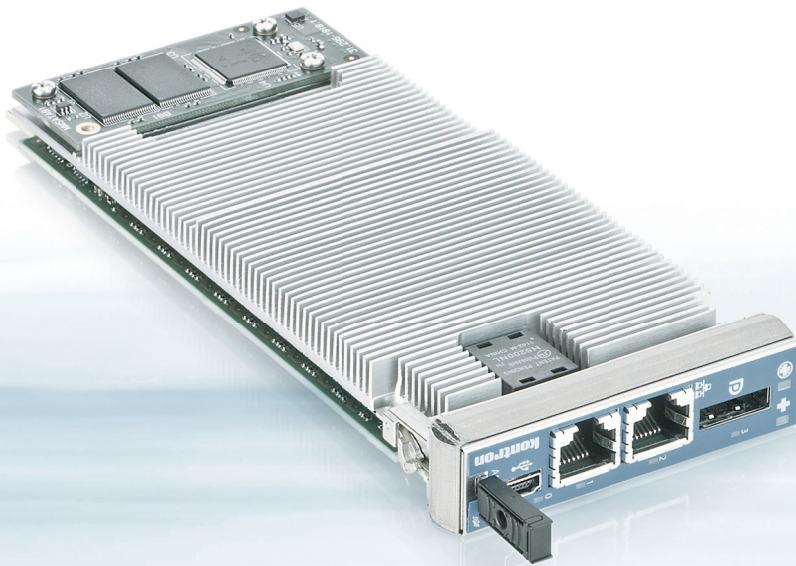


AM4022



HIGH-END PROCESSOR AMC BASED ON 3rd GENERATION Intel® Core™ i7 TECHNOLOGY

- ▶ outstanding performance
- ▶ impressive capacity
- ▶ comprehensive connectivity

POSSIBILITIES START HERE



AM4022

SMALL, FAST, ROBUST

Performance

The AM4022 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 3rd Generation Intel® Core™ i7 processor platform combined with the mobile Intel® QM77 Express Chipset. The board supports the Intel® Core™ i7-3612QE (2.1 GHz Quad Core) and the Intel® Core™ i7-3555LE (2.5GHz Dual Core) processors in 22 nm technology in a BGA package. Other processors are available on request. The processor and the memory are soldered on the AM4022 which results in higher Mean Time Between Failures (MTBF) and a significant improvement in cooling.

Throughput

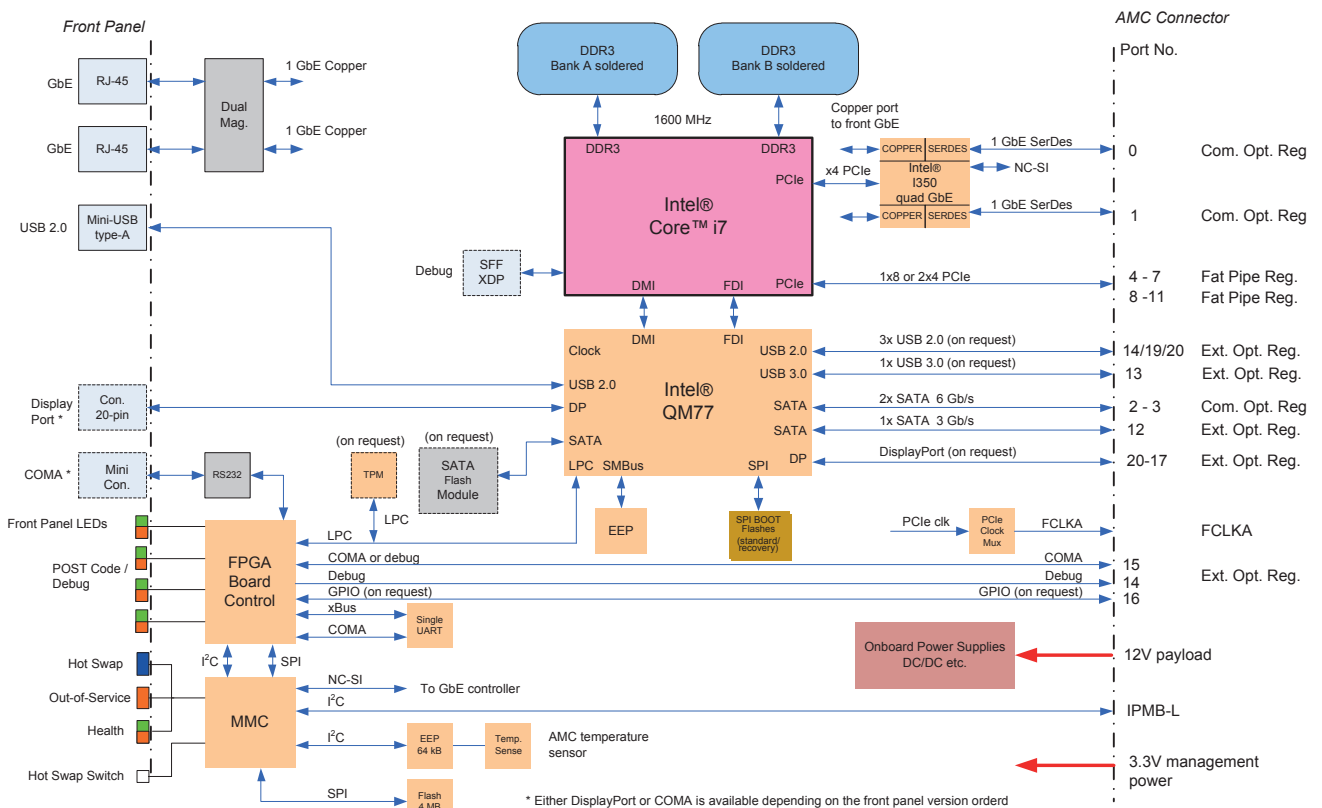
The AM4022 includes up to 8 GB, dual-channel Double Data Rate (DDR3) memory with Error Checking and Correcting (ECC) running at 1600 MHz. The graphics and memory controller is integrated in the processor. One quad Gigabit Ethernet controller directly connected to the processor ensures maximum data throughput between processor and memory. The AM4022 can be equipped optionally with an up to 64 GB NAND Flash memory module which can be screwed on the AM4022.

Connectivity

Supporting the PICMG sub-specifications AMC.1/.2/.3 the AM4022 ensures a comprehensive set of interconnecting capabilities. The AM4022 is available with two front panel versions, one with a high-resolution DisplayPort and one with a COM port. Further interfaces include one USB 2.0 host interface and two Gigabit Ethernet ports to the front as well as a variety of high-speed interconnect topologies to the system, such as Dual Gigabit SerDes connection and Dual Serial ATA storage interface in the Common Options Region, two x4 or one x8 PCI Express in the Fat Pipes Region, and various interfaces in the Extended Options Region available on request— among them SATA, USB, DisplayPort.

Reliability

The careful design and selection of high temperature resistant components together with the elaborated heat sink construction ensures a high product reliability. A front panel design according MicroTCA.1 (on request) provides shock & vibration resistance in demanding environmental conditions.



► TECHNICAL INFORMATION

<p>FORM FACTOR</p> <p>CPU AND PCH</p>	<p>PROCESSOR</p>	<p>Single mid-size or full-size (on request) AMC module</p> <p>The AM4022 supports the following microprocessors:</p> <ul style="list-style-type: none"> - Intel® Core™ i7-3612QE (SV) processor with ECC, 2.1 GHz, 6 MByte L3 cache - Intel® Core™ i7-3555LE (LV) processor with ECC, 2.5 GHz, 4 MByte L3 cache <p>Note: other processor versions available on project request</p> <p>Cache Structure:</p> <ul style="list-style-type: none"> - 64 kByte L1 cache for each core - 32 kByte instruction cache - 32 kByte data cache - 256 kByte L2 shared instruction/data cache for each core - Up to 6 MByte L3 shared instruction/data cache shared between all cores <p>Further processor features:</p> <ul style="list-style-type: none"> - Up to four physical execution cores - Intel® Hyper-Threading Technology (Intel® HT Technology) - Intel® 64 Architecture - Intel® Turbo Boost Technology - Intel® Intelligent Power Sharing (IPS) - One x16 PCI Express port operating at up to 8.0 GT/s
	<p>PLATFORM CONTROLLER HUB</p>	<p>Mobile Intel® 3rd Generation PCH; QM77 Express Chipset, Used interfaces:</p> <ul style="list-style-type: none"> - 3x USB 2.0, 1x USB 3.0 - 2x SATA 6Gbit/s, 2x SATA 3Gbit/s - 2x DisplayPort - RTC, interrupt controller and timers
<p>MEMORY</p>	<p>SYSTEM MEMORY</p> <p>NAND FLASH FLASH (BIOS)</p> <p>EEPROM</p>	<p>Dual channel DDR3 memory, up to 8 GByte DDR3 SDRAM memory with ECC, running at 1600 MHz</p> <p>Up to 64 GByte SLC NAND Flash on a dedicated SATA NAND Flash module</p> <p>Two redundant 8 MByte SPI Flash chips (2 x 8 MByte) for uEFI BIOS controlled by the MMC</p> <p>Serial EEPROM (24LC64) 64 kbit</p>
<p>ONBOARD CONTROLLERS</p>	<p>VGA</p> <p>GIGABIT ETHERNET</p> <p>UART</p> <p>TPM</p> <p>MMC</p> <p>WATCHDOG</p>	<p>Built-in Intel® 3D Graphics accelerator for enhanced graphics performance:</p> <ul style="list-style-type: none"> - Supports resolutions up to 2560 x 1600 pixels @ 60 Hz - DisplayPort hot plug support - Dynamic Video Memory Technology <p>When the AM4022 is populated with a COM port on the front panel, the Graphics controller is disabled.</p> <p>1x Intel® I350 Quad Gigabit Ethernet PCI Express 2.0 bus controller</p> <ul style="list-style-type: none"> - Two interfaces routed to front I/O connectors - Two interfaces routed to the AMC connector <p>EXAR XR16L580IL single UART, 16550 compatible</p> <p>Infineon SLB9635TT TPM 1.2 controller (on request)</p> <p>NXP LPC2368 controller with on-chip 512 kByte Flash and 56 kByte RAM</p> <p>FPGA-based, software-configurable, two-stage Watchdog with programmable timeout ranging from 125 ms to 4096 s in 16 steps</p>
<p>SYSTEM INTERCONNECTION</p>	<p>AMC PORTS</p> <p>FCLKA</p>	<p>AMC port 0-1: 2x 1000BASE-BX (SerDes)</p> <p>AMC port 2-3: 2x SATA 6Gbit/s</p> <p>AMC port 4-11: 2 x4 or 1 x8 PCI Express</p> <p>AMC port 12: 1x SATA 3Gbit/s</p> <p>AMC port 13: 1x USB 3.0</p> <p>AMC port 14: 1x Debug or USB 2.0</p> <p>AMC port 15: 1x COM</p> <p>AMC port 16: 4x GPIO</p> <p>AMC port 17-20: 1x DisplayPort, 2x USB 2.0</p> <p>Note: AMC port 12 - 20 connectivity available on project request</p> <p>PCI Express clock configuration configurable: disabled/enabled to AMC connector</p>
<p>FRONT PANEL INTERFACES</p>	<p>DISPLAYPORT (OPTION1)</p> <p>SERIAL PORT (OPTION 2)</p> <p>GIGABIT ETHERNET</p> <p>USB</p> <p>LEDs</p>	<p>1x DisplayPort on standard 20-pin DisplayPort connector (mutual exclusive with Serial Port)</p> <p>1x RS232 UART interface on 10-pin mini connector (mutual exclusive with DisplayPort)</p> <p>2x 1000BASE-TX on RJ45 connector</p> <p>1x USB 2.0 port on 5-pin, type A Mini-USB connector</p> <p>3x Module Management LEDs, Four User-Specific LEDs, Ethernet LEDs</p>
<p>ONBOARD INTERFACES</p>	<p>DEBUG INTERFACE</p> <p>I/O EXTENSION</p>	<p>JTAG port for processor emulation probe connection;</p> <p>Serial POST Code (LVTTTL) interface on the AMC port 14</p> <p>The I/O extension holds the following interfaces:</p> <p>SATA, LPC interface and some power and control signals, battery input</p>
<p>COMPLIANCY</p>	<p>ATCA</p> <p>MICROTCA</p> <p>AMC</p> <p>IPMI</p> <p>SATA</p> <p>CE</p> <p>VIBRATION/SHOCK</p> <p>CLIMATIC HUMIDITY</p> <p>WEEE</p> <p>ROHS</p>	<p>12 V payload power, 3.3 V management power</p> <p>PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0;</p> <p>PCI Express®: PCI Express® Base Specification Revision 1.0a</p> <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> <p>IPMI Intelligent Platform Management Interface Spec. V2.0</p> <p>IPMI - Platform Management FRU Information Definition V1.0</p> <p>Serial ATA: Serial ATA 2.5 Specification</p> <p>EN55022, EN55024, EN61000-6-2/-6-3, EN300386, EN60950-1</p> <p>IEC60068-2-6 / IEC60068-2-27</p> <p>IEC60068-2-78</p> <p>Directive 2002/96/EC</p> <p>Directive 2002/95/EC</p>

TECHNICAL INFORMATION (CONTINUED)

GENERAL	DIMENSIONS BOARD WEIGHT MTBF POWER SUPPLY POWER CONSUMPTION	Dimensions without retention screws on front panel: Mid-size: 181.5 x 73.5 x 18.96 mm Full-size: 181.5 x 73.5 x 28.95 mm Mid-size with heat sink and without SATA Flash module: 247 grams Full-size with heat sink and without SATA Flash module: 310 grams 205712 h acc. Bellcore Issue 6, Ground Benign, Controlled, 30 °C 12 V payload power, 3.3 V management power i7-3612QE 2.1 GHz with COM-Port with DP-Port typ: 31 W 31 W max: 44 W 50 W i7-3555LE 2.5 GHz with COM-Port with DP-Port typ: 24 W 24 W max: 30 W 41 W
ENVIRONMENTAL	TEMPERATURE RANGE HUMIDITY	- 5 °C to +55 °C (standard, depending on processor version and airflow in the system) - 40 °C to +70 °C (extended, depending on processor version and airflow in the system) - 40 °C to +70 °C (storage), passive module heat sink, forced system airflow Operational: 5 %-90 % (non-condensing), Non-Operating: 5 %-95 % (non-condensing)
SOFTWARE	BIOS IPMI LINUX WINDOWS WINDRIVER LINUX VXWORKS	AMI uEFI BIOS MMC (Module Management Controller) implementation compliant to PICMG AMC.0, Kontron own IP Red Hat Enterprise 6; Red Hat Fedora 17, free download from Kontron web Windows 7 64-bit; Windows 2008 Server R2, free download from Kontron web PNE 4.x Version 6.9.2

ORDERING INFORMATION

ARTICLE	DESCRIPTION
PROCESSOR MODULES	
AM4022-SA-2.5D-4-M-COM	Intel® Core™ i7-3555LE, 2.5 GHz, 4 GByte soldered Memory, Mid-size, 2xGbE, USB, COM, no onboard SATA-Flash
AM4022-SA-2.5D-4-M-DP	Intel® Core™ i7-3555LE, 2.5 GHz, 4 GByte soldered Memory, Mid-size, 2xGbE, USB, DisplayPort, no onboard SATA-Flash
AM4022-SA-2.1Q-8-M-COM	Intel® Core™ i7-3612QE, 2.1 GHz, 8 GByte soldered Memory, Mid-size, 2xGbE, USB, COM, no onboard SATA-Flash
AM4022-SA-2.1Q-8-M-DP	Intel® Core™ i7-3612QE, 2.1 GHz, 8 GByte soldered Memory, Mid-size, 2xGbE, USB, DisplayPort, no onboard SATA-Flash
AM4022-SA-2.1Q-8-M-DP-S32	Intel® Core™ i7-3612QE, 2.1 GHz, 8 GByte soldered Memory, Mid-size, 2xGbE, USB, DisplayPort, 32 GByte onboard SATA-Flash
SOFTWARE	
VXW-BSP-AM4022-V6.9.2	VxWorks 6.9.2 Board Support Package for AM4022
ACCESSORIES	
CABLE-MINI-USB-TA	Adapter cable: MiniUSB-A to USB-A-Jack, 15 cm
CABLE-GRAPHIC-DP-TO-DVI	Adapter cable: DisplayPort to DVI, 19 cm
CABLE-SERIAL-10-PIN-MINI-TO-9-PIN-DSUB	Adapter cable: 10-pin Hirose to 9-pin DSub

Note: For other configuration options please contact your local sales support

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