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# RPCIE-1553

## High Density PCI Express Interface

### Features

- 1, 2 or 4 dual-redundant MIL-STD-1553A/B Notice II channels
- Native 4 lane PCI Express interface (no bridge)
- Simultaneous Bus Controller, 31 Remote Terminals and Bus Monitor
- High-level API for Microsoft® Windows® 7 (32 and 64bit), Vista, XP, 2000, NT, VxWorks®, Linux, LynxOS, QNX and Solaris included
- Multi-function and dual-function versions
- Standard with IRIG-B receiver/generator
- 64 bit, 25ns message time tagging (virtually unlimited time stamping)
- 18 bi-directional Avionics discretes
- Complete message programmability
- Flexible message status/interrupt generation
- I/O triggering and error injection/detection
- Transition cabling to 1553 cable jacks included
- Optional conformal coating
- Supportable throughout program lifetime with Product Lifetime Management (PLM) program

GE Intelligent Platforms' RPCIE-1553 is the latest generation of performance and flexibility for MIL-STD-1553A/B Notice II on a PCI Express module. Available in -40°C up to +70°C temperatures with one, two or four dual-redundant channels, the RPCIE-1553 includes advanced API (Application Programming Interface) software that reduces application development time.

Standard features include IRIG-B signal Receiver/Generator with GPS synchronization, transformer coupling, 66 MHz, PCI bus support, 1 Mbyte of RAM per channel, 64-bit, 25 nanosecond message timetagging, triggers, extensive BC & RT link-list structures, error injection/detection, avionics level discretes, automatic/manual RT Status Bit and Mode Code responses, along with advanced BC functionality. Variable voltage output is optionally available. The RPCIE-1553 Bus Monitors provide unparallelled error detection and 100% monitoring of fully loaded buses.

### Multi-function Interfaces

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

### Dual-function Interfaces

Dual-function RPCIE-1553 interfaces have all the features and functionality of the multifunction versions, with either Bus Monitor and Bus Controller, or Bus monitor and up to 31 Remote terminals.

### Software

GE provides our advanced 1553 API in source code, along with support for Windows 7 (32 and 64bit), Vista, XP, 2000, NT, VxWorks, Linux, LynxOS, QNX and other operating systems. To access 1553 functionality without software development, BusTools/1553, GE's MIL-STD-1553 bus analysis, simulation and data logging/monitoring solution is available.



# RPCIE-1553 – High Density PCI Express Interface

## Specifications

### Physical

- PCI Express Interface Card (4.376 x 6.60 inches)

### Environmental

- Standard operating temperature range: -40°C up to +70°C
- Relative humidity: 5 to 95% (non-condensing)
- Optional conformal coating configurations

### Software Support

- API - High-level libraries with source code included for Windows 7 (32 and 64bit), XP, 2000, Me, NT, 98, 95, VxWorks, Linux, LynxOS and Solaris
- GUI - Optional BusTools/1553 GUI Bus Analysis, Simulation & Data Logging software (multi-function boards only)
- IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL)

### Connections

- Transformer coupling
- I/O triggers; 18 avionics-level discretes
- Transition cabling to 1553 cable jacks included

### Multi-function Operational Modes

- Simultaneous BC, 31 RTs and BM

### Dual-function Operational Modes

- BM and BC, or BM and 31RTs

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

- +12 VDC @ 200mA (typ.)
- +3.3 VDC @ 2A (typ.)
- 5.9 W power dissipated on board

### On-board Shared RAM

- 1 Mbyte (per dual-redundant channel)

### Optional Configurations

- 1, 2 or 4 dual-redundant channels
- 1, 2 or 4 Dual or Multi-function channels
- Optional conformal coating
- Optional Direct coupling

Contact factory for custom requirements

## Descriptions

### Bus Controller

- Programmable control over:
  - Major and minor frame content and timing inter-message gap times
  - Response time-out and late response
- 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 time 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)
- Selectable interrupts upon multiple conditions
- RT Map Monitoring

### Bus Monitor

- Capture 100% fully loaded bus traffic with:
  - Time-tagging
  - Error status
  - Word status
  - Message status
- 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
- IRIG/GPS synchronization

## Ordering Information

<b>RPCIE-1553-G2-1MW</b>	MIL-STD-1553 multi-function, PCI Express interface, single dual-redundant channel, 32-bit FW, variable voltage, with IRIG-B/G
<b>RPCIE-1553-G2-1DAW</b>	MIL-STD-1553 dual-function, PCI Express interface, single dual-redundant channel, 32-bit FW, fixed voltage, with IRIG-B/G
<b>RPCIE-1553-G2-2MW</b>	MIL-STD-1553 multi-function, PCI Express interface, two dual-redundant channel, 32-bit FW, variable voltage, with IRIG-B/G
<b>RPCIE-1553-G2-2DAW</b>	MIL-STD-1553 dual-function, PCI Express interface, two dual-redundant channel, 32-bit FW, fixed voltage, with IRIG-B/G
<b>RPCIE-1553-G2-4MW</b>	MIL-STD-1553 multi-function, PCI Express interface, four dual-redundant channel, 32-bit FW, variable voltage, with IRIG-B/G
<b>RPCIE-1553-G2-4DAW</b>	MIL-STD-1553 dual-function, PCI Express interface, four dual-redundant channel, 32-bit FW, fixed voltage, with IRIG-B/G
<b>-K suffix</b>	Conformal coating

## Optional Software

<b>BT-1553</b>	MIL-STD-1553 Bus Analysis & Data Logging software for Windows (multi-function boards only)
<b>LV-1553</b>	Lab/View support for MIL-STD-1553

For detailed information including systems options contact GE Intelligent Platforms

## About GE Intelligent Platforms

GE Intelligent Platforms is a General Electric (NYSE: GE) company, headquartered in Charlottesville, VA and part of GE Energy Management. The company's Military/Aerospace business, headquartered in Huntsville, AL, and Towcester, England, provides one of the industry's broadest ranges of high performance, rugged, SWaP-optimized embedded computing platforms. Backed by programs that provide responsive customer support and minimize long term cost of ownership for multi-year programs, GE's solutions are designed to help customers minimize program risk and cost, and to speed time-to-market. For more information, visit [defense.ge-ip.com](http://defense.ge-ip.com).

## GE Intelligent Platforms Contact Information

Americas: **1 877 429 1553** Global regional phone numbers are listed by location on our web site at [defense.ge-ip.com/avionics-contacts](http://defense.ge-ip.com/avionics-contacts)

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