

6U VPX Dual XMC/PMC Carrier and Mass Storage Board



APPLICATIONS

The VR XMC/x01 provides a flexible solution for adding modular I/O functionality and storage to a 6U VPX system. The carrier accommodates two single width XMC or PMC modules conforming to the IEEE 1386 Common Mezzanine Card standard, with front panel I/O and rear I/O. XMC modules supporting up to x16 PCI Express® (PCIe) interfaces and PMC modules supporting up to PCI-X 133MHz can be used.

The carrier provides rear I/O via PMC Pn4 and XMC Pn6 connectors, where the rear I/O signals are routed to the VPX backplane in accordance with VITA 46.9 (to an optional Rear Transition Module). Unused XMC/PMC sites can accommodate 2.5-inch SATA drives (HDD/SSD) for applications requiring mass storage. For rugged applications two VPX-REDI conduction-cooled versions of the board are available.

HIGHLIGHTS

- 6U VPX dual XMC/PMC Carrier:
 - up to 40 Watts per XMC/PMC module
 - air-cooled
 - 0.8-inch or 1.0-inch slot options
 - front panel I/O
 - optional rear transition module available
- XMC interfaces support:
 - x1, x2, x4 or x8 PCI Express® on site 1 and 2
 - x16 PCI Express optionally supported on site 2
 - option for +5V or +12V VPWR
- PMC interfaces support:
 - 32/64-bit, 33/66MHz PCI
 - 64-bit, up to 133MHz PCI-X
- Rear I/O options from XMC Pn6 and PMC Pn4:
 - 64 signals from Pn4 + 20 pairs from Pn6 or 38 signals and 20 pairs from Pn6
- +5 Volt, +12 Volt and -12 Volt provided for the XMC or PMC modules via the VPX backplane
- High-performance mass storage interfaces:
 - 2 x optional 2.5-inch mass storage drives (not available when XMC/PMCs are fitted)
 - option for up to 4 x SATA600 interfaces via P6 connector
- Option for 8 x GPIO and 8 x serial RS232/422/485 interfaces via VPX connectors
- VPX backplane fabric interface supports:
 - PCI Express links for 4 x4 PCIe ports, 2 x4 + 1 x8 PCIe ports, 2 x8 PCIe ports or 1 x16 PCIe port
 - support for Gen 1 and Gen 2
 - compatible with OpenVPX™ module profiles: MOD6-PER-4F-12.3.1-2, MOD6-PER-4F-12.3.1-3, MOD6-PER-2F-12.3.2-1, MOD6-PER-2F-12.3.2-2, MOD6-PER-1F-12.3.4-1 and MOD6-PER-1F-12.3.4-2
- System Management on VPX:
 - implements the SM0-1 and SM2-3 interface
- Elapsed Time Indicator for Scheduled Maintenance:
 - logs accumulated mission duration
 - records number of system power cycles
- Compatible with Concurrent Technologies 6U VPX SBCs supporting a PCIe data plane
- Extended temperature versions:
 - -25°C to +70°C (E-Series)
 - -40°C to +85°C (K-Series, includes humidity sealant)
- Ruggedized conduction-cooled VPX-REDI versions (RCx-Series):
 - conduction-cooled to VITA 48.2, conformally coated
 - -40°C to +85°C operating temperature (at card edge)
 - rear plug compatible with the air-cooled versions



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6U VPX Dual XMC/PMC Carrier

- 6U VPX dual XMC/PMC carrier supports:
 - 2 single width XMC or PMC modules
 - a single XMC and a single PMC module can be used simultaneously
 - up to 40 Watts per XMC/PMC module
 - supports single end-point PrXMC modules and non-Monarch PrPMC modules (e.g. supports the XP 732/x8x Processor XMC module)
 - PCI Express® fabric backplane operation
 - commercial air-cooled
- compatible with OpenVPX™ (VITA 65)
- for ruggedized VPX-REDI (RCx-Series) versions:
 - conduction-cooled to VITA 48.2
 - -40°C to +85°C at card edge
 - conformally coated
 - see VR XMC/001-RCx datasheet

XMC and PMC Interfaces

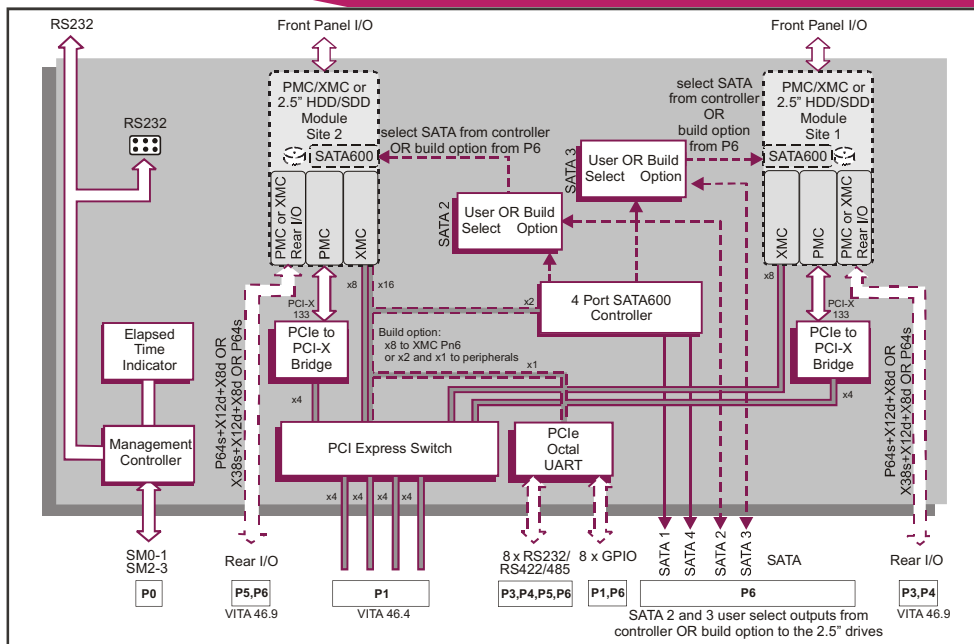
- complies with XMC (Switched Mezzanine Card) VITA 42 standard
- XMC interfaces support:
 - x1, x2, x4 or x8 PCI Express® on site 1 and site 2
 - x16 PCI Express on site 2 (build option)
 - support for Gen 1 and Gen 2 PCI Express
 - VPWR +5V (VS3) or +12V (VS1) (build option)
- PMC interface supports:
 - 32/64-bit, 33/66MHz PCI
 - 64-bit, up to 133MHz PCI-X
 - 5V tolerant PCI signaling
- XMC/PMC I/O via front and rear
- rear I/O from XMC Pn6 (build option):
 - X38s+X12d+X8d (20 differential pairs and 38 single-ended signals from Pn6), P3w3-X38s+P4w1-X12d+X8d (site 1), P5w3-X38s+P6w1-X12d+X8d (site 2)
- or rear I/O from XMC Pn6 and PMC Pn4 (build option):
 - P64s+ X12d+X8d (64 single-ended signals from Pn4 and 20 differential pairs from Pn6) P3w1-P64s+P4w1-X12d+X8d (site 1), P5w1-P64s+P6w1-X12d+X8d (site 2)
- Pn4 and Pn6 rear I/O mapping complies with VITA 46.9 (XMC/PMC Rear I/O Fabric Mapping on 6U VPX)

System Management

- Elapsed Time Indicator for Scheduled Maintenance:
 - logs accumulated mission duration
 - records number of system power cycles
- System Management on VPX:
 - implements the SM0-1 and SM2-3 interface
 - IPMI Version 1.5 via SM0-1 and SM2-3
- onboard Baseboard Management Controller
- monitors board voltages and status indicators
- supports 512 Kbytes of non-volatile memory
- RS232 Management Port for board management:
 - available via front panel
 - available via onboard header

Serial Interfaces

- 8x serial ports PCIe-to-UART controller (build option) supporting:
 - RS232/RS422/485 modes
 - accessed via P3/P4/P5/P6
 - Tx/Rx and CTS/RTS signals
 - 16550 compatible UARTs
 - RS422/485 full-duplex mode



VPX Backplane Interface

- PCI Express (PCIe) backplane fabric interface supports:
 - 4 x4 PCIe ports, 2 x4 + 1 x8 PCIe ports, 2 x8 PCIe ports or 1 x16 PCIe ports
 - Gen 1 and Gen 2
- any two ports can be configured as non-transparent
- compatible with OpenVPX module profiles:
 - MOD6-PER-4F-12.3.1-2, MOD6-PER-4F-12.3.1-3, MOD6-PER-2F-12.3.2-1, MOD6-PER-2F-12.3.2-2, MOD6-PER-1F-12.3.4-1 and MOD6-PER-1F-12.3.4-2
- option to work with PCIe clock (25MHz or 100MHz) from backplane (common reference clock)
- 4-channel DMA engine for fast data block moves

Mass Storage Interfaces

- 2 x optional onboard 2.5-inch SATA600 mass storage drive (MSD), either HDD or SSD, interfaces:
 - using the onboard PCIe to SATA controller or using an external SATA controller via P6 (build option)
- onboard SATA controller provides four SATA600 interfaces (two configured by user selection):
 - SATA1 always connects to P6
 - SATA2 selected via P6 or via onboard MSD
 - SATA3 selected via P6 or via onboard MSD
 - SATA4 always connects to P6

Other Peripheral Interfaces

- 8 x GPIO signals via P1 and P6:
 - derived from the eight port PCIe-to-UART controller (build option)

Compatible Processor Modules

- compatible with Concurrent Technologies 6U VPX single board computers supporting a PCIe data plane
- supported operating systems depend on the processor board used
- contact your local sales office for further information

Electrical Specification

- all current figures are typical (without XMC/PMC modules or HDD/SSD fitted)
- +5V (VS3) @ 3.0A; voltage +5%/-2.5%
- +3.3V (AUX) @ 0.1A; voltage +5%/-5%
- +12V and -12V not used onboard (routed to XMC sites)

Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

Environmental Specification

- operating temperature (air-cooled):
 - VITA 47 Class AC1, 0°C to +55°C (N-Series)
 - -25°C to +70°C (E-Series)
 - -40°C to +85°C (K-Series)
- storage temperature:
 - VITA 47 Class C1, -40°C to +85°C
- operating altitude:
 - 0 to 15,000 feet (0 to 4,572 meters)
- relative humidity (operating/storage):
 - 5% to 95%, non condensing
 - K-Series includes humidity sealant

Mechanical Specification

- 6U VPX form-factor (VITA 46.0, VITA 48.0)
- 9.2 inches x 6.3 inches (233mm x 160mm)
- alternative slot widths:
 - 0.8-inch (VITA 46.0)
 - 1.0-inch (VITA 48.0 as per VITA 65)
- connectors to VITA 46.0 for P0 through to P6
- operating mechanical:
 - shock - VITA 47 Class OS1, 20g
 - random vibration - 0.002g²/Hz

ORDERING INFORMATION

Order Number Product Description (Hardware)

For the order number suffix (-yz) options please contact your local sales office: where -yz = rear I/O configuration

VR XMC/x01-yz 6U VPX XMC/PMC Carrier, with optional SATA and serial ports

For accessories please contact your local sales office.

For further information on the VPX (N-Series) and VPX-REDI (RCx-Series) boards please contact your local sales office.