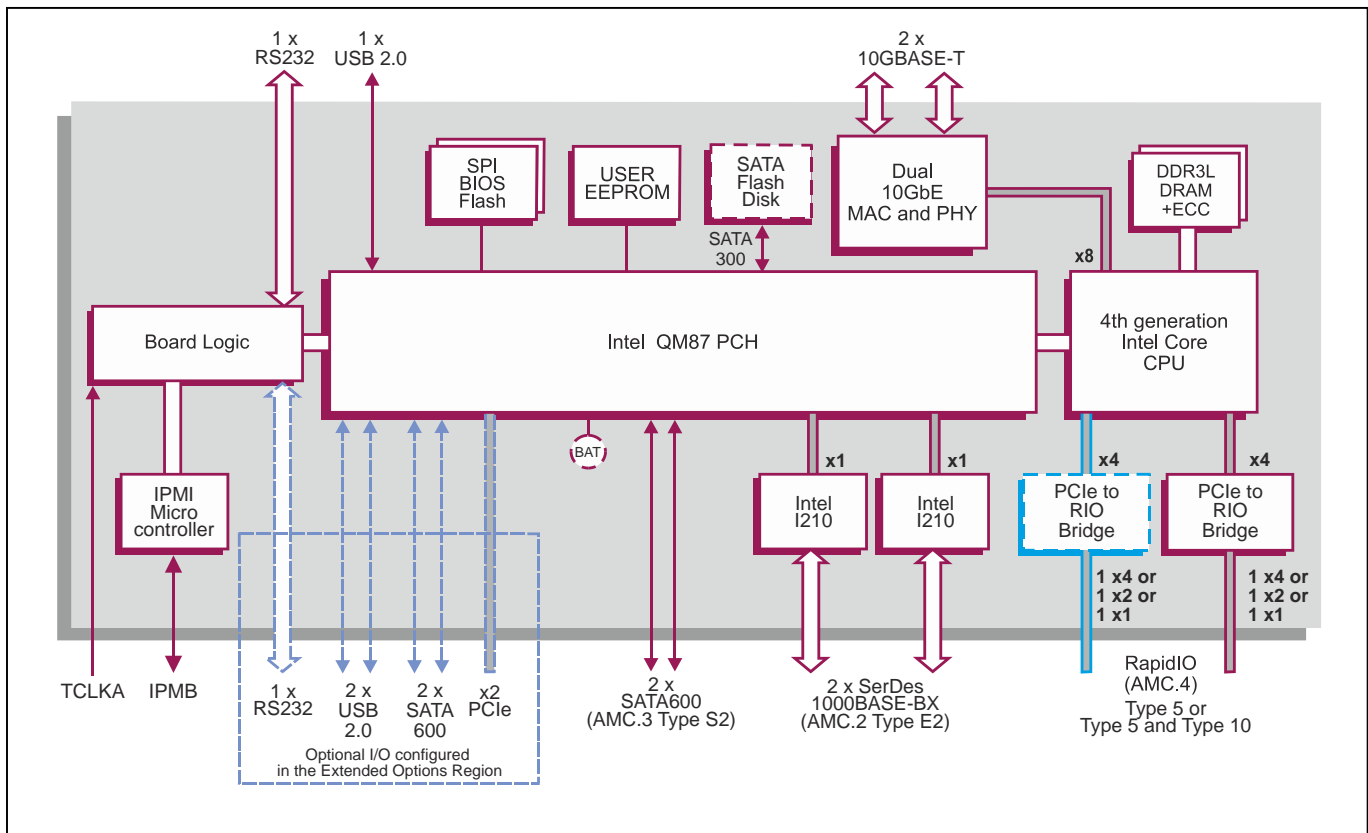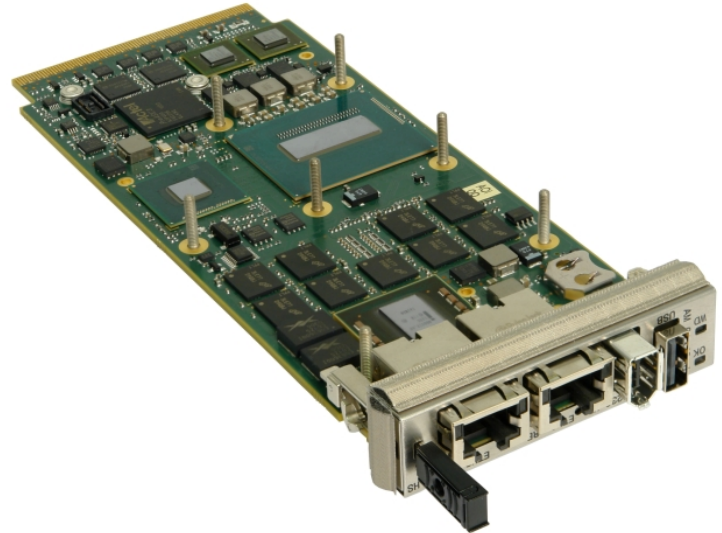# 4th Generation Intel® Core™ Processor AdvancedMC™ Module, with RapidIO®

Key Features

AM C1x/msd is a high performance Single-Module, Full or Mid-size AdvancedMC™ processor module, supporting the 4th generation Intel® Core™ Processor with 2 or 4 cores.

- Dual 10 Gigabit Ethernet for high speed networking interfaces

- Designed for use in a wide range of MicroTCA™ or AdvancedTCA® applications

- Utilizes RapidIO® fabric interface

- Optional on-board Flash Drive, up to 128 Gbytes

- Highly reliable performance with up to 16 Gbytes of Error Correcting Code memory

- Interfaces include:
  - → USB 2.0, RS232, SATA and PCI Express® (PCIe®) Gen 2

Block diagram showing: 1 x RS232, 1 x USB 2.0, 2 x 10GBASE-T. SPI BIOS Flash, USER EEPROM, SATA Flash Disk (SATA 300), Dual 10GbE MAC and PHY, DDR3L DRAM +ECC. Board Logic, Intel QM87 PCH, 4th generation Intel Core CPU (x8). IPMI Micro controller, BAT, Intel I210 (x1), Intel I210 (x1), PCIe to RIO Bridge (x4), PCIe to RIO Bridge (x4). TCLKA, IPMB, 1 x RS232, 2 x USB 2.0, 2 x SATA 600, x2 PCIe — Optional I/O configured in the Extended Options Region. 2 x SATA600 (AMC.3 Type S2), 2 x SerDes 1000BASE-BX (AMC.2 Type E2), 1 x4 or 1 x2 or 1 x1, RapidIO (AMC.4) Type 5 or Type 5 and Type 10.

Central Processor

- 4th generation Intel® Core™ processor:
  - → 4-core Intel® Core™ i7-4700EQ processor up to 3.4 GHz, 6M Last Level cache
  - → 2-core Intel® Core™ i5-4410E processor 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 Gbytes/s
  - → dual channel architecture
- accessible from processor and AMC connector

PICMG® AdvancedMC™ Interfaces

- single or dual x4 RapidIO® (Gen 1 and Gen 2) fabric interface (build option):
  - → AMC.4 Type 5 or AMC.4 Type 5 and Type 10
- hot swap compliant to AMC.0
- rear I/O compliant to AMC.4 specification
- can be configured for compliance with the requirements of the SCOPE Alliance

Storage Interfaces

- up to 4 x SATA600 interfaces:
  - → AMC.3 Type S2 (2 x SATA)
  - → 2 x SATA in AMC connector extended options region (build option)
- optional SATA300 Flash Drive Module

Ethernet Interfaces

- dual SerDes interfaces via AMC connector:
  - → AMC.2 Type E2 (2 x 1000BASE-BX)
  - → implemented using two Intel® Ethernet Controller I210-IS devices
- 2 x front panel 10 Gigabit Ethernet interfaces via RJ45 connectors:
  - → 10GBASE-T
  - → 1000BASE-T
  - → 100BASE-TX full-duplex
  - → implemented using an Intel® Ethernet Controller X540-AT2 device

Serial Interfaces

- 1 x RS232 interface via front panel IEEE1394 connector (adapter cable available):
  - → supports TxD, RxD, CTS and RTS
- 1 x RS232 interface in AMC connector extended options region (build option):
  - → TxD, RxD, RTS and CTS
- 16550 compatible UARTs

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability
- CPU temperature monitor; voltages monitor:
  - → all accessible via IPMI
- up to 3 x USB 2.0 ports:
  - → 1 USB via front panel
  - → 2 x USB in AMC connector extended options region (build option)
- x2 PCI Express (Gen 2) port option in AMC connector extended options region (build option)

Software Support

- support for Linux® and VxWorks®

Firmware Support

- Insyde Software InsydeH20™ BIOS:
  - → includes Compatibility Support Module
- Intel® Platform Innovation Framework for EFI
- LAN boot firmware included

Flash EPROM

- dual 8 Mbytes of BIOS SPI Flash EPROM

User EEPROM

- 8 Kbytes Flash memory primarily for User data
- storage of OS boot parameters

Telecoms Clock

- TCLKA clock input to board logic
- increments 64-bit counter in board logic

IPMI

- IPMI Version 1.5 according to AMC.0
- on-board BMC (Baseboard Management Controller)
- supports 8 Kbytes of non-volatile memory

Safety

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

Electrical Specification

- typical current figure with 4-core Intel Core i7-4700EQ processor operating at 2.4 GHz, 8 Gbytes DRAM, single RapidIO:
  - → +12V @ 3.3A, voltage ±2V
- +3.3V @ less than 0.15A, voltage ±5%

Environmental Specification

- operating temperature:
  - → 0°C to +55°C (N-Series)
  - → all processors for Full-size AMC
  - → selected processor for Mid-size AMC
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity

Mechanical Specification

- AMC.0 Single Module form-factor
- 180.6mm x 73.5mm (7.1 inches x 2.9 inches)
- Full-size panel: 29mm (1.1 inches):
  - → Mid-size variants available, contact sales

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