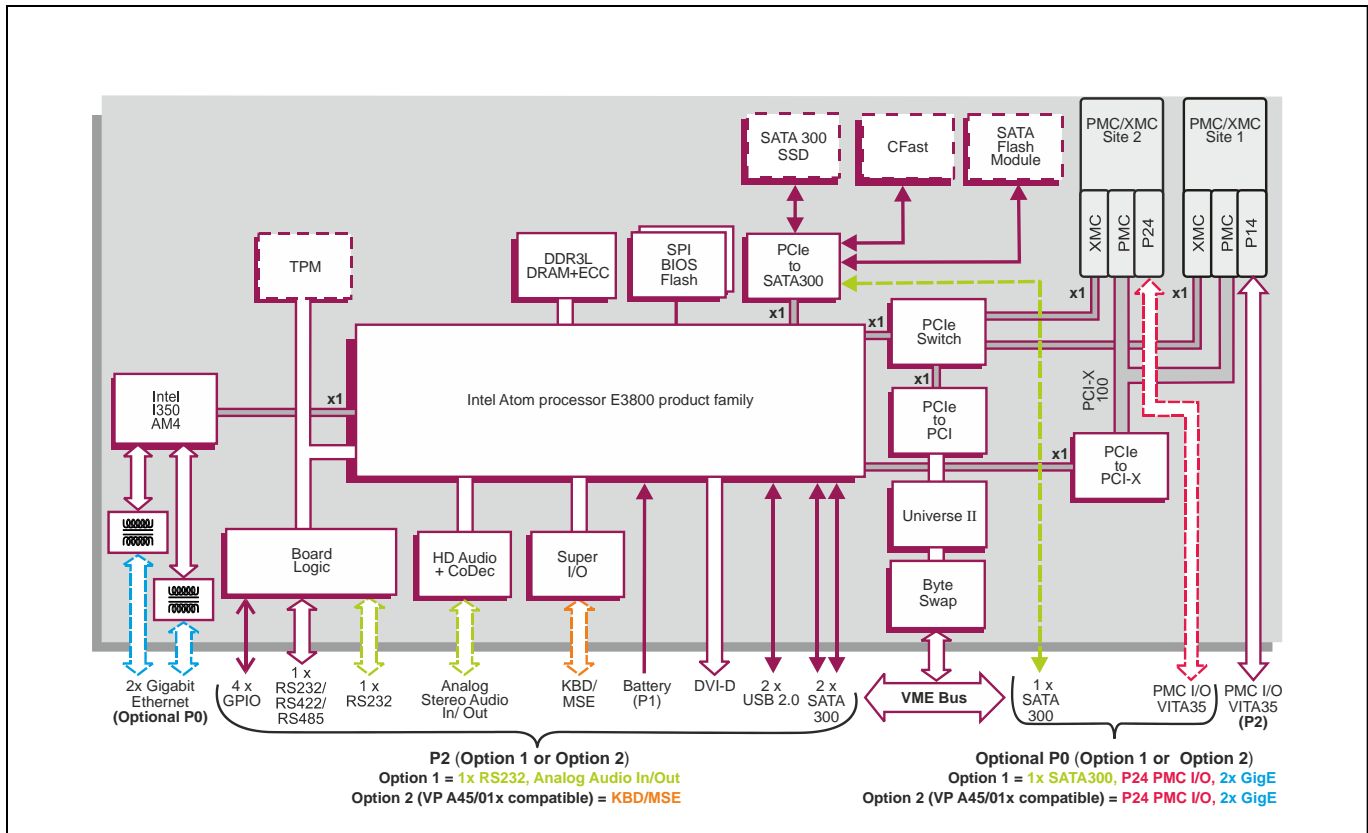
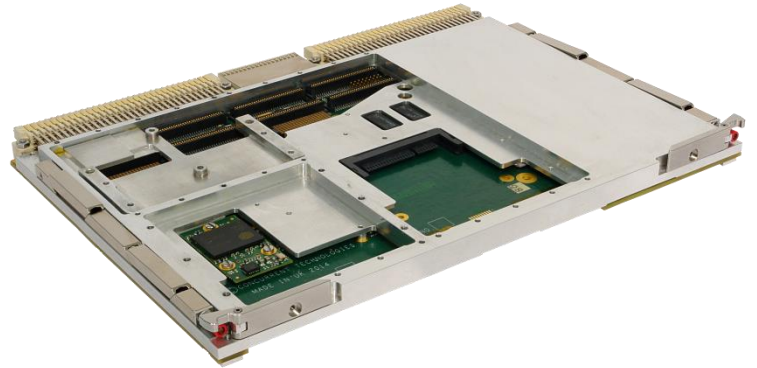


Rugged Conduction-Cooled VME board based on Intel® Atom™ Processor E3800 Product Family

Key Features

VP E2x/0sd-RC is a rugged conduction cooled VME board that has been designed for long life-cycle, low power consumption applications:

- 4-core and 1-core processor options allowing for performance and power optimizations
- Up to 8 Gbytes DRAM with built in error correction for reliable operation
- 2 x PMC/XMC module interfaces for local I/O expansion
- Built in I/O interfaces including SATA, USB, Ethernet, graphics, GPIO, audio and serial
- On board solid state disk options for reliable boot image and data storage
- Off the shelf board support packages available for Linux®, Windows® and VxWorks®



Rugged Dual PMC/XMC Controller

- conduction-cooled to IEEE 1101.2
- supports 2 x conduction-cooled PMC or XMC modules conforming to ANSI/VITA 20
- conformally coated

Central Processor

- Intel® Atom™ processor E3800 product family:
 - 4-core 1.91 GHz Intel® Atom™ processor E3845, 2M Last Level cache
 - 1-core 1.46 GHz Intel® Atom™ processor E3815, 512K Last Level cache

DRAM

- either 4 Gbytes soldered DDR3L DRAM:
 - 1-core or 4-core processor (build option)
 - peak bandwidth of 10.6 Gbytes/s (4-core)
 - peak bandwidth of 8.52 Gbytes/s (1-core)
 - single channel architecture with ECC
- or 8 Gbytes soldered DDR3L DRAM:
 - 4-core processor only (build option)
 - peak bandwidth of 21.3 Gbytes/s
 - dual channel architecture without ECC
- accessible from processor or VME bus

Mass Storage Interfaces

- up to 3 x external SATA300 interfaces:
 - 2 x SATA via P2
 - 1 x SATA (build option) via optional P0
- On-board SATA300 support for optional:
 - CFast™ Card
 - SATA Flash Drive Module
 - 2.5-inch mass storage drive (disables PMC/XMC site 2)

Ethernet Interfaces

- 2 x Gigabit Ethernet interfaces via rear:
 - implemented by an Intel® I350-AM4 Ethernet Controller via a x1 PCI Express® Gen 2 port
 - via optional P0 to optional Rear Transition Module
 - one interface supports VITA 31.1 (Gigabit Ethernet for VME64x backplanes)
 - on-board magnetics (50V isolation)

Dual PMC/XMC Interfaces

- PMC/XMC site 1:
 - P14 rear I/O via P2 (VITA 35)
- PMC/XMC site 2:
 - P24 rear I/O via optional P0 (VITA 35)
- PMC interface(s) support:
 - shared 32/64-bit, 33/66MHz PCI bus
 - shared 64-bit PCI-X bus up to 100MHz
 - 5V and 3.3V signaling
- XMC (Switched Mezzanine Card) site(s):
 - support x1 PCI Express® (Gen 1, Gen 2)
 - both powered from 5V supply

Serial Interfaces

- 1 x RS232/422/485 via P2:
 - RS232 supports Tx, Rx, CTS, RTS, DSR, DTR, DCD and RI
- 1 x RS232 via P2 (build option):
 - Tx and Rx
- 16550 compatible UARTs

Stereo Audio

- Intel® High Definition Audio interface (on-board CoDec) via P2 (build option):
 - analog stereo audio input and output

Graphics Interface

- DVI-D interface via P2:
 - up to 1600 x 1200 @ 16M colors
- 1-core processor:
 - graphics base frequency is 400 MHz
- 4-core processor:
 - graphics base frequency is 542 MHz
 - graphics burst frequency is 792 MHz
- support for Microsoft® DirectX 11.1 on Windows®
- support for OpenGL 3.0 on Linux®

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- watchdog timer; 1 x 32-bit Long Duration Timer with processor interrupt capability
- 2 x USB 2.0 interfaces via P2
- 4 x GPIO signals via P2 with processor interrupt capability
- keyboard and mouse PS/2 interfaces via P2 (build option for VP A45/01x legacy compatibility only)

Flash EPROM

- dual 8 Mbytes of BIOS SPI Flash EPROM

Software Support

- supports Linux®, Windows® and VxWorks®

Firmware Support

- Insyde Software InsydeH20™ BIOS:
 - Intel® Platform Innovation Framework for EFI
- optional Fast Boot solution based on the Intel® Firmware Support Package (Intel® FSP)
- LAN boot firmware included

Optional Built-In Test (BIT) Support

- Power-on BIT (PBIT), Initiated BIT (IBIT), Continuous BIT (CBIT)

Optional Board Security Features

- Trusted Platform Module (TPM):
 - build option for either TPM 1.2 or TPM 2.0
- option for Sanitization Utility Software Package
- proprietary board-level security features

VME Interface

- P1 and P2 connectors compatible with VME64x
- implemented using IDT® Universe II™ device
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(EO)/MBLT
- fast hardware byte swapping
- auto system controller detect
- full interrupter / interrupt handler support
- bus error interrupt hardware

Safety

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

Electrical Specification

- typical power consumption is typically 18W for the 1-core Intel Atom processor E3815 board
- +5V (+5%/-2.5%) is required, +3.3V is not required
- +12V @ 0.0A; -12V @ 0.0A
- +12V and -12V routed to both PMC/XMC sites

Environmental Specification

- operating temperature (at card edge):
 - VITA 47 Class CC4, -40°C to +85°C
 - conduction-cooled
- 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)
- 5% to 95% Relative Humidity, non-condensing
- commercial versions, see separate datasheet:
 - rear plug compatible
 - air-cooled or fanless: VP E2x/msd

Mechanical Specification

- 6U form-factor
- single slot, width 0.8 inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0 connector
- operating mechanical:
 - shock - VITA 47 Class OS2, 40g
 - random vibration - VITA 47 Class V3, 0.1g²/Hz displacement

