

## 3rd Generation Intel® Core™ Processor AdvancedMC™ Module



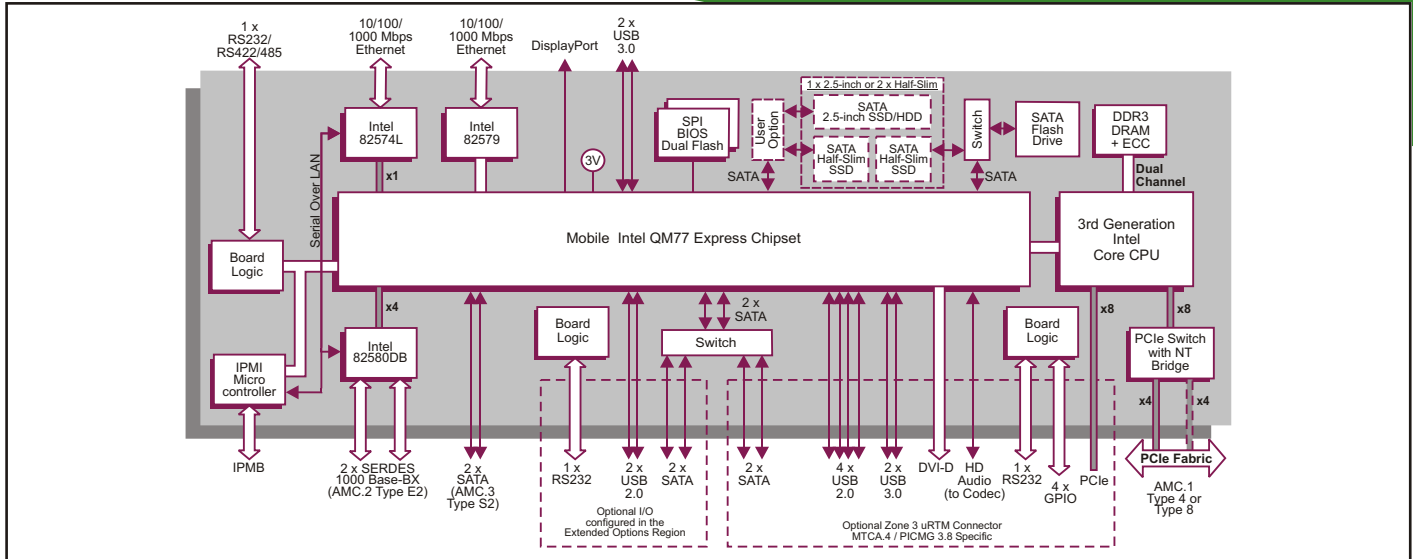
### APPLICATIONS

The AM 90x/x1x is a high performance double-width, full or mid-height, AdvancedMC™ processor module supporting the 3rd generation Intel® Core™ processor and the Mobile Intel® QM77 Express Chipset with up to 16 Gbytes of DDR3-1600 ECC DRAM. The AM 90x/x1x is designed in compliance to AMC.0, AMC.1 Type 8 (x8 PCI Express®, Gen 1, Gen 2 or Gen 3), AMC.2 Type E2 (2 x Gigabit Ethernet) and AMC.3 Type S2 (2 x SATA ports). The board features a range of interfaces including serial ports, USB ports, Gigabit Ethernet interfaces, DVI-D and

a DisplayPort interfaces. The board interfaces can be configured to be SCOPE Alliance compliant and MTCA.4 compatible. Supporting full hot swap and IPMI capabilities with a range of industry standard operating systems, the AM 90x/x1x is designed for use in AdvancedTCA®, MicroTCA™ or MicroTCA for Physics applications in the telecommunications, scientific, and physics research markets. Applications include media-servers or blade-servers.

### HIGHLIGHTS

- Double-width, full-height or mid-height, AdvancedMC™ processor module:
  - compliant to AMC.0
- Build options available:
  - compliance with SCOPE Alliance
  - compatibility with MTCA.4 (MTCA for Physics), with or without a µRTM connector
  - I/O within the extended options region
- 3rd generation Intel® Core™ processor:
  - 4-core 2.1 GHz Intel Core i7-3612QE processor
  - 2-core 2.5 GHz Intel Core i7-3555LE processor
- Up to 16 Gbytes of DDR3-1600 DRAM with ECC
- x8 PCI Express® (Gen 1, Gen 2 and Gen 3) fabric port:
  - AMC.1 Type 8
- 4 x Gigabit Ethernet interfaces:
  - AMC.2 Type E2 (2 interfaces, SerDes type)
  - 2 additional interfaces via front panel RJ45 connectors
- 2 x SATA interfaces on rear I/O:
  - 2 x SATA, AMC.3 Type S2
  - and 2 x SATA via extended options region or 2 x SATA via µRTM
- 2 x SATA interfaces for optional onboard storage:
  - 2.5-inch storage drive and soldered Flash drive
  - or 1 x half-slim SSD and soldered Flash drive
  - or up to 2 x half-slim SSDs
- USB port interfaces:
  - 2 x USB 3.0 ports via front panel
  - 2 x USB 2.0 via extended options region
  - 4 x USB 2.0 and 2 x USB 3.0 ports via µRTM
- Up to 3 serial port interfaces:
  - 1 via front panel
  - 1 via extended options region and 1 via µRTM
- DisplayPort graphics interface via front panel
- DVI-D graphics interface via µRTM
- Watchdog timer and Long Duration Timer
- 8 Mbytes of BIOS Flash EPROM, dual devices
- Hot swap compliant:
  - compliant to AMC.0
- IPMI (Intelligent Platform Management Interface):
  - IPMI Version 1.5 according to AMC.0 plus support for Serial Over LAN (SOL)
  - future support for IPMI Version 2.0
- Support for Linux®, Windows® Server 2008, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded and VxWorks®



## Dual Width AMC SBC

- build options available:
  - compliance with SCOPE Alliance
  - compatibility with MTCA.4 (MTCA for Physics), with or without a µRTM connector
  - I/O interfaces within Extended Options Region

## Central Processor

- 3<sup>rd</sup> generation Intel® Core™ processors:
  - 4-core 2.1 GHz Intel Core i7-3612QE processor
  - 2-core 2.5 GHz Intel Core i7-3555LE processor
  - up to 6 Mbytes of shared Last-Level on-die cache
- utilizes Mobile Intel® QM77 Express Chipset

## DRAM

- up to 16 Gbytes DDR3-1600 ECC DRAM:
  - soldered
  - single bit error correction
  - peak bandwidth of 25 Gbytes/s
  - dual channel architecture
- accessible from processor and AMC connector

## PICMG AdvancedMC™ Interfaces

- hot swap compliant to AMC.0
- single x8 or dual x4 PCI Express® fabric connection:
  - AMC.1 Type 4 or Type 8
  - support for Gen 1, Gen 2 or Gen 3
  - transfer rate up to 8 Gbytes/s
  - supported by a DMA engine in the PCI Express switch
  - can be used as two x4 interfaces in dual redundant fabric systems
  - external or on-board fabric clock support
- x8 PCI Express from processor via µRTM
- rear I/O compliant to AMC.1 specification

## Storage Interfaces

- SATA300 interfaces on rear I/O:
  - 2 x SATA, AMC.3 Type S2
  - and optionally 2 x SATA interfaces via extended options region or 2 x SATA via µRTM
- 2 x SATA600 interfaces for optional onboard storage:
  - 2.5-inch HDD/SSD and soldered Flash Drive
  - or 1 x half-slim SSD and soldered Flash Drive
  - or up to 2 x half-slim SSDs

## Ethernet Interfaces

- dual SerDes interfaces via AMC connector:
  - AMC.2 Type E2
  - supporting 1000Base-BX
  - implemented by Intel® 82850DB LAN Controller via x4 PCI Express port
- 2 x front panel 10/100/1000 Mbps interface accessed via RJ45 connectors, implemented by:
  - Intel® 82579LM Gigabit Ethernet PHY
  - Intel® 82574L Gigabit Ethernet controller

## Serial Interfaces

- serial port interfaces:
  - 1 x RS232/422/485 port via DB9 front panel connector
  - optionally 1 x RS232 port via extended options region (TXD, RXD, RTS and CTS)
  - or optionally 1 x RS232 port via µRTM
- 16550 compatible UARTs
- modem control signals supported:
  - front: TxD, RxD, CTS, RTS, DCD, DTR, DSR, RI
  - µRTM rear: TxD, RxD, CTS, RTS, DCD, DTR, DSR

## Display Interfaces

- implemented by the integrated chipset graphics controller and dual independent display
- DisplayPort connector on front panel:
  - up to 2560x1600, 32-bit, 60Hz
- digital DVI-D via µRTM:
  - up to 1600 x 1200
  - up to 32-bit color depth
- support for Microsoft® DirectX 10
- support for OpenGL 2.0, Windows and Linux

## 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
- 4 x GPIO signals via µRTM
- USB port interfaces:
  - 2 x USB 3.0 ports via front panel
  - optionally 2 x USB 2.0 ports via extended option region
  - or optionally 2 x USB 3.0 ports via µRTM and 4 x USB 2.0 ports via µRTM

## Software Support

- support for Linux®, Windows® Server 2008, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded and VxWorks®

## Firmware Support

- Insyde Software InsydeH20™ BIOS:
  - includes Compatibility Support Module
- based upon Intel® Platform Innovation Framework for EFI
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

## Flash EPROM

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

## IPMI

- IPMI Version 1.5 according to AMC.0 plus support for Serial Over LAN (SOL)
- future support for IPMI Version 2.0
- on-board BMC (Baseboard Management Controller)
- supports 8 Kbytes of non-volatile memory

## Electrical Specification (Estimated)

- +12V @ 4.1A (typical current figure with 2.1 GHz Intel Core i7-3612QE processor, 4 Gbytes DRAM), voltage ±2V
- +3.3V @ less than 0.1A, voltage ±5%

## Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

## Environmental Specification

- operating temperature:
  - 0°C to +55°C (N-Series, all processors for full-height AMC, contact sales for mid-height AMC)
  - -25°C to +70°C (E-Series, contact sales)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage)

## Mechanical Specification

- AMC.0 double-width form-factor:
  - 181mm x 149mm (7.1 inches x 5.8 inches)
- full-height panel: 29mm (1.1 inches):
  - mid-height version available

## ORDERING INFORMATION

Order Number	Product Description (Hardware)	For the order number suffix (yz) options please contact your local sales office:
AM 90x/21x-yz	3rd generation Intel Core processor, double width, full-height AMC	Where y = rear I/O options y - rear I/O build options
AM 90x/41x-yz	3rd generation Intel Core processor, double-width, mid-height AMC	Where z = DRAM size z - up to 16 Gbytes

For accessories please contact your local sales office.