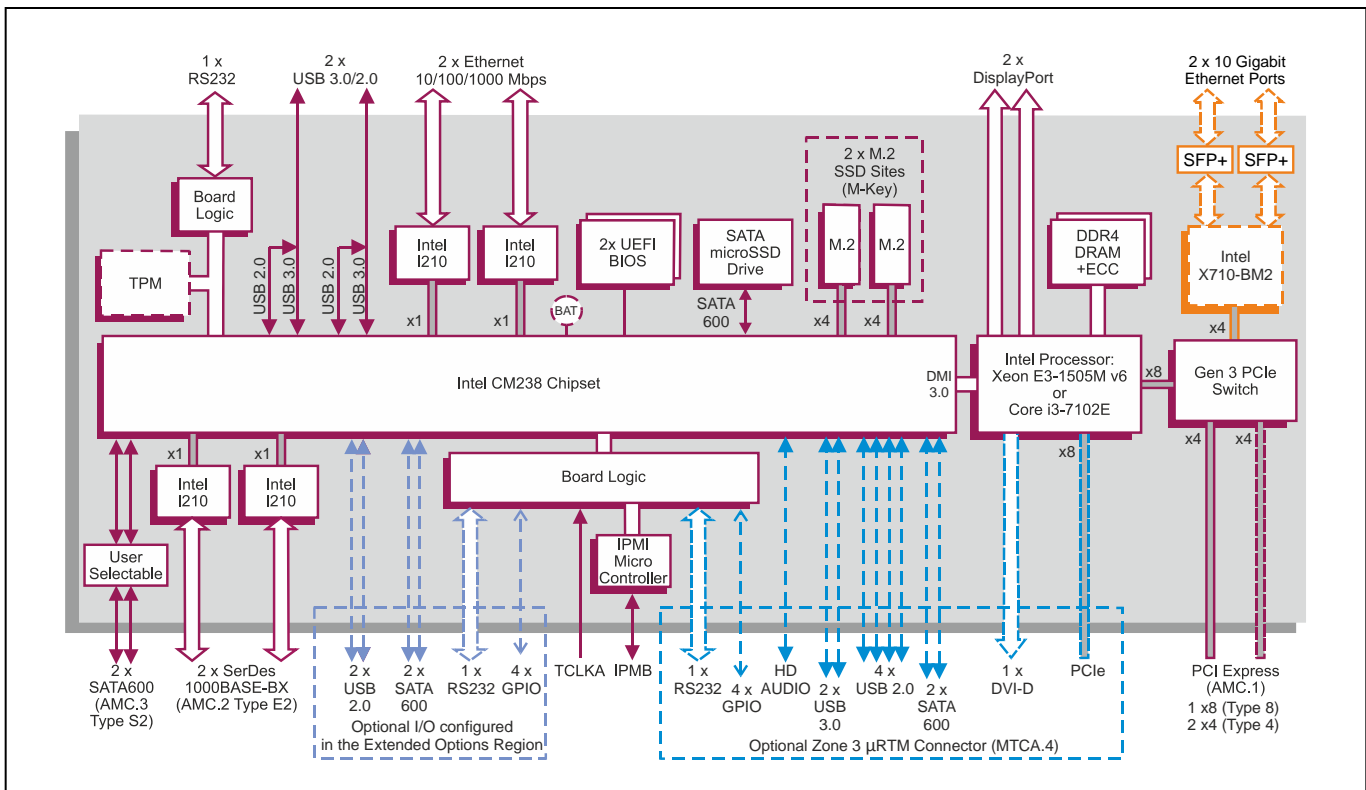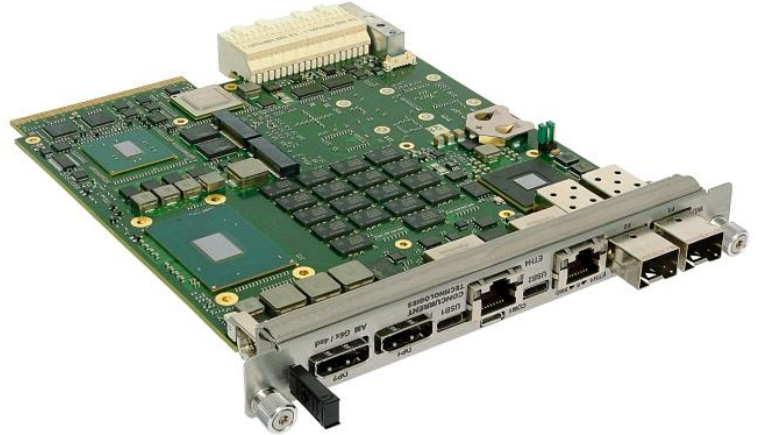# AdvancedMC® Double Module
with MicroTCA.4 capability

Key Features

AM G6x/msd is an AdvancedMC® Double Module designed for long life-cycle, high performance applications. It supports backwards compatible rear I/O options including the optional µRTM for MicroTCA.4 deployments and long distance networking connectivity.

- 4-core Intel® Xeon® Processor E3-1505M v6 for intensive computation applications

- 2-core Intel® Core™ i3-7102E Processor for low power applications

- Wide range of front panel connections including option for dual 10 Gigabit SFP+ modules for remote connectivity

- Direct attached storage including:
  - → built in SATA microSSD™
  - → two M.2 sites for high speed storage

- Support for Serial over LAN and IPMI over LAN

AdvancedMC Computer Board

- AdvancedMC® (AMC) Module utilizing Intel® processors formerly known as Kaby Lake
- AMC form factor is a Double Module supporting:
  - → Mid-size front panel
  - → Full-size front panel
  - → MTCA.4 µRTM connector (build option)
- AMC Fabric Interface supports:
  - → PCI Express® (PCIe®)

Central Processor

- 4-core Intel® Xeon® Processor E3-1505M v6:
  - → 8 Mbytes Cache, 3.00 GHz
  - → Intel® HD Graphics P630
- 2-core Intel® Core™ i3-7102E Processor:
  - → 3 Mbytes Cache, 2.10 GHz
  - → Intel® HD Graphics 630
- utilizes the Intel® CM238 Chipset

DRAM

- 16 or 32 Gbytes soldered DDR4 ECC DRAM:
  - → single bit error correction
  - → dual channel architecture
- accessible from processor and AMC connector

PICMG AdvancedMC Interfaces

- PCIe fabric connection (with build option):
  - → AMC.1 Type 8 or Type 4 (1 x8 or 2 x4 PCIe port)
  - → support for Gen 1, Gen 2 and Gen 3
  - → transfer rate up to 8 Gbps
  - → supported by a DMA engine in the PCIe switch
- PCI Express clock is user selectable from:
  - → on-board fabric clock
  - → external fabric clock, sourced via FCLKA pin
  - → on-board fabric clock, driven out via FCLKA pin
- single x8 PCIe Gen 3 port via optional µRTM
- hot swap compliant to AMC.0
- rear I/O compliant to AMC specification

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 Gigabit Ethernet interfaces via RJ45 connectors:
  - → supporting 10/100/1000 Mbps
  - → implemented using two Intel® Ethernet Controller I210-IT devices
- 2 x front panel 10 Gigabit Ethernet interfaces via SFP+ connectors (build option):
  - → implemented using an Intel® Ethernet Controller X710-BM2 device

Serial Interfaces

- 1 x RS232 interface via front panel Micro USB connector:
  - → supports TxD and RxD
- 1 x RS232 interface in AMC connector extended options region (build option):
  - → TxD, RxD, RTS and CTS
- 1 x RS232 interface via optional µRTM:
  - → TxD, RxD, RTS, CTS, DTR, DSR, DCD
- 16550 compatible UARTs

Storage Interfaces

- up to 6 x SATA600 interfaces via AMC connector:
  - → AMC.3 Type S2 (2 x SATA), each user selectable (on/off) to allow for different backplanes
  - → 2 x SATA via optional µRTM
  - → 2 x SATA in AMC connector extended options region (build option)
  - → SATA controller can be configured for AHCI or Intel® RST Premium mode
- 2 x M.2 SSD sites on-board supporting:
  - → Type 2242, 2260 and 2280 devices
  - → x4 PCIe interface (M-key)
  - → NVM Express® (NVMe™) logical device interface
- on-board SATA microSSD™ drive (64 Gbytes) for local operating system boot and data storage

Display Interfaces

- three independent display interfaces
- 2 x DisplayPort® v1.2 interfaces via front panel DisplayPort connectors:
  - → up to 3840 x 2160 @ 60Hz
  - → resolution is dependent on the device driver
- 1 x DVI-D interface via optional µRTM:
  - → up to 1920 x 1200 @ 60Hz
- support for Microsoft® DirectX 12
- support for OpenGL 4.x Windows® and Linux®
- support for OpenCL 2.1

Stereo Audio Interface

- DisplayPort interfaces support stereo audio
- Intel® High Definition digital audio interface via optional µRTM:
  - → µRTM provides CoDec to give analog audio (headphone, line-in, line-out and microphone)

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 8 x GPIO signals:
  - → 4 x GPIO signals via optional µRTM
  - → 4 x GPIO signals in AMC connector extended options region (build option):
- up to 10 x USB ports:
  - → 2 x USB 3.0/2.0 ports via front panel USB Type C connectors
  - → 2 x USB 2.0 ports in AMC connector extended options region (build option)
  - → 2 x USB 3.0, 4 x USB 2.0 via optional µRTM

Telecom Clock

- TCLKA clock input to board logic:
  - → increments 32-bit counter in board logic

Software Support

- supports Linux®, Windows® and VxWorks®
- Fabric Interconnect Networking Software (FIN-S):
  - → allows applications on multiple processor boards to efficiently communicate with each other over the fabric
  - → optional software, see separate datasheet

Board Security Features

- option for 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
- optional Fast Boot solution based on the Intel® Firmware Support Package (Intel® FSP)
- LAN boot firmware included

Non-Volatile Memory

- 16 Mbytes of BIOS Flash EEPROM, dual devices for redundancy

IPMI

- IPMI compatible with version 2.0
- IPMI support for AMC.0
- on-board BMC (Baseboard Management Controller)
- support for IPMI Over LAN
- support for Serial Over LAN
- RMCP+ encrypted LAN communication

Electrical Specification

- typical current consumption for 4-core processor with 16 Gbytes DRAM:
  - → +12V @ 2.2A, voltage ±2V
- +3.3V @ less than 0.15A, voltage ±5%

Safety

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

Environmental Specification

- operating temperature:
  - → 0°C to +55°C (N-Series)
  - → -25°C to +70°C (E-Series, 2.10 GHz CPU, Mid-size or Full-size panel)
  - → -25°C to +70°C (E-Series, 3.00 GHz CPU, Full-size panel only)
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non-condensing

Mechanical Specification

- AMC.0 Double Module form-factor 181mm x 149mm:
  - → Full-size panel: 29mm
  - → Mid-size panel: 19mm
- option for MTCA.4 I/O connector (build option):
  - → optional µRTM available

Compatible with Legacy Modules

- factory build options enable compatibility with legacy AMC processor modules, e.g.:
  - → AM 90x/21x and AM 90x/41x

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

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