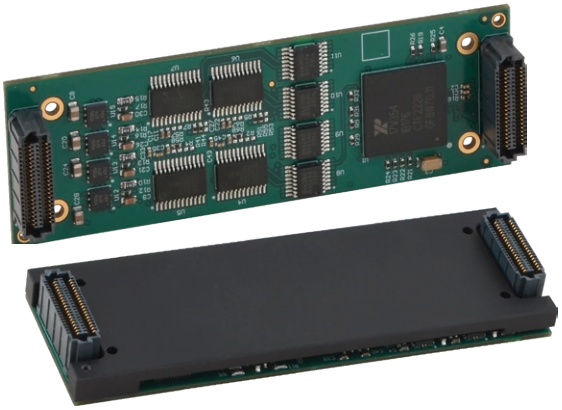
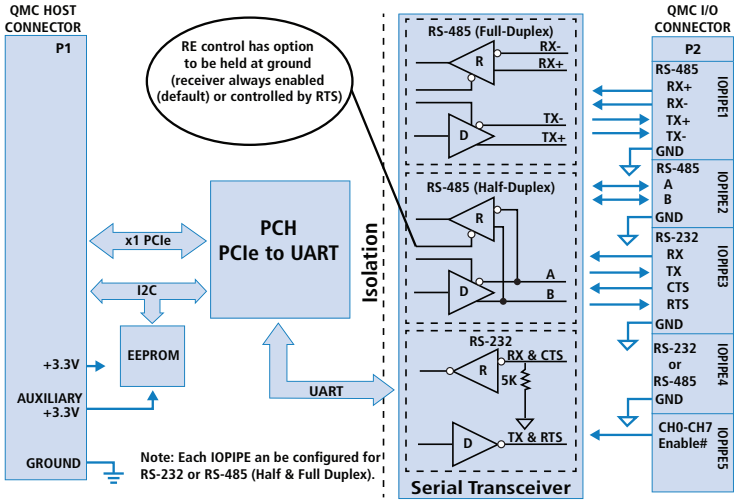
VITA 93 QMC Modules

QMC520 Series Isolated Serial Communication





4 Serial Ports ◆ Programmable for EIA/TIA-232/422/485 ◆ 256-byte FIFO Buffers ◆ PCIe Bus Interface

Description

QMC mezzanine modules plug into a carrier card to interface connected I/O and provide a variety of signal processing functions. Acromag QMC520 modules offer four programmable, isolated serial ports for safe, reliable communication with a broad range of systems. A PCIe bus interface provides communication to the carrier and host computer.

Each port is isolated and individually programmed for RS-232, RS-422, or RS-485 communication to provide optimal flexibility and utility. Software-configuration helps you quickly set baud rates, character-sizes, stop bits, and parity.

For more efficient data processing, each serial port is equipped with 256-character FIFO buffers on the transmit and receive lines. These FIFO buffers minimize CPU interaction for improved system performance.

The data ports generate individually controlled transmit, receive, line status, data set, and flow control interrupts. All interrupts can be read from a single register.

The 16-bit timer/counter uses an internal 125MHz clock. This timer supports a single-shot mode for one-time events and a re-triggerable mode for periodic signals. The timer can also generate interrupts for timeout conditions.

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

- Four (quad) isolated asynchronous serial communication ports
- Each port isolated (250V) from digital circuitry and (100V) from the other ports
- Each port programmable for EIA/TIA-232-F, EIA-TIA-422B, or EIA-485
- Full/half-duplex EIA-485 line support
- 16550-compatible register set
- 256-byte transmit and receive FIFO buffers with programmable trigger levels
- Programmable baud rate (up to 20Mbps)
- Individually controlled transmit, receive, line status, and data set interrupts
- General-purpose 16-bit timer/counter
- Extended temperature range and support for conduction-cooled systems

Acromag
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VITA 93 QMC Modules

ISO9001
AS9100
MADE IN USA

Performance Specifications

Serial Ports

Configuration
Four independent, isolated serial ports with separate port commons

Isolation
Individual opto-couplers provide isolation. Four groups (ports) of 8 channels, each with separate port commons, ensure port-to-port isolation. Individual ports are isolated from each other and from the PCIe interface logic.

Host connector to I/O connector isolation
IPC-2221B: 548.64V (peak) at sea level
IPC-9592: 425V (peak)
UL61010C-1: 250V (rms)

IOPIPE to IOPIPE isolation
IPC-2221B: 30V (peak) at sea level
IPC-9592: 30V (peak)
UL61010C-1: 60V (rms)

Data Rate
20M bits/second, maximum

Max. Cable Length
1200 meters (4000 feet) typical

Character size
5 to 8 bits, software-programmable

Parity
Odd, even, or no parity; software-programmable

Stop bits
1, 1-1/2, or 2 bits; software-programmable

Data register buffers
256-byte FIFO buffer

Interrupts
Receiver line status (overrun, parity, framing error, or break interrupt); receive/transmit FIFO level reached or character time-out; Xon/Xoff or special character detected

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(±5%): 0.12A typical
+3.3 VDC AUX(±5%): 0.20A typical
+12 VDC(±5%): Not used

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: 11.37g (0.401 ounces)

Ordering Information

Modules

Go to on-line ordering page >

QMC521-1111
QMC522-1111
Quad isolated 232/422/485 serial communication, Air-cooled (QMC521) or Conduction (QMC522)

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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