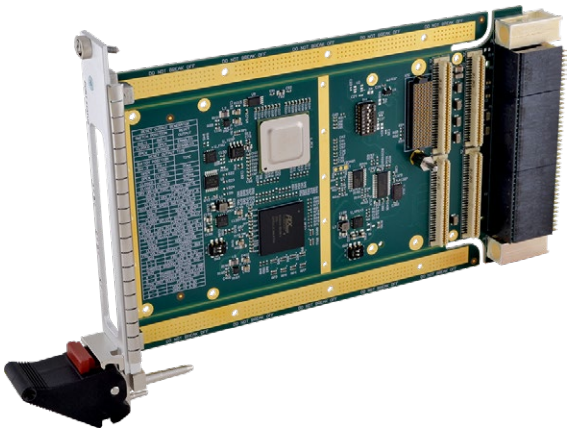
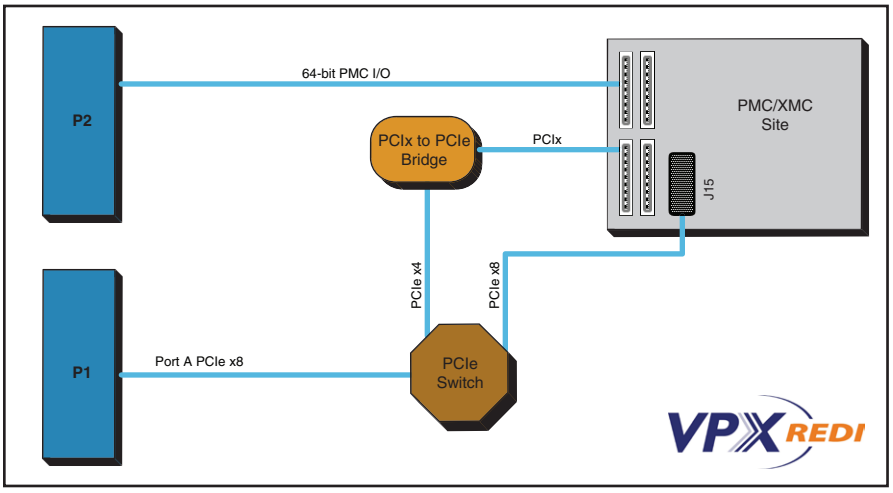
VPX Carrier Cards

VPX4810 VPX Carrier Cards for XMC or PMC Modules

2 YEAR WARRANTY





Air-cooled, conduction-cooled and REDI versions ◆ 3U ◆ One PMC/XMC slot ◆ PCIe x8 Gen 2 interface

Description

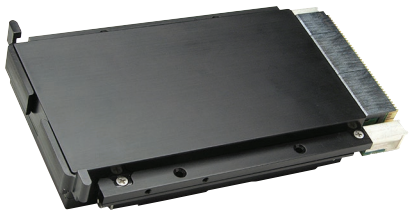
These 3U mezzanine carrier cards provide a simple and cost-effective solution for interfacing a PMC or XMC module to a VPX computer system. The carrier card routes power and bus signals to a plug-in mezzanine module through the VPX card slot connector. Industrial I/O and configurable FPGA modules from Acromag or other vendors are supported.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4810-LF is available in three versions: air-cooled, conduction-cooled and a Ruggedized Enhanced Design Implementation (REDI VITA 48).

Key Features & Benefits

- PMC/XMC site uses 64-bit, 66/133MHz PLX technology with a PCIe to PCI-X bridge
- PCIe bus 8-lane Gen 1 or 2 interface
- Supports standard PMC/XMC modules (IEEE 1386.1)
- Conforms to VPX VITA 46.0, 46.4 and 46.9 specifications and VITA 48
- Supports front or rear panel PMC/XMC I/O
- Supports 64 I/O lines (P14, VITA 46.9) via the P2 VPX connector
- 3.3V PCI-X signaling PMC site
- +12V and –12V provided to PMC/XMC site
- Monitors FRU information and module temperature

Conduction-cooled version



VPX REDI VITA 48 version

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VPX Carrier Cards

VPX4810 VPX Carrier Cards for XMC or PMC Modules

Performance Specifications

NOTE: Specifications for VPX4810 only.

General

Form Factor
3U VPX bus 6.299″ (160mm) x 3.937″ (100.0mm).

Pitch
VPX4810 (air-cooled): 1.0″ pitch
VPX4810-CC (conduction-cooled): 0.85″ pitch
VPX4810-REDI (conduction-cooled REDI): 1.00″ pitch

Front Panel
The VPX4810-LF has a 1.0″ VITA 48.1 front panel. Contact the factory for IEEE 1101.10 1.0″ and 0.8″ options.

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
MOD3-PER-1F-16.3.2-2 / SLT3-PER-1F-14.3.2
MOD3-PAY-1D-16.2.6-1[1] / SLT3-PAY-1D-14.2.6
Note 1: Board is compatible with payload profiles but has no hosting capabilities.

FRU EEPROM with temperature monitor.

PMC/XMC Interface
One IEEE 1386.1 PMC/XMC module in single VPX slot.

PMC site is PCI 3.0 compliant, 32/64-bit, 33/66MHz.

PMC site is PCI-X 1.0b compliant, 64-bit, 66/100/133MHz.

XMC site is PCIe Gen. 2.0 and 8 lanes wide.

3.3V, 5V and ±12V provided for PMC modules via the VPX backplane.

Front or rear panel I/O support for the PMC site with 64 I/O lines, or 32 differential pairs. Rear I/O is compliant to VITA 46.9 P2w1-P64s.

Power Requirements

Carrier-Only Power Requirements
+3.3V DC: 0.9A typical plus any additional power consumed by PMC/XMC.

+5V DC: 0.9A typical plus any additional power consumed by PMC and XMC (VPWR).

+12V DC and –12V DC provided to PMC and XMC site (aux only).

Environmental

Air-Cooled Operating Temperature
0 to 70°C (air flow requirement as measured to be greater than 200 LFM).

Conduction-Cooled Operating Temperature Range
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

REDI (VITA 48) Operating Temperature Range
-40 to 85°C (board MUST operate in a fully-installed conduction-cooled, REDI supported rack).

Storage Temperature Range
-55 to 100°C.

Relative Humidity
5 to 95% non-condensing.

MTBF
2,652,569 hrs. at 25°C.

1,672,742 hrs. at 40°C.

Vibration
0.05g RMS (20 - 2000Hz) random, operating 6g RMS per Hz spectrum.

Shock
30g each axis, 11ms.

Ordering Information

Carrier Cards

VPX4810-LF
VPX carrier card, 3U, one PMC/XMC slot

VPX4810-CC-LF
Conduction-cooled version of VPX-4810

VPX4810-REDI-LF
Ruggedized enhanced design implementation (REDI VITA 48) version of VPX-4810-LF

Accessories

See www.acromag.com for more information.

Software Development Tools

See www.acromag.com for more information.

ISO9001
AS9100
MADE IN USA

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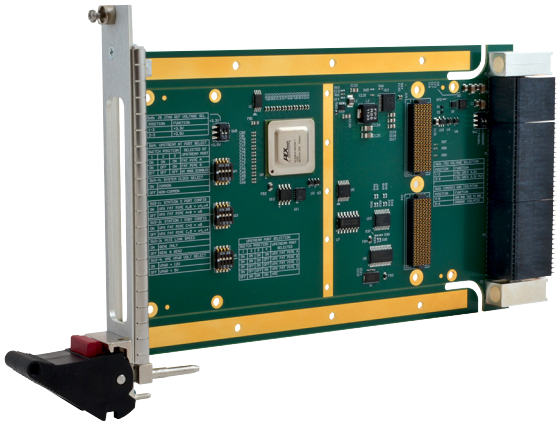
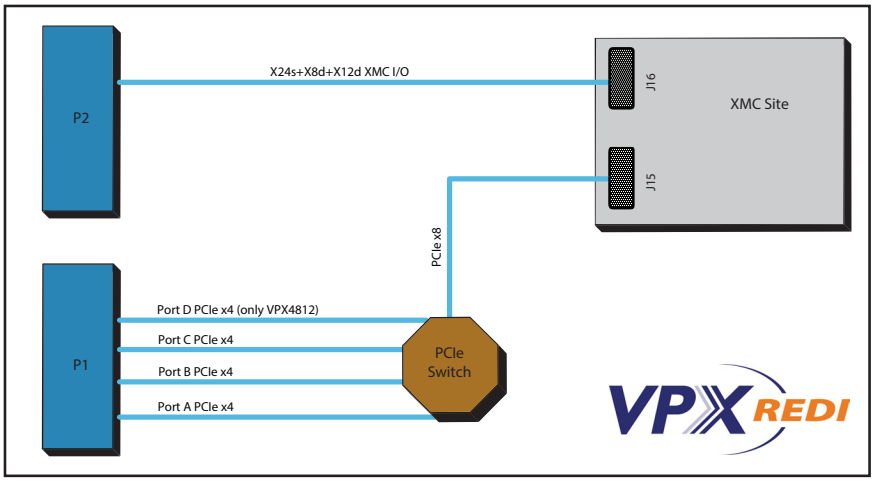
VPX Carrier Cards

VPX4812A / VPX4814A VPX Carrier Cards for XMC Modules

CE 2 YEAR WARRANTY RoHS Compliant





Air-cooled, conduction-cooled and REDI versions ◆ 3U Single XMC slot ◆ PCIe x8 Gen 2 interface

Description

These 3U mezzanine carrier cards provide a simple and cost-effective solution for interfacing a XMC module to a VPX computer system. The carrier card routes power and bus signals to a plug-in mezzanine module through the VPX card slot connector. Industrial I/O and configurable FPGA modules from Acromag or other vendors are supported.

The VPX4812A can be used as a VPX switch card allowing a host CPU to communicate with up to 3 downstream cards in addition to the XMC card. Each VPX port can be configured to be x4 or x8.

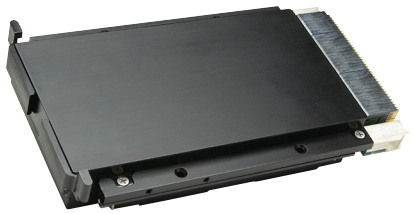
The VPX4814A is a peripheral XMC carrier board designed to be used in a system that uses a VPX AcroExpress® CPU.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4812A and VPX4814A is available in three versions: air-cooled, conduction-cooled and a Ruggedized Enhanced Design Implementation (REDI VITA 48).

Key Features & Benefits

- PCIe bus 8-lane Gen 1 or 2 interface
- Supports standard XMC modules (IEEE 1386.1)
- Conforms to VPX VITA 46.0, 46.4, and 46.9 specifications and optionally VITA 48
- Supports front or rear panel XMC I/O
- Rear I/O is compliant to VITA 46.9 X24s+X8d+X12d
- +12V and –12V provided to XMC site
- Monitors FRU information and module temperature

Conduction-cooled version



VPX REDI VITA 48 version

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VPX Carrier Cards

VPX4812A / VPX4814A VPX Carrier Cards for XMC Modules

Performance Specifications

General

Form Factor
3U VPX bus 6.3" (160mm) x 3.94" (100.0mm).

Front Panel
The VPX4821A-LF has a 1.0" VITA 48.1 front panel. Contact the factory for IEEE 1101.10 1.0" and 0.8" options.

Bus Compliance
VITA 46.0, 46.4, 46.9, 48 and 65.
MIL Spec 217-F @ 105,000 hours.

VPX Carrier Interface

VPX4812A
Compatible VITA 65 module / slot profiles:

MOD3-SWH-4F-16.4.5-2 / SLT3-SWH-4F-14.4.4

MOD3-PER-1F-16.3.2 / SLT3-PER-1F-14-3.2.

FRU EEPROM with temperature monitor.

VPX4814A
AcroExpress™ VPX6600 system compatible.

Compatible VITA 65 module / slot profiles:

MOD3-PER-1F-16.3.2 / SLT3-PER-1F-14-3.2.

FRU EEPROM with temperature monitor.

Compatible with sytems that use UTP control plane interfaces.

XMC Interface

One IEEE 1286.1 XMC module in single VPX slot.

XMC site is PCIe Gen. 2.0 and 8 lanes wide.

+/-12V AUX provided from VPX backplane.

VPWR selectable between +5V or +12V

Front I/O is supported on air-cooled only.

Rear I/O is supported via XMC P16 and is compliant to VITA 46.9 X24s+X8d+X12d.

Power Requirements

Carrier-Only Power Requirements
Board is powered from VS1 (+12V) only.
VS2 (+3.3V) and VS3 (+5V) are not used.

Carrier only: +12V 0.4A typical 1A max.

+12V AUX and -12V AUX provided to XMC site from VPX backplane.

Environmental

Air-Cooled Operating Temperature
-40 to 70°C (air flow requirement to be greater than 200 LFM).

Conduction-Cooled Operating Temperature
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

REDI (VITA 48) Operating Temperature
-40 to 85°C (board MUST operate in a fully-installed conduction-cooled, REDI supported rack).

Storage temperature
-40 to 85°C.

Relative humidity
5% to 95% non-condensing.

MTBF
1,595,069 hrs. at 25°C.

1,225,286 hrs. at 40°C.

Shock
Operating:
Designed to comply with VITA 47 Class OS1, 20g, 11ms half sine and terminal sawtooth shock pulses.

Vibration
Operating:
Designed to comply with VITA 47 Class V1.

Ordering Information

Carrier Cards

VPX4812A-LF
VPX carrier card, 3U, one XMC slot.

VPX4812A-CC-LF
Conduction-cooled version of VPX4812.

VPX4812A-REDI-LF
Ruggedized enhanced design implementation (REDI VITA 48) version of VPX4812.

VPX4814A-LF
AcroExpress® VPX6600 system compatible.
VPX carrier card, 3U, one XMC slot.

VPX4814A-CC-LF
Conduction-cooled version of VPX4814.

VPX4814A-REDI-LF
Ruggedized enhanced design implementation (REDI VITA 48) version of VPX4814.

Accessories

TRANS-V112-LF
Rear transition module.

5028-564
JTAG development cable

Related Products

XMC boards

ISO9001
AS9100
MADE IN USA

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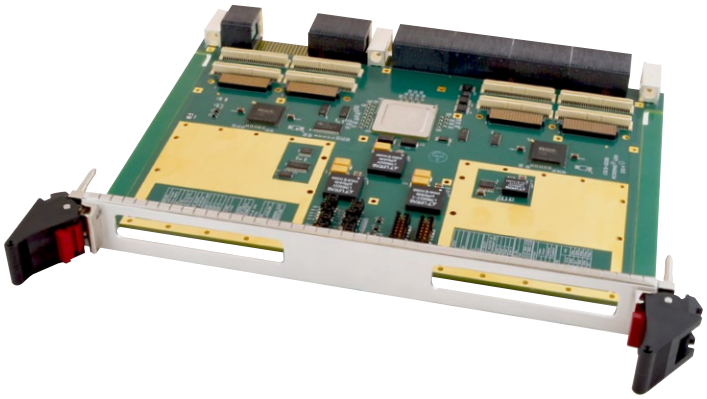
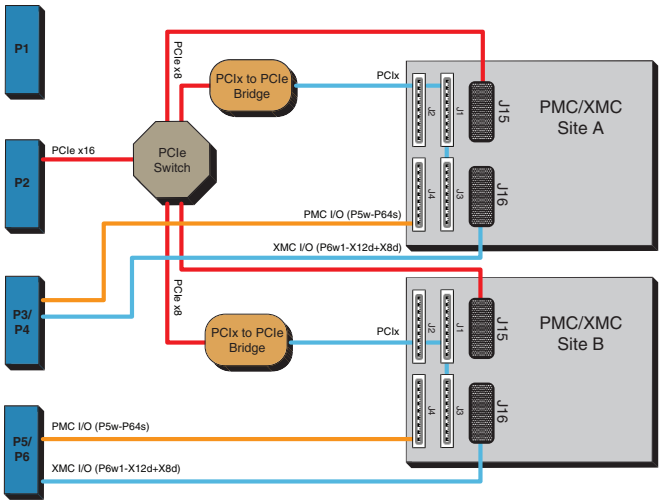
VPX Carrier Cards

VPX4820 VPX Carrier Cards for XMC or PMC Modules

2 YEAR WARRANTY





PCIe x8 Gen 2 interface via Expansion plane ◆ Two PMC/XMC slots ◆ 6U form factor

Description

The VPX4820 carrier card provides a simple and cost-effective solution for interfacing a PMC or XMC module to a VPX computer system.

Connect to the OpenVPX™ via Expansion plane for a direct PCIe connection over the VPX backplane. This allows host processors access to a high-performance, low latency interconnect to the PMC and XMC modules on the carrier card.

The PMC site uses 32/64-bit, PLX technology with a PCIe to PCI-X bridge; while the XMC site enables rapid data throughput with its use of an 8-lane PCIe Gen 2 interface. These sites support front or rear panel I/O.

By inserting PMC or XMC industrial I/O and configurable FPGA modules, developers can now leverage hundreds of available functions currently unavailable in a VPX platform.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4820 is available in two versions: air-cooled and conduction-cooled.

The VPX4820 is one member of a family of 3U and 6U OpenVPX mezzanine carrier cards that support a simple and cost-effective solution for interfacing XMC or PMC modules to OpenVPX computer systems.

Key Features & Benefits

- Connects to OpenVPX™ via Expansion plane
- Support for upstream/downstream
- Optional backplane configuration for one 16-lane port, two 8-lane ports, or four 4-lane ports
- Supports dual standard (IEEE 1386.1) PMC/XMC modules with 25W mezzanine sites
- PMC site uses 32/64-bit, 33/66/133MHz PLX technology with a PCIe to PCI-X bridge
- Supports 64-bits of PMC I/O including differential routing to backplace per pattern "P64s" of VITA 46.9
- 5V tolerant with respect to PMC connectors
- XMC site uses PCIe x8 Gen 1 or 2 interface
- Supports 40-bits (20 pairs) of XMC I/O to backplane per pattern "X12d+X8d" of VITA 46.9
- Conforms to VITA 46.0, 46.4, 46.9
- Supports front or rear panel PMC/XMC I/O
- ±12V AUX power to PMC/XMC site
- Monitors FRU information and module temperature

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VPX Carrier Cards

VPX4820 VPX Carrier Cards for XMC or PMC Modules

Performance Specifications

NOTE: Specifications below only for VPX4820 carrier. See PMC/XMC data sheet for additional specifications.

General

Form Factor
6U VPX bus 6.299" (160mm) x 9.173" (233.0mm).

Pitch
VPX4820 (air-cooled): 1.0" pitch.
VPX4820-CC (conduction-cooled): 0.81" pitch.

Front Panel
The VPX4820-LF has a 1.0" VITA 48.1 front panel. Contact the factory for IEEE 1101.10 1.0" and 0.8" options.

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:
MOD6-PER-1Q-12.3.5-1 Expansion Plane PCIe Gen1
MOD6-PER-1Q-12.3.5-2 Expansion Plane PCIe Gen2

Note 1: Board is compatible with payload profiles but has no hosting capabilities.

FRU EEPROM with temperature monitor.

PMC/XMC Interface
Two IEEE 1386-2001 PMC/XMC modules in a single VPX slot.

PMC site is PCI-X 2.0 compliant, 32/64-bit, 33/66/133MHz, up to 1GB/s.

XMC site is PCIe Gen 2 and 8 lanes wide.

Front panel I/O support for the PMC/XMC site with 32 differential pairs (air cooled only).

Rear I/O support for the PMC site with 64 I/O lines.

Rear I/O support for XMC site with 20 differential pairs.

VITA 46.9 compliance:
Slot 1 rear I/O map is P3w1-P64s+P4w1-X12d+X8d.
Slot 2 rear I/O map is P5w1-P64s+P6w1-X12d+X8d.

Power

Power Requirements
+5V DC (0 to 70°C):
8A maximum generated from +12V supply.

+5V DC (-40 to 85°C):
5A maximum generated from +12V supply.

+3.3V DC (0 to 70°C):
8A maximum generated from +12V supply.

+3.3V DC (-40 to 85°C):
5A maximum generated from +12V supply.

+3.3V Aux DC: 5mA typical.

+12V DC and –12V DC provided to PMC site from VPX backplane.

+12V DC: Backplane voltage provided to XMC.

±12V Aux DC.
Note: see manual for further information.

Environmental

Air-Cooled Operating Temperature
-20 to 70°C (air flow requirement as measured to be greater than 200 LFM).

Conduction-Cooled Operating Temperature Range
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

Storage Temperature Range
-55 to 100°C.

Relative Humidity
5 to 95% non-condensing.

Weight
VPX4820-LF: 1.021 lbs. (0.4631 kg)
VPX4820-CC-LF: 1.418 lbs. (0.6432 kg)

Temperature °C	MTBF (hours)	MTBF (years)	Failure Rate (FIT)
25	647,065	73.9	1.545
40	426,934	48.7	2.342

Ordering Information

Carrier Cards

VPX4820-LF
VPX carrier card, 6U, two PMC/XMC slots, lead-free

VPX4820-CC-LF
Conduction-cooled version of VPX-4820-LF

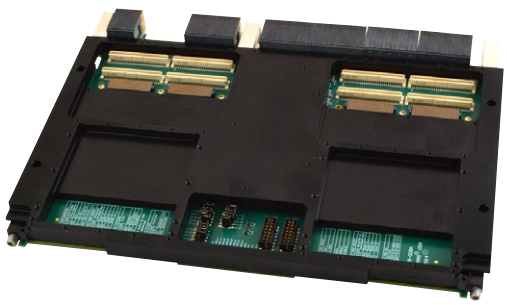
Consult factory for lead solder versions

Accessories

See www.acromag.com for more information.

Software Development Tools

See www.acromag.com for more information.



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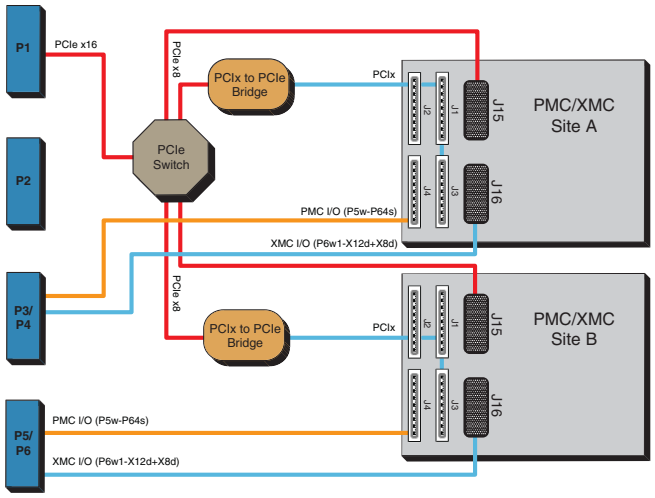
VPX Carrier Cards

VPX4821A VPX Carrier Cards for XMC or PMC Modules

2 YEAR WARRANTY

OpenVPX™



PCIe x8 Gen 2 interface via Data plane ◆ Two PMC/XMC slots ◆ 6U form factor

Description

The VPX4821A carrier card provides a simple and cost-effective solution for interfacing a PMC or XMC module to a VPX computer system.

Connect to the OpenVPX™ via Data plane for a direct PCIe connection over the VPX backplane. This allows host processors access to a high-performance, low latency interconnect to the PMC and XMC modules on the carrier card.

The PMC site uses 32/64-bit, PLX technology with a PCIe to PCI-X bridge; while the XMC site enables rapid data throughput with its use of an 8-lane PCIe Gen 2 interface. These sites support front or rear panel I/O.

By inserting PMC or XMC industrial I/O and configurable FPGA modules, developers can now leverage hundreds of available functions currently unavailable in a VPX platform.

These carriers are ideal for high-performance industrial, defense, scientific research, and telephony systems requiring high-speed I/O expansion. The VPX4821A is available in two versions: air-cooled and conduction-cooled.

The VPX4821A is one member of a family of 3U and 6U OpenVPX mezzanine carrier cards that support a simple and cost-effective solution for interfacing XMC or PMC modules to OpenVPX computer systems.

Key Features & Benefits

- Connects to OpenVPX™ via Data plane
- Support for upstream/downstream
- Optional backplane configuration for one 16-lane port, two 8-lane ports, or four 4-lane ports
- Supports dual standard (IEEE 1386.1) PMC/XMC modules with 25W mezzanine sites
- PMC site uses 32/64-bit, 33/66/133MHz PLX technology with a PCIe to PCI-X bridge
- Supports 64-bits of PMC I/O including differential routing to backplace per pattern "P64s" of VITA 46.9
- 5V tolerant with respect to PMC connectors
- XMC site uses PCIe x8 Gen 1 or 2 interface
- Supports 40-bits (20 pairs) of XMC I/O to backplane per pattern "X12d+X8d" of VITA 46.9
- Conforms to VITA 46.0, 46.4, 46.9
- Supports front or rear panel PMC/XMC I/O
- ±12V AUX power to PMC/XMC site
- Monitors FRU information and module temperature

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VPX Carrier Cards

VPX4821A VPX Carrier Cards for XMC or PMC Modules

Performance Specifications

NOTE: Specifications below only for VPX4821A carrier. See PMC/XMC data sheet for additional specifications.

General

Form Factor
6U VPX bus 6.299″ (160mm) x 9.173″ (233.0mm).

Pitch
VPX4821A (air-cooled): 1.0″ pitch.
VPX4821A-CC (conduction-cooled): 0.81″ pitch.

Front Panel
The VPX4821A-XX-LF has a 1.0″ VITA 48.1 front panel.
Contact the factory for IEEE 1101.10 1.0″ and 0.8″ options.

VPX Carrier Interface
Compatible VITA 65 module / slot profiles:

Data Plane PCIe Gen 1
MOD6-PER-4F-12.3.1-2, MOD6-PER-2F-12.3.2-1, MOD6-PER-1U-12.3.3-1, MOD6-PER-1F-12.3.4-1

Data Plane PCIe Gen 2
MOD6-PER-4F-12.3.1-3, MOD6-PER-2F-12.3.2-2, MOD6-PER-1U-12.3.3-2, MOD6-PER-1F-12.3.4-2

Note 1: Board is compatible with payload profiles but has no hosting capabilities.

FRU EEPROM with temperature monitor.

PMC/XMC Interface
Two IEEE 1386-2001 PMC/XMC modules in a single VPX slot.

PMC site is PCI-X 2.0 compliant, 32/64-bit, 33/66/133MHz, up to 1GB/s.

XMC site is PCIe Gen 2 and 8 lanes wide.

Front panel I/O support for the PMC/XMC site with 32 differential pairs (air cooled only).

Rear I/O support for the PMC site with 64 I/O lines.

Rear I/O support for XMC site with 20 differential pairs.

VITA 46.9 compliance:
Slot 1 rear I/O map is P3w1-P64s+P4w1-X12d+X8d.
Slot 2 rear I/O map is P5w1-P64s+P6w1-X12d+X8d.

Power

Power Requirements
+5V DC (0 to 70°C):
8A maximum generated from +12V supply.

+5V DC (-40 to 85°C):
5A maximum generated from +12V supply.

+3.3V DC (0 to 70°C):
8A maximum generated from +12V supply.

+3.3V DC (-40 to 85°C):
5A maximum generated from +12V supply.

+3.3V Aux DC: 5mA typical.

+12V DC and –12V DC provided to PMC site from VPX backplane.

+12V DC: Backplane voltage provided to XMC.

±12V Aux DC.
Note: see manual for further information.

Environmental

Air-Cooled Operating Temperature
-0 to 70°C (air flow requirement as measured to be greater than 200 LFM).

Conduction-Cooled Operating Temperature Range
-40 to 85°C (board must operate in a fully-installed conduction-cooled rack).

Storage Temperature Range
-55 to 100°C.

Relative Humidity
5 to 95% non-condensing.

Weight
VPX4821A-XX-LF: 1.25 lbs (0.5669kb)

VPX4821A-XX-CC-LF: 1.5 lbs (0.6804kg)

Dimensions
Length: 10in

Height: 6.5in

Width: 1in

Ordering Information

Carrier Cards

VPX4821A-42-LF
Air-cooled 6U VPX XMC/PMC Carrier for Data Plane with VITA 42

VPX4821A-42-CC-LF
Conduction-cooled 6U VPX XMC/PMC Carrier for Data Plane with VITA 42

VPX4821A-61-LF
Air-cooled 6U VPX XMC/PMC Carrier for Data Plane with VITA 61

VPX4821A-61-CC-LF
Conduction-cooled 6U VPX XMC/PMC Carrier for Data Plane with VITA 61

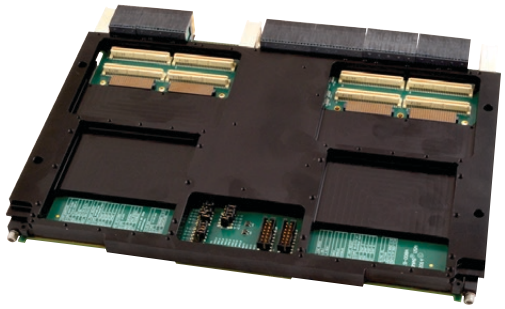
Consult factory for lead solder versions

Accessories

See www.acromag.com for more information.

Software Development Tools

See www.acromag.com for more information.



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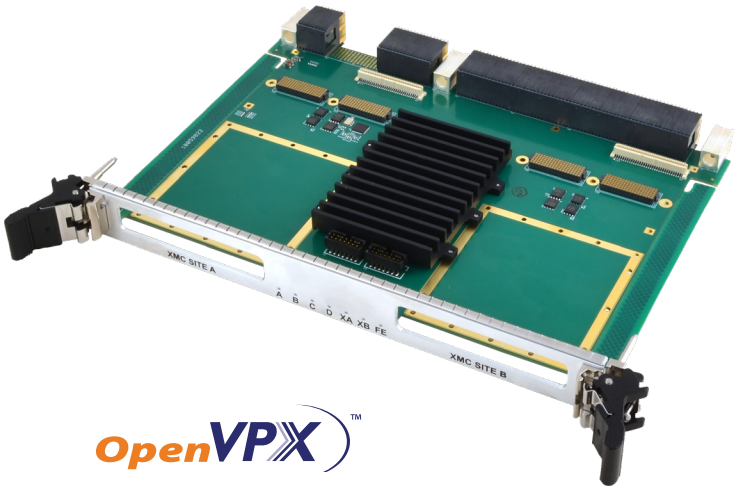
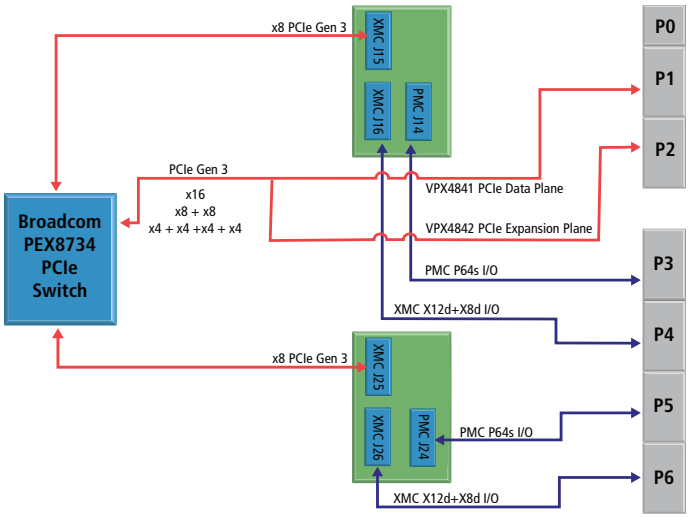
VPX Carrier Cards

VPX4840 Series 6U VPX Carrier Cards for XMC Modules

CE 2 YEAR WARRANTY RoHS Compliant





Two XMC slots ◆ PCIe x16 Gen 3 interface via Expansion or Data plane ◆ Air or Conduction-cooled

The VPX4840 carrier cards provide a simple and cost-effective solution for interfacing an XMC module to a VPX computer system. They offer host processors low latency access to the XMC modules through high-speed interconnects on the carrier card.

The XMC sites enable rapid data throughput with their use of a 16-lane PCIe Gen 3 interface. These sites support front or rear panel I/O. Two versions offer a choice of direct PCIe connection to the VPX backplane via the data or expansion plane.

By inserting XMC modules providing advanced signal processing, communication, GPU/FPGA computing and other capabilities, developers can leverage hundreds of available functions currently unavailable in a VPX platform. The carrier cards also support the use of a prXMC processor module.

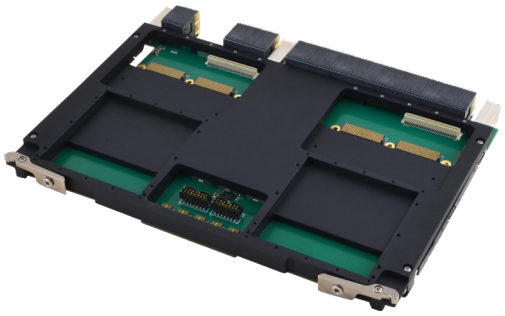
These carriers are ideal for high-performance aerospace, defense, scientific research, and industrial systems requiring high-speed I/O expansion. The VPX4840 is available in air-cooled and conduction-cooled versions.

Software support packages facilitate use with Microsoft Windows®, Linux®, and VxWorks™ operating systems.

Acromag has more than 60 years of experience working with defense, aerospace, scientific, and industrial applications. We are committed to providing embedded computing solutions with the best long-term value in the industry. These boards are designed and manufactured in the USA with a 2-year warranty and a life expectancy of at least 7 years.

Key Features & Benefits

- Hosts two VITA 42.0 compliant XMC modules
- Variants available supporting alternate XMC connectors defined in VITA 61 and VITA 88
- Supports XMC Front I/O (air-cooled only)
- Supports XMC Rear I/O with backplane mapping per VITA 46.9
- Supports the Jn6 differential signals and legacy I/O from Jn4
- PCIe Gen3 x16 interface on Data Plane (VPX4841) or Expansion Plane (VPX4842)
- Backplane PCIe interface can be configured to be 1x16, 2x8 or 4x4 ports.
- Available in air-cooled or conduction-cooled variants compliant with VITA 48
- Supports the use of an XMC processor on either site



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VPX Carrier Cards

Performance Specifications

NOTE: Specifications below only for VPX4840 carriers. See XMC data sheet for additional specifications.

General

Form Factor
6U VPX module, air or conduction-cooled, 1.0 inch pitch.
Air-cooled metalwork compliant with VITA 48.1.
Conduction-cooled metalwork compliant with VITA 48.2.

Dimensions
Height: 233.35 mm (9.187 in).
Depth: 160.00 mm (6.299 in).
PCB Thickness: 1.68 mm (0.066 in).
Weight (Air-Cooled): 0.419 kg (0.9232 lb).
Weight (Conduction-Cooled): 0.60 kg (1.332 lb).

VPX Interface

OpenVPX
Compatible with VITA 65.

OpenVPX Slot Profile
VPX4841: SLT6-PER-4F-10.3.1.
VPX4842: SLT6-PER-1Q-10.3.5.

OpenVPX Module Profile
MOD6-PER-1Q-12.3.5-2.

I2C Bus
Connects FRU EEPROM and on-board temperature sensor to VPX backplane.

SMBus
Connected to VPX backplane per VITA 46.0.

PCIe Interface

PCIe switch
Broadcom PEX8734 connected to XMC Jn5.

Backplane
PCIe Gen 3 x16.
VPX4841: Data plane to P1.
VPX4842: Expansion plane to P2.

XMC Interface

XMC Expansion
Two XMC mezzanine module slots. Available with VITA 42, VITA 61, or VITA 88 connectors.

PCIe interface
XMC Jn5 ports connect 8-lane PCIe Gen 3 to PCIe Switch.

Processors
Supports prXMC modules on either XMC expansion site.

Rear I/O
Connections via Jn4 and Jn6 ports.
Signal Mapping: P3w1-P64s+P4w1-X12d+X8d+P5w1-P64s+P6w1-X12d+X8d.
VITA 46.9 compliant.

JTAG interface
JTAG debug ports provided for each XMC site.

Power Requirements

+12V (VS1) must be supplied from VPX backplane. All voltage rails (+3.3V_AUX, +VBAT) derived from +12V.

+12V (VS1): 0.9A typical, 1.5A max.

+3.3V Aux DC: 2mA typical, 6mA max.

Environmental

Air-Cooled Operating Temperature
Standard: 0 to 55°C (air flow > 200 LFM).
Extended: -40 to 70°C (air flow > 200 LFM).

Conduction-Cooled Operating Temperature Range
-40 to 85°C.

Storage Temperature Range
-55 to 100°C.

Relative Humidity
5 to 95% non-condensing.

Vibration, Random Operating
VITA 47 Class V1. Withstands vibration from 5 to 100Hz with Power Spectral Density (PSD) = 0.04g2/Hz, for 1 hour per axis. MIL-STD-810, Method 514, Procedure 1.

Shock, Operating
VITA 47 Class OS1. 20g, 11ms half sine and terminal sawtooth shock pulses. 3 shock pulses in each direction along 3 axes (36 shocks, total). MIL-STD-810, Method 516, Procedure 1.

Ordering Information

Models

Go to on-line ordering page >

Carrier Cards

VPX4841-42-20
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, air-cooled.

VPX4841-42-30
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, extended temperature air-cooled.

VPX4841-42-50
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, conduction-cooled.

VPX4841-61-20
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, air-cooled.

VPX4841-61-30
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, extended temperature air-cooled.

VPX4841-61-50
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, conduction-cooled.

VPX4842-42-20
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, air-cooled.

VPX4842-42-30
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, extended temperature air-cooled.

VPX4842-42-50
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, conduction-cooled.

VPX4842-61-20
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, air-cooled.

VPX4842-61-30
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, extended temperature air-cooled.

VPX4842-61-50
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, conduction-cooled.

Related Products

Go to on-line XMC boards ordering page >

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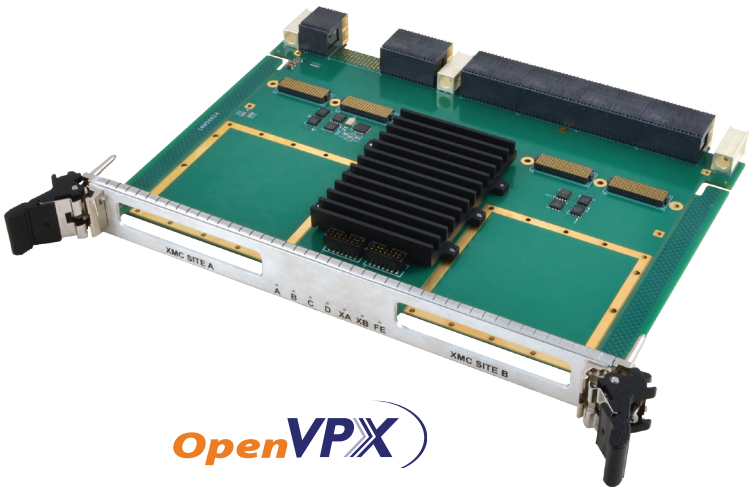
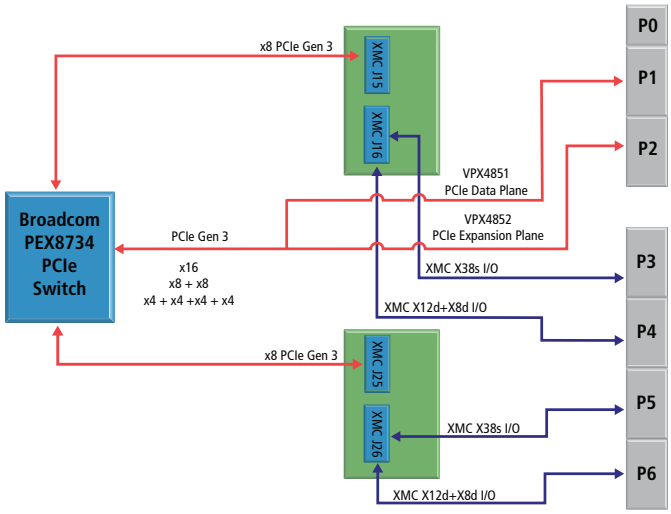
VPX Carrier Cards

VPX4850 Series 6U VPX Carrier Cards for XMC Modules

CE 2 YEAR WARRANTY RoHS Compliant





Two XMC slots ◆ PCIe x16 Gen 3 interface via Expansion or Data plane ◆ Air or Conduction-cooled

The VPX4850 carrier cards provide a simple and cost-effective solution for interfacing XMC modules to a VPX computer system. They offer host processors low latency access to the XMC modules through high-speed interconnects on the carrier card.

The XMC sites enable rapid data throughput with their use of a 16-lane PCIe Gen 3 interface. These sites support front or rear panel I/O. Two versions offer a choice of direct PCIe connection to the VPX backplane via the data or expansion plane.

By inserting XMC modules providing advanced signal processing, communication, GPU/FPGA computing and other capabilities, developers can leverage hundreds of available functions currently unavailable in a VPX platform. The carrier cards also support the use of a prXMC processor module.

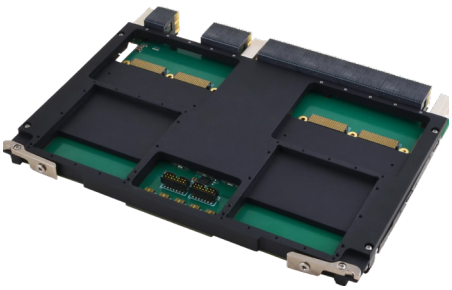
These carriers are ideal for high-performance aerospace, defense, scientific research, and industrial systems requiring high-speed I/O expansion. The VPX4850 is available in air-cooled and conduction-cooled versions.

Software support packages facilitate use with Microsoft Windows®, Linux®, and VxWorks™ operating systems.

Acromag has more than 60 years of experience working with defense, aerospace, scientific, and industrial applications. We are committed to providing embedded computing solutions with the best long-term value in the industry. These boards are designed and manufactured in the USA with a 2-year warranty and a life expectancy of at least 7 years.

Key Features & Benefits

- Hosts two VITA 42.0 compliant XMC modules
- Variants available supporting alternate XMC connectors defined in VITA 61 and VITA 88
- Supports XMC Front I/O (air-cooled only)
- Supports XMC Rear I/O with backplane mapping per VITA 46.9
- Supports full Jn6 rear I/O
- PCIe Gen3 x 16 interface on Data Plane (VPX4851) or Expansion Plane (VPX4852)
- Backplane PCIe interface can be configurable as 1x16, 2x8 or 4x4 ports
- Available in air-cooled or conduction-cooled variants compliant with VITA 48
- Supports the use of an XMC processor on either site



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VPX Carrier Cards

Performance Specifications

NOTE: Specifications below only for VPX4850 carriers. See XMC data sheet for additional specifications.

General

Form Factor
6U VPX module, air or conduction-cooled, 1.0 inch pitch.
Air-cooled metalwork compliant with VITA 48.1.
Conduction-cooled metalwork compliant with VITA 48.2.

Dimensions
Height: 233.35 mm (9.187 in).
Depth: 160.00 mm (6.299 in).
PCB Thickness: 1.68 mm (0.066 in).
Weight (Air-Cooled): 419 kg (0.9232 lb).
Weight (Conduction-Cooled): 0.60 kg (1.332 lb).

VPX Interface

OpenVPX
Compatible with VITA 65.

OpenVPX Slot Profile
VPX4851: SLT6-PER-4F-10.3.1.
VPX4852: SLT6-PER-1Q-10.3.5.

OpenVPX Module Profile
MOD6-PER-1Q-12.3.5-2.

I2C Bus
Connects FRU EEPROM and on-board temperature sensor to VPX backplane.

SMBus
Connected to VPX backplane per VITA 46.0.

PCIe Interface

PCIe switch
Broadcom PEX8734 connected to XMC Jn5.

Backplane
PCIe Gen 3 x16.
VPX4851: Data plane to P1.
VPX4852: Expansion plane to P2.

XMC Interface

XMC Expansion
Two XMC mezzanine module slots. Available with VITA 42, VITA 61, or VITA 88 connectors.

PCIe interface
XMC Jn5 ports connect 8-lane PCIe Gen 3 to PCIe Switch.

Processors
Supports prXMC modules on either XMC expansion site.

Rear I/O
Connections via Jn6 ports.
Signal Mapping: P3w3-X38s+P4w1-X12d+X8d+P5w3-X38s+P6w1-X12d+X8d.
VITA 46.9 compliant.

JTAG interface
JTAG debug ports provided for each XMC site.

Power Requirements

+12V (VS1) must be supplied from VPX backplane. All voltage rails (+3.3V_AUX, +VBAT) derived from +12V.

+12V (VS1): 0.9A typical, 1.5A max.

+3.3V Aux DC: 2mA typical, 6mA max.

Environmental

Air-Cooled Operating Temperature
Standard: 0 to 55°C (air flow > 200 LFM).
Extended: -40 to 70°C (air flow > 200 LFM).

Conduction-Cooled Operating Temperature Range
-40 to 85°C.

Storage Temperature Range
-55 to 100°C.

Relative Humidity
5 to 95% non-condensing.

Vibration, Random Operating
VITA 47 Class V1. Withstands vibration from 5 to 100Hz with Power Spectral Density (PSD) = 0.04g2/Hz, for 1 hour per axis. MIL-STD-810, Method 514, Procedure 1.

Shock, Operating
VITA 47 Class OS1. 20g, 11ms half sine and terminal sawtooth shock pulses. 3 shock pulses in each direction along 3 axes (36 shocks, total). MIL-STD-810, Method 516, Procedure 1.

Ordering Information

Models

Go to on-line ordering page >

Carrier Cards

VPX4851-42-20
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, air-cooled.

VPX4851-42-30
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, extended temperature air-cooled.

VPX4851-42-50
VPX carrier card, two VITA 42 XMC slots, data plane PCIe, conduction-cooled.

VPX4851-61-20
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, air-cooled.

VPX4851-61-30
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, extended temperature air-cooled.

VPX4851-61-50
VPX carrier card, two VITA 61 XMC slots, data plane PCIe, conduction-cooled.

VPX4852-42-20
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, air-cooled.

VPX4852-42-30
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, extended temperature air-cooled.

VPX4852-42-50
VPX carrier card, two VITA 42 XMC slots, expansion plane PCIe, conduction-cooled.

VPX4852-61-20
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, air-cooled.

VPX4852-61-30
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, extended temperature air-cooled.

VPX4852-61-50
VPX carrier card, two VITA 61 XMC slots, expansion plane PCIe, conduction-cooled.

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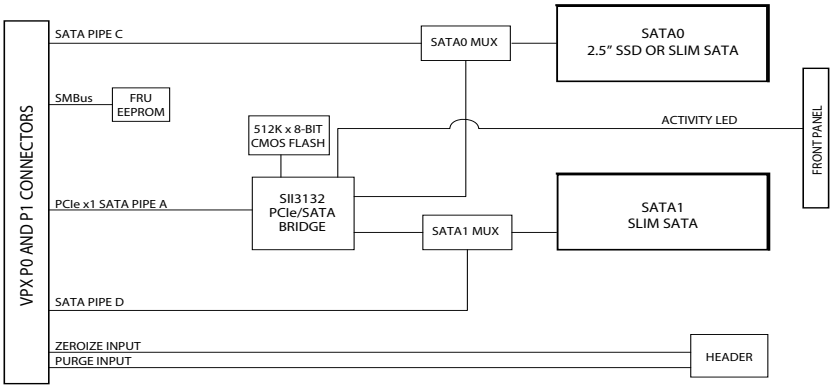
VPX Storage Modules

XVPX-9756 3U VPX Bootable SATA/SAS Drive Module

2 YEAR WARRANTY



Boot via PCIe or SATA/SAS ◆ Supports dual SSD or a single 2.5" drive ◆ Dual SSDs are RAID 0/1 configurable

Description

The XVPX-9756 is a bootable SATA/SAS storage module which supports dual slim SATA drives (SSD) or a single 2.5" drive, either rotating or solid state. The module connects directly to the CPU via SATA signals or by means of PCI Express signals through an on-board controller. Given its connectivity options, the XVPX-9756 is an unequaled VPX bootable storage solution.

Key Features & Benefits

- Bootable over PCIe or SATA/SAS
- Supports SATA, SAS, and PCIe interfaces
- Suits customized or standard backplanes
- RAID 0/1 configurable with dual slim SATA drives
- Can support one or two CPU boards via SATA interfaces
- Drive activity LED
- SMbus FRU available for user data and module status

Performance Specifications

Bus Compliance

VITA 46.0, 46.4, 46.9, 48, 65

MIL Spec 217-F @105.000 Hrs

Form Factor

3U VPXbus 3.94" (100.01mm) x 6.3" (160mm)
Front panel for air cooled module is 0.8" per IEEE 1101.10

Environmental

Operating temperature

Air cooled:	-40 to 80°C*
Conduction cooled:	-40 to 85°C**
REDI cover, conduction cooled:	-40 to 85°C***

* w/ 200 lfm airflow

** must operate in a fully installed conduction cooled rack

*** must operate in a fully installed conduction cooled REDI rack

Storage temperature

Air cooled models:	-40 to 85°C
Conduction cooled and REDI models:	-40 to 105°C

Shock
Operating:
30g peak acceleration, 11ms duration

Non-operating:
50g peak acceleration, 11ms duration

Relative humidity
20 to 80% non-condensing

Vibration (5Hz-2kHz)
Operating:
0.015" (380µm) peak-to-peak displacement
2.5g max acceleration

Non-operating:
0.030" (760µm) peak-to-peak displacement
5.0g max acceleration

Ordering Information

XVPX-9756-AB0-X

A = Thermal
1 - Air cooled
2 - Conduction cooled
3 - REDI

B = Drive connector type
0 - HD/SDD (SATA)
1 - Dual slim SATA

X = Solder
L - Lead solder
LF - Lead-free solder

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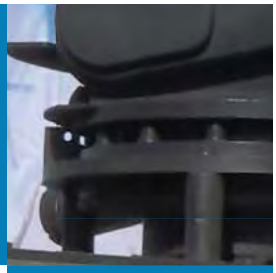

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