

➤ AM4010

Processor AMC Module based on
Intel® Core™ Duo / Intel® Core™ 2 Duo



powered by Embedded
Multi-Core Processor

AdvancedMC™

AdvancedTCA®

μTCA™

➤ Ultra Performance

Intel® Core™ Duo with 1.2 GHz or 1.66 GHz

Intel® Core™ 2 Duo with 1.5 GHz

➤ Ultra Capacity

Up to 4 GB memory DDR2 400 MHz

Up to 8 GB NAND Flash

➤ Ultra Flexibility

Flexible Gigabit and PCI Express fabric interface

➤ First class performance AMC module

Kontron's AdvancedMC processor module AM4010 provides outstanding performance in conjunction with comprehensive AMC interconnect capabilities designed according to the PICMG specifications AMC.0, AMC.1, AMC.2, AMC.3.

➤ Ultra Performance

The AM4010 is a highly integrated CPU board implemented as a Single Mid-size or Full-size Advanced Mezzanine Card (AMC) Module. The design is based on the Intel® Core™ Duo and the Intel® Core™ 2 Duo processors combined with the Intel® 3100 server-class chipset. The board is capable of supporting the Intel® Core™ Duo and the Intel® Core™ 2 Duo processor versions in 65 nm technology with 64 kB L1 and up to 4 MB L2 cache in a 479 FCBGA package with frequencies ranging from 1.2 GHz up to 1.66 GHz providing up to 667 MHz front side bus (FSB) speed.

➤ Ultra Capacity

The board includes up to 4 GB registered Double Data Rate (DDR2) memory with Error Checking and Correcting (ECC) running at 400 MHz. Two dual Gigabit Ethernet controllers each utilizing a x4 lane PCI Express inter-connection to the Intel® 3100 chipset ensure maximum data throughput between processor and memory. The AM4010 further provides up to 8 GB Flash memory via an USB 2.0 NAND Flash Controller.

➤ Ultra Flexibility

Supporting the PICMG sub-specifications AMC.1/2/3 the AM4010 ensures a comprehensive set of interconnecting capabilities to the AMC Carrier. A x4 PCI Express lane according to AMC.1 guarantees high throughput for I/O intensive applications. The dual Gigabit Ethernet controller realizing the AMC.2 interconnect utilizes a x4 lane PCI Express interface to the 3100 chipset ensuring maximum packet performance. Two SATA ports compliant to AMC.3 allow flexible usage models of the AM4010 depending on the application requirements.

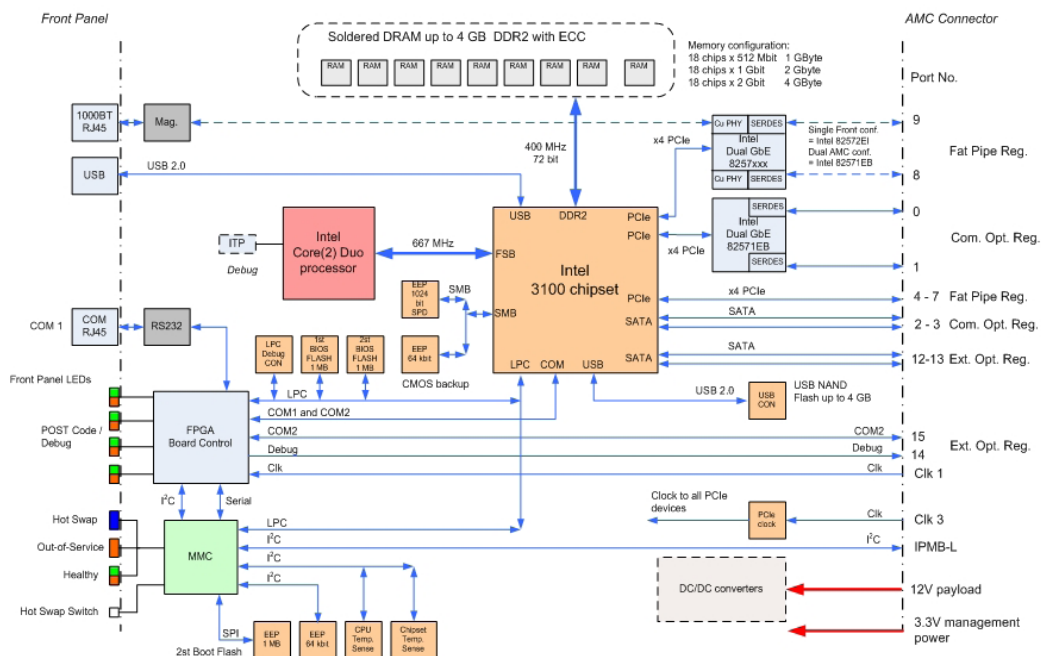
➤ AMC everywhere

A comprehensive range of 'AMC everywhere' ATCA boards, such as ATCA carrier boards, CPU and hub boards are complementing Kontron's AMC product portfolio including the AM4010 module. Optimized for high-performance, packetbased telecom systems, the AM4010 is targeted towards, but not limited to telecom applications such as radio network controllers, storage control, routing and switching solutions in ATCA systems. Beyond the usage in ATCA systems the AM4010 complies to the MicroTCA standard dedicated for cost optimized communication applications.

➤ Reliability

The careful design and selection of high temperature resistant components together with the elaborated heat sink construction ensures a high product availability. This, along with a high level of scalability, reliability, and stability, makes this state-of-the-art product a perfect core technology for long-life embedded applications.

AM4010: Intel Core(2) Duo based PrAMC



➤ Specification

System Processor	
AM4010 (Full-size or Mid-size)	<p>Intel® Core™ Duo or Intel® Core™2 Duo Processor (65 nm), 479-pin FCBGA package, 2x 32 KB L1 cache and 2/4 MB L2 cache, 533 or 667 MHz processor system bus.</p> <p>Intel® Core™ Duo U2500 (ULV), 1.2 GHz, 533 MHz FSB, 2 MB L2 cache</p> <p>Intel® Core™ Duo L2400 (LV), 1.66 GHz, 667 MHz FSB, 2 MB L2 cache</p> <p>Intel® Core™2 Duo L7400 (LV), 1.5 GHz, 667 MHz FSB, 4 MB L2 cache</p> <p>The processor is passive cooled with a fanless heatsink.</p> <p>Forced air cooling at a specific flow rate is required.</p>
Memory	
System memory:	Up to 4 GByte (soldered) registered DDR2 400 MHz with ECC
NAND Flash:	Up to 8 GByte NAND Flash via onboard USB 2.0 Flash controller
Flash (BIOS):	Two redundant 1 MB Firmware hubs (FWH)
EPROM:	Serial EEPROM (24LC64) 64 kbit
Onboard Controller	
Intel® 3100 chipset with integrated Memory and I/O Controller Hub:	Three x4 PCI Express ports, DDR2 SDRAM memory controller with ECC, six SATA 150 ports, four USB 2.0 ports, two UARTs, RTC, Interrupt Controller, Timer
Gigabit Ethernet:	Intel® 82572 single GbE and 82571EB dual GbE PCI Express device; Optional: two Intel® 82571EB dual GbE PCI Express devices
Watchdog:	FPGA based, software configurable, two-stage Watchdog with programmable timeout ranging from 125 msec to 256 sec in 12 steps.
MMC:	Microcontroller with on-chip 512 kB Flash and 40 kB RAM, ext. 1 MB SPI Flash, 64 kbit EEPROM
AMC System Interconnect	
PCI Express:	One x4 PCI Express interface
Gigabit Ethernet:	<p>AMC fat pipes region port 4-7</p> <p>2x 1000BASE-BX (SerDes) on AMC ports 0-1 (Common Options Region); Optional: in addition 2x 1000BASE-BX (SerDes) on AMC ports 8-9 (Fat Pipe Region)</p>
Front Panel	
	<p>One USB 2.0 port</p> <p>One serial port (COM1) with RS-232 signal level on RJ-45 connector</p> <p>One Gigabit Ethernet port on RJ-45 connector</p> <p>Three Module Management LEDs</p> <p>Four User-Specific LEDs</p>
MMC Module Management Controller	
	<p>Microcontroller with 40 kB RAM and redundant 512 kB Firmware Flash with automatic roll-back strategy.</p> <p>The MMC carries out IPMI commands such as monitoring several onboard temperature conditions, board voltages and the power supply status, and managing hot swap operations.</p> <p>The MMC is accessible via a local IPMB (IPMB-L) and two host Keyboard Style Interfaces (KCS).</p>
Compliance	
ATCA:	PICMG 3.0 AdvancedTCA Base Specification R2.0
MicroTCA:	PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0
AMC:	<p>PICMG AMC.0: Advanced Mezzanine Card Specification R2.0</p> <p>PICMG AMC.1: PCI Express and Advanced Switching R1.0</p> <p>PICMG AMC.2: Gigabit Ethernet R1.0</p> <p>PICMG AMC.3: Storage Interfaces R1.0</p>
IPMI:	<p>IPMI Intelligent Platform Management Interface Spec. V2.0</p> <p>IPMI - Platform Management FRU Information Definition V1.0</p>
PCI Express:	PCI Express Base Specification Revision 1.0a
Serial ATA:	Serial ATA 2.5 Specification
CE:	EN55022, EN55024, EN61000-6-2/-6-3, EN300386, EN60950-1
Vibration/Shock:	IEC60068-2-6 / IEC60068-2-27
Climatic Humidity:	IEC60068-2-78
WEEE:	Directive 2002/96/EC
RoHS:	Directive 2002/95/EC
Power Consumption	
AM4010 with Core Duo, 1.2 GHz, 1 GB	max. 25 W
AM4010 with Core Duo, 1.66 GHz, 2 GB	max. 34 W
AM4010 with Core 2 Duo, 1.5 GHz, 2 GB	max. 36 W
General	
Dimensions:	<p>181.5 mm x 73.5 mm x 18.96 mm (Mid-size/Single-width),</p> <p>181.5 mm x 73.5 mm x 28.95 mm (Full-size/Single-width)</p>
MTBF:	221,055 h acc. Bellcore Issue 6, Ground Benign, Controlled, 30 C
Software Support	
AMI BIOS, BIOS parameters saved in EEPROM, Boot order defined via MMC	
Serial over Lan, Support for Redhat Linux, WRLinux PNE 2.0 (Q2/2008), VxWorks 6.6 SMP (Q3/2008)	
Environmental	
Operating temp.:	-5°C to +55°C (depending on system environment)
Storage temp.:	-40°C to +70°C
Humidity:	<p>Operational: 5%-90% (non-condensing)</p> <p>Non-Operating: 5%-95% (non-condensing)</p>

➤ Ordering Information

Article	Description	Front Panel
Processor AMC		
AM4010-1.2GHz-1M-mid	PrAMC, Intel® Core™ Duo (ULV), 1.2 GHz, 533 MHz FSB, 1 GB memory	Mid-size
AM4010-1.66GHz-2M-full or -mid	PrAMC, Intel® Core™ Duo (LV), 1.66 GHz, 667 MHz FSB, 2 GB memory	Full- or Mid-size
AM4010-1.5GHz-2M-full or -mid	PrAMC, Intel® Core™ 2 Duo (LV), 1.5 GHz, 667 MHz FSB, 2 GB memory	Full- or Mid-size
AM4010-1.5GHz-4M-full or -mid	PrAMC, Intel® Core™ 2 Duo (LV), 1.5 GHz, 667 MHz FSB, 4 GB memory	Full- or Mid-size
Software		
LIN-BSP-AM4010	Linux Board Support Package	
LIN-BSP-WR-AM4010-PNE2.0	WindRiver Linux PNE2.0 Board Support Package	
Accessories		
FLASH-USB-xxx	NAND-Flash in various capacities	
AM-EVAL1	AM40xx Evaluation Kit, incl. graphic card, HDD, cables, installed Linux s/w on HDD	

➤ AM4010 Platforms



➤ Corporate Offices

Europe, Middle East & Africa

Oskar-von-Miller-Str. 1
85386 Eching/Munich
Germany
Tel.: +49 (0)8165/ 77 777
Fax: +49 (0)8165/ 77 219
sales@kontron.com

North America

14118 Stowe Drive
Poway, CA 92064-7147
USA
Tel.: +1 888 294 4558
Fax: +1 858 677 0898
sales@us.kontron.com

Asia Pacific

17 Building, Block #1, ABP.
188 Southern West 4th Ring Road
Beijing 100070, P.R.China
Tel.: + 86 10 63751188
Fax: + 86 10 83682438
kcn@kontron.cn

Kontron Modular Computers GmbH

Sudetenstr. 7
87600 Kaufbeuren
Germany
Tel.: +49 (0)8341/ 803-0
Fax: +49 (0)8341/ 803-499
sales@kontron.com