

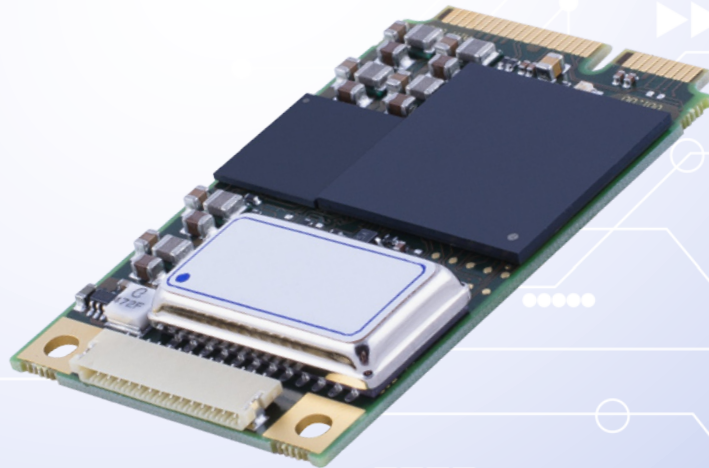


Avionics Databus
Solutions

AME1553-1

PCI Express Mini Card for
MIL-STD-1553 Test & Simulation

Data
Sheet



AME1553-1

PCI Express Mini Card for MIL-STD-1553 Test & Simulation

General Features

The AME1553-1 ► **PCI Express Mini Card** module offers full function test, simulation, monitoring and recording for MIL-STD-1553B applications implemented in an ultra-compact form factor.

The ► **AME1553-1** module provides a dual redundant ► **MIL-STD-1553** interface and concurrently acts as Bus Controller, Multiple Remote Terminals (31) and Chronological/Mailbox Monitor.

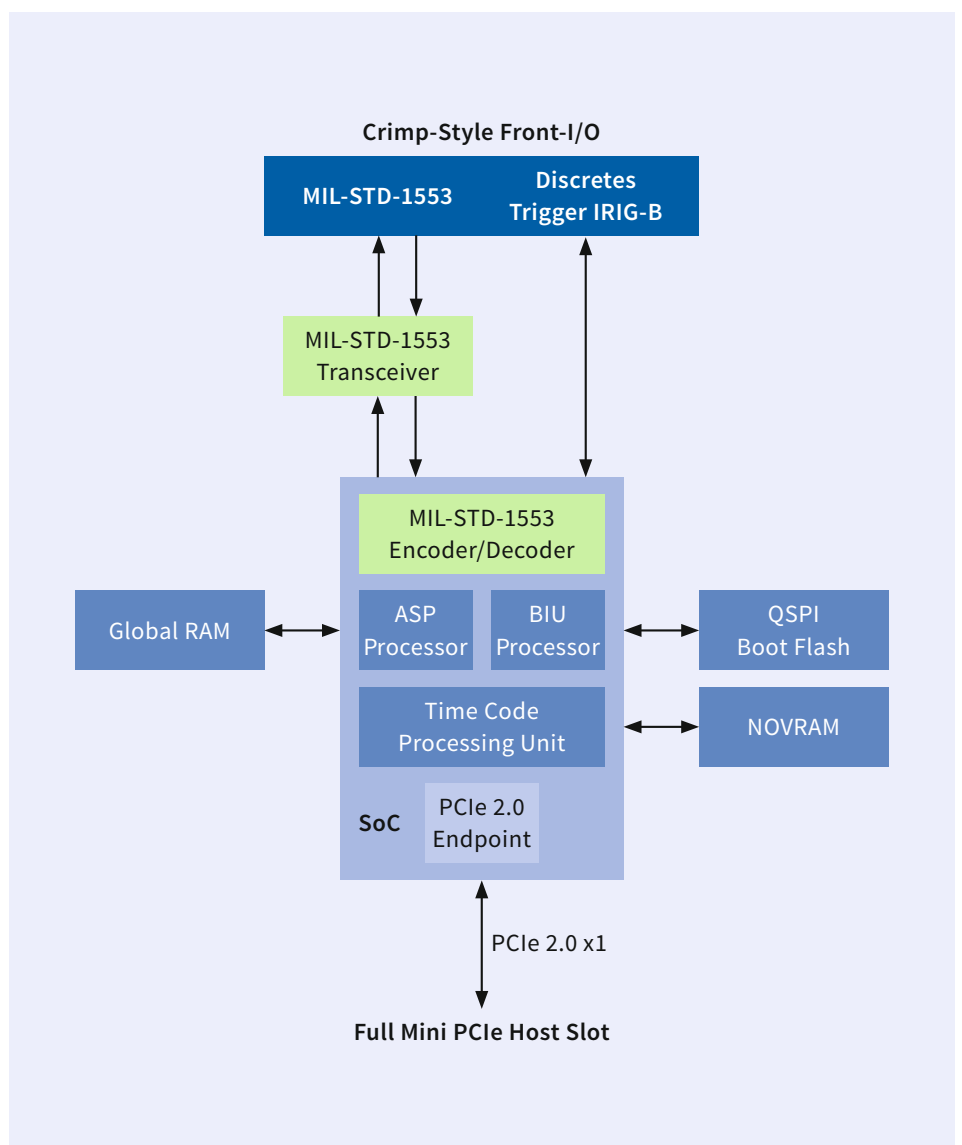
The AME1553-1 supports 2 discrete inputs and 2 discrete output signals to be monitored or generated. In addition 1 trigger input and 1 trigger output are provided.

An onboard high-precision free-wheeling IRIG-B time encoder/decoder supports time tagging on all AME1553-1 models and allows users to accurately synchronize modules to a common IRIG-B time source.

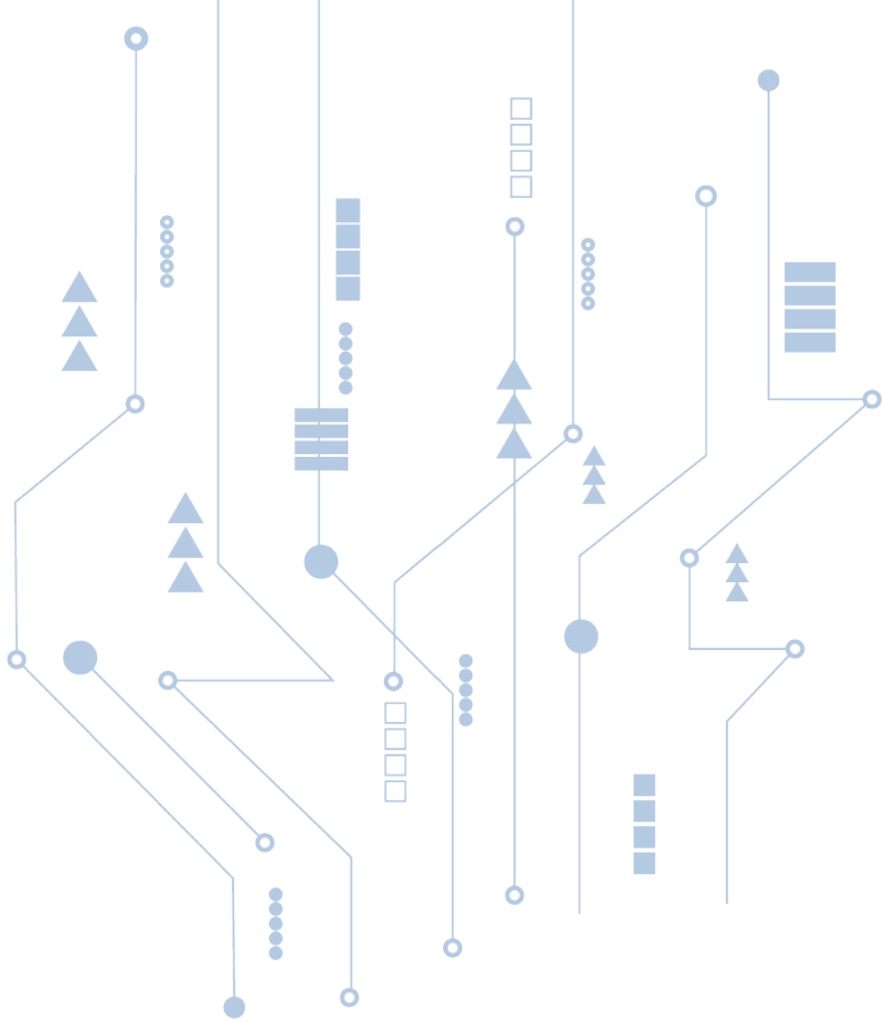
The AME1553-1 offers Transformer Coupling to the databus.

The optional ► **PBA.pro™** Databus Test and Analysis Tool (for Windows and Linux) is also available for use with AME1553-1 modules.

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



AME1553-1 Block Diagram



Key Features

- Robust and low power ► **PCI Express Mini Card** implementing a MIL-STD-1553 Interface
- Single Stream, Dual Redundant Implementation
- 14-pin dis-connectable crimp style I/O Connector
- 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**
- Discretes 2x In/2x Out, Trigger 1x In/1x Out and IRIG-B I/O

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 Output
- 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
- 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
- Programmable Response Time-Out
- Trigger In- and Output

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
- Synchronization with multiple AIM Modules or any IRIG-B compatible Module

Discrete-I/O

- 2 Discrete Inputs, 2 Discrete Outputs

Driver Software Support

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

Technical Data

Express Interface

Single Lane Full PCI Express Mini Card, compatible with PCI-Express Standard (Release 2.0)

Memory

128MB RAM

Processor

SoC Device with 2x 800MHz Processors

Time Tagging

46-bit absolute IRIG-B formatted

Discrete I/O

2 Discrete Inputs, 2 Discrete Outputs (3.3V compatible, handled by FPGA I/O)

Trigger I/O

BC/BM Trigger Input and Output Line (3.3V compatible, handled by FPGA I/O)

Encoder/Decoder

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

Physical Bus Interface

MIL-STD-1553B Trapezoidal Transceiver; Transformer coupled

Connector

14-pin dis-connectable crimp style I/O Connector

Dimensions

Full PCI Express Mini Card width: 50.95mm x 30mm

Note: Max. standard height (top) is exceeded by the 1553 Transceiver Device

Supply Voltage

Standard PCI Express Mini Card Supply +3.3V_{AUX}, +1.5V

Power Consumption

@3.3V_{AUX}: 3.12W

@1.5V: <0.1W

Operating Temp. Range

Standard: 0°C to +60°C ambient

Extended Temp. Range

-40°C to +70°C

Storage Temp. Range

-40°C to +85°C

Humidity

5 up to 95% (non-condensing)

Ordering Information

AME1553-1

Single Stream, Dual Redundant PCI Express Mini Card to MIL-STD-1553 Interface:

BC, Multi RT Simulator with Mailbox & Chronological Monitor;

IRIG-B Time Encoder/Decoder,

2 Discrete In, 2 Discrete Out and Trigger 1x In/1x Out;

1GB Global RAM

All I/O (1553, Discretes, Trigger, IRIG-B) via 14-pin dis-connectable crimp style Connector.

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 & Mailbox Monitor

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