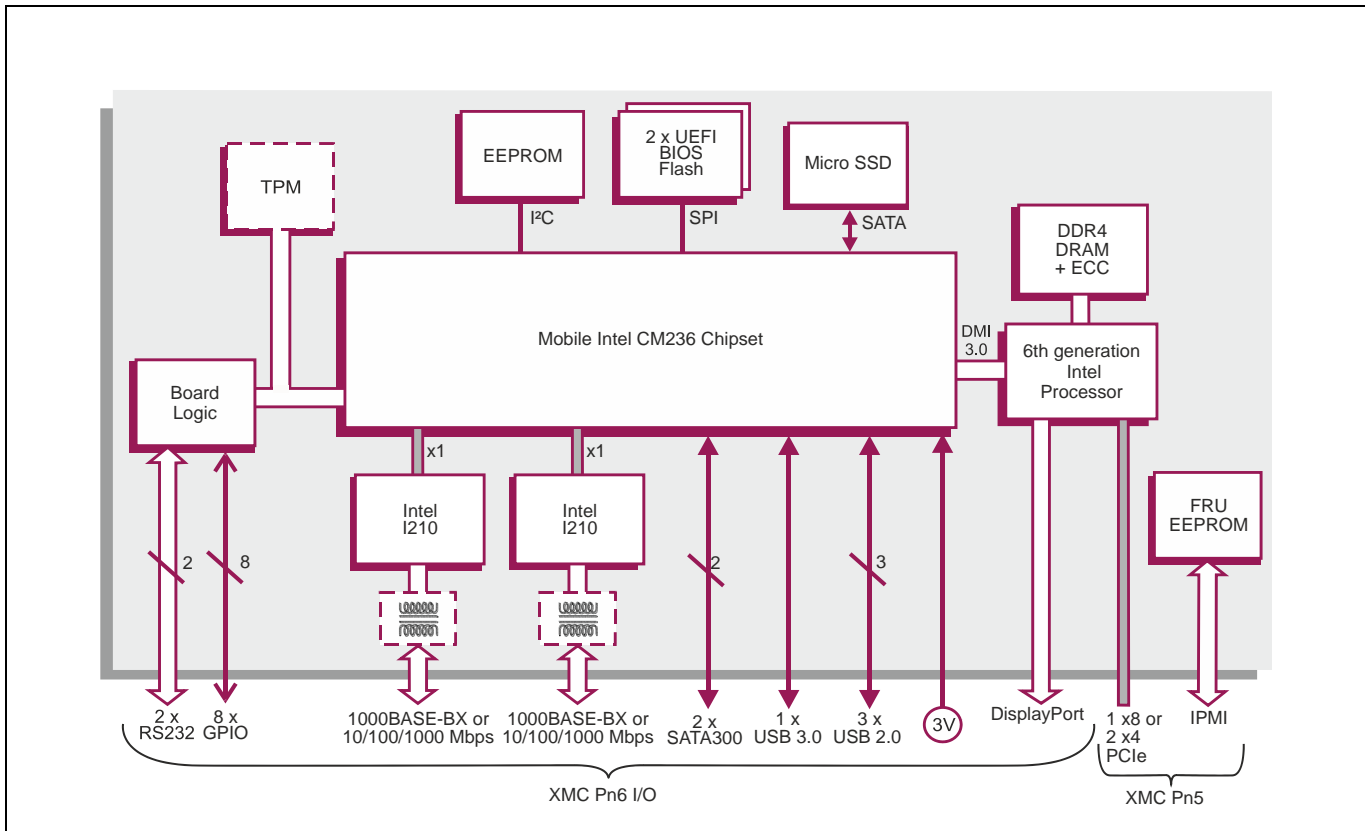# Rugged Processor XMC module based on 6th Generation Intel® Processor

Key Features

XP B5x/msd-RC is based on a 6th generation Intel® processor for long life-cycle deployments. When fitted on a suitable carrier, the combination can provide excellent size, weight and power metrics for rugged and extended temperature operating environments.

■ 6th generation Intel processor mated with ECC memory

■ Built in Solid State Drive for reliable storage

■ Wide range of I/O interfaces available on XMC connectors

■ Air-cooled versions available

■ Support for Linux®, Windows® and VxWorks®

Block diagram showing Mobile Intel CM236 Chipset with TPM, EEPROM (I²C), 2 x UEFI BIOS Flash (SPI), Micro SSD (SATA), DDR4 DRAM + ECC, 6th generation Intel Processor (DMI 3.0), Board Logic, 2 x Intel I210 (x1), FRU EEPROM. Outputs: 2 x RS232, 8 x GPIO, 1000BASE-BX or 10/100/1000 Mbps (x2), 2 x SATA300, 1 x USB 3.0, 3 x USB 2.0, 3V, DisplayPort, 1 x8 or 2 x4 PCIe, IPMI. XMC Pn6 I/O and XMC Pn5.

Rugged Processor XMC Module

- utilizes 6th generation Intel® processor
- XMC Pn6 and Pn5 connectors (build option), select:
  - → VITA 42 XMC (color black)
  - → VITA 61 XMC 2.0 (color white)
- configurable PCI Express® interface via Pn5
- range of I/O interfaces via Pn6
- conduction-cooled to ANSI/VITA 20-2001 (R2005)
- conformally coated
- air-cooled variants available:
  - → see separate XP B5x/msd datasheet

Central Processor

- 4-core Intel® Xeon® processor E3-1505L v5:
  - → 8 Mbytes Smart Cache, 2.0 GHz
  - → Intel® HD Graphics P530
- 2-core Intel® Core™ i3-6102E processor:
  - → 3 Mbytes Last Level Cache, 1.9 GHz
  - → Intel® HD Graphics 530
- utilizes the Mobile Intel® CM236 Chipset

DRAM

- up to 16 Gbytes soldered DDR4 DRAM:
  - → dual channel architecture
  - → bus speed 2133MHz
- accessible from local processor and base board

XMC Interface

- configurable PCI Express (PCIe®) interface via XMC Pn5 connector supports:
  - → 1 x8 or 2 x4 PCIe ports
  - → PCIe Gen 1, Gen 2 and Gen 3
- XMC Pn5 connector type (build option) determines the maximum PCIe operational speed:
  - → up to Gen 2, VITA 42 connector
  - → up to Gen 3, VITA 61 connector
- supports Root Complex operation
- supports IPMI Interface

Gigabit Ethernet Interfaces

- 2 x Gigabit Ethernet interfaces via Pn6
- factory build option for 2 x 1000BASE-BX ports
- alternative factory build option for 2 x 10/100/1000 Mbps Ethernet ports:
  - → 10BASE-T, 100BASE-TX, 1000BASE-T
  - → optional on-board magnetics
- support for IEEE I588 precision clock
- implemented by two Intel® Ethernet Controller I210 devices via x1 PCIe ports

Mass Storage Interfaces

- 2 x SATA300 interfaces via XMC Pn6 connector
- 64 Gbytes soldered Micro SSD

Serial Interfaces

- 2 x RS232 serial ports:
  - → port 1 supports Tx, Rx, RTS, CTS, DSR, DCD, DTR, RI via rear Pn6
  - → port 3 supports Tx, Rx, RTS, CTS via Pn6
- 16550 compatible UARTs

Graphics Interface

- DisplayPort™ interface:
  - → 4096 x 2034 @ 60Hz
- accessible via Pn6
- support for Microsoft® DirectX 11.1 on Windows®
- support for OpenGL 4.4 on Microsoft® Windows® and Linux®

Other Peripheral Interfaces

- watchdog timer, 1 x 32-bit Long Duration Timer
- PC Real-Time Clock (no on-board battery):
  - → VBAT can be supplied via Pn6
- 4 x USB ports via Pn6:
  - → 1 x USB 3.0 port
  - → 3 x USB 2.0 ports
- 8 x GPIO signals via Pn6:
  - → processor interrupt capability

Flash EPROM

- dual 16 Mbytes of BIOS Flash EEPROM

Board Security Features

- option for Trusted Platform Module (TPM 2.0)
- option for Sanitization Utility Software Package

Firmware Support

- UEFI 2.4 boot firmware (BIOS) :
  - → UEFI 2.4 support
  - → includes Compatibility Support Module
  - → implements Secure Boot
- LAN boot firmware included

Software Support

- support for Linux®, Windows® and VxWorks®

Optional Built-In Test (BIT) Support

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

Electrical Specification

- typical current figure (1.9 GHz, 8 Gbytes DRAM):
  - → +5V @ 4.0A
- +5V VPWR, voltage +5% / -5%
- +12V VPWR is not supported
- supports board power management, under software control

Safety

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

Environmental Specification

- operating temperature:
  - → 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

Mechanical Specification

- single-width CMC (Common Mezzanine Card) IEEE 1386 form factor: (74mm x 149mm)
- 10mm height stack module

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