

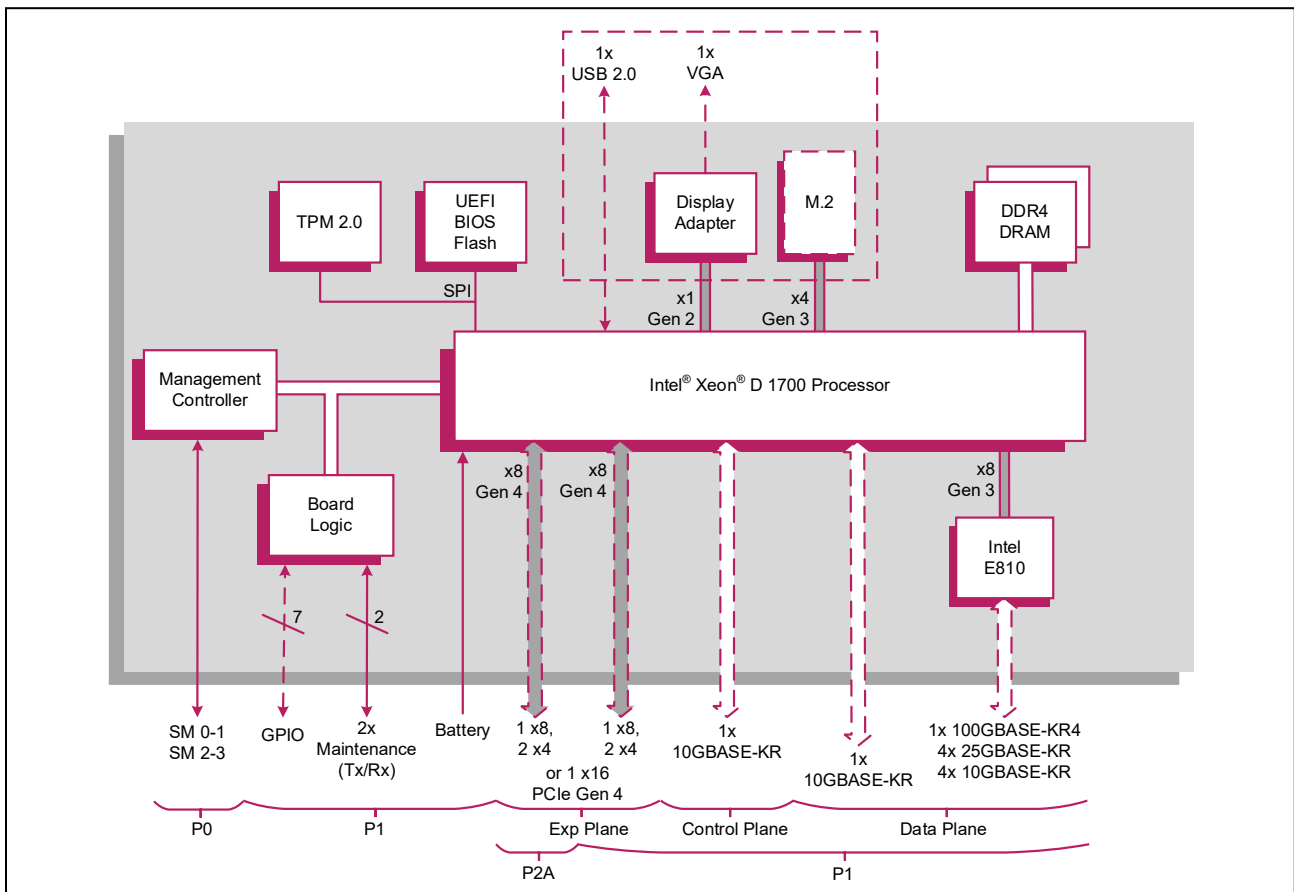
## 3U VPX™ Compute Intensive Plug In Card (PIC) based on Intel® Xeon® D-1700 Processor Family

### Key Features

TR Mx/6sd-RCx is a compute intensive rugged Plug In Card. It has been developed in alignment with the SOSA™ Technical Standard. It features a processor with 10 cores, large memory capacity, local storage and support for virtualization.



- 10-core processor for high performance
- Up to 128 Gbytes DDR4 memory for server grade applications
- 100GBASE-KR4 Ethernet Data plane
- Up to x16 PCI Express® Gen 4 Expansion plane for high speed communication with adjacent PIC(s)
- Optional M.2 module for storage with Write/Protect and Opal 2.0 compliance
- Optional Front VGA and USB ports for ease of setup



## VPX Processor PIC

- rugged conduction-cooled 3U VPX™ computing PIC utilizing Intel® Xeon® D-1700 Processor
- compliant with two OpenVPX™ slot and module profiles:
  - SLT3-PAY-1F1U1S1S1U1U2F1H-14-6.11-0
  - MOD3p-PAY-1F1U1S1S1U1U2F1H-16-6.11-4
  - SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-n
  - MOD3p-PAY-1F1U1S1S1U1U4F1J-16.6.13-1

## Central Processor

- 10-core Intel® Xeon® D-1746TER Processor:
  - 15 Mbytes Cache, up to 2.0 GHz, up to 67 W
- Intel® Advanced Vector Extensions AVX-512
- Intel Vector Neuro Network Instructions (VNNI)
- Intel Vector Byte Manipulation Instructions (VBMI)
- server class processing cores in a System-on-a-Chip package
- range of performance/power factory build options

## DRAM

- Up to 128 Gbytes soldered DDR4 ECC DRAM:
  - single bit error correction and dual bit error detection

## Maintenance Serial Ports

- 2x maintenance ports via P1:
  - supports LVCMOS levels
  - supports RS232 Tx/Rx signals
  - 16550 compatible UARTs

## Mass Storage Interfaces

- optional M.2 Carrier Module supporting:
  - 1x M.2 Flash site
  - 2242 format modules (with option for self-encryption)
  - x4 PCI Express® (PCIe®) interface (M-key)
  - Opal 2.0 security encryption
  - Write Protect
  - NVMe Express® (NVMe®) logical device interface
  - NVMe 1.3 compatible

## Console Interface

- for board commissioning an optional on-board console interface is available via a forward facing 16-way I/O connector:
  - supported on the M.2 Carrier Module
  - VGA interface (up to 1920 x 1080 @ 60 Hz)
  - USB 2.0 port for user interface
  - separate adapter cable available with standard VGA and USB connectors

## Other Peripheral Interfaces

- PC RTC, long duration timer, watchdog timer
- build option: up to 7x GPIO signals via P1

## VPX Data Plane, 100 Gigabit Ethernet (optional)

- configurable Ethernet VPX Data Plane fabric interface (VITA 46.7)
- VPX Data Plane interface supports:
  - 1x 10GBASE-KR and/or 1x 100GBASE-KR4
  - 1x 10GBASE-KR and/or 4x 25GBASE-KR
  - 1x 10GBASE-KR and/or 4x 10GBASE-KR
- factory build option available to disconnect Data Plane

## VPX Control Plane, 10 Gigabit Ethernet (optional)

- configurable Control Plane (VITA 46.6)
- VPX Control Plane interface supports:
  - 1x 10GBASE-KR
- factory build option available to disconnect Control Plane

## VPX Expansion Plane, PCIe (optional)

- configurable PCI Express (PCIe) Gen 4 VPX Expansion Plane fabric interface (VITA 46.4):
  - 1 x16 on P1 and P2A PCIe ports
  - 1 x8 on P1 and/or 1 x8 on P2A PCIe ports
  - 2 x4 on P1 and/or 2 x4 on P2A PCIe ports
- factory build option available to disconnect Expansion Plane

## System Management

- On board controller:
  - SM0-1 and SM2-3
- VITA 46.11-2022 type 3 IPMC
- option for VITA 46.11-2022 compatible Tier 1 Chassis Manager

## Board Security Features

- Trusted Platform Module (TPM 2.0)
- supports Total Memory Encryption
- option for Sanitization Utility Software Package
- option for proprietary board-level security features
- implements Intel Boot Guard and Intel SGX

## Optional Built-In Test (BIT) Support

- Power-on BIT, Initiated BIT, Continuous BIT

## Software Support

- supports Linux® and Windows®
- for other operating systems such as VxWorks®, contact Concurrent Technologies for further information

## Firmware Support

- single BIOS SPI Flash EPROMs
- UEFI boot firmware (BIOS):
  - UEFI 2.7 support
  - implements Secure Boot
- optional Fast Boot solution using the Intel Slim Bootloader
- LAN boot firmware included

## Safety

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

## Electrical Specification

- typical current consumption for 10-core processor (2.0 GHz):
  - +12 V VS1 @ TBD
  - +3.3 V AUX @ TBD

## Environmental Specification

- conduction-cooled (VITA 48.2)
- operating temperature at card edge:
  - VITA 47.1 Class CC3, -40°C to +70°C (RCx-Series)
  - VITA 47.1 Class CC4, -40°C to +85°C (RCx-Series) - Contact Concurrent Technologies for more details
- non-operating temperature:
  - VITA 47.1 Class C4, -55°C to +105°C
- operating altitude:
  - -1,500 to 60,000 feet (-460 to 18,300 meters)
- rapid decompression:
  - From 8,000 to 60,000 feet (from 2440 to 18,300 meters)
- 5% to 95% Relative Humidity, non-condensing

## Mechanical Specification

- 3U VPX form-factor (VITA 46.0, VITA 48.0):
  - 3.9-inches x 6.3-inches (100 mm x 160 mm)
- slot width (VITA 48.0):
  - 1.0-inch VPX-REDI Type 1, RCR-Series Type 1 Extended Covers Two Level Maintenance (VITA 48.2)
- connectors to VITA 46.0 for P0, P1 and P2A
- captive screws available to secure front handles
- operating mechanical:
  - shock - VITA 47.1 Class OS2, 40 g
  - random vibration - VITA 47.1 Class V3, 0.1 g<sup>2</sup>/Hz