New Product!

AVIONICS INTERFACE TECHNOLOGIES
A Teradyne Company

UXI-1553

1, 2, or 4 Channel High Performance MIL-STD-1553 Test Instrument for USB & Ethernet

OVERVIEW

The UXI-1553 is the newest member of AIT's family of instruments offering full function test, simulation, monitoring and databus analyzer functions for MIL-STD-1553A/B applications.

AIT's UXI-1553 is the most flexible and high performance instrument of it's class in the avionics test and simulation industry. It provides support for both USB 3 and Ethernet (10/100/1000) connectivity to the host system and can also be powered from either it's USB or Ethernet (POE) interface.

The instrument is also capable of simultaneous full rate MIL-STD-1553 Bus Controller (BC), 31 Remote Terminals (RT), and Bus Monitor (BM) operations. The instrument also supports full rate physical bus replay simultaneously on all MIL-STD-1553 interfaces. The MIL-STD-1553 bus coupling mode for each of the available MIL-STD-1553 channels can be configured, in software, for Direct or Transformer coupling. Additionally, the output bus voltage level can be independently set, in software, for each of the MIL-STD-1553 Channels.

UXI-1553 Instrument

COMPREHENSIVE SOFTWARE SUPPORT

The UXI-1553 instrument is supported by AIT's MIL-STD-1553 Software Development Kit (SDK) for Windows and Linux. The MIL-STD-1553 SDK provides multiple application interfaces including support for C/C++, C#, and VB.NET. High-level LabVIEW Virtual Instruments (VIs) are also provided. The MIL-STD-1553 SDK provides for simple and intuitive application software development and is backed up by AIT's industry leading team of applications support engineers.

AIT's advanced analyzer and simulation software application, Flight Simulyzer™, is optionally available for use with the new UXI-1553.

The UXI-1553 also includes an onboard applications support processor which allows for time critical applications specific functions to be handled onboard the instrument. The full MIL-STD-1553 C API is accessible for use by applications running onboard the instrument. Onboard, non-volatile storage is provided to store applications specific executable code.

Additionally, the instrument can be used in a fully autonomous monitoring mode. In this mode, the instrument will automatically stream all MIL-STD-1553 bus data over the LAN interface in IRIG 106 Chapter 10 format.

FLEXIBLE SYNCHRONIZATION & DIO

The UXI-1553 provides a high resolution onboard clock used for timestamping captured data and for precise scheduling of MIL-STD-1553 bus operations. The instrument can be synchronized to either an input IRIG-B or IEEE-1588 master time source. The instrument can also act as an IRIG-B time source. Additionally, 10 DIOs (5 Input/5 Output) are provided to coordinate operations with external systems.

KEY FEATURES

- Dual redundant, single, dual, or quad channel configurations
- Concurrent BC, 31 RTs, and BM operations
- Physical Bus Replay
- Full error injection/detection capabilities
- Programmable trigger and capture
- Programmable Bus Coupling and Output Voltage Levels
- Onboard IRIG-B time code encoder/decoder for Synchronization
- Time Synchronization to IEEE 1588 via Ethernet LAN port
- 10 Discrete I/O Interfaces (5 Outputs / 5 Inputs)
- Operates from a single USB or Ethernet LAN connection
- Supports SAE AS4112/4114 protocol testing requirements
- Flight Simulyzer™ GUI Analyzer software

UXI-1553 Operated from Laptop PC

Advanced Features & Functionality to Support the Most Demanding MIL-STD-1553 Test & Simulation Applications

BUS CONTROLLER

AIT's UXI-1553 provides real-time bus controller functions on one, two, or four dual-redundant MIL-STD-1553A/B buses concurrently with multiple RT and chronological monitor operation.

- Autonomous operation including sequencing of minor/major frames
- Programmable BC Retry without host interaction
- Full error injection down to word and bit level (AS4112 compliant)
- Multi-buffering with real-time data buffer updates
- Synchronization of BC operation to trigger inputs
- Intermessage gaps programmable down to 4 µsec

REMOTE TERMINALS

The user can simulate up to 31 RTs at once, including all subaddresses, on one, two, or four MIL-STD-1553A/B bus systems concurrently with BC and BM operation. Alternately, each of the 31 RTs can operate in a message oriented 'Mailbox Monitor Mode' to monitor non-simulated RTs.

- Programmable response time for each RT with fast RT response at 4 µSecs
- Programmable and intelligent response to mode codes
- Full error injection down to word and bit level (AS4112 compliant)
- Multi-buffering with real-time data buffer updates

CHRONOLOGICAL BUS MONITOR

The UXI-1553 offers single or dual stream bus monitoring and analysis with programmable trigger and capture features. The Chronological Bus Monitor (BM) provides accurate time tagging of all bus traffic to 1 msec resolution including response time and gap time measurements down to 250 nsec resolution.

- Autonomous message synchronization and full error detection
- Two static/dynamic complex triggers with sequencing
- Message filter and selective capture
- Bus activity recording independent from trigger and capture mode
- External trigger inputs and outputs
- Programmable response time-out

PHYSICAL BUS REPLAY

The UXI-1553 module supports physical bus replay which allows the instrument to electrically reconstruct previously recorded MIL-STD-1553A/B databus traffic physically to the bus with precise timing accuracy. Recorded data files can be selected for physical bus replay with the ability to disable any or all RT responses from the record file to perform systems integration and test.

ORDERING INFORMATION

UXI-1553-1, UXI-1553-2, UXI-1553-4

(1, 2, or 4) MIL-STD-1553 redundant channels, full function, simultaneous BC, 31 RTs, and BM Operations. Full Bus Replay. Transformer & Direct Coupling. USB 3 & 10/100/1000 Ethernet LAN Host Interface. IRIG-B & IEEE-1588 Time Synchronization. 5 DIO Inputs, 5 DIO Outputs.

UXI-1553M-1, UXI-1553M-2, UXI-1553M-4

(1, 2, or 4) MIL-STD-1553 redundant channel, single function, BC, or 31 RTs, or BM, or Bus Replay Operations. Transformer & Direct Coupling. USB 3 & 10/100/1000 Ethernet LAN Host Interface. IRIG-B & IEEE-1588 Time Synchronization. 5 DIO Inputs, 5 DIO Outputs.

TECHNICAL SPECIFICATIONS

System Interface	USB2.0/USB3.0/USB3.1 Gen 1/USB3.2 Gen 1x1 (USB-C Connector) 10/100/1000 BASE-T Ethernet LAN
Memory/Storage	4GB RAM (For On Board Processing System) 8GB Non-Volatile Storage
Encoder/Decoder	One, two, or four MILSTD1553A/B encoder/decoder with full error injection and detection capability
Time Tagging	Absolute time tagging with 1 µSec resolution, 46 bits
Physical Bus Interface	One, Two, or Four MILSTD1553A/B trapezoidal transceivers; software selectable direct coupling and transformer coupling
General Purpose I/O	5 Input and 5 Output, software programmable I/O lines supporting up to 30V signaling with external reference
Connectors	USB-C, Ethernet RJ45 Socket 68-pin VHDCI (MIL-STD-1553, DIO, IRIG I/O) Note: VHDCI to MIL-STD-1553 Twinax Adapter cable provided
Dimensions	15.5cm X 8.5cm X 2.5cm 6.1in X 3.35in X 0.98in
Power Input	PoE+ or USB-PD
Power Consumption	TBD
Operating Temp.	-40° C...+85° C ambient
Storage Temperature	-40° C...+85° C ambient
Humidity	0 to 95% noncondensing

UXI-1553 Rear Panel

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