AM4024(E)

HIGH-END PROCESSOR AMC BASED ON 4TH GENERATION INTEL® CORE™ i7 TECHNOLOGY

- outstanding performance
- impressive capacity
- comprehensive connectivity

POSSIBILITIES START HERE kontron

HIGH PERFORMANCE ON SMALL FORM FACTOR

Performance & Throughput

The AM4024(E) is a highly integrated CPU board implemented as a Single Mid-size (Full-size on project request) Advanced Mezzanine Card (AMC) for ATCA and MicroTCA applications. The design is based on the 4th Generation Intel® Core™ i5/i7 processor platform combined with the mobile Intel® QM87 Express Chipset.

The AM4024(E) supports up to 16 GB dual-channel Double Data Rate (DDR3) memory with Error Checking and Correcting (ECC) running at 1600 MHz. One or two quad Gigabit Ethernet controllers (providing up to 8 GbE ports) are directly connected to the processor via PCIe x4 Gen3 by that ensuring a maximum data throughput between processor and memory. The AM4024(E) can be equipped optionally with an up to 64 GB SATA NAND Flash module.

Connectivity

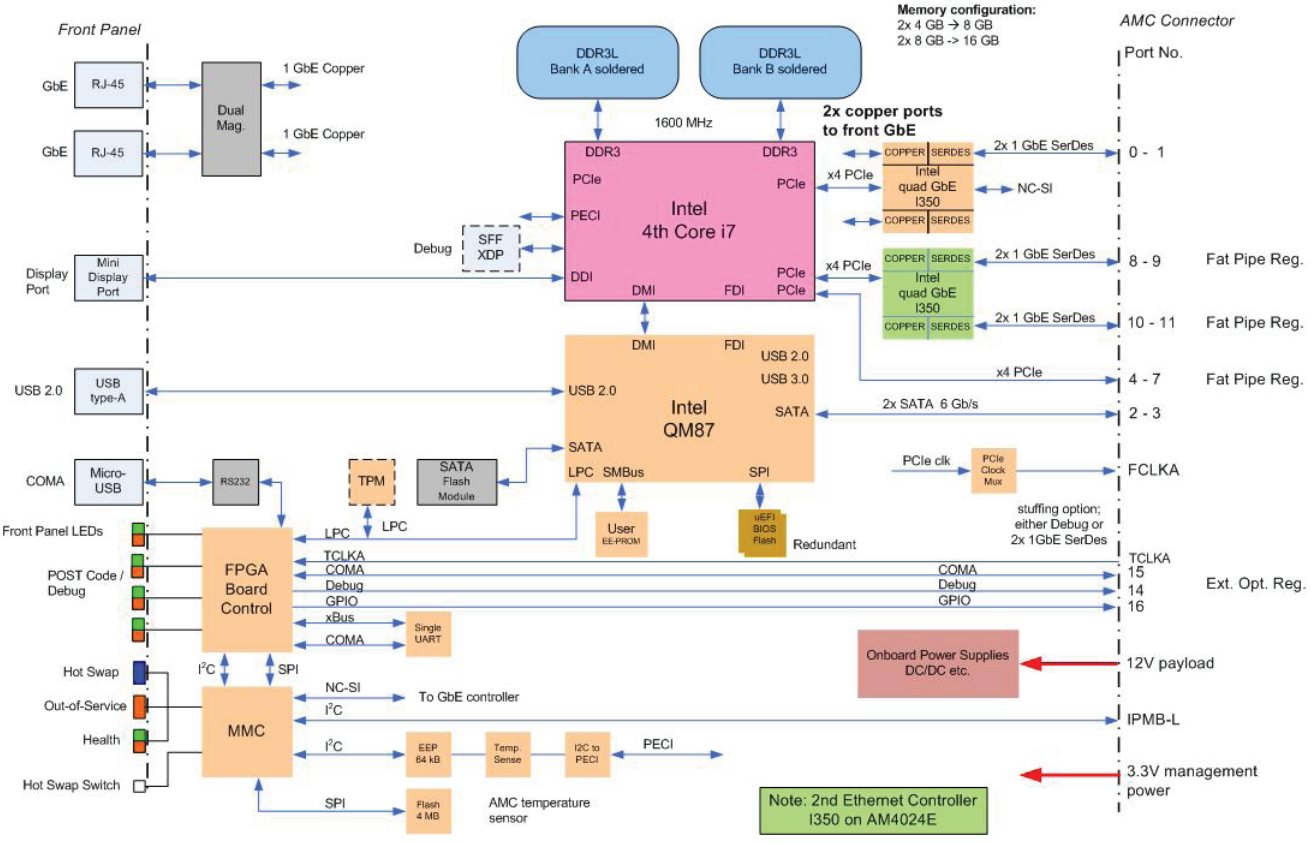
The AM4024(E) supports a comprehensive set of interconnecting capabilities. On the front panel the AM4024(E) comes with a broad set of I/O interfaces – such as 2x GbE, DisplayPort, COM, USB - allowing a convenient bring up process during the application development process. A variety of high-speed interconnect ports to the backplane, such as up to 8 GbE ports, PCI Express®, SATA ensures a wide range of possible application use cases for the AM4024(E).

Reliability

The processor and the memory are soldered on the AM4024(E) which results in a higher MTBF value and a significant advantage for the cooling concept. 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 project request) provides shock & vibration resistance in demanding environmental conditions.

Target Applications

The AM4024(E) is an ideal platform for high-performance computing and multi-processor systems in general. In the communication market the AM4024(E) serves perfectly for media server, gateway applications as well as in test solutions for networking equipment. In particular the Core i7 with integrated Intel® HD Graphics 4600 / 5200 provides a significant performance boost for video streaming / transcoding and IPTV applications.



TECHNICAL INFORMATION

FORM FACTOR		Single mid-size or full-size (on project request) AMC module
CPU AND PCH	PROCESSOR	Following Intel® Core™ i5/i7 processors – 4th Generation – code name "Haswell" are supported: - Quad Core i7-4860EQ GT3 1.8 GHz 6 MByte Cache – 47 W - Quad Core i7-4700EQ GT2 2.4 (1.7) GHz 6 MByte Cache – 47 W (37 W) - Dual Core i5-4402E GT2 1.6 GHz GT2 3 MByte Cache – 25 W Note: other processor versions available on project request
	PLATFORM CONTROLLER HUB	Mobile Intel® 4th Generation PCH; QM87 Express Chipset Used interfaces: - 2x USB 2.0 - 2x SATA 6Gbit/s, 1x SATA 3Gbit/s - 1x DisplayPort - RTC, interrupt controller and timers
MEMORY	SYSTEM MEMORY	Dual channel DDR3 memory, up to 16 GByte DDR3 SDRAM memory with ECC, running at 1600 MHz
	NAND FLASH	Up to 64 GByte SLC NAND Flash on a dedicated SATA NAND Flash module - SATA 3Gbit/s connection from PCH QM87
	FLASH (BIOS)	Two redundant 8 MByte SPI Flash chips (2x 8 MByte) for uEFI BIOS controlled by the MMC
	EEPROM	Serial EEPROM (24LC64) 64 kbit
ONBOARD CONTROLLERS	GRAPHICS	Built-in Intel® 3D Graphics accelerator for enhanced graphics performance : - Supports resolutions up to 3840 x 2160 pixels @60 Hz - DisplayPort hot plug support - Dynamic Video Memory Technology - Intel® HD Graphics 4600/Intel® Iris™ Pro graphics 5200
	GIGABIT ETHERNET	One or two Intel® I350 Quad Gigabit Ethernet PCI Express® 2.0 bus controller for a max of 8x GbE ports: - 2x GbE ports routed to front I/O connectors - 2x or 6x GbE ports routed to the AMC connector
	UART	Single UART, 16550 compatible
	TPM	Trusted Platform Module (TPM) 1.2 for enhanced hardware and software based data and system security
	MMC	Microcontroller with on-chip 512 kByte Flash and 56 kByte RAM
	WATCHDOG	FPGA-based, software-configurable, two-stage Watchdog with programmable timeout ranging from 125ms to 4096s in 16 steps
SYSTEM INTERCONNECTION	AMC PORTS	

Port#	AM4024	AM4024E
TCLKA	av	av
TCLKB	ncac	av
FCLKA	PCIe CLK (bidirectional)	PCIe CLK (bidirectional)
0	GbE-0	GbE-0
1	GbE-1	GbE-1
2	SATA-1	SATA-1
3	SATA-2	SATA-2
4	PCIe 1x 4	PCIe 1x 4
5		
6		
7		
8	nc	GbE-8
9	nc	GbE-9
10	nc	GbE-10
11	nc	GbE-11
12	nc	nc
13	nc	nc
14	Debug/nc	Debug/nc
15	Serial	Serial
16	TCLKC / 2x GPIO	TCLKC / 2x GPIO
17	nc	nc
18	nc	nc
19	nc	nc
20	nc	nc

FRONT PANEL INTERFACES	GIGABIT ETHERNET	2x 1000BASE-TX on RJ45 connector with integrated Speed + Activity LED
	DISPLAYPORT	1x DisplayPort on mini DisplayPort connector
	USB	1x USB 2.0 port on 5-pin, type A Mini-USB connector
	SERIAL PORT	1x RS232 UART interface on microUSB connector
	LEDs	3x LEDs according AMC.0 spec: 4x additional control and status bicolor (red/green) LEDs
ONBOARD INTERFACES	DEBUG INTERFACE	JTAG port for processor emulation probe connection
	I/O EXTENSION	The I/O extension holds the following interfaces: SATA, USB, LPC interface and some power and control signals, battery input Daughter cards to connect: - SATA NAND Flash module - Battery to supply the integrated RTC with power

TECHNICAL INFORMATION

COMPLIANCY	ATCA AMC/MICROTCA IPMI CE VIBRATION/SHOCK CLIMATIC HUMIDITY WEEE RoHS	PICMG 3.0 AdvancedTCA Base Specification R3.0 PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0 PICMG AMC.0 Advanced Mezzanine Card Specification R2.0 PICMG AMC.1 PCI Express and Advanced Switching R2.0 PICMG AMC.2 Gigabit Ethernet R1.0 PICMG AMC.3 Storage Interfaces R1.0 IPMI Intelligent Platform Management Interface Spec. V2.0; IPMI - Platform Management FRU Information Definition V1.0 EN55022, EN55024, EN61000-6-2/-6-3, EN300386, EN60950-1 IEC60068-2-6 / IEC60068-2-27 IEC60068-2-78 Directive 2002/96/EC Directive 2002/95/EC
MISCELLANEOUS	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: tbd grams; Full-size with heat sink: tbd grams tbd 12 V payload power, 3.3 V management power tbd
ENVIRONMENTAL	TEMPERATURE RANGE HUMIDITY	- 5 °C to +55 °C (standard, depending on processor version and airflow in the system) - 25 °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	Phoenix uEFI BIOS MMC (Module Management Controller) implementation compliant to PICMG AMC.0, MicroTCA.0 Generic BSP to be used with various Linux derivates; Verified for RedHat Fedora, RedHat Enterprise 6.x Windows7 64bit, Windows 2008 Server R2 PNE 5.x 6.9.3.x or later

ORDERING INFORMATION

ARTICLE	DESCRIPTION
PROCESSOR MODULES	
AM4024-SA-2.4-8-M	Quad Core i7-4700EQ, 2.4 GHz/47 W (1.7 GHz/37 W), 8 GByte DDR3 soldered memory 1600 MHz with ECC, FP: mid-size, 2x GbE, USB, DisplayPort, COM; AMC ports: 2x GbE, PCIe x4, 2x SATA
AM4024-SA-2.4Q-16-M	Quad Core i7-4700EQ, 2.4 GHz/47 W (1.7 GHz/37 W), 16 GByte DDR3 soldered memory 1600 MHz with ECC, FP: mid-size, 2x GbE, USB, DisplayPort, COM, AMC ports: 2x GbE, PCIe x4, 2x SATA
AM4024E-SA-1.8Q-8-M	Quad Core i7-4860EQ 1.8 GHz/47 W, 8 GByte DDR3 soldered memory 1600 MHz with ECC, FP: mid-size, 2x GbE, USB, DisplayPort, COM, AMC ports: 6x GbE, PCIe x4, 2x SATA
ACCESSORIES	
CABLE-MINI-USB-TA	Adapter cable: MiniUSB-A to USB-A-Jack, 15 cm
CABLE-SERIAL-MICROUSB-TO-9-PIN-DSUB	Adapter cable: MicroUSB to 9-pin DSub

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

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