



# QPMC-1553

## High Density PMC Module

### Features

- 1, 2 or 4 independent MIL-STD-1553 dual redundant channels
- Multi-function features
  - Simultaneous bus controller, 31 remote terminals and bus monitor
- Single-function features
  - Bus controller or 31 remote terminals or bus monitor
- Bus Controller - BC
  - BC->RT, RT->BC, RT->RT
  - Mode codes, broadcast and single-shot messaging
  - Programmable time delays
  - Major/minor frames
  - Real-time conditional branching
  - Two aperiodic messaging methods
- Remote Terminal - RT
  - RT data wrapping
  - Multiple RT buffers
  - Dynamic bus control
  - Automatic mode code and status bit responses
  - Programmable response time
  - RT map monitoring

- Bus Monitor - BM
  - Full error detection
  - Multiple monitoring methods
  - 45-bit time-tagging
  - Adv. interrupts and triggers
- Architecture
  - BC & RT error injection/detection
  - FPGA architecture
  - BC & RT link list structures
  - 1 Mbyte RAM per channel
  - Direct & transformer coupling
  - Environmental options
- Software support
  - Advanced, high-level API
  - Source code included
  - *BusTools* Analyzer optional

GE Fanuc Embedded Systems' QPMC-1553 provides new levels of performance and flexibility for MIL-STD-1553A/B Notice II on a PMC (PCI Mezzanine Card) module. Available in commercial, ruggedized and conductively cooled versions with one, two or four dual-redundant channels, the QPMC-1553 includes advanced API (Application Programming Interface) software that reduces application development time.

Standard features include selectable transformer or direct coupling, 1 Mbyte of RAM per channel, 45-bit message timetagging, triggers, extensive BC and RT link-list structures, error injection/detection, avionics level discretes, automatic/manual RT Status Bit and Mode Code responses, along with advanced BC functionality. An IRIG-B signal Receiver/Generator with GPS synchronization, variable voltage output and 66 MHz PCI bus operation are optionally available. With the highest speed encoder/decoder in the industry, the QPMC-1553 Bus Monitors provide unparalleled error detection and 100% monitoring of fully loaded buses.

### Multi-function Interfaces

QPMC-1553 multi-function interfaces are easily configured to operate with simultaneous Bus Controller, 31 Remote Terminals and Bus Monitor functionality.

### Single-function Interfaces

Single-function QPMC-1553 interfaces have all the features and functionality of the multi-function versions, but only one major operational mode is enabled at a time. Each interface can emulate either a Bus Controller or 31 Remote Terminals or Bus Monitor.

### Software

GE Fanuc Embedded Systems provides our advanced 1553 API in source code, along with support for Windows XP, 2000, Me, NT, 98, 95, Linux, LynxOS, VxWorks and other operating systems. To access 1553 functionality without software development, *BusTools/1553*, GE Fanuc Embedded Systems' MIL-STD-1553 bus analysis, simulation and data logging/monitoring solution is available.



# QPMC-1553 High Density PMC Module

## Specifications

### Physical

- PMC Mezzanine Card (74 mm x 149 mm without bezel)
- Standard configuration has front bezel I/O

### Environmental

- Standard operating temperature range: 0°C to +70°C
- Relative humidity: 5 to 90% (non-condensing)
- Optional ruggedized, extended temp and conductively cooled configurations

### Software Support

- API - High-level libraries with source code included for Windows XP, 2000, Me, NT, 98, 95, Linux, LynxOS and VxWorks
- GUI - Optional *BusTools/1553* GUI Bus Analyzer (multi-function boards only)

### Connections

- Direct or transformer coupling
- I/O triggers; 18 avionics-level discretes
- Front panel bezel or P14 I/O connections
- Transition cabling to 1553 cable jacks included on front panel configurations

### Multi-function Operational Modes

- Simultaneous BC, 31 RTs and BM

### Single-function Operational Modes

- BC or 31 RTs or BM

### Power (4 channels at 75% duty cycle)

- +5 VDC @ 1.3 A (typ.)
- +3.3 VDC @ 150 mA
- 7.2 W power dissipated on board

### On-board Shared RAM

- 1 Mbyte (per dual-redundant channel)

### PCI Signal Compatibility

- Universal (5V or 3.3V)
- Optional 66 MHz PCI bus operation

### Configuration Options

- 1, 2 or 4 dual-redundant channels
- Optional P14 I/O
- Optional ruggedized, -40°C to +85°C operating temperature range
- Optional ruggedized, VITA compliant conductive cooling (max +71°C rail temp)
- Optional conformal coating
- Optional IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL)
- Available mounted on a PCI, 3U/6U CompactPCI carrier board

## Description

### Bus Controller

- Programmable control over:
  - Major and minor frame content and timing
  - Intermessage gap times
  - Response time-out and late response
  - Multiple BC retry
- Modify messages, data or setup while card is running
- Insert aperiodic messages into a running BC list
- "Oneshot" mode for simplified BC operation
- Conditional message sequencing based on real-time message data or status
- Selectable interrupt generation and status messages on full range of system conditions or all detected errors
- Full error detection
  - Invalid word
  - Bit count error
  - High word
  - Low word
  - Inverted sync
  - Manchester
  - Late response
  - Early response
  - No response
  - Incorrect RT address
  - Parity error
- Extensive programmable error injection (on a per word basis)
- Synchronize BC operation to external trigger source

### Remote Terminal

- Multiple RT simulation (up to 31 RTs)
- Programmable error injection (on a per word basis)
- Modify data, status words or setup while card is running
- Programmable message content (linked message buffers)
- Interrupts can be generated on a per message basis upon End of Message and error conditions
- RT Map Monitoring

### Bus Monitor

- Capture 100% fully loaded bus traffic with:
  - Time-tagging
  - Error status
  - Word status
  - Message status
  - RT response time
- Interrupts can be selected by RT/SA/WC
- Extensive filtering and triggering options
  - By individual RT/subaddress
  - Transmit, receive or broadcast mode codes
  - Internal or external triggering
  - Trigger output on user specified data
- Real-time bus playback with RT edit mode
- 45-bit, microsecond resolution timetagging
- IRIG/GPS synchronization

## Ordering Information

### QPMC-1553-1M

MIL-STD-1553 multi-function, single dual-redundant channel, fixed voltage PMC interface

### QPMC-1553-2M

MIL-STD-1553 multi-function, two dual-redundant channel, fixed voltage PMC interface

### QPMC-1553-4M

MIL-STD-1553 multi-function, four dual-redundant channel, fixed voltage PMC interface

### QPMC-1553-1S

MIL-STD-1553 single-function, single dual-redundant channel, fixed voltage PMC interface

### QPMC-1553-2S

MIL-STD-1553 single-function, two dual-redundant channel, fixed voltage PMC interface

### QPMC-1553-4S

MIL-STD-1553 single-function, four dual-redundant channel, fixed voltage PMC interface

Contact Factory for Conduction Cooled, Rugged and Other Configurations

## About GE Fanuc Embedded Systems

GE Fanuc Embedded Systems is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Embedded Systems has the breadth, experience and 24/7 support to deliver what you need. For more information, visit [www.gefanucembedded.com](http://www.gefanucembedded.com).

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## Additional Resources

For more information, please visit the GE Fanuc Embedded Systems web site at:

[www.gefanucembedded.com](http://www.gefanucembedded.com)

