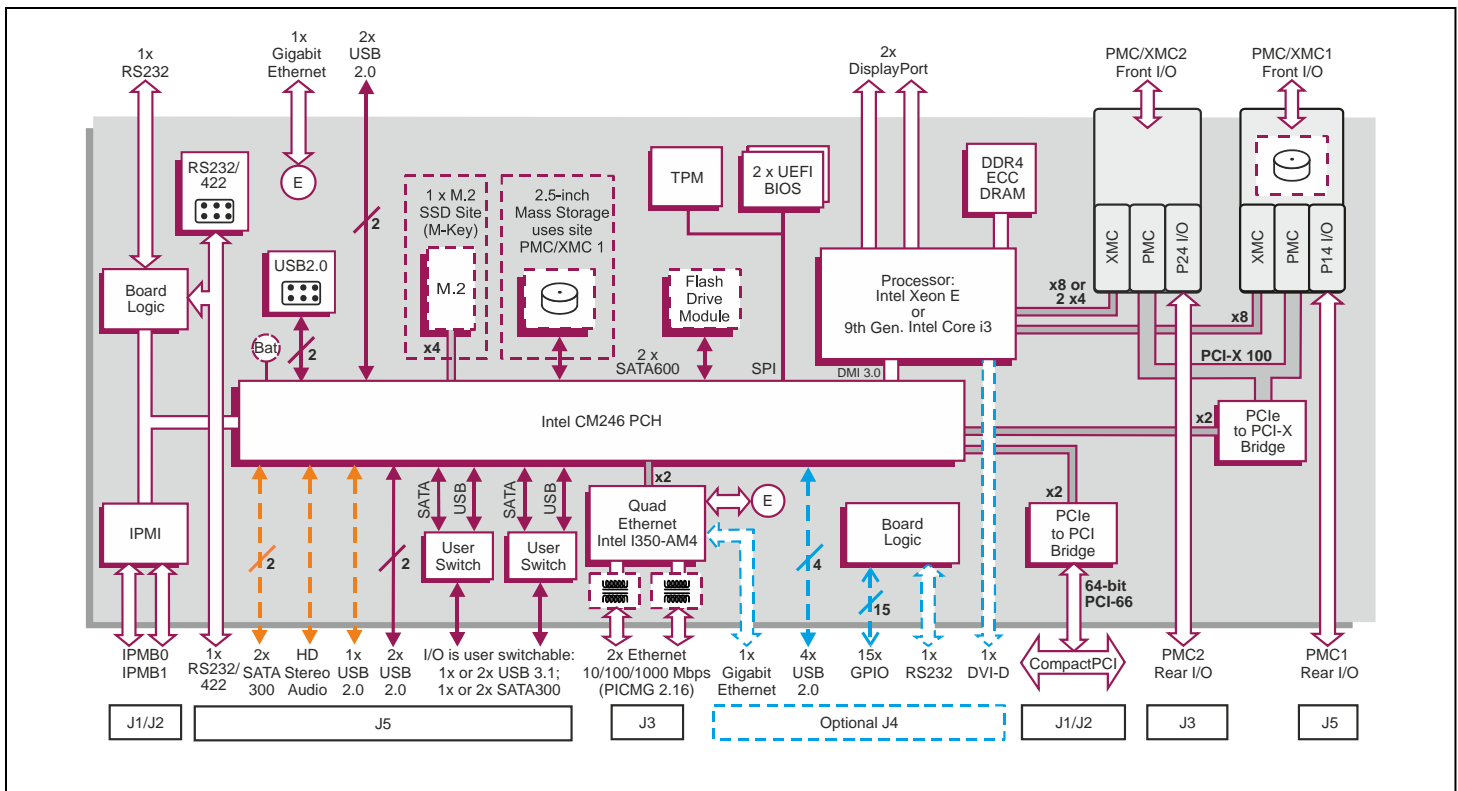


## 6U CompactPCI® Processor Board based on Intel® Xeon® E or 9th Generation Intel® Core™ i3 Processor

### Key Features

PP B7x/msd and PP B8x/msd are single slot air-cooled CompactPCI® boards, allowing customers to easily migrate to the latest generation of Intel® processors for longer system life-cycles.

- PP B7x/msd supports workstation processor performance with enterprise-class graphics capabilities using an Intel® Xeon® E Processor
- PP B8x/msd is a lower cost board using a 9th Generation Intel® Core™ i3 Processor
- Two XMC/PMC module slots for local I/O expansion
- Local solid-state storage options



## 6U CompactPCI Processor Board

- air-cooled 6U CompactPCI® computing board utilizing an Intel® Xeon® processor based on Coffee Lake-H and Coffee Lake-H Refresh
- optional Rear Transition Module (RTM)

## Central Processor

- 6-core Intel® Xeon® Processor E-2176M:
  - 12 Mbytes Smart Cache, 2.7 GHz
  - Intel® UHD Graphics 630
- 4-core 9th Generation Intel® Core™ i3-9100HL Processor:
  - 6 Mbytes SmartCache, up to 1.6 GHz
- range of performance/power factory build options
- utilizes the Intel® CM246 Platform Controller Hub

## DRAM

- 16 or 32 Gbytes soldered DDR4 ECC DRAM:
  - single bit error correction
  - dual channel architecture
- accessible from processor and CompactPCI® bus

## Mass Storage Interfaces

- up to four SATA interfaces accessed via J5:
  - 2 x SATA300 interfaces (build option 1)
  - 0, 1 or 2 x SATA300 interfaces - user selectable, as alternatives to USB 3.1 (Gen 1) ports
- 2 x SATA600 interfaces for optional on-board:
  - SATA Flash Drive Module
  - 2.5-inch SATA drive (disables PMC/XMC Site 1)
- 1 x M.2 SSD site on-board supporting:
  - Type 2242, 2260 and 2280 device
  - x4 PCIe interface (M-key)
  - NVMe Express® (NVMe™) logical device interface
  - NVMe 1.3 compatible
  - resides within PMC/XMC Site 1 and 2 areas

## Gigabit Ethernet Interfaces

- up to four 1 Gigabit Ethernet interfaces
- 1 x front panel interface via an RJ45 connector
- 2 x rear interfaces via J3:
  - support for PICMG® 2.16 R1.0 - Packet Switching Backplane (build option) or via an optional RTM
- 1 x rear interface via optional J4
- implemented by an Intel® I350-AM4 controller

## Dual PMC/XMC Interfaces

- dual PMC/XMC interfaces:
  - front panel I/O
- PMC sites support:
  - PMC P14 rear I/O via J5
  - PMC P24 rear I/O via J3
  - 32/64-bit, 33/66MHz PCI bus
  - 64-bit, 100MHz PCI-X™ bus
  - 5V and 3.3V signaling
- XMC sites support:
  - both support x8 PCI Express® (PCIe®)
  - XMC site 2 can also support 2 x4 PCI Express
  - PCIe Gen 1, Gen 2 (and optionally Gen 3)
  - XMC VPWR +5V
- XMC connector type (build option) determines the maximum PCIe operational speed:
  - up to Gen 2, VITA 42 XMC (color black)
  - up to Gen 3, VITA 61 XMC 2.0 (color white)

## Stereo Audio

- Intel® High Definition Digital Audio (build option 1) via J5:
  - optional CoDec on optional RTM

## Serial Interfaces

- up to 3 x serial interfaces:
  - 1 x Tx/Rx RS232 accessed via a front panel 60-way high-density connector
  - 1 x RS232/422 via on-board header or J5
  - 1 x RS232 via optional J4
- J5 (or on-board header) and J4 RS232 interfaces support Tx, Rx, RI, CTS, RTS, DSR, DTR and DCD
- J5 (or on-board header) RS422 interfaces support Tx and Rx
- 16550 compatible UARTs

## Graphics Interfaces

- up to three independent graphics interfaces
- 2 x DisplayPort® v1.2 graphics interfaces via a front panel 60-way high-density connector:
  - up to 1920 x 1200 @ 60Hz
  - resolution is dependent on the device driver
- 1 x DVI-D graphics interface via optional J4:
  - up to 1920 x 1200 @ 16M colors
- support for Microsoft® DirectX 12, OpenGL 4.5 under Windows® and Linux® and OpenCL 2.1

## Other Peripheral Interfaces

- PC Real Time Clock
- watchdog timer; 32-bit Long Duration Timer with processor interrupt ability; chipset timer
- voltages monitor; CPU temperature and board temperature monitors; all accessible via IPMI
- 2 x USB 2.0 ports accessed via a front panel 60-way high-density connector
- 2 x USB 2.0 ports accessed via on-board header
- up to nine USB ports accessed via rear panel I/O:
  - 4 x USB 2.0 ports via optional J4
  - 2 or 3 x USB 2.0 ports (build option 1) via J5
  - 0, 1 or 2 x USB 3.1 (Gen 1) ports via J5 - user selectable, as alternatives to SATA300 ports
- 15 x GPIO signals accessed via optional J4
- independent legacy speaker output via J3

## IPMI

- PICMG 2.9 R1.0 (System Management):
  - implements IPMB0/IPMB1 interfaces
- Baseboard Management Controller
- supports 8 Kbytes of non-volatile memory

## Software Support

- supports Linux® and Windows®
- for other operating systems contact Concurrent Technologies for further information, e.g. VxWorks

## Firmware Support

- UEFI 2.7 boot firmware (BIOS):
  - dual BIOS SPI Flash EPROMs
  - implements Secure Boot
- implements Intel® Boot Guard
- optional Fast Boot solution using the Intel® Firmware Support Package (FSP)
- LAN boot firmware included

## Optional Built-In Test (BIT) Support

- Power-on BIT, Initiated BIT, Continuous BIT

## Board Security Packages

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

## CompactPCI Interface

- compliant with PICMG 2.0 R3.0; 3.3V or 5V signaling levels (universal signaling support)
- 33/66 MHz, 32/64-bit interface accessed via J1/J2 connectors
- PICMG 2.1 R2.0 Hot Swap compliant
- operates as System Slot controller or in a Peripheral slot (auto-selected on insertion to backplane)
- option to disable CompactPCI interface (Satellite Mode):
  - receives power from CompactPCI bus
  - board can be hot swapped

## Safety

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

## Electrical Specification

- typical current figures (based on 6-core CPU (45W) 16 GBytes DRAM):
  - +5V @ 6.8A
  - +3.3V @ 3.2A
  - +12V and -12V, both @ 0.0A
- +12V and -12V are not required, but are routed to PMC/XMC sites

## Environmental Specification

- operating temperature:
  - 0°C to +55°C (N-Series)
- extended operating temperatures (based upon selected processor performance/power option):
  - -25°C to +70°C (E-Series)
  - -40°C to +70°C (K-Series)
  - -40°C to +85°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:
  - 9.2 inches x 6.3 inches (233mm x 160mm)
- single slot: 0.8 inches (20.3mm)
- connectors: IEC-1076-4-101 for J1-J5:
  - J4 is a factory build option
- operating shock: 20g, 11ms, ½ sine
- operating vibration:
  - 5Hz-2000Hz at 2g, 0.38mm peak displacement

## Legacy Board Compatibility

- PP B7x/msd and PP B8x/msd rear plug compatibility with the popular PP B1x/msd family