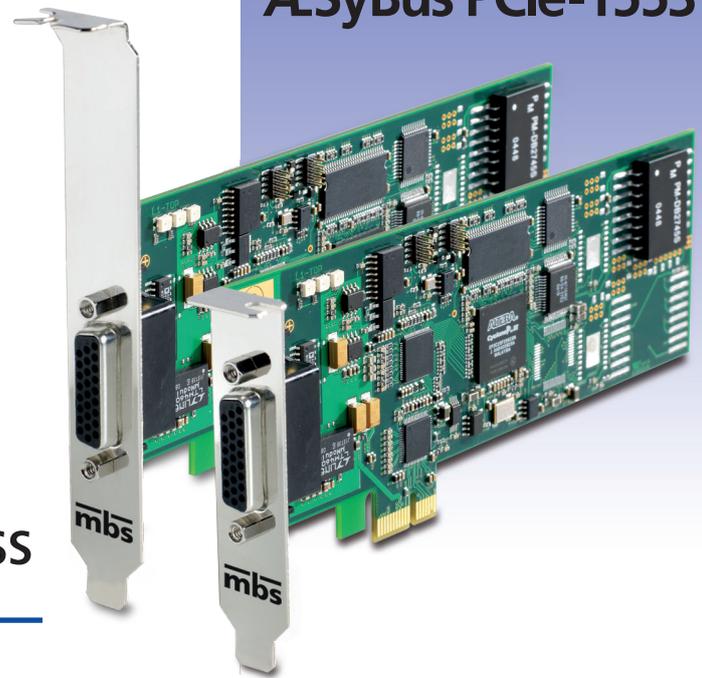


## PCIe-1553 Mil.Std. 1553 to PCI Express



### Features

- Single and Double Node: Dual Redundant Mil.Std.1553 Bus Channels
- Bus Controller, Remote Terminal or Monitor Operation
- Periodic Message Scheduling
- Aperiodic Messages
- Full Status Monitoring of Transmit and Receive Events
- Time-stamping and Timer Synchronisation
- PCI Express® 1.1 at 2.5GHz signal rate

### Description

The MBS PCIe-1553 provides a Concurrent Multi-Application PCI Express™ interface to a single or double node, Dual Redundant MIL.STD.1553 Bus Terminals operating in either, Bus Controller, Remote Terminal or Bus Monitoring Modes. The card is compliant with PCI Express™ Base Specification Revision 1.1, and provides simultaneous bi-directional data transfer at 2.5GHz signal rate with a X1 link width.

### Mil.Std.1553

Each Node of the PCIe-1553 cards can be individually configured as a Bus Controller, Remote Terminal or Bus Monitor (with or without assigned RT Address).

### BC Function

When operating as a Bus Controller, the user enjoys full control over Bus Selection, Periodic and Aperiodic communication via expedient use the Command FIFO and Transmit Scheduling facilities:

- The Command FIFO provides basic access to all configuration registers, Dual Redundant Bus selection, Mode and Status Registers, and control over non-periodic transmissions. This FIFO has sufficient memory to queue up to 85 System Commands.
- The Transmit Scheduler provides the user with a simple means for regimenting Periodic Communications with full

control over main and sub-frame messages. The scheduler uses the same command structure as used by the command FIFO, except that it is organised to issue these System Commands in a deterministic series of major and minor communication frames with a fixed period. The scheduler supports major frames with up to 1024 commands. Normally these system commands are used to issue BC commands to Remote Terminals, but they can also be used to switch dual redundant buses and other system parameters and registers in a deterministic manner.

Asynchronous and periodic transmissions mix naturally on to the buses with periodic transmissions taking priority.

Data for transmission is drawn from user defined locations in the Transmit Data Buffer. This memory is able to buffer up to 1k data words.

Data received from Remote Terminals is automatically transferred to locations in the Receive Data Buffer, which is organised as a cyclic buffer with a capacity for 256 data words. The write pointer to this buffer is stored with Time Stamp and other status information in the Message Status memory. This memory is also organised as a cyclic buffer, the contents of which can be automatically transferred with the Receive Data buffer etc. periodically to the host application.

### RT Function

Data buffering for transmission, reception and status monitoring for the PCIe-1553, when configured as a Remote Terminal, functions in a similar manner to the BC terminal described above, except that it does not instigate messages but simply responds as a slave to BC commands.

### MT Function

The PCIe-1553 can be configured as a Bus Monitor to capture receive data and bus status information, as described above,

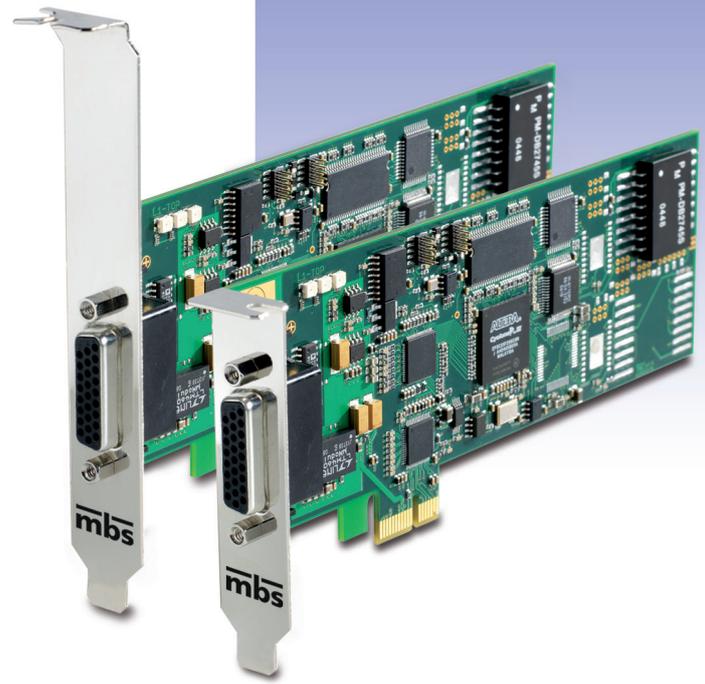
except that the user has the choice to monitor all Bus traffic or just the traffic in relation to a particular terminal.

## Discrete I/O

In addition to the dual Redundant data busses, the PCIe-1553 has 4 RS-485 Transmitters and Receives which can be used to synchronise system timers with those other devices.

## Software

The PCIe-1553 comes with example software and support API provided with source code and full documentation. Available software drivers include: WinXP64, WinXP, Win2K, Vista, Win98ME, LINUX, SCO Unix , UnixWare 7.x Mac OS 10.4 and 10.5.



## Functional Specification

### General Features:

- PCI Express™ Revision 1.1
- On board System Timer with support for external synchronisation and clock drift compensation
- Time Stamping of Mil.Std.1553 communications using a 20 bit microsecond and 20 bit second counters
- User configurable, message scheduling of data and other information to host applications, periodically and/or when necessary.
- Discrete I/O support
- Full status monitoring including: Time Stamping, BC command words, RT status words, Error status and location and count of words captured.
- Automatic capture of all receive data and status into user accessible cyclic data buffers
- Utilises standard message processor compliant to Mil-Std-1553B Notice 2 and Mil-Std-1760 Stores Management

### BC Features:

- Configurable Transmit Command Scheduler with capacity for 1024 periodic System Commands
- System Command FIFO for asynchronous system control, dual redundant bus switching and aperiodic communication
- Inter-message gap and minor frame period control

### RT Features:

- Automatic dual redundant bus switching

### MT Features:

- Choice of monitoring communication from a single Remote Terminal or all Remote Terminals

## Ordering Information:

Part Number	Description
PCIe-1553-BCRT-1	Single Node, Dual Redundant MIL.STD. 1553 Interface to PCI Express
PCIe-1553-BCRT-2	Double Node, Dual Redundant MIL. STD 1553 Interface to PCI Express

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