» AM4140 «

Data Plane Processor AMC based on Freescale™ QorIQ Technology

High-throughput processing with low latency

» Freescale™ QorIQ P4040/80 – 4/8-core CPU @ 1.5GHz

» Serial Rapid IO, PCIe and 1/10GbE fabrics

» Fast dual-channel memory (up to 8 GB RAM with ECC)

Easy implementation

» Useable in managed (with MCH) and unmanaged (without MCH) systems

Target Applications

» Communications (packet processing, RNC, LTE, Test Equipment)

» Industrial and Medical Image Processing

If it's embedded, it 's Kontron.

AM4140
Data plane 4/8-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 MicroTCA applications. The design is based on the Freescale ™ QorIQ P4040/80 4/8-Core processor, 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 GB 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 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™ P4040 or P4080.
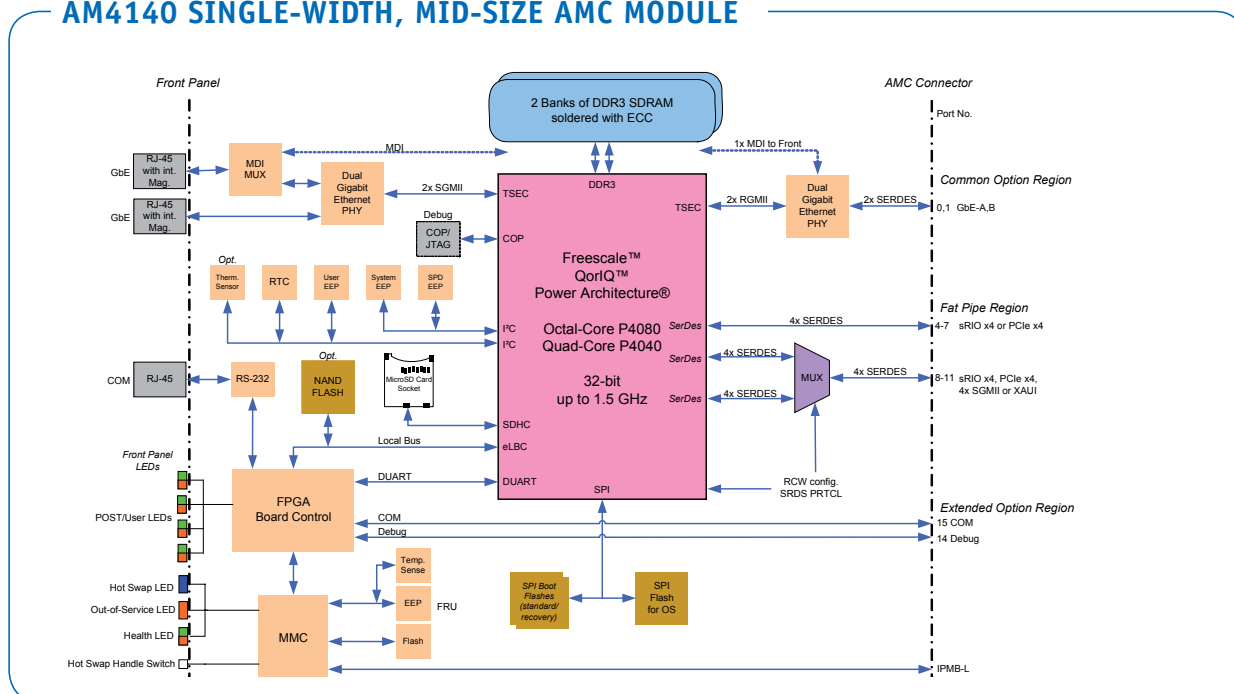
» Longevity

The AM4140 meets highest demands regarding longevity due to the availability of the processor at least until 2018, 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 6.9, WindRiver Linux, as well as the WindRiver Hypervisor.

» 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-MCH. It can be operated with dual MCHs.

AM4140 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 / P4080 @ 1.5GHz
Memory	2x2GB and 2x4GB RAM with ECC standard 2x2MB SPI NOR (for Bootloader, fallback configuration) 1x8MB NOR (for VxWorks) 1GB NAND Flash standard or not assembled, up to 2GB on project request MicroSD card socket
System Interconnection	Port 0: 1xGbE Port 1: 1xGbE (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(10GbE) or 4xSGMII(1GbE) Port 14: Debug Port15: COM2, 3.3V TTL FCLKA: bidirectional PCIe clock configuration Power supply: 3.3V management power, 12V payload power
Front Panel Interfaces	1xGbE 1xGbE (routable to Port 1, software selectable, default port 1) COM1, RS232 4xLEDs: control and status, bi-color (red/green LEDs) 3xLEDs: connected to MMC (healthy, hot swap, out of service)
Miscellaneous	Watchdog, timeout 125ms to 4096s in 16 steps RTC (not buffered)
Software	Bootloader U-Boot IPMI VxWorks BSP WindRiver Linux BSP WindRiver Hypervisor support
Compliancy	
MicroTCA	PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0
PCI Express	PCI Express Base Specification Revision 1.0a
Serial Rapid IO	RapidIO Interconnect Specification, Revision 1.2
AMC	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	IPMI Intelligent Platform Management Interface Spec. V2.0, 1.5
Environmental	
Operating Temperature	-5°C to +55°C Acc. IEC60068-2-1/2
Humidity Operating	93% RH at 40°C, non condensing Acc. IEC60068-2-78
Vibration (sinusoidal)	5Hz to 150Hz, 1g Acc. to IEC 60068-2-6
Shock	15g / 11ms Acc. to IEC 60068-2-27
EMC	Immunity: acc. to EN 55024 and 61000-6-2 Emission: acc. to EN 55022, class B and FCC47, part 15, subpart B
Safety	IEC 60950-1

Ordering Information

Article	Description
AM4140-1.50-8-1	P4080 1.5GHz octo core, 8GB RAM with ECC, 1GB NAND Flash
AM4140-1.50-4-1	P4080 1.5GHz octo core, 4GB RAM with ECC, 1GB NAND Flash
AM4140-1.5Q-4-0	P4040 1.5GHz quad core, 4GB RAM with ECC, 0GB NAND Flash
VXW-BSP-AM4140	WindRiver VxWorks BSP
LIN-BSP-AM4140	WindRiver Linux BSP
WRHV-BSP-AM4140	WindRiver Hypervisor BSP
	Note: All AM4140 boards provide a microSD card socket.

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