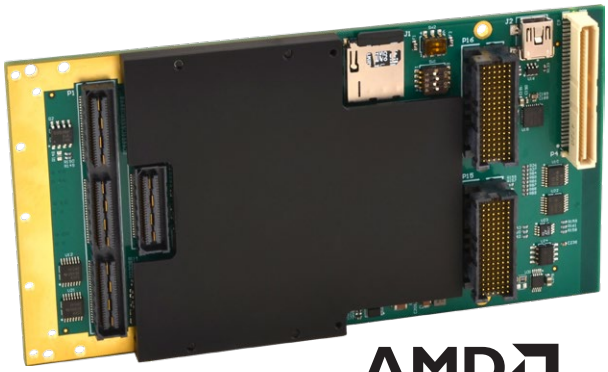
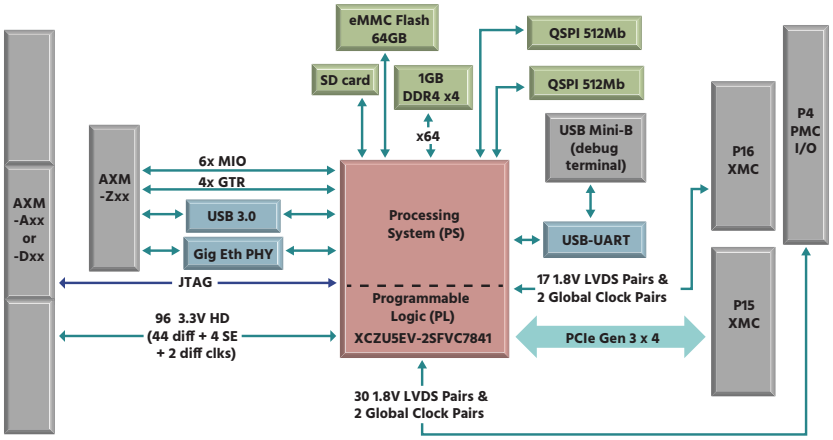
XMC Modules

XMC-ZU Series Configurable AMD Zynq® UltraScale+™ MPSoC with Plug-In I/O





AMD Zynq® ZU5EV MPSoC ◆ ARM Cortex™ A53 & R5 CPUs ◆ Programmable logic ◆ Air/Conduction-Cooled

XMC-ZU series modules provide a programmable AMD Zynq UltraScale+ multiprocessor system on a chip (MPSoC). This MPSoC combines a feature-rich ARM-based processing system and programmable logic in a single device. A quad-core A53 application processor and dual-core R5 real-time processor deliver high-performance computation capability. Additional resources include on-chip memory, external memory interfaces, and a rich set of peripheral connectivity interfaces. The integrated ASIC-class programmable logic is ideal for compute-intensive tasks and offloading critical applications.

An AXM-Z01 expansion I/O module plugs in to bring out the processor peripherals through DisplayPort, USB 3.0, RJ45 and USB UART ports. A number of high-speed serial and LVDS I/O interfaces are also provided. Other AXM mezzanine modules are compatible to provide a variety of analog and digital I/O interfaces.

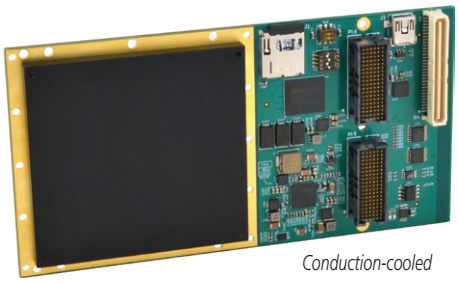
High-speed serial lanes route PCIe, Serial RapidIO and 10-Gigabit Ethernet signals to the rear XMC P15 connector. High performance signals from the programmable logic are configurable as LVDS I/O or global clocks are accessible on the P4 and P16 rear connectors.

The real value of the Zynq UltraScale+ MPSoC architecture lies in the tight integration of its programmable logic with the processing system. Its high throughput interface eliminates bottlenecks that plague two-chip ASSP-FPGA solutions and allows designers to easily extend the processing system capabilities. Now developers can build custom designs by adding peripherals in the programmable logic and increase overall system performance by partitioning hardware and software functions with custom accelerators.

Designed for COTS applications these MPSoC I/O modules deliver user-customizable I/O in a high-density and very rugged form factor. Typical applications involve adaptive filtering, sensor fusion, motor control, and image processing.

Acromag's Engineering Design Kit (EDK) provides example designs that provides host access to the hardware I/O. The examples are implemented using the AMD Vivado® development environment and offer a starting point from which customers can develop their customized applications. Vitis® and PetaLinux® examples are also provided.

AXM-Z01



Conduction-cooled

Key Features & Benefits

Zynq MPSoC

- Quad-core ARM Cortex A53-based application processing unit (APU)
- Dual-core ARM Cortex R5-based real-time processor unit (RPU)
- Mali™-400 GPU
- H.264/265 video codec
- UltraScale+ 256k programmable logic cells
- Extensive on-chip memory

I/O and Peripherals

- Gigabit Ethernet interface
- USB 3.0 and USB-UART ports
- DisplayPort
- LVDS I/O

General

- PCI Express Gen 3 interface
- MicroSD or NOR flash boot
- Dual Quad-SPI flash memory
- 4GB DDR4 storage memory
- DMA transfers
- BSP and MPSoC design kit software
- VxWorks®, Linux®, and Windows® support

Tel 844-878-2352 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 S. Wixom Rd, Wixom, MI 48393-2417 USA

XMC Modules

ISO9001
AS9100
MADE IN USA

XMC-ZU Series Configurable AMD Zynq® UltraScale+™ MPSoC with Plug-In I/O

Performance Specifications

Multiprocessor SoC

MPSoC device
AMD Zynq XCZU5EV-2SFVC784I.

Application processor: Quad-core ARM Cortex-A53, up to 1.5GHz.

Real-time processor: Dual-core ARM Cortex-R5, up to 600MHz.

GPU: Mali™-400 MP2 up to 667MHz.

Video Codec: H.265/H.264

Programmable Logic: 256k logic cells; 117k LUTs; 1248 DSP slices.

Configuration
Primary boot from SD card or NOR flash alternate.

I/O and Peripheral Interfaces

AXM Mezzanine I/O
AXM modules plug into the XMC module's front mezzanine for additional I/O lines. Analog, digital, and peripheral I/O AXM modules are sold separately.

Front I/O to Processing System
Tri-mode Gigabit Ethernet 10/100/1000,
1x USB 3.0,
1x USB UART,
DisplayPort.

Front I/O to Programmable Logic
44 differential I/O,
4 single-ended I/O,
2 differential clocks.

Rear I/O
P15: 4 high-speed (12.5Gb/s) serial lanes for PCIe, Serial RapidIO, or 10GbE.

P16: 17 LVDS pairs (34 LVCMOS), 2 global clock pairs.

P4: 30 LVDS pairs (60 LVCMOS), 2 global clock pairs

Memory
DDR4: 4GB.

eMMC: 64GB.

QSPI: 2 x 512Mb.

SD Card: 16 GB industrial MLC microSD card pre-programmed with boot.bin file.

PCIe interface
PCIe bus 4-lane (x4) Gen 3 interface.

Environmental

Operating temperature
Air-cooled (with heat spreader): 0 to 70°C (minimum airflow of 400LFM is recommended).
Conduction-cooled: -40 to 85°C.

Storage temperature
-55 to 125°C .

Relative humidity
5 to 95% non-condensing.

Mean time between failure (MTBF)
MIL-HDBK-217F, FN2. Ground benign, controlled. Consult factory for details.

Power
+3.3V: 78mA typical.
+3.3 Aux Volts: 6mA typical.
+12/5V (VPWR): 763mA @ +12V typical.
+12V: 763mA typical.
–12V: 0mA A typical.

Engineering Design Kit

Board support package and FPGA design kit for AMD Vivado®, Vitis™, and PetaLinux. Includes schematics, part location drawings, and example design files.

Kit must be ordered with the first purchase of an XMC-ZU module (see www.acromag.com for more information).

Ordering Information

Models

Go to on-line ordering page >

XMC-ZU5EV1-42-30
XMC module with XCZU5EV and AXM front I/O, VITA 42 connectors, rugged air-cooled.

XMC-ZU5EV1-42-50
XMC module with XCZU5EV and rear I/O (no AXM), VITA 42 connectors, conduction-cooled.

XMC-ZU5EV1-61-30
XMC module with XCZU5EV and AXM front I/O, VITA 61 connectors, rugged air-cooled.

XMC-ZU5EV1-61-50
XMC module with XCZU5EV and rear I/O (no AXM), VITA 61 connectors, conduction-cooled.

Software

XMC-ZU-EDK
Engineering design kit. (One kit required)

PMCSW-API-VXW
VxWorks® software support package.

PCISW-API-WIN
Windows® software support package.

PMCSW-API-LNX
Linux™ software support. (website download only)

Accessories

AXM-Z01
AXM module with RJ45 Gigabit Ethernet, USB 3.0, mini DisplayPort, and USB UART mini-B ports.

AXM-A75
16 analog inputs, 8 analog outputs, and 16 digital I/O.

AXM-D02
30 RS485 differential I/O channels.

AXM-D03
16 CMOS and 22 RS485 differential I/O channels.

AXM-D04
30 LVDS I/O channels.

AXM-??
Custom I/O configurations available, call factory.

Carrier Cards

See a full list of XMC carrier cards.

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