

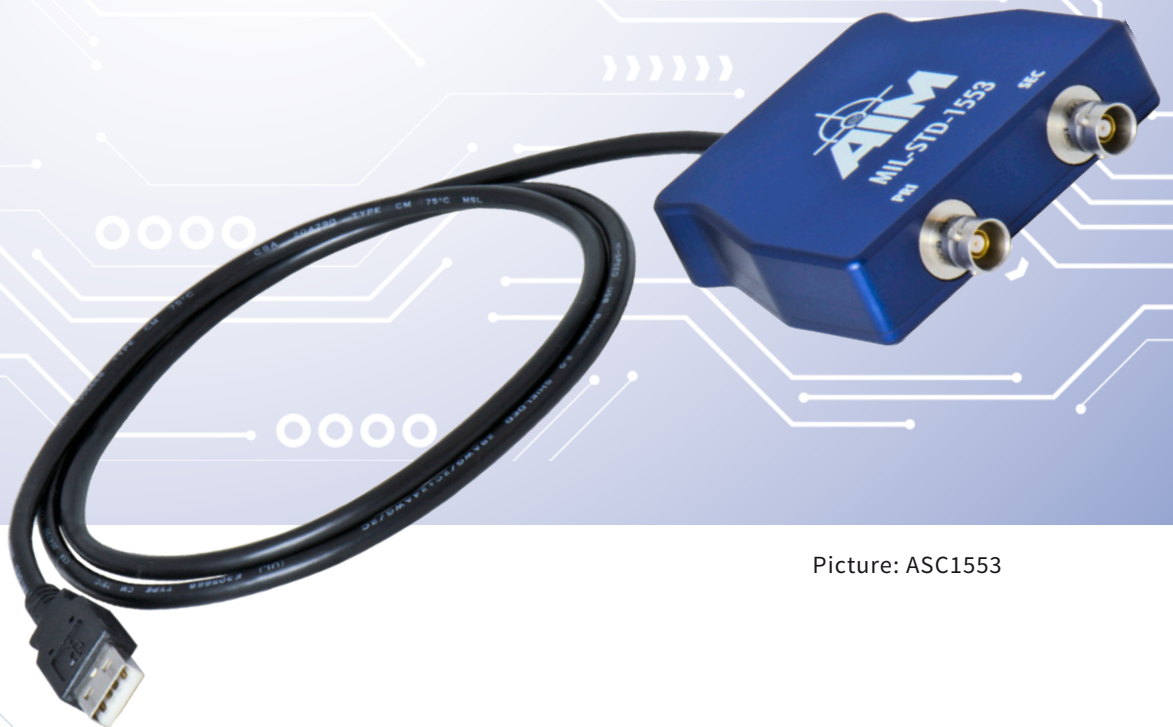


Avionics Databus  
Solutions

# ASC1553

USB SmartCable™  
for MIL-STD-1553  
Test & Simulation

Data  
Sheet



Picture: ASC1553

# ASC1553

## USB SmartCable™ for MIL-STD-1553 Test & Simulation

### General Features

The ► **ASC1553** (AIM SmartCable™) USB module offers full function test, simulation, monitoring and recording for MIL-STD-1553B applications implemented in an ultra compact form factor. The ASC1553 module provides a dual redundant MIL-STD-1553 interface and concurrently acts as Bus Controller, Multiple Remote Terminals (31) and Chronological/Mailbox Monitor.

ASC1553 modules are powered from the host computer via a single USB2.0 (or higher) connection – no external power adapter is required. Embedded in a connector housing, the ASC1553 supports up to 8 discrete input/output signals to be monitored or generated (ASC1553-A only).

An onboard high-precision 'free-wheeling' IRIG-B time encoder/decoder supports time tagging on all ASC1553 models and allows users to accurately synchronize modules to a common IRIG-B time source with the ASC1553-A variant.

The ASC1553 offers Transformer Coupling to the databus.

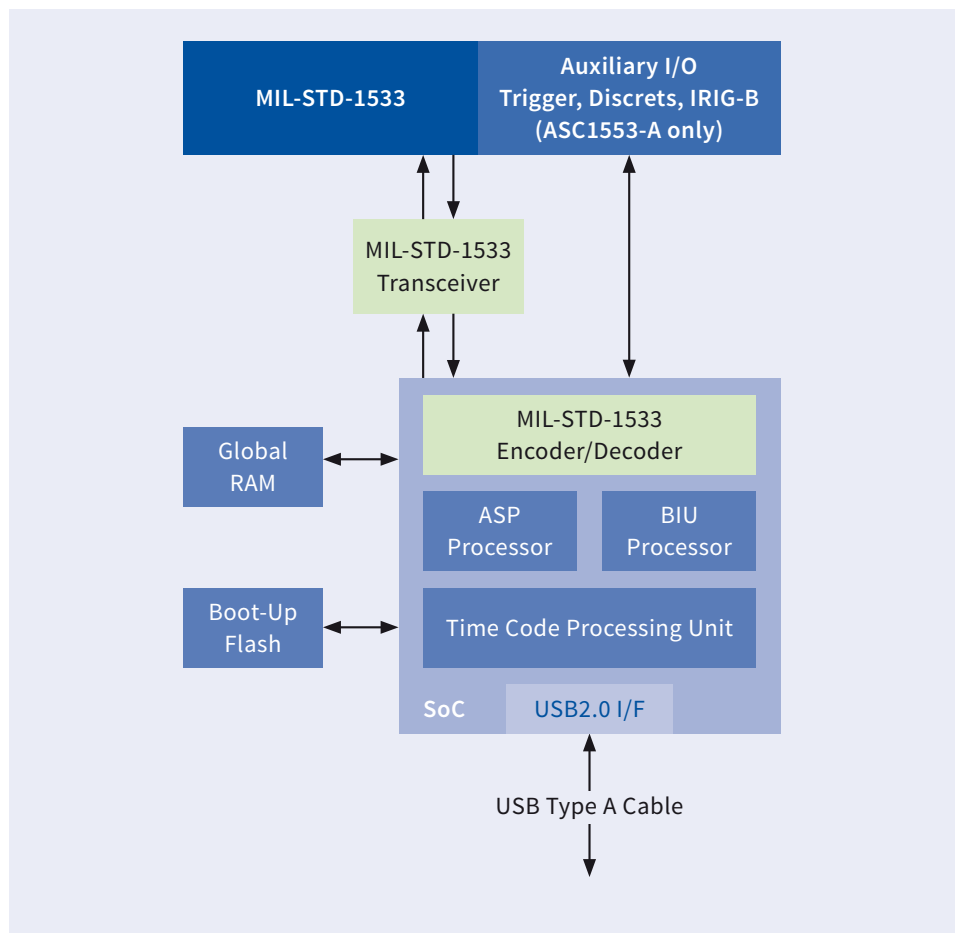
The optional PBA.pro™ Databus Test and Analysis Tool (for Windows and Linux) is also available for use with ASC1553 modules.

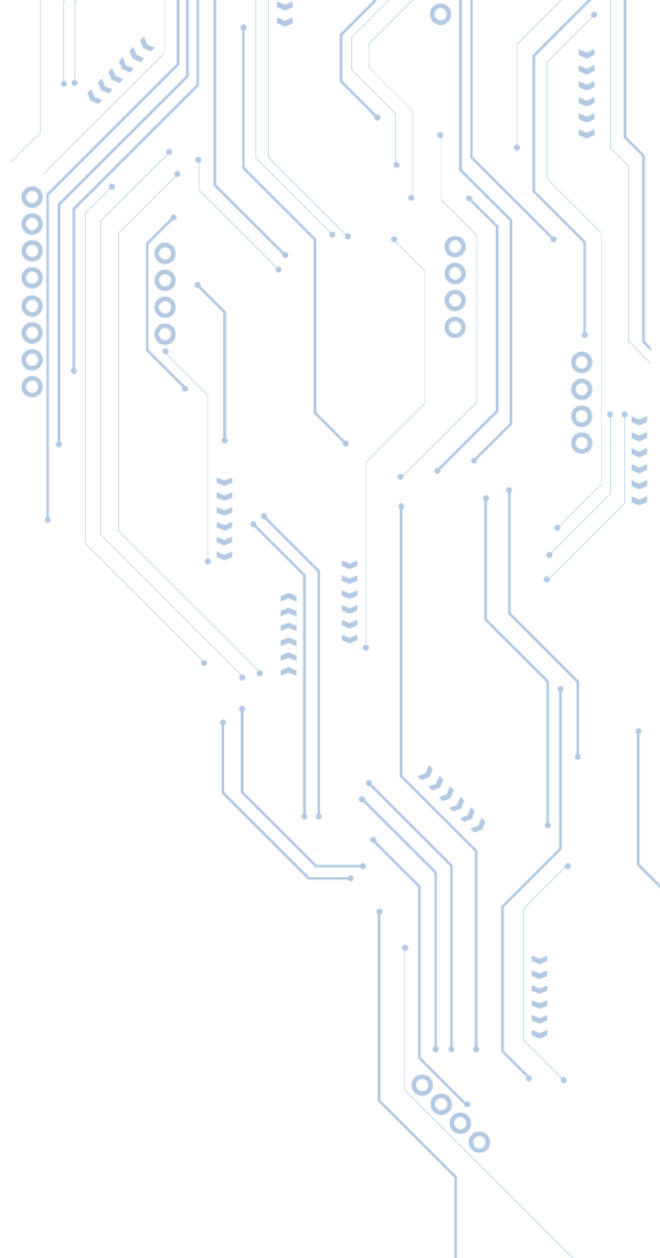
A common Application Programming Interface (API) supports all AIM ► **MIL-STD-1553** modules.

### Key Features

- Robust and Low Power USB2.0 Module implementing a dual redundant MIL-STD-1553 Interface
- Powered via single USB2.0 (or higher), no external power adapter required
- Hot Plug Capability
- Standard Twinax BJT77-male Connectors for MIL-STD-1553B Bus Connections
- Single Stream, Dual Redundant Implementation
- Concurrent Bus Controller, 31 Remote Terminals and Bus Monitor
- Full Error Injection/Detection Capability
- Multi-Level Triggering for Capturing/Filtering
- Real Time Recording and Physical Bus Replay at 100% Bus Loads
- Drivers for Linux and Windows
- Fully supported by PBA.pro™
- Fully Software compatible with AIM's Family of MIL-STD-1553 Cards
- Additional D-Sub Connector for Discretes, Trigger I/O and IRIG-B I/O (ASC1553-A only)

ASC1553  
Block Diagram





## 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
- Synchronization of BC Operation to external Trigger In- and Outputs (ASC1553-A only)
- 4µs Intermessage Gaps
- Interrupt Generation on BC Transfer Events

## Multiple Remote Terminal Features

- Programmable RT Response Time down to 4µs for each simulated RT
- 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
- Mailbox Monitor Mode
- Interrupt Generation on RT Events

## Chronological Bus Monitor

- 100% Data Capture on 1 Stream at full Bus Rates
- Single Shot, Continuous or Selective Capture Modes
- Autonomous Message Synchronization and Full Error Detection
- 2 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
  - Intermessage Gaps and Response Time to 250ns
- External Trigger In- and Outputs (ASC1553-A only)
- 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

- 1 dual redundant MIL-STD-1553 Bus Interface
- Transformer Coupling

## IRIG-B Time Encoder/Decoder

- Onboard, free-wheeling IRIG-B formatted Time Encoder/Decoder for time tagging
- Amplitude modulated sinusoidal IRIG-B Output (ASC1553-A only)
- Synchronization with multiple AIM Modules or any IRIG-B compatible Module (ASC1553-A only)

## Discrete-I/O

- 8 bi-directional Discrete I/O Signals (ASC1553-A only)

## Driver Software Support

- Common Application Programming Interface (API)
- Drivers for Linux and Windows

## Technical Data

### USB2.0 Interface

480Mbit USB2.0 Standard Interface  
(Revision 2.0)

### Memory

128MB RAM

### Processor

SoC Device with 2x 400 MHz Processors

### Time Tagging

46-bit absolute IRIG-B formatted

### Discrete I/O (ASC1553-A only)

8 bi-directional Discrete-I/O Signals

### Trigger I/O (ASC1553-A only)

BC/BM Trigger Input and Output Lines,  
TTL compatible

### Encoder/Decoder

1x MIL-STD-1553 Encoder/Decoder with  
full Error Injection/Detection

### Physical Bus Interface

MIL-STD-1553B Trapezoidal Transceiver;  
Transformer coupled

### Connector

Standard Twinax BJT77-male Connectors  
for MILbus

### USB-Connector

Fixed mounted Cable with single  
USB Type A host Connectors on request

### Auxiliary I/O Connector (ASC1553-A only)

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

### Dimensions

75mm x 83mm x 19mm (W x L x H)  
(Housing incl. AUX D-Sub and MILbus  
Twinax Connectors)

### Supply Voltage

+5V from single USB2.0 (or higher) Supply  
Voltage

### Power Consumption

2.5W max

### Operating Temp. Range

Standard: 0°C to +50°C ambient  
Extended: -15°C to +60°C

### Storage Temp. Range

-40°C to +85°C

### Humidity

5 up to 95% (non-condensing)

## Ordering Information

### ASC1553-A

Single Stream, Dual Redundant USB2.0  
to MIL-STD-1553 Interface:  
BC, Multi RT Simulator with Mailbox &  
Chronological Monitor; IRIG-B Time  
Encoder/Decoder, 8 General Purpose  
Discrete I/O's and Trigger 1x In/1x Out;  
128MB Global RAM,  
MIL-STD-1553 I/O via 2 Twinax  
Connectors;  
IRIG-B I/O, Discrete and Trigger I/O via  
D-Sub Auxiliary I/O Connector.  
Including USB Cable, 1.0m, occupying  
1 USB (2.0 or higher) Port.  
Includes Driver Software for Linux and  
Windows.

### ASC1553

Single Stream, Dual Redundant USB2.0  
to MIL-STD-1553 Interface:  
BC, Multi RT Simulator with Mailbox &  
Chronological Monitor;  
128MB Global RAM,  
MIL-STD-1553 I/O via 2 Twinax  
Connectors;  
No IRIG-B I/O, Discrete and Trigger I/O.  
Including USB Cable, 1.0m, occupying  
1 USB (2.0 or higher) Port.  
Includes Driver Software for Linux and  
Windows.

### Simulator Only Versions available

BC, Multi-RT Simulator with Mailbox  
Monitor.

### Single Function Versions available

Chronological & Mailbox Monitor or BC  
and Chronological & Mailbox Monitor  
or Multi-RT and Chronological & Mail-  
box Monitor.

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