



» MicroTCA and AMC «

The MicroTCA open standard

- » Integrated Platforms
- » Advanced Mezzanine Cards
- » Customized Designs



Kontron and MicroTCA

The MicroTCA open standard

The MicroTCA open standard has gained considerable traction as an architecture that fulfills a need for a variety of applications. Among the success factors behind MicroTCA is the ecosystem which provides a rich portfolio of AMC modules.

The MicroTCA specification supports managed systems consisting of the latest in processor technology, DSP, Network Packet Processors, storage, line cards, I/O cards and RF modules. Among the benefits of MicroTCA is the flexibility of the serial backplane which allows AMCs to interconnect over PCI-Express, Ethernet (1GbE and 10GbE), Serial Rapid IO and SAS/SATA.

Kontron's AdvancedMCs

Kontron provides a wide range of AMC modules. With high end processor modules, dedicated I/Os and storage modules; a solution can be customized to application needs.

Kontron's Integrated Platforms

Kontron offers comprehensive pre-integration and pre-validation services for its MicroTCA open modular platforms. Available in different form factors, and Kontron's matching MCHs, the line of Kontron OM MicroTCA platforms are reliable, scalable and configured in the right way right from the very start.

MicroTCA Carrier Hub – MCH

A MicroTCA Carrier Hub (MCH) plays a key role in the design of a MicroTCA platform. It combines the control and management infrastructure and the interconnect fabric resources needed to support up to twelve AdvancedMCs in a MicroTCA Platform. An MCH has the same form factor as an AdvancedMC. MCHs are the infrastructure elements that are shared by all AdvancedMCs. Since MCHs represent a single point of failure in a MicroTCA platform, where any fault could bring down the entire system, it is possible to include a pair of MCHs to make the solution suitable for High Availability (HA) applications.

Requirement Summary

- » High performance and throughput
- » Multi-Processor
- » Advanced switching requirements
- » Advanced system management
- » Hot-Swap
- » Redundant

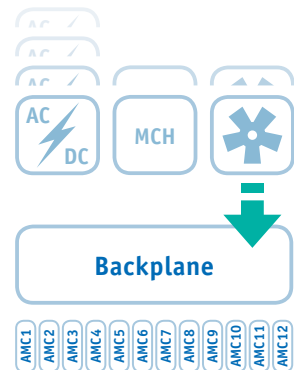
- » High performance and throughput
- » Multi-processor
- » Basic switching requirements
- » Basic system management
- » IO-oriented

HIGH

LEVEL OF REQUIREMENTS

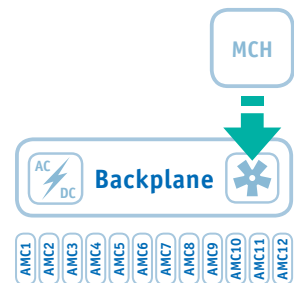
LOW

Fully-Featured



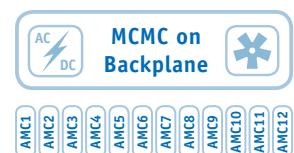
- » Completely redundant
- » Fully featured MCH
- » Power Modules
- » Cooling Units

Cost-optimized



- » Simple Power Supplies
- » Simple Fans
- » Simple MCH

Lowest cost



- » Simple power supplies
- » Simple fans
- » MCMC module on backplane

AM4904 / AM4910

The AM4904/AM4910 is a fully featured MCH providing high sophisticated system management and high performance switching capabilities for up to 12 AdvancedMC™ modules. The AM4904 supports a Layer 2 (on request Layer 3) managed GbE switch combined with additional switching options for 10 GbE, PCIe or SRIO. Completing the rich feature-set of the MCH by offering various clocking functions the AM4904/AM4910 is the perfect match



for advanced communication application requirements.

- » Fully-featured MCH for up to 12 AMCs, two Power Modules and two Cooling Units
- » Enterprise class switching functions
- » Sophisticated management capabilities
- » Layer 2 (on request Layer 3) managed GbE switch, optionally PCIe, SRIO or 10 GbE
- » 2x GbE or 2x 10 GbE Uplink channels
- » Update channel to redundant MCH

AM4901 / 5901

The AM4901 and AM5901 are entry-level MCH solutions which enable cost-effective MicroTCA system designs. The two main functions of an MCH are system management (IPMI controlled power management, electronic keying, hot-swap of AMCs) and Ethernet switching. The AM4901 / AM5901 provide these functions for six AMCs - designed as a single PCB solution with one tongue only. The AM4901 / AM5901 contain an unmanaged Ethernet switch, which simplifies designs and improves costs (lower cost components, no switch controller, no software for switch controller). The AM5901 as a double AMC form factor offers more front panel space allowing a broader set of uplink capabilities compared to the single AMC form factor. Furthermore, the AM5901 is designed to meet MicroTCA.1 requirements achieving higher robustness and shock and vibration resistance.

- » Cost optimized design by focusing to essential requirements
- » System management + Unmanaged Ethernet Switching
- » Low power consumption
- » High reliability (MTBF > 620 000 h)



AM2901

The AM2901 is the smallest possible solution to provide as a MicroTCA Carrier Management Controller (MCMC) system management functions in a compact MicroTCA design. These functions include IPMI controlled power management, electronic keying, hot-swap of AMCs). The AM2901 is the optimized solution where switching capabilities are not required.

- » Cost optimized design for small custom MicroTCA solutions
- » System management only - MCMC
- » Low power consumption
- » High reliability (MTBF > 2 000 000 h)



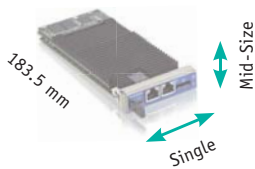
Form Factors

POWERFUL & SMALL

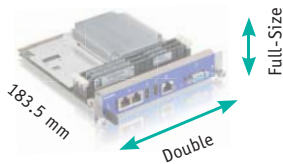
On a footprint of 74 mm x 183.5 mm they offer massive data throughput via high speed serial interconnects. With focus on demanding application AMCs offer sophisticated manageability and serviceability via IPMI and hot-swap.

AMC FORM FACTORS

Single (73.8 mm)
Mid-Size (4HP) or Full-Size (6HP)



Double (148.8 mm)
Mid-Size (4HP) or Full-Size (6HP)



FULLY FEATURED

Double AMCs provide graphics, mass-storage and IO, all on a space saving 149 mm x 183.5 mm form factor, with a power envelope of 80W. This enables high performance platforms, focused on applications that demand massive data throughput drive by high speed serial interconnects. Sophisticated manageability and serviceability via IPMI and the hot-swap concept round out the feature set.

Platforms

OM6120



The OM6120 is a compact AMC platform dedicated, but not limited to, industrial automation and medical applications. It supports any standard compliant AMCs and MCH. In comparison to conventional MicroTCA implementations, it achieves significant cost improvements by a simplified design, which does eliminate the need of MicroTCA Power Modules and uses standard PSU instead.

- » Up to 12 AMCs
- » Dual pluggable Power Supplies AC&DC
- » Dual star incl. GbE, 10GbE, PCIe and SRIO acc. to SCOPE mapping
- » Management options from basic MCH to fully featured MCH
- » Dense industrial platform for image processing, motion and process control

OM5080



- » 2U 19" off the shelf platform for up to 8 AMCs
- » Fault resilient design: no single point of failure
- » Maximum space efficiency

OM6061



- » Flexible 1U platform for Central Office and service aggregation point applications
- » Pre-tested with Kontron storage, processor, and network processor AdvancedMC modules
- » Cost-efficient MCH module and six AMC slots

SINGLE

Platforms

OM6090 D/7090 D



- » Modular platform for high-end multi-core processor AMCs
- » 19" rack mountable system (6U) with front-to-back cooling for best usage of shelf space
- » Supports double-width, full-size AMCs for high power envelope up to 80W
- » 10 GbE fabric with enterprise-class MCH

OM6040D



- » Compact modular platform for high-end multi-core processor AMCs
- » 4x Full-Size, Double-Width Slots for AMCs (max 80W) (e.g. AM5030)
- » 10 GbE fabric with enterprise-class MCH

DOUBLE

Processor

OM6060



- » Up to six AMCs
- » Single Star for GbE fabric
- » PCIe, SRIO and SATA point-to-point
- » Entry level for industrial applications, image processing and packet processing

OM6040



- » Up to four AMCs incl. AC power and fans
- » Single star for GbE and PCIe/SRIO fabric
- » Fully featured MCH
- » SATA point-to-point
- » Entry level system for MicroTCA development

STARTER KIT

- » Base system: OM6060 chassis incl. 250 Watts AC Power, Multi-Purpose
- » Backplane for six Mid-Size AMCs, AM4901 MCH with GbE Switch
- » Intel® architecture options: AM4010 Core™ 2 Duo or AM4020 Core™ i7
- » Power PC developer's option: AM4101 MPC8641D
- » Packet-processing option: AM4204 Cavium 12-Core AMC



AMC Developer's Package

For AMC developers, MicroTCA management may represent an obstacle for AMC designs. The AMC developer's package provides proven building blocks for MicroTCA management: a hardware building block, MMC management software and a reference implementation on AMC incl. debugging facilities. The management functions over IPMI on AMCs are contained in a functional entity named MMC (module management controller).

AM4020

High-End Core i7 processor AMC



The AM4020 is a highly integrated CPU board implemented as a Single Mid-size or Full-size Advanced Mezzanine Card (AMC) for ATCA and MicroTCA applications. The design is based on the Intel® Core™ i7 processor platform combined with the mobile Intel® QM57 Express Chipset. The single-width AM4020 AdvancedMC™ processor board integrates the memory controller, PCI Express, and the graphics processor within the multi-core processor.

- » Intel® Core™ i7 up to 2.53 GHz
- » Up to 8 GByte SDRAM memory (soldered) with ECC running at 1066 MHz
- » Graphics interface
- » Up to 32 GByte SATA NAND Flash memory module
- » Comprehensive I/O capabilities
- » Superb monitoring features
- » PICMG AMC.0/.1/.2/.3 compliance

Processor

OM6062



- » Cost Optimized for up to six AMCs
- » Pluggable Power Supply AC
- » Management and fan control on backplane
- » Single star for GbE fabric
- » PCIe point-to-point
- » Industrial platform for IPTV, media server, process control and image processing

AM5030

High-End Quad Core processor AMC

The AM5030 AdvancedMC processor module is equipped with the next generation Intel® Xeon® processor LC5518 which provides outstanding server-class processing power and maximum performance per watt for MicroTCA system designs.



- » Quad Core Intel XEON LC5518 1.73 GHz processor (48 Watt TDP), Hyper-threading support and 8 MB last level cache
- » Highly integrated server-class processor/chipset platform with support for three memory channels up to 1066 MHz for high bandwidth
- » AMC double-width, full-size solution
- » Up to 24 GB DDR3 memory with ECC
- » Supporting AMC.1, AMC.2, AMC.3
- » 2x 10 GbE (XAUI) to backplane
- » Optional TPM support

MCH

AM4100 / AM4101 Power PC Processor AMC



- » Freescale dual-core MPC8641D PowerPC, 1.5 GHz
- » Up to 2 GByte soldered SDRAM memory
- » 2 GByte onboard NAND Flash
- » Comprehensive fabric interfaces GbE / PCI-Express / serial RapidIO concurrently

AM4010/AM4011 x86 Processor AMC



- » Intel® Core™2 Duo 1.5 GHz
- » Up to 4 GByte soldered SDRAM memory
- » Up to 8 GByte NAND Flash memory
- » Flexible GbE & PCI-Express fabric interface
- » Superb monitoring features

AM4904 / AM4910



- » Fully Featured MCH
 - » MCMC incl. remote Mgt. + Managed Switch)
 - » GbE, PCIe, SRIO (AM4904)
 - » 10GbE (AM4910)

AM4901



- » Basic MCH
 - » MCMC + Unmanaged Switch
 - » GbE

I/O

AM42xx Communication AMC



- » Cavium OCTEON Plus 5650 Network Service Processor
- » High-density, high-bandwidth serial I/O for networking
- » Multiple Frontpanel configurations
- » SW configurable FAT pipe region interface
- » 10GbE, Quad GbE, PCIe x4 or x8

AM4301 Gigabit Ethernet



- » 4x GbE via RJ45 connectors
- » Full fast path buffer for QoS
- » Virtual LANS 802.3q VLAN tagging

AM5020 High-End Core i7 processor AMC

Available
Q4-2010



- » Intel® Core™ i7 up to 2.53 GHz
- » Up to 8 GByte SDRAM memory (soldered) with ECC running at 1066 MHz
- » Graphics interface
- » Up to 32 GByte SATA NAND Flash memory module
- » Onboard 2.5 SATA HDD/SSD optional

AM5010



- » Double Width AMC
- » Intel® Core™2 Duo 1.5 GHz
- » Up to 4 GByte soldered SDRAM memory
- » Graphics Interface
- » Onboard 2.5 SATA HDD/SSD optional
- » Flexible GbE and PCI-Express fabric interface

AM5901R



- » Cost optimized design by focusing to essential requirements
- » System management + Ethernet Switching
- » 4 GbE uplinks (RJ45 and SFP+) and management port

Storage

AM4520

- » SAS Storage Module
- » Up to 146 GByte capacity



AM4500

- » SATA Storage Module
- » 120 and 250 GByte capacity



AM4510

- » SSD Storage Module
- » 32 and 64 GByte capacity



AM5500R

- » Carrier HDD/SSD
- » Cost optimized storage
- » 2x onboard 2.5" SATA HDD/SSD
- » IPMI according to AMC.0



SINGLE

DOUBLE

Rugged MicroTCA

LEVELS OF RUGGEDNESS

MicroTCA.0 Base Specification

- » 7g shock, 0.5g amplitude vibration (DL1, IEC60068-2-6/27)

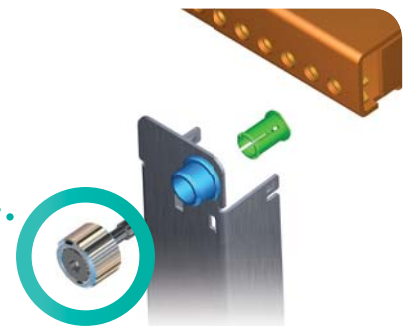
MicroTCA.1 Rugged Air Cooled Extended Environment

- » Standard AMCs, but fixed on front
- » 25g shock, 3g amplitude vibrate (DL3, IEC60068-2-6/27)
- » Extended temperature -40°C to +75°C

MicroTCA.3 Hardened Conduction Cooled MIL Environment

- » Status: PICMG working group Estimate release 2HY10

Modern warfare systems must blend issues of ruggedness, flexibility, mobility and high-end processing. MicroTCA boards and systems are designed to meet NEBS Level 3 requirements, addressing demands such as thermal margins, fire suppression, emissions and the ability to continue working even during a severe earthquake. As a result, standard MicroTCA systems are beyond rugged enough for environments such as ground installations or on certain types of airborne platforms. MicroTCA systems can offer up to 12 slots, making the platform highly suitable for high-bandwidth, high-performance military applications.



OM5030 RC



- » Base Station
- » AMC clamshells for conduction cooling
- » Up to three AMCs
- » Management via MCMC Module (AM2901)

AM4010 clamshell



- » Rugged, conduction cooled single AMC
- » Intel® Core™ Duo 1.5 GHz

