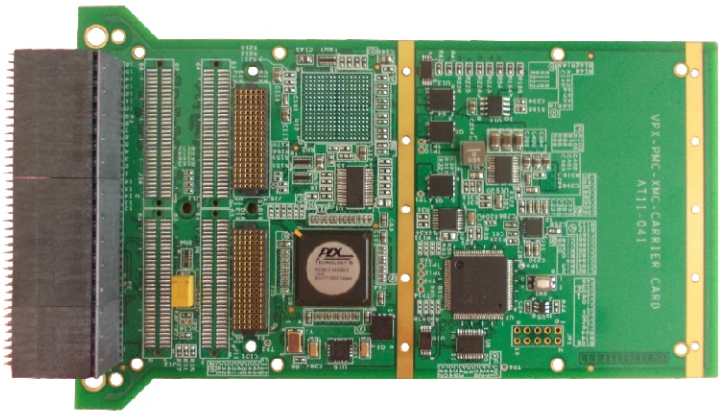
AT-VPX-Carrier

3U VPX VITA46 form factor Active VPX Carrier Card



- **3U VPX VITA46 form factor Active VPX Carrier Card**
- **Provides one PMC/XMC expansion site**
- **PMC/XMC Site provides 4 lane PCIe link on J15 Connector**
- **PMC/XMC site provides parallel PCI-X/PCI on PMC connectors**
- **PCI-Bus 64 bit, 33MHz/66MHz**
- **PCI Express® (PCIe) backplane interface to other VPX host processor cards**
- **Rear I/O as per VITA46.9**
- **PMC/XMC site provides 64 I/O lines on J14 and 20 Differential IO, 24 Single Ended IO on J16**
- **100 Ohm differential, 50 Ohm nominal for both J14 and J16 I/O signals**
- **Two PCIe links to backplane on VPX P1 core fabric connector**
- **Lane Status indicator LEDS and Module present indicator LEDs**
- **Two I2C interfaces from the backplane P0 connector**
- **High bandwidth multiGig RT connector for VPX boards**
- **Air- cooled and conduction-cooled versions**

OVERVIEW

AT-VPX-Carrier is one of a family of modules to employ open architecture VITA 46 standard primarily to marry High Speed Interconnect such as Rapid IO and PCI Express. AT-VPX-Carrier carrier card offers maximum flexibility to system integrators to implement advanced multi function systems by use of high performance Mezzanine card (either PMC or XMC) in a standard VPX form factor.

AT-VPX-Carrier carrier card is equipped with one mezzanine site capable of supporting Standard IEEE 1386 PMC or the latest high-performance VITA 42.3 XMC module. To the host processor, PMC and XMC Module on the carrier card appear as if they were on the host processor. PMC/XMC module supports 4-lane PCIe interface to J15 connector. PCI-X interface on PMC module is served by a 4-lane PCIe port on the central PCIe switch through a PCIe-to-PCI bridge. The AT-VPX-Carrier connects to other cards on the backplane via two, 4-lane PCI Express ports through the VITA 46 P1 Connector (ports A, B). All PCI Express ports go through a PLX PEX8617 PCI Express switch.

AT-VPX-Carrier provides significantly greater number of user IO's which are availed by PMC and XMC sites by providing 64 signals (32 pairs) of J14 I/O and 20 Differential IO, 24 Single Ended IO on J16 I/O from each of its mezzanine sites to the backplane connectors. The I/O is mapped as per the pattern P2w1-X24s+X8d+X12d mentioned in the VITA 46.9 draft specification, which provides for controlled impedance, matched length differential pairs.

The AT-VPX-Carrier has the ability to connect to two I2C interfaces from the backplane P0 connector. Either of the two I2C can be used by an external I2C master for control and configuration of the card.

VPX Backplane Fabric ports

The backplane provides 4-lane PCIe links to VITA 46 P1 connector ports A, B. The backplane ports A and B can be selected to function as either 2, 4-lane PCI Express ports or as a single 8-Lane upstream port. The selection of lane width is via onboard jumpers, as is the choice of which backplane PCI express port is the upstream port.
Note: There can only be one active upstream port.

Backplane Fabric Interface

Two 4-lane PCI Express links to the VITA 46 P1 connector (A, B) Choice of which backplane PCI Express port is the upstream port is user Selectable User can select backplane ports A and B to function as a single 8-lane PCI Express upstream port.

Mezzanine Sites Features

XMC/PMC site 1:

- Supports PCI-X at 66MHz and PCI at 33MHz, 64-bit PMC J11, J12 and J13 connectors
- Supports 4-lane PCIe interface to XMC J15 connector
- PCI/PCI-X interface is served by a 4-lane PCIe port on the central PCIe switch through a PCIe-to-PCI bridge
- Supports 64 IO signals (32 pairs) of PMC I/O to VITA 46 P2 as per VITA 46.9 pattern P64 (P2-64s)
- Supports 20 Differential IO, 24 Single Ended signals of XMC I/O to VITA 46 P2 per VITA 46.9, rule 5-5, pattern P2w1-X24s+X8d+X12d
- Either PMC/XMC IO's can be routed to P2 through build option

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Note: Only one of the PCIe and PCI-X interfaces can be active at any one time – the active interface is determined automatically depending on whether an XMC or PMC is installed. XMC site on carrier card utilizes up to a x4 PCI Express lanes from PCIe Switch on the J15 connector. Lane width can be negotiated to x1, x2, x4 based on the number of lanes available on XMC module The AT-VPX-Carrier is capable of hosting Processor PMCs in non-Monarch mode as described in the VITA 32-2003 draft standard (the Monarch# signal is left floating). The AT-VPX-Carrier does not support the optional second PCI agent, the optional EREADY signal, or the optional RESETOUT# signal.

Status Indicators and Controls

AT-VPX-Carrier supports front panel LEDs. A Green Power Status is provided which when lit indicates all power supplies to the card within specifications. If any of the power supply is not ok, the green LED remains OFF.

Each PCI Express lane for the backplane fabric ports and on board PCI Express ports (Switch and PCIe bridges) has an associated Indicator LED, which when lit indicates that the lane has been trained and is operational.

PRODUCT SPECIFICATIONS

PMC/XMC Sites

XMC Sites

- Form Factor 74x149 mm modules (IEEE 1386)
- Mounting height 10mm for single slot
- Specification VITA 42.3

PCI/PCI-X Host Interface

- Modes PCI/ PCI-X
- Clock Rates 66 MHz max
- Max data Width 64 bit

XMC PCI Express Interface

- Lanes 4 max;
- Ref Clock 100 Mhz
- Bit Rate per lane 2.5 Gbps
- VITA 42.3 XMC for PCI Express

Front Panel Indicators

- A green LED is provided to indicate onboard power supplies within specifications

Power Requirements

- The AT-VPX-PMC/XMC-CAR itself requires only 5V and 3.3Vaux
- 3.3V power is provided from On-Board PSU
- 3.3V is sequenced with main board power
- +12Vaux is routed to the PMC/XMC site
- A user-configurable jumper option is provided to route either backplane 5V or 12V to the XMC VPWR power input pins for system design flexibility

Mechanical Format Options

- 3U VPX (VITA 46), air-cooled, temperature range 0 (0 to +60°C)
- 3U VPX (VITA 46), conduction-cooled, temperature range to (-40 to +85°C)

Physical Configuration

- VPX 3U form factor (100X160mm) with a 4HP between slots
- Tyco MultiGig RT Connector
- PMC connectors: Four 1mm (Stacking Height of 10mm) connectors
- XMC Connectors: Two 1.27mm (Stacking height of 10mm) connectors

Environmental Specification

	Air-Cooled	Conduction-Cooled
Operating Temperature	-40ºC to +85ºC	0ºC to +60ºC

- The specification of 3U VPX conduction cooled envelope is compliant with the IEEE standard IEEE-1101.2, which is compatible with existing enclosures
- Provision is also made for air-cooling via an IEEE 1101.1/10 form factor version

Warranty

- 1 year standard warranty period

ORDERING INFORMATION

Hardware Selection

AT-VPX-1-PMC/XMC-CAR-Ruggedization

- A=Air-Cooled, R=Conduction-Cooled
- PMC=PMC Configuration, XMC=XMC Configuration
- 1 = 3U

- Contact sales for support for other Operating Systems
- Contact sales for configuration of front and rear I/O configuration
- Contact sales for environmental options

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