

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

KONTRON

AM4140 AM4140-SA-1.5(E)O-4-FR

MULTICORE AMC PROCESSOR MODULE

Used with the applicable AM4140 AMC computing modules configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Kontron AM4140 AMC computing modules applicable manufacturer documentation

AM4140



DATA PLANE PROCESSOR AMC BASED ON Freescale™ QorIQ™ TECHNOLOGY

- ▶ high-throughput processing with low latency
- ▶ easy implementation

POSSIBILITIES START HERE



AM4140

DATA PLANE 8-CORE QorIQ™ AMC MODULE

High-performance processing

The AM4140 is a data plane CPU board implemented as Single Mid-Size Advanced Mezzanine Card (AMC) for ATCA and MicroTCA applications. The design is based on the Freescale™ QorIQ™ P4080 8-Core processor (P4040 4-Core on request), with cores based on the e500 Power Architecture®. Due to the P4080 processor, the AM4140 meets highest demands in multi-threaded processing: in combination with high-speed fabrics and frame handlers, the multi-core architecture allows high throughputs, as well as low latencies. To match demands on high-performance, the AM4140 provides a high-speed dual-channel memory with up to 8 GByte ECC-RAM. In order to grant reliability of the application, the AM4140 features redundant Boot Flashes.

High-speed fabrics

The AM4140 provides flexible configuration of high-speed fabrics. On AMC ports 4-7, 4x SERDES lines can be configured either as PCIe (root complex or end point) or sRIO ports (host or agent). sRIO and PCIe target applications which require close programming to the chip without extensive overhead and minimum latencies. AMC ports 8-11 may be configured either with sRIO x4, PCIe x4, 10GbE over XAUI, respectively 4x GbE over SGMII. In addition, the AM4140 supports up to 3 GbE channels: AMC port 0 + 2x Front or AMC port 0,1 + 1x Front. Depending on the application, the AM4140 supports usage in systems with MCH or without MCH in order to reduce costs and speed up system development. Depending on application requirements, the AM4140 is available with Freescale™ P4080 or P4040 on project request.

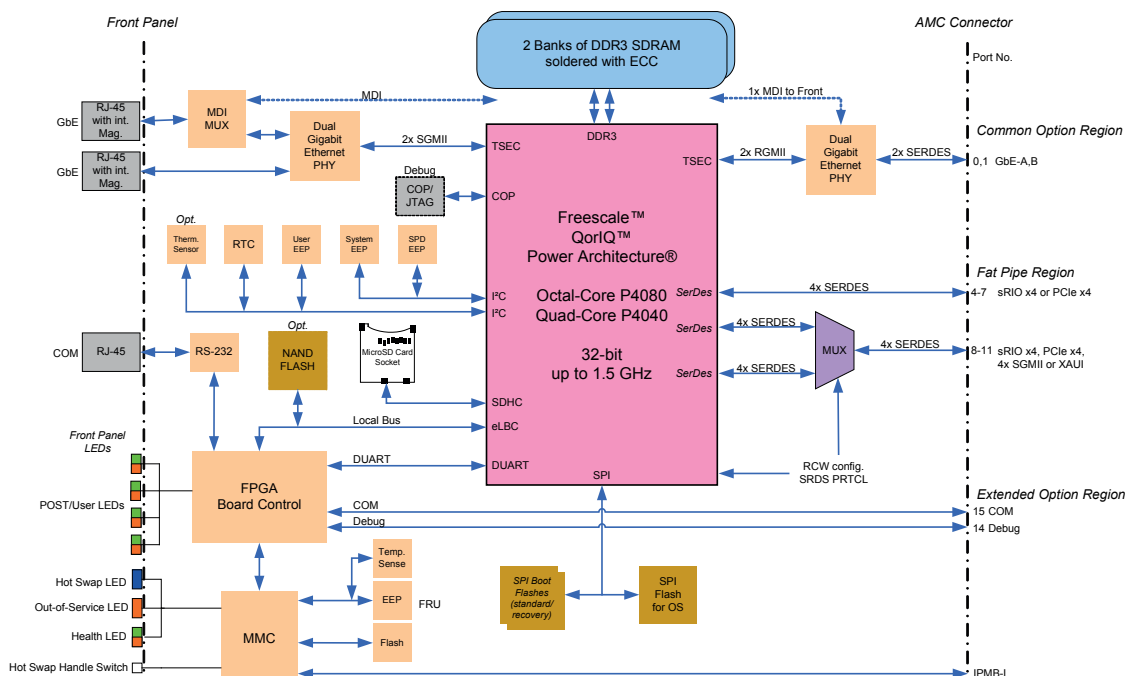
Longevity

The AM4140 meets highest demands regarding longevity due to the careful component selection and a Micro SDHC card socket to be not affected by regular flash discontinuation. With up to 8 GbE DDR-3 ECC memory the AM4140 is well equipped for future demands. This QorIQ™ processor module is therefore suitable for telecommunication, military communications, as well as image processing in industrial and medical environments. The AM4140 supports different options of booting the OS, either from the Micro SDHC card, the NOR or the NAND Flash (for rugged applications). In terms of operating systems, the AM4140 supports VxWorks, WindRiver Linux.

AMC systems

Kontron also offers a choice of AMC systems for the AM4140. For instance the OM6060 can be used as entry level platform for operating the AM4140 with point to point fabrics PCIe and sRIO in combination with the AM4901 basic MCH which provides Ethernet connectivity to all AMC slots. In this system, the AM4140 can be combined with I/O cards, DSP cards and different processor boards. For higher demands, the OM6120 system provides multiple sRIO connections for up to 12 AMCs in combination with the AM4904-sRIO MCH. Alternatively 10GbE can be used in combination with the AM4910-MCH. The system also allows switching PCIe fabrics in combination with AM4904-PCIE. It can be operated with dual MCHs.

► AM4150 SINGLE-WIDTH, MID-SIZE AMC MODULE



TECHNICAL INFORMATION

FORM FACTOR		Single width, mid-size module (full size on project request)
CPU AND PCH		Freescale P4040 (on project request) / P4080 @ 1.5GHz
MEMORY		2x 2 GByte and 2x 4 GByte RAM with ECC standard 2x 2 MByte SPI NOR (for Bootloader, fallback configuration) 1x 8 MByte NOR (for VxWorks) 1 GByte NAND Flash standard or not assembled, up to 2 GByte on project request MicroSD card socket
SYSTEM INTERCONNECTION		Port 0: 1x GbE Port 1: 1x GbE (routable to front plate, software selectable, default: port 1, on front only available, if sRIO 3.125G selected on AMC port 4-7) Ports 4-7: sRIO x4 or PCIe x4 Ports 8-11: sRIO x4 or PCIe x4 or XAUI (10 GbE) or 4x SGMII (1 GbE) Port 14: Debug Port 15: COM2, 3.3 V TTL FCLKA: bidirectional PCIe clock configuration Power supply: 3.3 V management power, 12 V payload power
FRONT PANEL INTERFACES		1x GbE 1x GbE (routable to Port 1, software selectable, default port 1) COM1, RS232 4x LEDs: control and status, bi-color (red/green LEDs) 3x LEDs: connected to MMC (healthy, hot swap, out of service)
MISCELLANEOUS		Watchdog, timeout 125 ms to 4096 s in 16 steps RTC (not buffered)
SOFTWARE		Bootloader U-Boot IPMI VxWorks BSP WindRiver Linux BSP
COMPLIANCY	MICROTCA PCI EXPRESS® SERIAL RAPID IO AMC IPMI	PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0 PCI Express® Base Specification Revision 1.0a sRIO 3.125G, ... PICMG AMC.0: Advanced Mezzanine Card Specification R2.0 PICMG AMC.1: PCI Express® and Advanced Switching R1.0 PICMG AMC.2: Gigabit Ethernet R1.0 PICMG AMC.4: Serial Rapid IO IPMI Intelligent Platform Management Interface Spec. V2.0, 1.5
ENVIRONMENTAL	OPERATING TEMPERATURE HUMIDITY OPERATING VIBRATION (SINUSOIDAL) SHOCK EMC SAFETY	-5 °C to +55 °C Acc. IEC60068-2-1/2 93 % RH at 40 °C, non condensing Acc. IEC60068-2-78 5 Hz to 150 Hz, 1 g Acc. to IEC 60068-2-6 15 g / 11 ms Acc. to IEC 60068-2-27 Immunity: acc. to EN 55024 and 61000-6-2 Emission: acc. to EN 55022, class B and FCC47, part 15, subpart B IEC 60950-1

ORDERING INFORMATION

ARTICLE	DESCRIPTION
AM4140-SA-1.50-8-M-N1	P4080 1.5 GHz 8-Core, 8 GByte RAM with ECC, 1 GByte NAND Flash
AM4140-SA-1.50-4-M-N1	P4080 1.5 GHz 4-Core, 4 GByte RAM with ECC, 1 GByte NAND Flash
VXW-BSP-AM4140-6.9.2	WindRiver VxWorks BSP

Note: All AM4140 boards provide a microSD card socket.

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