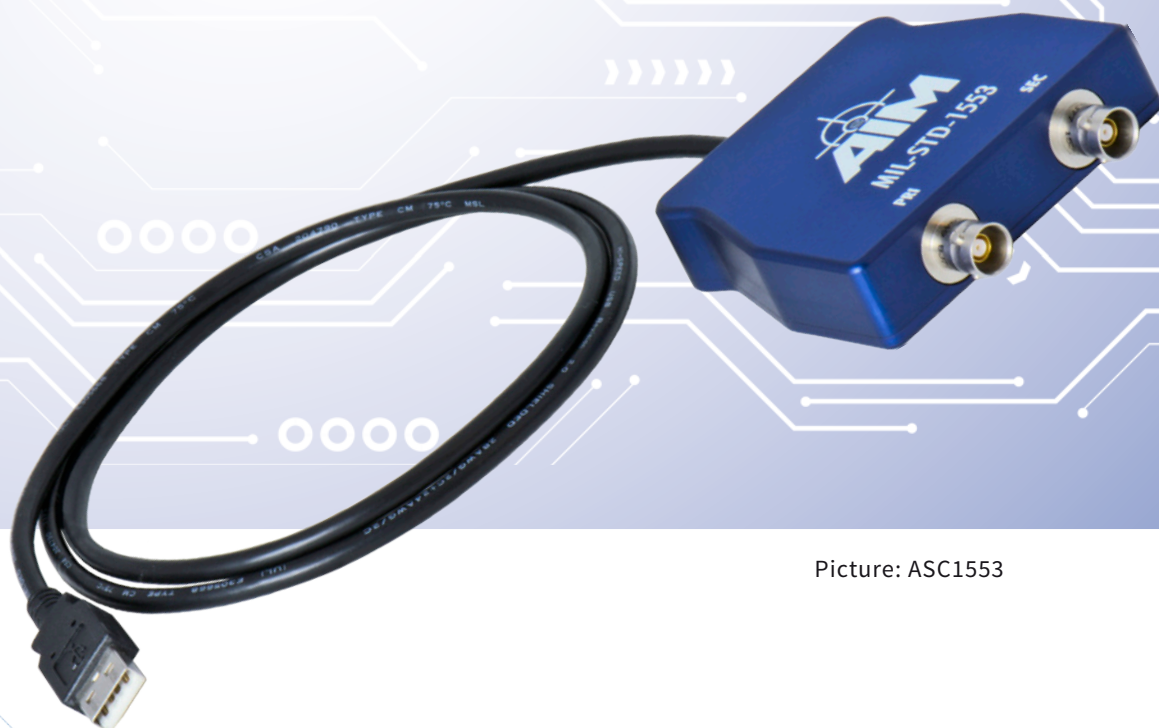# ASC1553

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 BJ77-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
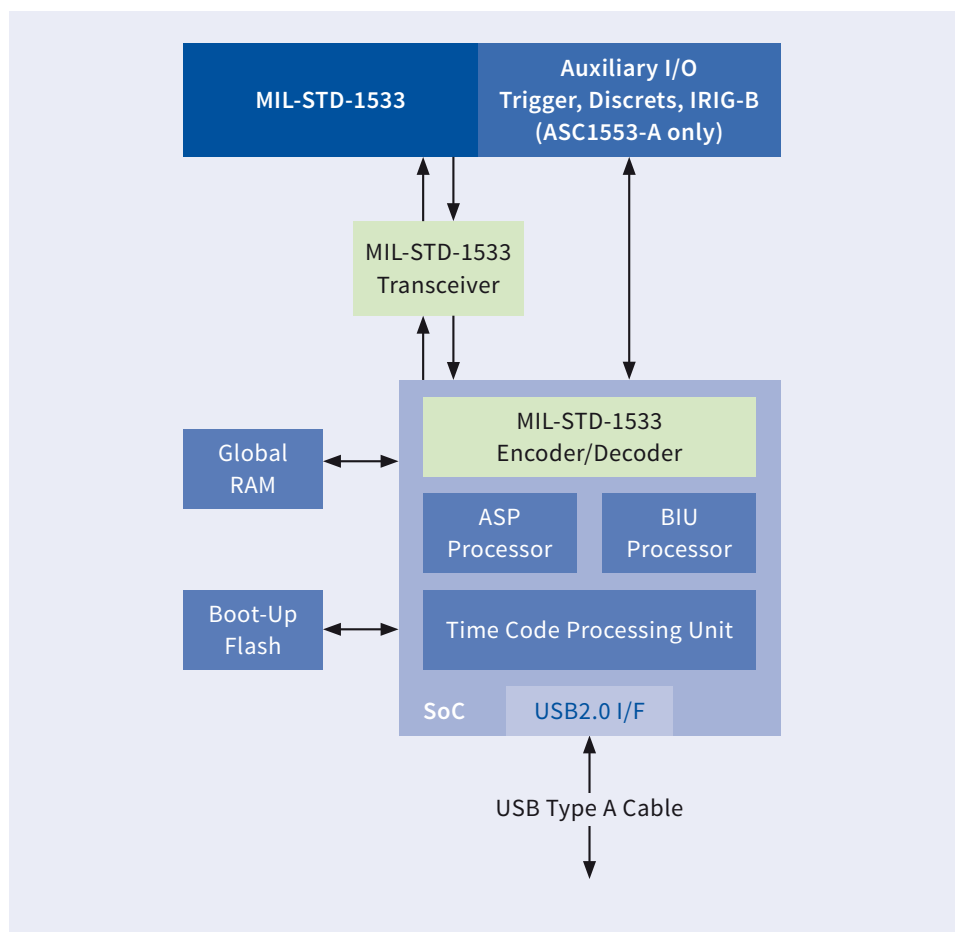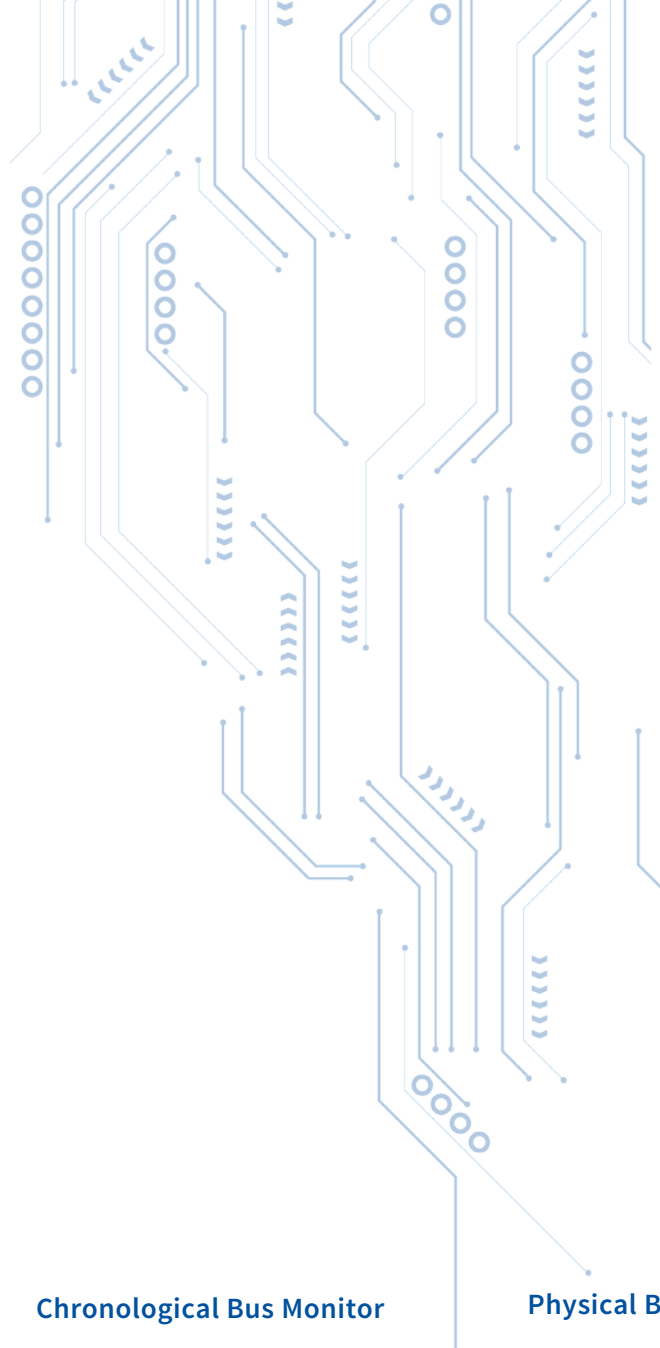
Bus Control Features

- 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 BJ77-male Connectors
for MILbus

USB-Connector
fixed mounted cable with single USB Type A
host Connector, USB-C cable upon 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: 0ºC to +50ºC ambient
Extended: -15°C to +60°C

Storage Temp. Range
-40ºC to +85ºC

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.

► **AIM Office Contacts:**

AIM GmbH
Sasbacher Str. 2
D-79111 Freiburg / Germany
Phone +49 (0)761 4 52 29-0
Fax   +49 (0)761 4 52 29-33
sales@aim-online.com

AIM GmbH – Munich Sales Office
Terofalstr. 23a
D-80689 München / Germany
Phone +49 (0)89 70 92 92-92
Fax   +49 (0)89 70 92 92-94
salesgermany@aim-online.com

AIM UK Office
Cressex Enterprise Centre, Lincoln Rd.
High Wycombe, Bucks. HP12 3RB / UK
Phone +44 (0)1494-446844
Fax   +44 (0)1494-449324
salesuk@aim-online.com

AIM USA LLC
Seven Neshaminy Interplex
Suite 211 Trevose, PA 19053
Phone 267-982-2600
Fax   215-645-1580
sales@aim-online.us