Avionics Interface Technologies PXIe-1553M-1

Single Function, Single MIL-STD-1553 Channel PXI Express Test and Simulation Module

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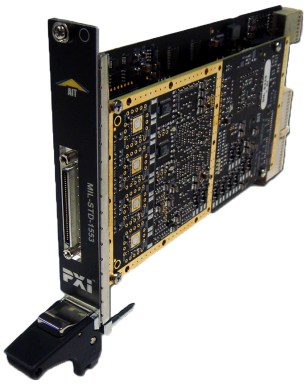
PXIe-1553

MIL-STD-1553 Test & Simulation Instrument for PXI Express

The PXIe-1553 module is the PXI Express member of AIT's family of MIL-STD-1553 test and simulation instruments. This module is a 3U PXI Hybrid Slot and PXI Express slot compatible instrument designed to support testing, simulations, monitoring, and analysis of MIL-STD-1553 A/B databuses. The PXIe-1553 module is capable of simultaneously simulating a MIL-STD- 1553 Bus Controller (BC), up to 31 Remote Terminals (RT), and a Chronological Bus Monitor (BM) on each channel. Single, dual, and quad channel options are available. The PXIe-1553 provides full error injection and detection capabilities in support of AS4112/AS4111 testing.



SOFTWARE SUPPORT

The PXIe-1553 is delivered with AIT's MIL-STD-1553 Software Development Kit (SDK), which includes software driver support for Windows, Linux, and LabVIEW Real Time. The SDK provides multiple application interfaces, including support for C/C++, C#, and VB.NET. High-level LabVIEW Virtual Instruments (VI) are provided with each module in support of intuitive application development. A simple soft front panel Graphical User Interface (GUI) application is also delivered with each module.

MIL-STD-1553 BUS CONTROLLER

The PXIe-1553 Bus Controller function provides real-time BC simulation functions supported by the PXIe-1553's onboard advanced FPGA. The precise timing and sequencing of bus commands, within minor/major frames is handled onboard supporting autonomous operations. Error injection is supported on transfer, word, and bit levels.

REMOTE TERMINALS

The PXIe-1553 is capable of simultaneously simulating up to 31 RTs. Each RT provides fully programmable and intelligent responses to BC commands, including intelligent mode code responses and application-selectable response times. Full error injection is supported down to word and bit level. Each RT may also be configured to operate in a monitor-only mode in which it only stores data sent to it, while NOT responding to BC commands.

Key Features

- One, two, or four dual redundant MIL-STD-1553 bus interfaces
- Concurrent BC, multiple RT (31), and BM operations
- Full error injection and detection
- Data capture filtering, 100% bus recording, and physical bus replay
- PXI trigger generation on 1553 bus events
- Initiate data simulation (BC) and data capture (BM) on PXI triggers
- Onboard time-tag clock synchronization to external IRIG or PXI system clock
- Variable output voltage signal and software selectable bus coupling modes
- 10 high voltage (up to 30V) programmable DIO lines
- Flight Simulyzer™ GUI Analyzer software

CHRONOLOGICAL BUS MONITOR

The PXIe-1553 BM supports 100% time-tagged data capture and archiving to disk. Full error detection capabilities are provided, as well as support for advanced filtering and triggering.

PHYSICAL BUS REPLAY

The PXIe-1553 module is able to electrically replay previously recorded MIL-STD-1553 traffic to the bus with exact timing accuracy. Physical Replay mode enables users to disable any or all RT responses from the recorded files to allow the actual RT's to be connected to the network to respond to the replayed commands.

IRIG-B TIME CODE DECODER/ENCODER

An onboard IRIG-B time code decoder and generator allows synchronized time tagging of multiple MIL-STD-1553 streams using single or multiple PXIe-1553 modules. The PXIe-1553 modules can be synchronized to one common external IRIG-B time source or to the free-wheeling onboard time code generator.

EMBEDDED PROCESSOR

The use of an embedded processor allows user-specific functions to be processed onboard, significantly off-loading the host processor. This new concept allows users to implement application-specific system level functionality on a single interface card. In addition, the card has the potential to host simple user applications.

BUS COUPLING & DISCRETE I/O

The PXIe-1553 provides support for both Direct and Transformer coupling. The module also provides 10 fully programmable (as input or output) discrete lines. Each discrete line is capable of TTL signaling. The output lines can drive up to 30V signals, with external supply and input lines accepting up to 30V signals in support of MIL-STD-1760 applications.

ORDERING INFORMATION

PXIe-1553-1

Single MIL-STD-1553 Channel PXI Express module, IRIG-Bencoder/decoder, 10 Input/Output DIO, Simulates BC, upto 31 RTs, AND Bus Monitor.

PXIe-1553M-1

PXIe-1553M-1 Single Function, single MIL-STD-1553 Channel PXI Express module, IRIG-B encoder/decoder, 10 Input/Output DIO, Simulates BC, OR upto 31 RTs, OR Bus Monitor.

PXIe-1553-2

Two MIL-STD-1553 Channel PXI Express module, IRIG-B encoder/decoder, 10 Input/Output DIO, Simulates BC, up to 31 RTs, AND Bus Monitor on each channel.

PXIe-1553M-2

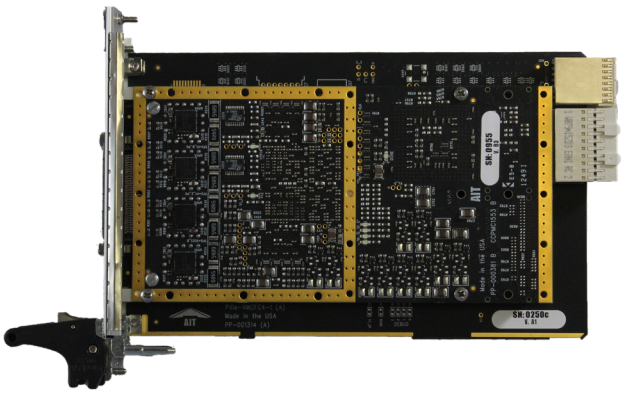
Single Function, two MIL-STD-1553 Channel PXI Express module, IRIG-B encoder/decoder, 10 Input/Output DIO, Simulates BC, OR up to 31 RTs, OR Bus Monitor on each channel.

PXIe-1553-4

Four MIL-STD-1553 Channel PXI Express module, IRIG-B encoder/decoder, 10 Input/Output DIO, Simulates BC, up to 31 RTs, AND Bus Monitor on each channel.

PXIe-1553M-4

Single Function, four MIL-STD-1553 Channel PXI Express module, IRIG-B encoder/decoder, 10 Input/Output DIO, Simulates BC, OR up to 31 RTs, OR Bus Monitor on each channel.



Avionics Interface Technologies | 14769 California Street, Omaha, NE 68154 | +1.402.763.9644 | sales@aviftech.com | aviftech.com
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