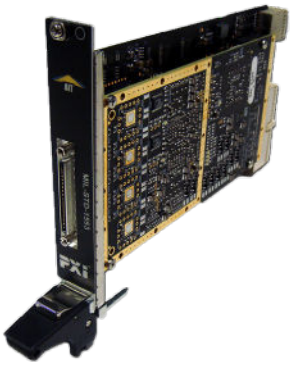
AVIONICS INTERFACE TECHNOLOGIES
A Teradyne Company

PXI-C1553

Extended Function MIL-STD-1553A/B Test & Simulation PXI Module

The PXI-C1553 module is a member of AIT's family of MIL-STD-1553A/B test and simulation modules. This module is a 3U PXI Hybrid Slot compatible instrument designed to support testing, simulations, monitoring, and analysis of MIL-STD-1553 A/B databuses. The PXI-C1553 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 PXI-C1553 provides full error injection and detection capabilities in support of AS4112/AS4111 testing.



SOFTWARE SUPPORT

The PXI-C1553 is delivered with AIT's MIL-STD-1553 Software Development Kit (SDK) which includes software driver support for Windows XP/Vista/7/8/10, Linux, and LabVIEW RT. 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.

COMPATIBLE WITH NATIONAL INSTRUMENTS LabVIEW™

PXI FEATURES

The PXI-C1553 is 3U PXI Hybrid Slot compatible module which supports synchronization of its onboard time tagging clock to either the PXI 10MHz system clock or an IRIG-B input signal. When using the PXI system clock, the time-tag can be reset via the PXI star trigger.

Addtionally, the module supports input and output of triggers to and from the PXI trigger bus. PXI triggers can be generated by the module based on detected MILSTD- 1553 bus events and PXI triggers can be used as input to intiate the start of BC operations, BM data captures, and many other operations.

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

BUS CONTROLLER

The PXI-C1553 Bus Controller provides real-time BC simulation functions supported by the PXI-C1553'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 PXI-C1553 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.

CHRONOLOGICAL BUS MONITOR

The PXI-C1553 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.

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

The PXI-C1553 provides multiple physical bus coupling modes including direct coupling, transformer coupling, and full bus network emulation allowing direct connections to transformer coupled devices. Selection of the coupling modes is done via software function calls from the application. Additionally, software control of the amplitude of the bus signal is provided.

REMOTE OBJECT SERVICES

Remote Object Services (ROS) service make PXI-C1553 hardware available to network clients running in other processes or on other hosts in the network. It runs on its host as either a Windows service or as a Linux daemon.

Technical Data

Form Factor	3U Hybrid Slot Compatible PXI module
System Interface	32-bit / 33 MHz PCI plus PXI Trigger Bus, PXI System Clock, and PXI Star Trigger
Connectors	J1 and XJ4 PXI backplane connectors; 68-pin VHDCI front panel connector holding bus signals, IRIG-B input/output, and 10 DIO lines
Memory	128 MBytes (channel data) 128 MBytes (embedded processor)
Power Consumption	Operating: 3 Watts Idle: 2.5 Watts
Operating Temp. Range	0º C to +45º C
Storage Temperature	-40º C to +85º C
Humidity:	0 to 95% non-condensing

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