

General Features

The APU1553-x USB Module offers full function test, simulation, monitoring & recording for MIL-STD-1553 applications on a single USB2.0 Module. The APU1553-x modules provide one or two dual redundant MIL-STD-1553 streams and concurrently act as Bus Controller, Multiple Remote Terminals (31) and Chronological/ Mailbox Monitor. APU1553-x Modules are powered from the host computer via the USB connection - no external power adapter is required. Designed in a shirt-pocket sized box, the APU1553-x supports up to 8 discrete input/ output signals to be monitored or generated.

An onboard high-precision 'free wheeling' IRIG-B time encoder/ decoder allows users to accurately synchronise single or multiple APU1553-x Modules to a common time source. The APU1553-x offers Transformer Coupling to the databus.

The optional PBA.pro™ Databus Test & Analysis Tool (for Windows & Linux) and legacy PBA-2000/ ParaView Databus Analyser/Visualiser Software (for Windows) can also be purchased for use with APU1553-x cards.

A common Application Programming Interface (API) supports all AIM MIL-STD-1553 modules.

APU1553-x

Single and Dual Stream
MIL-STD-1553 Test &
Simulation Module for USB



APU1553-x Front



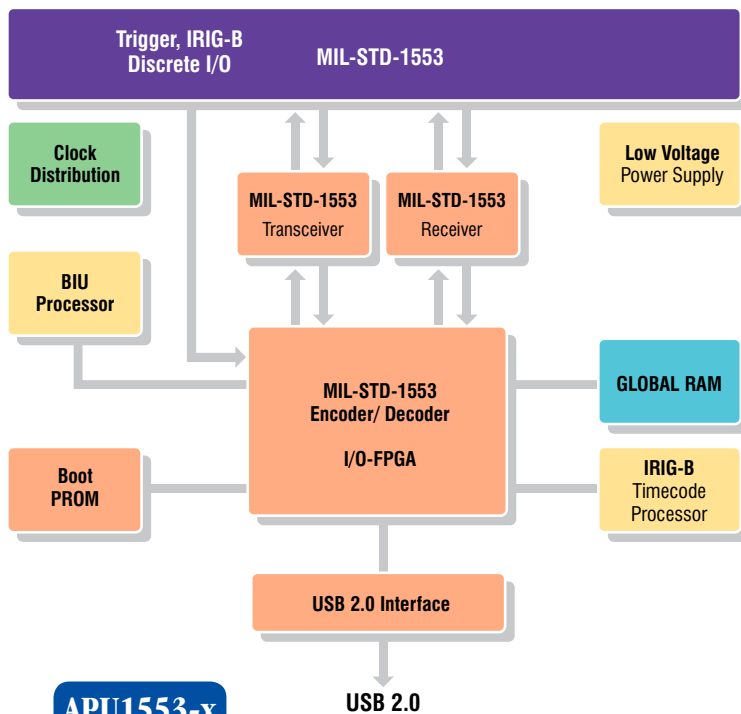
APU1553-x Rear

Key Features

- Robust and Low Power USB2.0 Module for MIL-STD-1553
- Powered via USB, no external power adapter required
- Hot Plug Capability
- Standard Twinax Connectors
- Single or Dual Stream, Dual Redundant Implementation
- Concurrent Bus Controller, 31 Remote Terminals and Bus Monitor
- Full Error Injection/ Detection Capability
- Multi Level Triggering for Capturing/ Filtering
- IRIG-B Time Encoder/ Decoder for Data Correlation
- Real Time Recording and Physical Bus Replay at 100% Bus Loads
- 8 bi-directional Discrete I/O Signals
- Drivers for Windows XP/Vista (others on request)
- Compatible with PBA.pro™, PBA-2000 and ParaView
- Software compatible with AIM's Family of PC104+, PC-Card, PMC, PCI, CompactPCI/PXI, VME and VXI MIL-STD-1553 Cards



Physical I/O Interface



APU1553-x
Block Diagram

Avionics Databus Solutions



Bus Control Features

- Autonomous Operation including Sequencing of multiple Minor and Major Frames
- Support for Acyclic Message Insertion/ Deletion
- Support for Instructions for Synchronization to external Events and Timing Control
- 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
- Synchronisation of BC Operation to external Trigger Inputs
- 4µs Intermassage Gaps
- Interrupt Generation on BC Transfer Events

Multiple Remote Terminal Features

- Programmable RT Response Time down to 4µs for each simulated RT
- Programmable & intelligent Response to Mode Codes
- Full Error Injection down to Word and Bit Level (AS4112 compliant)
- Multi-Buffering with Real Time Data Buffer Updates
- Mailbox Monitor Mode
- Interrupt Generation on RT Events

Chronological Bus Monitor

- 100% Data Capture on two Streams at full Bus Rates
- Single Shot, Continuous or Selective Capture Modes
- Autonomous Message Synchronisation 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
- Time Tagging:
 - All Bus Traffic to 1µs
 - Intermassage Gaps & Response Time to 250ns
- External Trigger Outputs
- Programmable Response Time-Out

Physical Bus Replay

- Electrically reconstruct previously recorded MIL-STD-1553 Databus Traffic
- Disable any or all RT Responses from the recorded Files

Physical Bus Interface

- One or two dual redundant MIL-STD-1553 Bus Interfaces
- Transformer Coupling

IRIG-B Time Encoder/ Decoder

- Onboard, free wheeling IRIG-B Time Encoder/ Decoder with amplitude modulated sinusoidal output
- Synchronise with multiple AIM Modules or any IRIG-B compatible Module

Discrete I/O

- 8 bi-directional Discrete I/O Signals

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Driver Software Support

- Common Application Programming Interface (API)
- Drivers for Windows XP/Vista/7 (incl. LabVIEW/VIs) and Linux (other OS on request)

Technical Data

USB2.0 Interface: 480Mbit USB2.0 Standard Interface (Revision 2.0)

Memory: 1MB (APU1553-1), 2MB (APU1553-2) Global RAM

Processor: One 400MHz RISC Processor

Time Tagging: 46-bit absolute IRIG-B Time

Discrete I/O: 8 bi-directional Discrete I/O Signals

Trigger I/O: BC/BM Trigger Input and Output Lines, TTL compatible

Encoder/ Decoder: One MIL-STD-1553 Encoder/ Decoder per Channel with full Error Injection/ Detection

Physical Bus Interface: MIL-STD-1553B Trapezoidal Transceiver; Transformer coupled

Connector: Standard Twinax Connectors for each MILbus

USB-Connector: Mini USB Connector (B-Type)

Auxiliary I/O Connector: 15-pin High-Density D-Sub Connector for Discrete I/O, IRIG-B and Trigger Signals

Dimensions: 133mm x 85mm x 19mm

Supply Voltage: +5V (USB Supply Voltage)

Power Consumption: Idle 2.5W, Max 3W (APU1553-1)
Idle 2.8W, Max 3.6W (APU1553-2)

Operating Temp. Range: Standard 0°C... + 50°C ambient
Extended on request

Storage Temp. Range: -40°C... +85°C

Humidity: 5 up to 95% (non-condensing)

Ordering Information

APU1553-1

Single Stream, Dual Redundant USB2.0 to MIL-STD-1553 Interface:

BC, Multi RT Simulator with Mailbox & Chronological Monitor; IRIG-B Time

Encoder/ Decoder and 8 General Purpose Discrete I/O's; 1MB Global RAM

Including USB Cable (1.2m, occupying two USB Ports)

Includes Driver Software for Windows XP/Vista/7 and Linux

APU1553-2

Dual Stream, Dual Redundant USB2.0 to MIL-STD-1553 Interface:

BC, Multi RT Simulator with Mailbox & Chronological Monitor; IRIG-B Time

Encoder/ Decoder and 8 General Purpose Discrete I/O's; 2MB Global RAM

Including USB Cable (1.2m, occupying two USB Ports)

Includes Driver Software for Windows XP/Vista/7 and Linux

Simulator Only Versions available

BC, Multi-RT Simulator with Mailbox Monitor

Single Function Versions available

Chronological Monitor and Mailbox Monitor OR Bus Controller OR Multi-RT and Mailbox Monitor

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