VPX (OpenVPX)

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Computer

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Magni (TR MBx/6sd)

Rugged 3U VPX   SOSA Aligned Compute Intensive PIC with XMC for Crypto/Storage/Acceleration

Key Features

Magni is a rugged 3U VPX   Plug In Card (PIC) based on the 13th Gen Intel   Core^{TM} Processor for Crypto/Storage/Acceleration needs. It is designed in alignment with the SOSA   Technical Standard for compute intensive processor PICs.

- 14-core processor for high performance
- 100GBASE-KR4 Ethernet Data plane
- Gen 4 PCI Express   Expansion plane for high-speed communication with adjacent boards
- XMC Site for crypto, accelerator or storage modules
- Up to 2TB M.2 module for direct attached storage with Write Protect and Opal 2.0 data at rest compliance.
- Rugged conduction-cooled
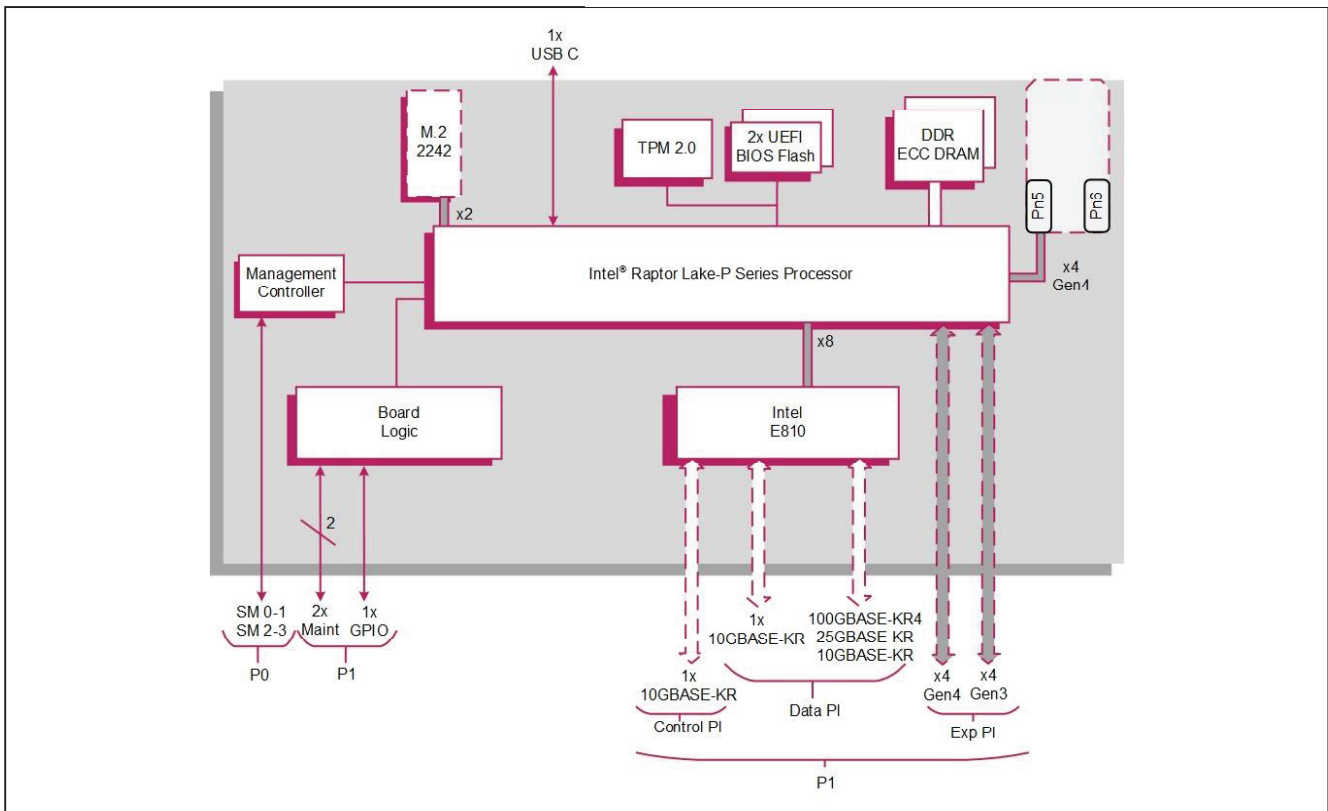
Specification

VPX Processor PIC

- Rugged conduction-cooled 3U VPX PIC based on 13th Generation Intel Core Series Processor
- Compliant with two OpenVPX slot profile:
  - SLT3-PAY-1F1U1S1S1U1U2F1H-14-6.11-0

Central Processor

- 14-core Intel Core i7-13800HRE Processor
- Intel Vector Neuro Network Instructions (VNNI)
- Intel Iris Xe (Gen 12) Graphics Engine with up to 96 EUs

DRAM

- 64 Gbytes soldered LPDDR5 IBECC DRAM:
  - In-band ECC
  - Single bit error correction

Optional XMC Site

- 1x XMC site, in a single VPX slot (VITA 42.0):
  - 1 x4 PCI Express (PCIe)
  - PCIe Gen 1, Gen 2, Gen 3 and Gen 4
- XMC connector type:
  - VITA 42 XMC (black color)
- XMC VPWR +12 V

Serial Ports

- 2x maintenance ports accessed via P1
- Maintenance ports on P1 support LVCMOS levels
- 16550 compatible UARTs

Other Peripheral Interfaces

- PC RTC, long duration timer, watchdog timer
- 1x GPIO signal via P1
- USB-C on front for development purposes

Mass Storage Interfaces

- 1x M.2 SSD site supports:
  - 2242 format module
  - x2 PCIe interface (M-key)
  - Opal 2.0 security encryption
  - Hardware Write Protect
  - NVM Express (NVMe) logical device interface

VPX Control Plane, Ethernet

- Configurable Control Plane (VITA 46.6)
- 1x 10GBASE-KR Ethernet port via P1:
  - Supports up to 10GBASE-KR
  - Implemented by Intel Ethernet Controller E810 via x8 PCIe
  - Factory build option available to disable Control Plane
- Supports IEEE 1588 Precision Time Protocol

VPX Data Plane, 100 Gigabit Ethernet

- Configurable Ethernet VPX Data Plane fabric interface (VITA 46.7)
- 1x 100 Gigabit Ethernet port via P1 (VITA 46.7):
  - Supports 1x 100GBASE-KR4 or 1x 25GBASE-KR or 4x 10GBASE-KR
  - Additional 10GBASE-KR port supported in 4x 10GBASE-KR mode
  - Implemented by Intel Ethernet Controller E810 via x8 PCIe
  - Factory build option available to disable Data Plane
- Supports IEEE 1588 Precision Time Protocol

VPX Expansion Plane, PCI express

- Configurable PCI Express (PCIe) VPX Expansion Plane fabric interface (VITA 46.4):
  - 1 x4 Gen 4 and 1 x4 Gen 3
  - Factory build option available to disable Expansion Plane

Optional Built-In Test (BIT) Support

- Power-on BIT, Initiated BIT, Continuous BIT

System Management

- IPMC on-board controller:
  - SM0-1 and SM2-3
- VITA 46.11-2022 Tier 3 IPMC
- Option for VITA 46.11-2022 compatible Tier 1 Chassis Manager

Board Security Packages

- Trusted Platform Module (TPM 2.0)
- Supports Total Memory Encryption, ROP Attack Prevention and Advanced Crypto-Key Protection
- Option for Sanitization Utility Software Package
- Option for proprietary board-level security features

Software Support

- Supports Linux

Firmware Support

- Dual 32 Mbyte BIOS SPI Flash EPROMS
- UEFI boot firmware (BIOS):
  - UEFI 2.7 support
  - Implements Secure Boot
- Implements Intel Boot Guard
- Optional Fast Boot solution using the Intel Firmware Support Package (FSP)
- LAN boot firmware included

Safety

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

Electrical Specification (Estimated)

- Typical current figure:
  - +12 V VS1 @ 2.7 A
  - +3.3 V AUX @ 0.3 A
- +12 V AUX and -12 V AUX routed to XMC site
- +5 V and +3.3 V are not connected

Environmental Specification

- Conduction-cooled (VITA 48.2)
- Operating temperature at card edge:
  - VITA 47 Class CC3, -40 C to +85 C
- Non-operating temperature:
  - VITA 47 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)
- Relative humidity: 5% to 95%, 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 and P1
- Operating mechanical:
  - Shock - VITA 47 Class OS2, 40 g
  - Random vibration - VITA 47 Class V3, 0.1 g /Hz

Please contact your local Concurrent Technologies sales office for further details on board build options and accessories.