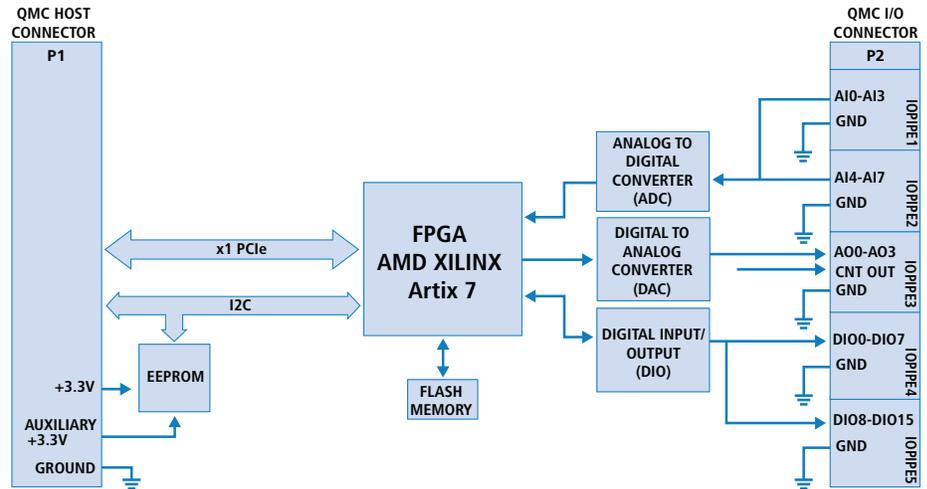
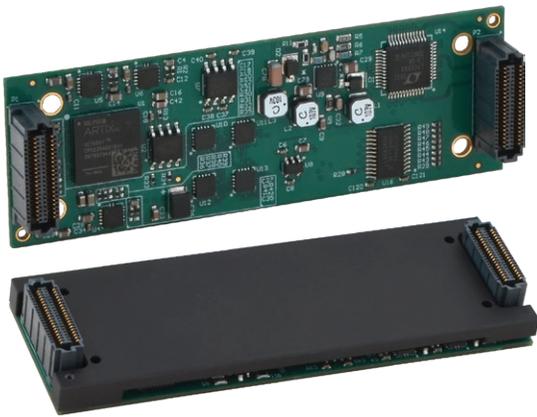


VITA 93 QMC Modules

QMC730 Series Multi-function I/O



Analog inputs ♦ Analog outputs ♦ Digital I/O ♦ Counter/Timers ♦ PCIe Bus Interface

Models

QMC mezzanine modules plug into a carrier card to interface connected I/O and provide a variety of signal processing functions. Acromag QMC730 modules offer a high-density combination of analog input, analog output, digital I/O, and counter/timer functions. A PCIe bus interface provides communication to the carrier and host computer.

The analog input channels perform high-speed, high-resolution A/D conversion. Input ranges, calibration, and other operational parameters are individually selectable for each channel to provide great flexibility.

Analog output channels are also individually configured, allowing users to select ranges, trigger methods, and operation modes to accommodate application requirements. High-performance D/A converters provide fast and accurate output.

Digital I/O is configured as TTL-level input or output in groups of eight channels. Interrupts are software programmable for any bit change-of-state or level.

A multi-function, high-resolution counter/timer supports a variety of measurement operations. Programmable polarity, thresholds, and interrupts along with internal or external triggering offer extensive adaptability to meet your needs.

QMC modules adhere to the VITA 93 standard for small form factor (SFF) mezzanine modules. Two high-performance 80-pin connectors provide separate field I/O and PCIe bus host interfaces. Modules can deploy on a variety of carrier card platforms including PCIe expansion cards, 3U/6U Eurocards such as VPX and CompactPCI, VNX+ SFF cards, and many other architectures. The rugged design is well-suited for use in laboratory, industrial, defense, and aerospace applications.

QMC modules have a much smaller footprint than PMC/XMC modules. Single-width QMC modules are only 26 x 78.25mm which facilitates mixing and matching of multiple functions on a single carrier card for high-density I/O solutions. They are ideal for computing systems with strict size, weight, power, and cost (SWAP-C) limitations.

An Intelligent Platform Management Interface (IPMI) facilitates system management. The QMC EEPROM holds module information and sensor data that is accessible by a smart carrier card with an IPMC controller over an I2C interface.

Key Features & Benefits

- Eight analog input channels with 16-bit A/D
 - 1.264µs conversion time (791KHz)
 - 1026 sample FIFO buffer
 - Unipolar and bipolar voltage ranges
 - Input range selectable for each channel
- Four analog output channels with 16-bit D/A
 - 7.5µs output settling time
 - Individually configured operating mode
 - Direct, single, continuous, or FIFO mode
 - Software, timer, or external trigger
 - Unipolar and bipolar voltage ranges
 - Output range selectable for each channel
- Sixteen digital input/output channels
 - TTL-compatible thresholds
 - Programmable change/level interrupts
 - Fail-safe power-up and reset
- Multi-function 32-bit counter/timer
 - Waveform generation
 - Event counting
 - Watchdog timing
 - Pulse-width or period measurement
 - Quadrature position measurement
- Extended temperature range and support for conduction-cooled systems



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

Performance Specifications

Analog Input

Input channels

8 differential, voltage (non-isolated)

Resolution

16 bits.

Conversion rate

791,139.24Hz maximum

Settling time

Full-scale step 420 ns to 0.005% of FSR

Input ranges

Software-selectable on a per channel basis

Bipolar: $\pm 10.24V$, $\pm 10.0V$, $\pm 5.12V$, $\pm 5.0V$

Unipolar: 0 to 10.24V, 0 to 10.0V, 0 to 5.12V

Calibrated error

± 3.125 LSB max. (0 to 5.12V)

± 2.125 LSB max. (all other ranges)

Analog Output

Output channels

4 single-ended voltage (non-isolated)

Resolution

16 bits

Settling Time

12.5 μ s 20 V step to 1 LSB maximum

8.5 μ s 10 V step to 1 LSB maximum

7.5 μ s typical

Output ranges (software-selectable)

Bipolar: $\pm 10V$, $\pm 5V$, $\pm 3V$, -2.5 to +7.5V

Unipolar: 0 to 10V, 0 to 5V

Output current:

± 10 mA maximum (minimum load resistance of 1K Ω with a 10V output)

Calibrated error:

± 2.125 LSB ($\pm 0.0032\%$ FSR) max.

Digital I/O

Input/output range

0 to 5V

Signal thresholds

V_{IH}: 2.0V minimum

V_{IL}: 0.8V maximum

I_{OH}: -24 mA maximum

I_{OL}: 24mA maximum

V_{OH}: 3.7V minimum V_{CCA}

V_{OL}: 0.55V maximum V_{CCA}

Minimum pulse

32ns

Debounce

Filters signals with duration 4.0 μ s

Counter/Timer

Configuration:

32-bit timer

Counter input and output

TTL input port.

MOSFET output port.

Counter output pull-up voltage

+5V with 1K pull-up.

Internal clock

62.5MHz, 15.625MHz, 7.8125MHz, 3.90625MHz,

1.953125MHz

PCI Express Base Specification

Conforms to revision 2.1

Lanes

1 lane in each direction

Bus Speed

2.5 Gbps (Generation 1)

Memory

256k space: Base address register 0

1M space: Base address register 2

Environmental

Operating temperature

Air-cooled: 0 to 70°C (200 LFM airflow)

Conduction-cooled: -40°C to +85°C

Storage temperature

-55 to 125°C

Relative humidity

5 to 95% non-condensing

Power

+3.3 VDC($\pm 5\%$): 0.50A typical

+3.3 VDC AUX($\pm 5\%$): 0.20A typical

+12 VDC($\pm 5\%$): 0.20A typical

MTBF (Mean Time Between Failure)

Contact factory

Physical

Size

Length: 78.25mm (3.08 in)

Width: 26.00mm (1.02 in)

Height: 11.00mm (0.43 in)

Weight

Unit weight: 8.9g (0.31 oz)

Ordering Information

QMC Models

[Go to on-line ordering page >](#)

QMC731-1111

QMC732-1111

Multi-function analog and digital I/O

Air-cooled (QMC731) or Conduction (QMC732)

Carrier Cards

See [Acromag.com/QMC-Carriers](#) for a full list of QMC carrier cards.

Software (see software documentation for details)

USW-API

Universal Embedded Design Suite with software support for VxWorks®, Windows®, and Linux®



QMC730 Shown with attached heatsink included with conduction-cooled QMC Modules.