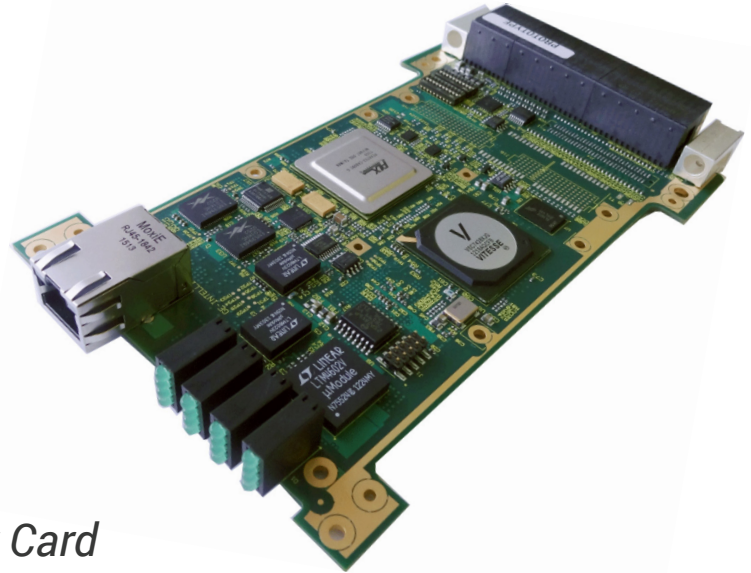




PEX431

Multi-Fabric Switch and XMC Carrier Card

The PEX431 Multi-Fabric Switch and XMC Carrier Card allow designers to build complex VPX systems with multiple single board computers and multiple I/O modules. PEX431 supports PCIe switching, GigE switching or the ability to host a XMC mezzanine.

The PCI Express switch of the PEX431 allows up to six ports of 4-lane PCI Express to be connected to a non-blocking line-speed switch, such that a scalable, complex system architecture can be created. In order to support systems requiring interconnection of more than six hosts, multiple PEX431 boards may be daisy-chained together.

The PCIe switch supports non-transparent bridging mode, allowing multiple intelligent hosts to be connected together. Non-transparent bridges allow systems to isolate memory domains by presenting the processor subsystem as an endpoint, rather than another memory system. To facilitate inter-processor communication, base address registers (BARs) are used to translate addresses, doorbell registers are used to transmit interrupts between the address domains, and scratchpad registers are accessible from both address domains.

The PCIe switch also supports transparent bridging mode in order to expand the I/O capability of the VPX single board computers.

The PEX431 can be configured to carry an XMC card, with eight lanes of PCI Express routed from the PCI Express switch to the mezzanine size.

For mezzanines that require maximum bandwidth, the PEX431 can be configured for 8-lane PCI Express at the VPX backplane connector. 64 bits of XMC I/O are routed to the VPX backplane connector.

Additionally, PEX431 has an unmanaged, Layer 2 Gigabit Ethernet Switch that offers up to nine ports, of which up to eight can be in 1000BASE-BX and up to two can be in 1000BASE-T.

From a software perspective, each PCI Express port is a virtual PCI-to-PCI bridge device, with its own set of PCI Express configuration registers. The host can configure the other ports by way of the upstream port, using conventional PCI enumeration. The virtual PCI-to-PCI bridges within the PEX431 are compliant with the PCI and PCI Express system models.

FEATURES:

- Up to six x4 PCIe Gen 3.0-capable ports via non-blocking switch
- Non-transparent bridging mode for multi-host systems
- Up to nine ports Gigabit Ethernet Switch (unmanaged)
- Build Options Include:
 - Up to 8x 1000BASE-BX with 1x 1000BaseT
 - Up to 6x 1000BASE-BX with 2x 1000BaseT
 - Not available with XMC option
- Supports XMC Modules
- Mezzanine I/O routed to VPX backplane
- XMC IO via J16 (x24s+x8d+x12d)
- Or via J14 (x64s)
- Not available with Ethernet switching option

PEX431 Multi-Fabric Switch and XMC Carrier Card

Specifications

PCI Express

- Up to 6 ports x4 PCIe Gen 3.0-capable, in accordance with VITA 46.4 (4 ports if mezzanine is supported)
- Firmware configurable for x8 operation from XMC site to backplane

Ethernet (unmanaged)

- 100BASE-BX and 1000BASE-T switching in following combinations
 - 8 x 1000BASE-BX plus 1 x 1000BASE-T or
 - 6 x 1000BASE-BX plus 2 x 1000BASE-T
- Not available with XMC option

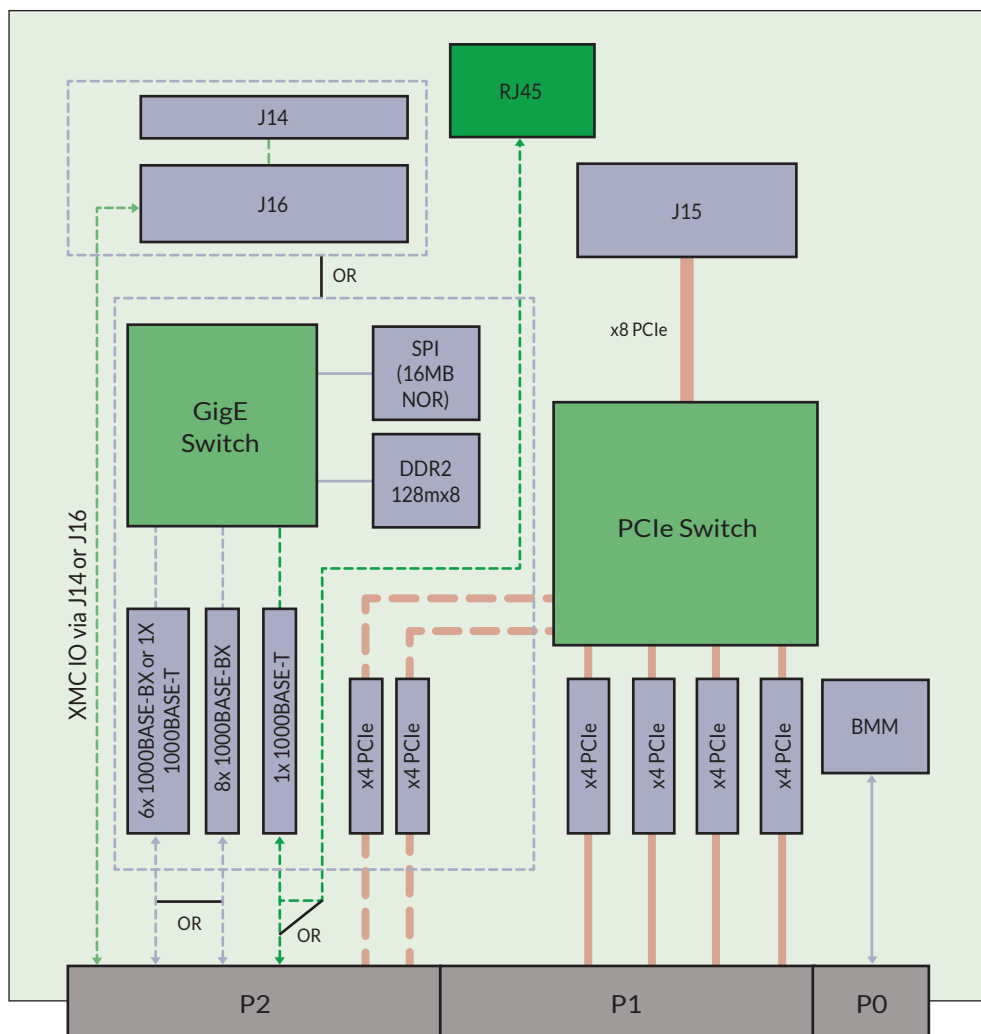
Mezzanine I/O

- 64 bits routed from mezzanine I/O connector to VPX backplane.
- Note: selection of XMC I/O via J14 (PMC style connector) or J16 (XMC style connector) is a factory build option
- XMC Mezzanine interface
- In accordance with VITA 46.9
- Routing from mezzanine I/O connector to the VPX backplane connector is a factory-build option.
- Not available with Ethernet Switching option

VPX Switch Module Profiles Supported

- Primary: MOD3-SWH-6F8U-16.4.10-2
- Secondary: MOD3-SWH-6F6U-16.4.1-3
- Mezzanine: MOD3-SWH-4F-16.4.5-2

Block diagram



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