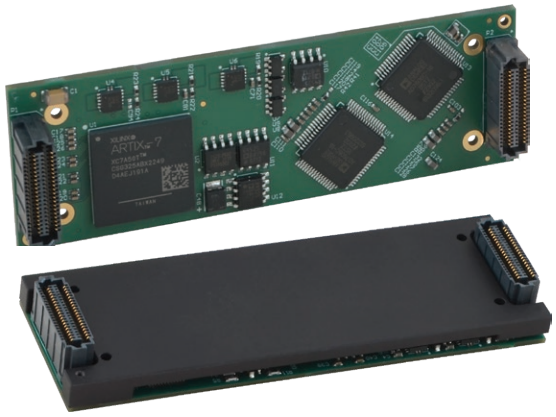
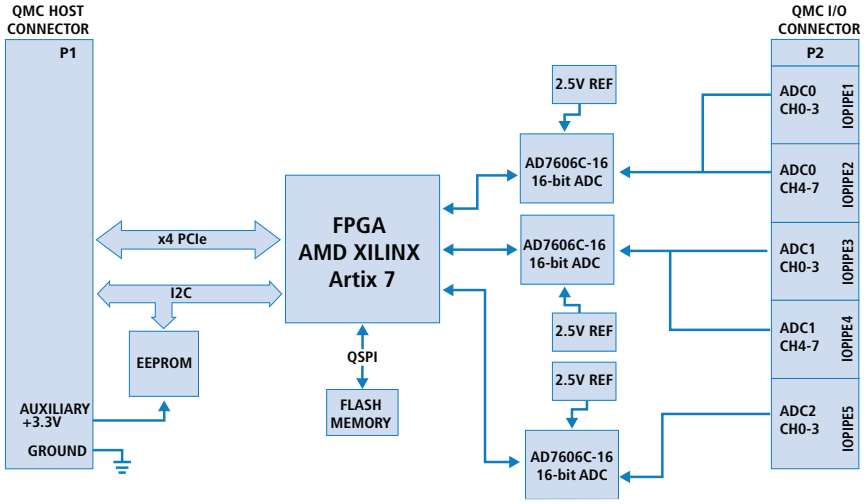
VITA 93 QMC Modules

QMC350 Series Analog Input





20 Analog Input Channels ◆ 16-bit A/D Converter on Each Channel ◆ 1 MHz Sampling Rate ◆ 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 QMC350 modules offer 20 input channels for high-speed, high-resolution analog-to-digital signal conversion. A PCIe bus interface provides communication to the carrier and host computer.

Each input channel has its own simultaneous sampling 16-bit A/D converter with a throughput rate of 1MSPS. Flexible digital filtering with software calibration of system gain, offset, and phase enables high accuracy.

Software-selectable inputs provide great flexibility. Select from a wide variety of unipolar and bipolar voltage ranges for single-ended and differential pair inputs. Individual input control allows flexible channel selection and updating.

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

- 20 analog input channels
- Individual 16-bit ADC on each channel
- Simultaneous Sampling ADC with 1MSPS sampling rate (1MHz)
- Software-selectable input voltage range
- Input ranges selectable per-channel with 12 unipolar/bipolar voltage range options
  - Single-ended analog input ranges: 0-5V, 0-10V, 0-12.5V, ±2.5V, ±5V, ±6.25V, ±10V, ±12.5V
  - Differential pair input ranges: ±5V, ±10V, ±12.5V, ±20V
- Two bandwidth options: 25KHz and 220KHz
- ±21 input clamp on all channels
- 1M Ω input on all channels
- Reliable software calibration with coefficients stored on-board
- Individual selection and updating of analog input channels
- Failsafe reset
- Extended temperature range and support for conduction-cooled systems

Acromag
THE LEADER IN INDUSTRIAL I/O

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

VITA 93 QMC Modules

ISO9001 AS9100 MADE IN USA

Performance Specifications

Analog Inputs

Input channel configuration
20 differential or single-ended analog inputs

A/D converter resolution
16-bit ADC

A/D sampling rate
1 MSPS on all channels
Conversion time: 550ns
Acquisition time: 450ns

Analog input ranges
Selectable on individual channel basis

Bipolar single-ended:
±12.5 V, ±10 V, ±6.25 V, ±5 V, ±2.5 V

Unipolar single-ended:
0 V to 12.5 V, 0 V to 10 V, 0 V to 5 V.

Bipolar differential:
±20 V, ±12.5 V, ±10 V, ±5 V.

System accuracy
Bipolar ranges: ±5 LSB full scale error, typical. Unipolar ranges: ±15 LSB full scale error, typical.

Data sample memory
16k sample FIFO buffer.

Dynamic performance
92 dB typical SNR for ±20 V bipolar differential range
95 dB SNR, oversampling by 32
–100 dB typical THD for all other ranges.

PCI Express Base Specification

Conforms to revision 2.1

Lanes
4 lanes in each direction

Bus Speed
5 Gbps (Generation 2)

Memory
64k space: Base address register 0
256k space: Base address register 2
1M space: Base address register 4

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 (±5%): 1.28 A typical
+3.3 VDC AUX (±5%): 0.02 A typical
+12 VDC (±5%): 0.278 A 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: 13.26g (0.47 oz)

Ordering Information

QMC Models

Go to on-line ordering page >

QMC351-3111
QMC352-3111
Analog input, 20-channel 16-bit A/D,
Air-cooled (QMC351) or Conduction (QMC352)

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®

Example QMC Module shown with attatched heatsink inlcluded with conduction-cooled QMC Modules.

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