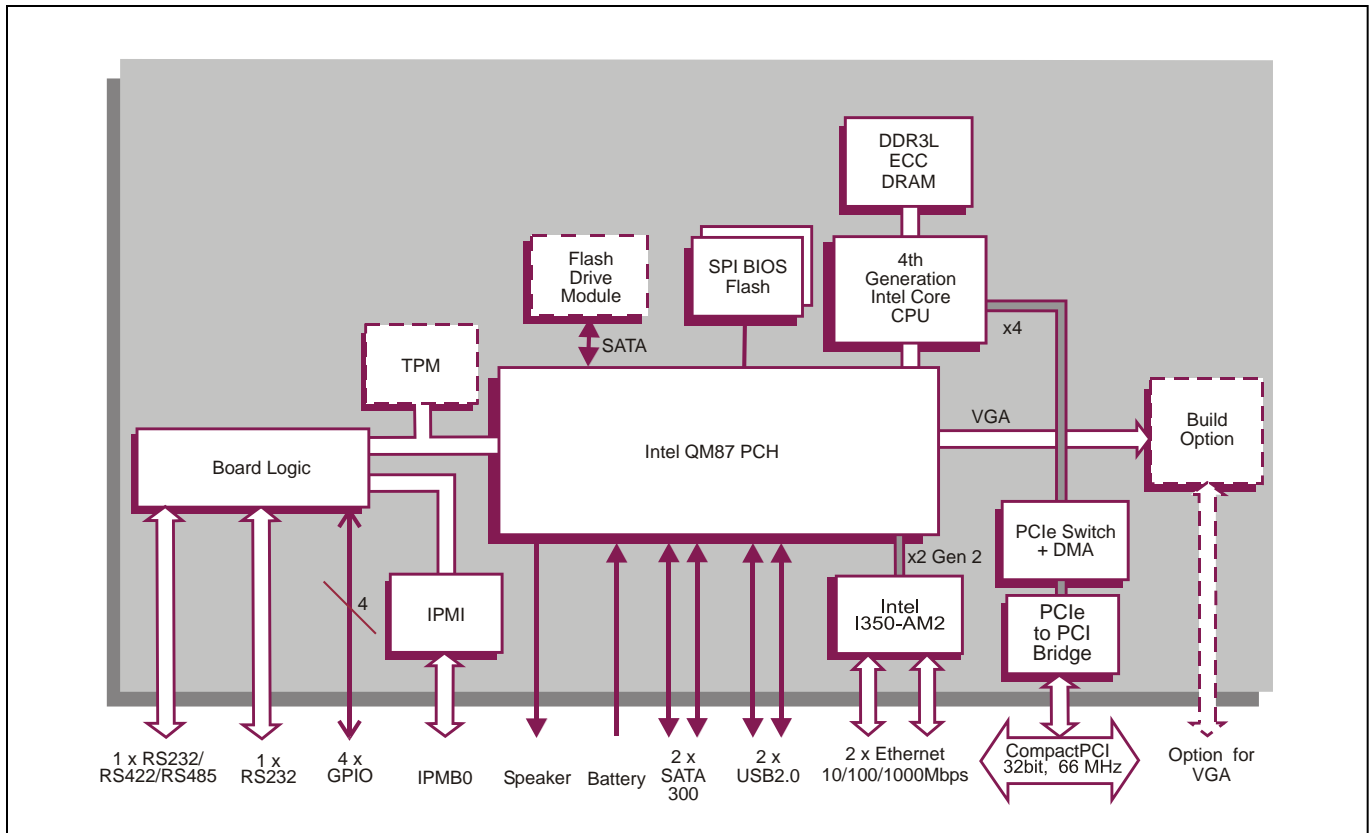## 3U CompactPCI® board based on
4th Generation Intel® Core™ Processor

Key Features

TP B1x/3sd is plug compatible with the popular TP 702/38x family allowing transitions for higher performance and longer life deployments.

- Quad and dual-core processor variants available to match application performance and power requirements

- Up to 16GB DRAM with built in error correction for reliable operation

- Built in I/O interfaces including SATA, USB, Ethernet, graphics, GPIO and serial

- On board solid state disk option for reliable boot image and data storage

- Off the shelf board support packages available for Linux®, Windows® and VxWorks®

- Optional software packages for Built-In-Test and security

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Central Processor

- 4th generation Intel® Core™ CPU:
  - 4-core Intel® Core™ i7-4700EQ CPU up to 3.4 GHz, 6M Last Level cache
  - 2-core Intel® Core™ i5-4410E CPU 2.9 GHz, 3M Last Level cache
  - 2-core Intel® Core™ i5-4422E CPU up to 2.9 GHz, 3M Last Level cache
  - Intel® Advanced Vector Extensions 2 (AVX2)
  - Intel® AES New Instructions (AES-NI)
- utilizes the Intel® QM87 Platform Controller Hub

DRAM

- up to 16 Gbytes soldered DDR3L-1600 ECC DRAM:
  - single bit error correction
  - peak bandwidth of 25.6 Gbytes/s
  - dual channel architecture
- accessible from processor or CompactPCI® bus

Mass Storage Interfaces

- 2 x SATA300 interfaces accessible via J2
- 1 x optional SATA300/600 Flash Drive Module:
  - write protect signal from backplane available (dependent on Flash Module selected)

Ethernet Interfaces

- 2 x Ethernet interfaces via J2 supporting:
  - 10BASE-T, 100BASE-TX, 1000BASE-T
- implemented by an Intel® I350-AM2 Ethernet controller via a 1 x2 PCI Express® port

Graphics Interface

- build option for VGA graphics interface via J2:
  - resolutions up to 1920 x 1200
- alternative build option, the graphics interface is not connected
- support for Microsoft® DirectX 11.1 on Windows® and OpenGL 3.0 on Linux®
- implemented by the Intel® HD Graphics 4600

Serial Interfaces

- 2 serial interfaces accessible via J2
- 1 x RS232 interface supporting Tx and Rx
- 1 x RS232 interface supporting Tx, Rx, RI, CTS, RTS, DSR, DTR and DCD or 1 x RS422/RS485 supporting Tx and Rx
- 16550 compatible UARTs

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- watchdog timer; 32-bit Long Duration Timer with processor interrupt ability; chipset timer
- legacy speaker interface via J2
- 2 x USB 2.0 interfaces via J2
- 4 x GPIO signals via J2
- external battery supply for the RTC
- CPU temperature monitor; board temperature monitor; voltages monitor:
  - all accessible via IPMI

IPMI

- PICMG 2.9 R1.0 (System Management Spec.):
  - implements the IPMB0 interface
- on-board Baseboard Management Controller
- supports 8 Kbytes of non-volatile memory

CompactPCI Interface

- universal signaling support, compliant with PICMG® 2.0 R3.0; 3.3V or 5V signaling levels
- 33/66 MHz; 32-bit interface via J1
- PCI Express link from processor via PCIe-PCI bridge for off-board accesses:
  - DMA hardware support included
- operates as a System Slot controller (supporting up to 7 peripheral slots) or operates in a Peripheral Slot:
  - supports hot-swapping peripheral boards
  - PICMG 2.1 R2.0 Hot Swap Specification
- user option to disable CompactPCI® interface (Satellite Mode):
  - receives power from CompactPCI bus
  - board can be hot swapped

Flash EPROM

- 8 Mbytes of BIOS Flash EPROM, dual devices:
  - main/backup device enabled via switch

Software Support

- support for Linux®, Windows® and VxWorks®

Firmware Support

- Insyde® Software InsydeH20™ BIOS:
  - includes Compatibility Support Module
- optional Fast Boot software package using the Intel® Firmware Support Package (FSP):
  - based upon Intel® Platform Innovation Framework for EFI
- LAN boot firmware included

Optional Built-In Test (BIT) Support

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

Optional Board Security Packages

- Trusted Platform Module (TPM)
- proprietary board-level security features

Safety

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

Electrical Specification

- typical current consumption (4-core processor with 8 Gbytes DRAM):
  - +5V @ 6.0A
  - +3.3V @ 2.2A
- voltages +5%/-3%
- +12V and -12V not required

Environmental Specification

- operating temperatures:
  - 0°C to +55°C (N-Series)
  - -25°C to +70°C (E-Series: selected CPU)
  - -40°C to +70°C (K-Series: selected CPU)
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non-condensing:
  - K-Series includes humidity sealant
- for rugged versions, see separate datasheet:
  - conduction-cooled: TP B1x/3sd-RC
  - 2-core processor only (selected CPU)
  - supports XMC module site

Mechanical Specification

- 3U form-factor: 3.9-inches x 6.3-inches (100mm x 160mm)
- single slot
- connectors: IEC-1076-4-101 for J1-J2
- shock: 20g, 11ms, ½ sine
- vibration: 5Hz-2000Hz at 2g, 0.38mm peak displacement

Legacy SBC Compatibility

- rear I/O compatible with the popular TP 702/38x

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