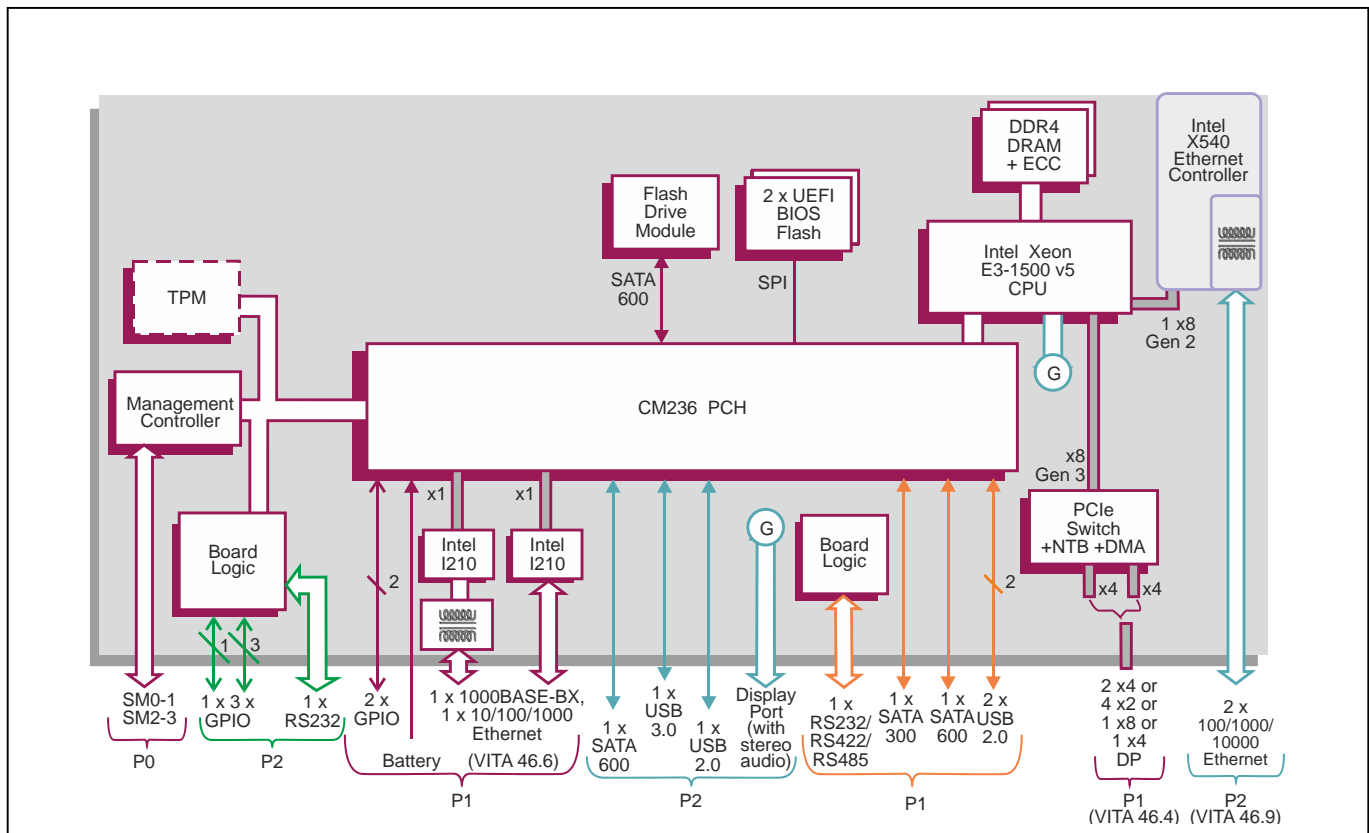


## 3U VPX™ Processor with 10Gigabit Ethernet interfaces

### Key Features

BA 1TR/501 is a 3U VPX™ board with an Intel® Xeon® processor E3-1505M v5 for applications that require high speed networking connectivity within a single VPX slot.

- Quad-core processor with 16GB DRAM and graphics
- 10Gigabit and Gigabit Ethernet LAN connectivity
- 64GB solid state disk module
- PCI Express® data plane for high speed connectivity to backplane based resources
- Air and conduction-cooled variants available



## VPX Computing and I/O Board

- 3U VPX™ computing board supporting dual 10 Gigabit Ethernet interfaces:
  - utilizing a CPU from the Intel® Xeon® processor E3-1500 v5 family
  - 10GBASE-T/1000BASE-T/100BASE-Tx via P2
  - optional Rear Transition Module (RTM)
- compatible with several OpenVPX™ module profiles:
  - MOD3-PAY-2F2U-16.2.3-3
  - MOD3-PAY-2F1F2U-16.2.1-4
  - MOD3-PAY-1F2F2U-16.2.2-4
- single VPX slot (VITA 42.0)
- air-cooled or rugged conduction-cooled variants

## Central Processor

- 4-core Intel® Xeon® processor E3-1505M v5:
  - 8 MB Smart Cache, 2.8 GHz
  - Intel® HD Graphics P530
- utilizes the Intel® CM236 Platform Controller Hub

## DRAM

- 16 GB soldered DDR4 ECC DRAM:
  - single bit error correction
  - dual channel architecture
  - accessible from processor or VPX™ fabric

## Dual 10 Gigabit Ethernet interfaces

- dual 10 Gigabit Ethernet interfaces with magnetics on-board:
  - implemented using the Intel® X540 Ethernet Controller device
  - 1 x8 PCI Express® Gen 2
  - implemented via an on-board XMC module (factory fitted)
  - P2 rear I/O pin-map to X8d+X12d (VITA 46.9)
- in-board status LEDs for link/speed activity:
  - status LED signals also via P2
- PXE BIOS Firmware and iSCSI BIOS Firmware

## On-board Mass Storage

- on-board 64GB Flash Drive Module:
  - utilizes 1 x SATA600 interface

## External Mass Storage Interfaces

- 3 x SATA interfaces:
  - 2 x SATA600 interfaces via P1
  - 1 x SATA600 interface via P2

## Graphics/Audio Interface

- independent graphics/audio interface via P2:
  - DisplayPort interface, supporting audio and video
  - resolution is dependent on the device driver
- support for Microsoft® DirectX 12 and 11.x
- support for OpenGL 4.x and 5.x under Windows® and Linux®
- support for OpenCL 2.1

## Serial Ports

- 1 x RS232/422/485 port accessed via P1:
  - supporting Tx, Rx, RTS and CTS in RS232 only
- 1 x RS232 port accessed via P2:
  - supporting Tx, Rx, RTS and CTS
- 16550 compatible UARTs

## Other Peripheral Interfaces

- PC RTC, long duration timer, watchdog timer
- 4 x USB ports via the rear:
  - 2 x USB 2.0 ports via P1
  - 1 x USB 2.0 port and 1 x USB 3.0 port via P2
- 6 x GPIO signals:
  - 2 x GPIO via P1
  - 4 x GPIO via P2

## VPX Control Plane, Ethernet

- configurable Ethernet Control Plane (VITA 46.6) supports:
  - 1 x 1000BASE-BX Ethernet port
  - 1 x 10/100/1000 Mbps Ethernet ports with magnetics

## VPX Data Plane, PCI Express

- configurable PCI Express (PCIe®) VPX Data Plane fabric interface (VITA 46.4) supports:
  - 2 x4 or 4 x2 or 1 x8 or 1 x4 PCIe ports
  - support Gen 1, Gen 2 and Gen 3
- PCIe switch supports two non-transparent ports for multi-processing configurations
- 4 channel DMA engine for fast data block moves
- switch ports can be configured by the VPX Switch Configuration Tool, see separate datasheet
- switch supported by Fabric Interconnect Networking software (FIN-S), see separate datasheet
- support for PCIe backplane common clock options

## System Management

- IPMI via SM0-3, accessing:
  - voltages monitor, CPU temperature monitor and board temperature monitor
- Baseboard Management Controller (BMC)

## Optional Built-In Test (BIT) Support

- Power-on BIT, Initiated BIT, Continuous BIT

## Optional Board Security Packages

- Trusted Platform Module (TPM):
  - compliant to TCG v1.2
- proprietary hardware/software board security

## Software Support

- supports Linux®, Windows® and VxWorks®

## Firmware Support

- UEFI boot firmware (BIOS):
  - UEFI 2.4 support
  - EDK II support
  - includes Compatibility Support Module
- LAN boot firmware included

## Non-Volatile Memory

- 8 Mbytes of BIOS Flash EPROM, dual devices

## Safety

- PCB (PWB) manufactured with flammability rating of UL94V-0

## Electrical Specification

- typical current consumption for 4-core Intel Xeon processor E3-1505M v5 with 16 Gbytes DRAM:
  - +5V @ 2.3A
  - +3.3V @ 4.1A; +3.3V AUX @ 0.3A
- dual 10 Gigabit Ethernet interfaces adds a maximum of 3.7A @ +5V VPWR

## N-Series Environmental Specification

- air-cooled board
- operating temperature:
  - VITA 47 Class AC1, 0°C to +55°C
- non-operating temperature:
  - VITA 47 Class C1, -40°C to +85°C
- operating altitude:
  - 0 to 15,000 feet (0 to 4,572 meters)
- relative humidity:
  - 5% to 95%, non-condensing

## RCx-Series Environmental Specification

- conduction-cooled board (VITA 48.2)
- operating temperature at card edge:
  - VITA 47 Class CC4, -40°C to +85°C
- non-operating temperature:
  - VITA 47 Class C4, -55°C to +105°C
- operating altitude:
  - -1,000 to 50,000 feet (-305 to 15,240 meters)
- relative humidity:
  - 5% to 95%, non-condensing

## VPX Mechanical Specification

- 3U VPX form-factor (VITA 46.0, VITA 48.0)
- 3.9 inches x 6.3 inches (100mm x 160mm)
- connectors to VITA 46.0 for P0, P1 and P2

## N-Series Mechanical Specification

- air-cooled slot width 1.0-inch:
- IEEE 1101.10 as per VITA 46.0 operating mechanical:
  - shock - VITA 47 Class OS1, 20g
  - random vibration - 0.002g<sup>2</sup>/Hz

## RCx-Series Mechanical Specification

- conduction-cooled slot widths (VITA 48.0):
  - 0.8 inches VPX-REDI Type 2, RCT-Series
  - 0.85 inches VPX-REDI Type 1, RCS-Series, Type 1 Two Level Maintenance (VITA 48.2)
- operating mechanical:
  - shock - VITA 47 Class OS2, 40g
  - random vibration - VITA 47 Class V3, 0.1g<sup>2</sup>/Hz

## Optional VPX Fabric Switch

- board is compatible with FR 331/x06 VPX Switch or FR 341/x06 VPX Switch