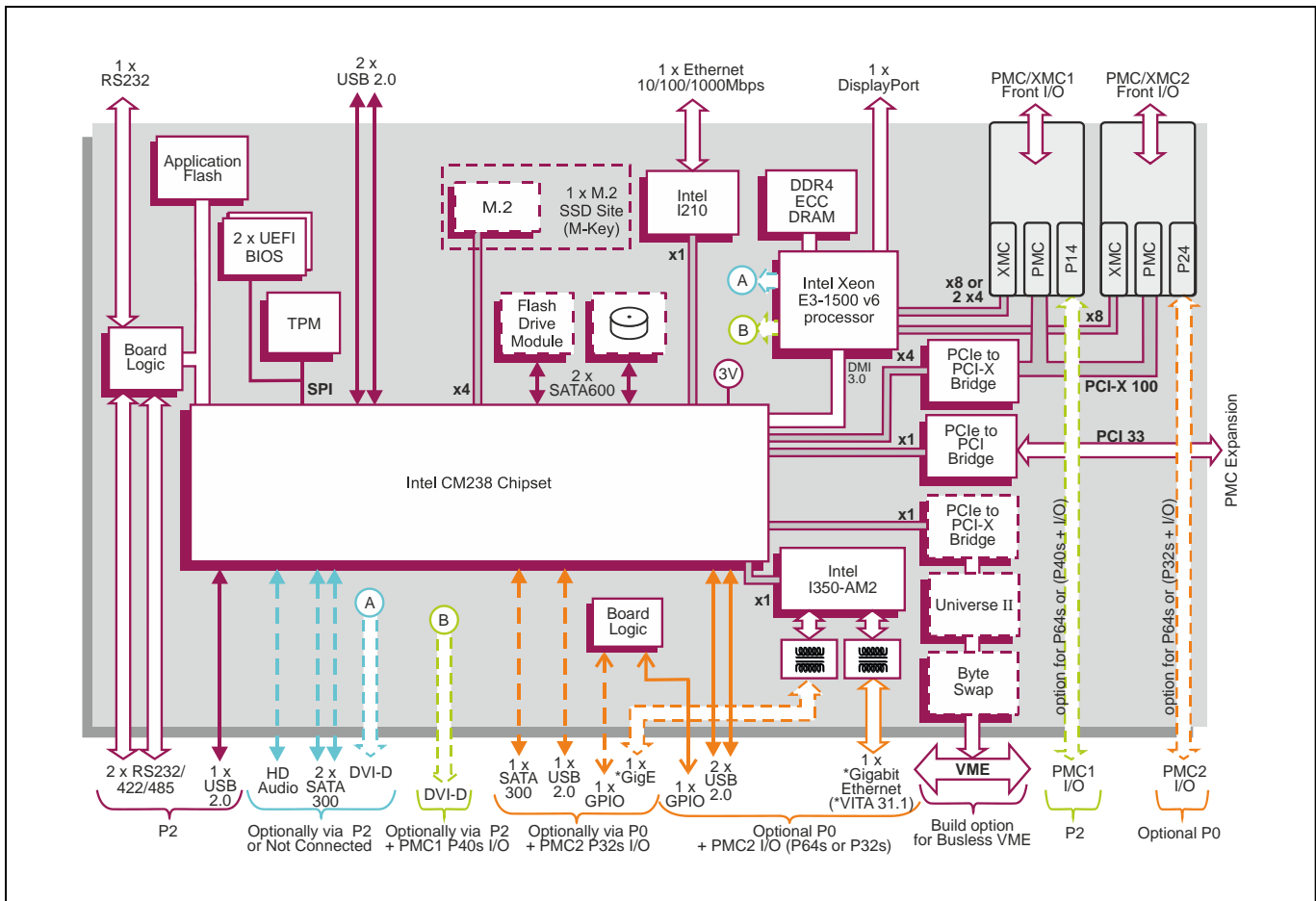# VME board based on Intel® Xeon® Processor

Key Features

A 6U processor board designed to extend the life of VMEbus deployments.

- Utilizes 4-core Intel® Xeon® Processor E3-1505L v6

- Supports two on-board PMC/XMC sites

- Supports two additional PMC modules connected via optional AD CR5/PMC expansion carrier

- Optional SATA Flash, M.2 and 2.5-inch storage drives

- Support for Linux®, Windows® and VxWorks®. For other Operating Systems contact your local Concurrent Technologies Sales Office

- Option to exclude VMEbus interface is available

CONCURRENT TECHNOLOGIES

Concurrent Technologies Plc 4 Gilberd Court, Colchester, Essex, CO4 9WN, UK
Tel: +44 (0)1206 752626

Concurrent Technologies Inc. 400 West Cummings Park, Suite 1300, Woburn, MA 01801, USA
Tel: (781) 933 5900

email:info@gocct.com   www.gocct.com

VME Embedded Computer Board

- air-cooled 6U VME computing board utilizing an Intel® Xeon® processor
- optional Rear Transition Module (RTM)
- rugged conduction-cooled (RC-Series) versions:
  → see VP F6x/msd-RC datasheet

Central Processor

- 4-core Intel® Xeon® Processor E3-1505L v6:
  → 8 Mbytes Cache, 2.2 GHz
  → Intel® HD Graphics P630
- utilizes the Intel® CM238 Chipset

DRAM

- 16 or 32 Gbytes soldered DDR4-2400 ECC DRAM:
  → single bit error correction
  → dual channel architecture
- accessible from processor or VME bus

PMC/XMC Interfaces

- 2 x PMC shared sites supporting:
  → 32/64-bit, 33/66 MHz PCI bus
  → 64-bit PCI-X bus up to 100 MHz
  → 3.3V or 5V PCI signaling
- 2 x XMC (Switched Mezzanine Card) sites:
  → support x8 PCI Express (Gen 1, Gen 2)
  → XMC Site 1 can also support 2 x4 PCI Express
  → both sites provide 5V VPWR
- PMC Site 1 I/O (P14) via front panel and via P2:
  → P64s via P2 or factory build option to provide P40s plus DVI-D via P2
- PMC Site 2 I/O (P24) via front panel and via optional P0:
  → P64s via P0 or factory build option to provide P32s plus other I/O
  (see Note: Option 1 or Option 2)
- optional carrier board with dual PMC/XMC sites:
  → x8 PCIe interface (using XMC Site 2) supporting up to two modules, 66MHz PCI-X or x8 PCIe
- alternative optional carrier board with dual PMC sites:
  → PCI-33 board expansion connector supporting up to two 32-bit/33 MHz modules
  → PMC/XMC Site 1 and Site 2 remain available

Ethernet Interfaces

- 2 x Gigabit Ethernet interfaces via rear panel:
  → accessed via optional P0
  → on-board magnetics
  → implemented by Intel® Ethernet Controller I350-AM2 via x1 PCI Express® (PCIe®) Gen 2 port
- support for VITA 31.1:
  → Gigabit Ethernet for VME64x backplanes
- 1 x Gigabit Ethernet interface via front panel:
  → accessed via RJ45 connector
  → implemented by Intel® Ethernet Controller I210
- support Wake-On-LAN
- support Precision Time Protocol (IEEE 1588)

Serial Interfaces

- 3 x serial channel interfaces:
  → 1 x RS232 accessed via 60-way high density connector on front panel
  → 2 x RS232/422/485 accessed via P2
- 16550 compatible UARTs

Mass Storage Interfaces

- build options for up to 3 x external SATA interfaces:
  → 2 x SATA300 via P2
  → 1 x SATA300 via P0
- 1 x M.2 SSD site for optional on-board supporting:
  → Type 2242, 2260 or 2280 device
  → x4 PCIe interface (M-key)
  → NVM Express® (NVMe™) logical device interface
  → device can be fitted simultaneously with PMC/XMC modules fitted
  → only 2242 device can be fitted with 2.5-inch SATA drive fitted
- 2 x SATA600 interfaces for optional on-board:
  → SATA Flash Drive Module
  → 2.5-inch SATA drive (uses PMC/XMC Site 2)

Graphics Interfaces

- 1 x DisplayPort® interface via 60-way high density connector on front panel:
  → up to 1920 x 1200 @ 60Hz
  → resolution is dependent on the device driver
- up to 2 x DVI-D interfaces (build options) via P2:
  → up to 1920 x 1200
  → 1 x interface uses I/O pins for PMC/XMC Site 1
- support for Microsoft® DirectX 12, OpenGL 4.4 under Windows® and Linux® and OpenCL 2.1

Stereo Audio

- build option for Intel® High Definition stereo audio interface via P2 (external CodeC required)

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- up to 6 x USB 2.0 ports:
  → 2 x USB via 60-way connector on front panel
  → 1 x USB via P2
  → 2 x USB via P0
  → option for an additional USB via P0 (see Note: Option 2)
- 1 or 2 x GPIO signals via P0 (see Note: Option 2)
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability

Optional Built-In Test (BIT) Support

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

Board Security Packages

- Trusted Platform Module (TPM 2.0)
- option for Sanitization Utility Software Package
- option for proprietary board-level security features

Firmware Support

- UEFI 2.6 boot firmware (BIOS):
  → includes Compatibility Support Module
  → implements Secure Boot (with TPM)
- implements Intel® Boot Guard
- optional Fast Boot solution based on the Intel® Firmware Support Package (Intel® FSP)
- LAN boot firmware included

Flash EPROM

- dual 16 Mbytes of BIOS SPI Flash EPROM
- 64 Mbytes of Application Flash memory for VxWorks applications

Software Support

- support for Linux®, Windows® and VxWorks®

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
- build option for busless VME interface:
  → SYSRESET, SYSFAIL, ACFAIL, GAx
  → VMEbus daisy chain

Electrical Specification

- +5V @ 7.4A (typical with 16 Gbytes DRAM)
- +12V, -12V and +3.3V not required
- +12V and -12V routed to both PMC/XMC sites and PMC expansion connector

Safety

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

Environmental Specification

- operating temperatures:
  → 0°C to +55°C (N-Series)
  → -25°C to +70°C (E-Series)
  → -40°C to +70°C (K-Series)
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non-condensing:
  → K-Series includes humidity sealant

Mechanical Specification

- 6U form-factor
- single slot, 0.8-inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0 connector
- IEEE 1101.10 VME64x handles, alternatively with option for VME32 handles
- shock: 20g, 11ms, ½ sine
- vibration: 0.38mm pk at 5Hz-36Hz; 36Hz-2000Hz at 2g, 0.38mm peak displacement

Legacy Computing Board Compatibility

- upgrade path for the popular VP F1x/msd, VP 91x/01x and VP 91x/11x board families

Note:
The optional P0 connector supports factory build options for one of two options:
Option 1)
    PMC/XMC Site 2 P64s I/O,
    1 x GPIO, 2 x USB 2.0 and
    1 x Ethernet (VITA 31.1) interfaces
or
Option 2)
    PMC/XMC Site 2 P32s I/O,
    1 x SATA, 2 x GPIO, 3 x USB 2.0 and
    2 x Ethernet (VITA 31.1) interfaces

Parhelia B.V.
www.parheliabv.com
+31(0)10 741 00 28

PARHELIA

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

Datasheet Code 1800/0719
© Concurrent Technologies 2019