

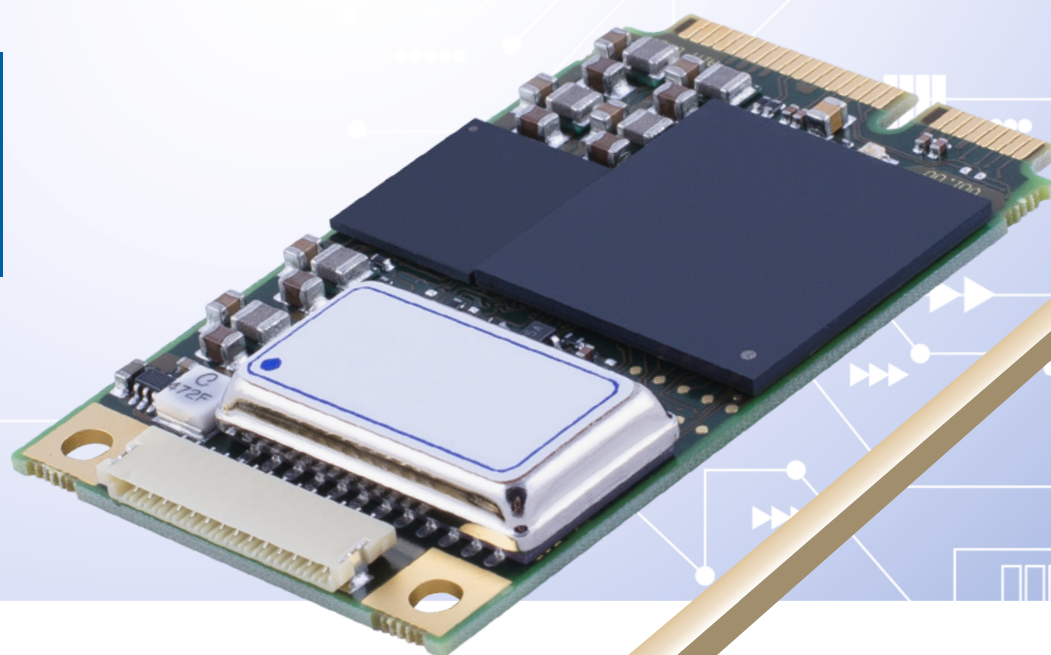


Avionics Databus  
Solutions

# AME1553-1-E

Rugged Embedded MIL-STD-1553  
PCI Express Mini Card

Data  
Sheet



# AME1553-1-E

## Rugged Embedded MIL-STD-1553 PCI Express Mini Card

### General Features

The AME1553-1-E is a ► **PCI Express Mini Card** targeted for embedded MIL-STD-1553B applications.

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

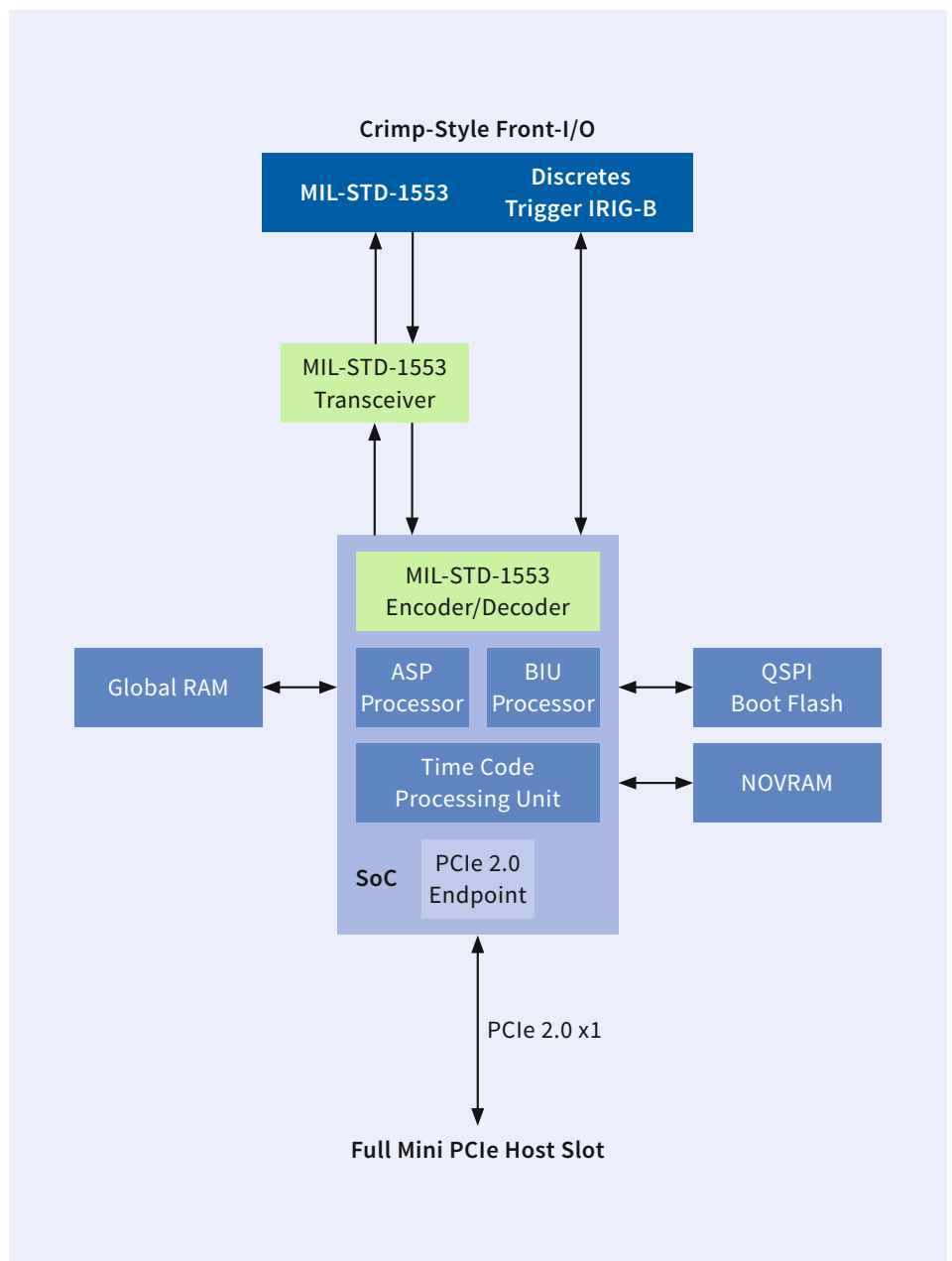
The AME1553-1-E supports 2 discrete input and 2 discrete output signals to be monitored or generated. In addition 1 trigger input and 1 trigger output are provided.

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

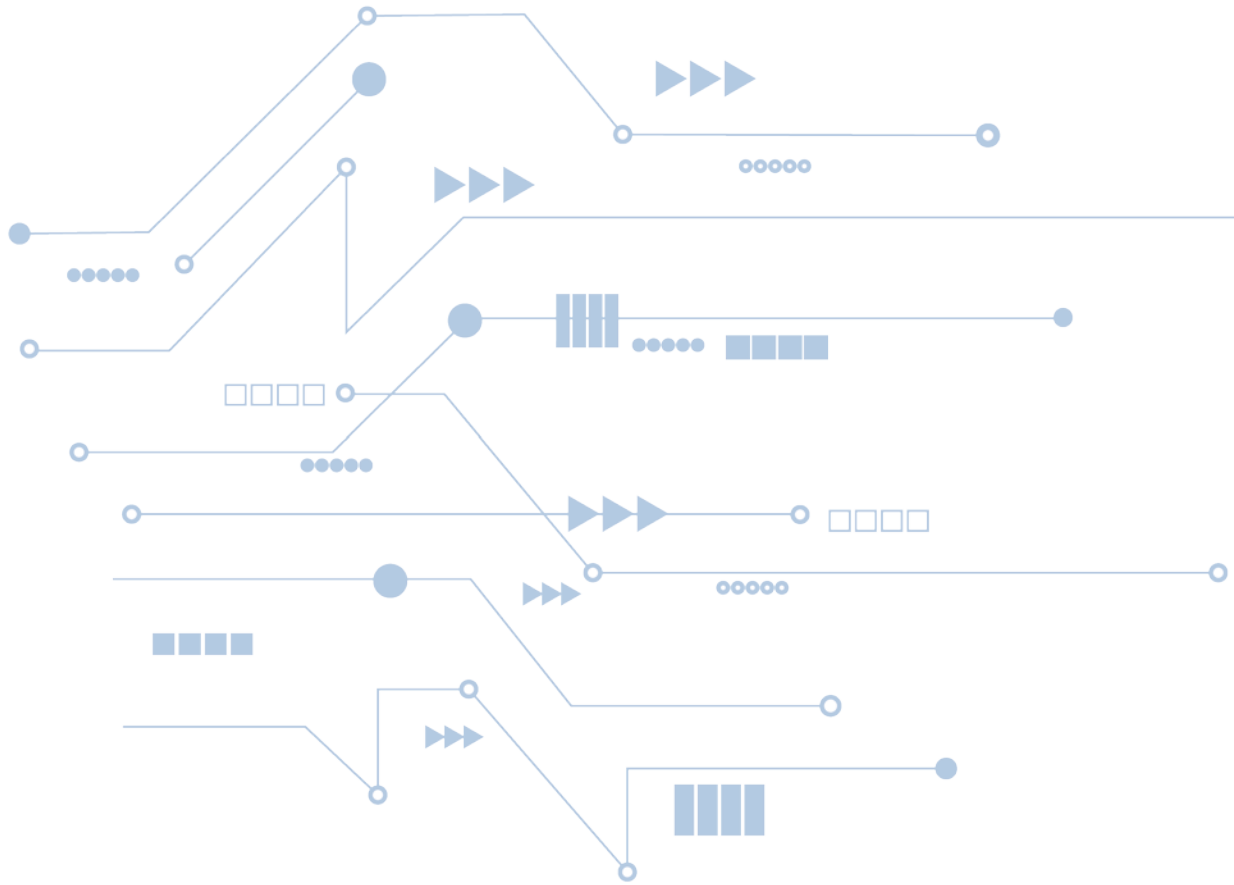
The AME1553-1-E offers Transformer Coupling to the databus. With the provided onboard flash memory the components boot up autonomously after power up. Therefore the cards are well prepared for embedded applications requiring fast and autonomous boot up to operational mode.

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

The card is designed to meet vibration requirements as specified in ANSI/VITA 47 for class V3. It is also designed to meet the shock requirements specified in ANSI/VITA 47 for class OS2.



AME1553-1-E Block Diagram



## Key Features

- Robust and low power ► **PCI Express Mini Card** implementing a MIL-STD-1553 Interface
- VITA 47 shock and vibration qualified
- 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 Detection Capability
- Triggering for Capturing/Filtering
- Real Time Recording at 100% Bus Loads
- Drivers for Linux, Windows and VxBus
- Discretes 2x In/2x Out, Trigger 1x In/1x Out and IRIG-B Input

## Bus Control Features

- Autonomous Operation
- Sequencing of multiple Minor and Major Frames
- Acyclic Message Insertion/Deletion
- Programmable BC Retry without Host Interaction
- Multi-Buffering with Real Time Data Buffer Updates
- Synchronization of BC Operation to external Trigger Input
- Interrupt Generation on BC Transfer Events

## Multiple Remote Terminal Features

- Programmable RT Response Time for each simulated RT
- Programmable and intelligent Response to Mode Codes
- Multi-Buffering with Real Time Data Buffer Updates
- Mailbox Monitor Mode
- Interrupt Generation on RT Events

## Chronological Bus Monitor

- 100% Data Capture of Bus Traffic
- Autonomous Message Synchronization and Full Error Detection
- Dynamic Complex Trigger 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 Interface

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

## IRIG-B Time Decoder

The card provides an analog IRIG-B input and a time decoder with free-wheeling mode for time tag synchronization of multiple cards to 1 common IRIG-B time input source.

## Discrete-I/O

- 2 Discrete Inputs, 2 Discrete Outputs

## Driver Software Support

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

## 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 SoC Device)

### Trigger I/O

BC/BM Trigger Input and Output Line (3.3V compatible, handled by SoC Device)

### Encoder/Decoder

1x MIL-STD-1553 Encoder/Decoder with full Error 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, +1.5V

### Power Consumption

@3.3V aux: 3.12W  
@1.5V: <0.1W

### Extended Temp. Range

-40°C to +85°C operating for Conduction Temperature measured at SoC component case

### Storage Temp. Range

-40°C to +85°C

### Humidity

5 up to 95% (non-condensing)

## Ordering Information

### AME1553-1-E

Single Stream, Dual Redundant PCI Express Mini Card to MIL-STD-1553 Interface:  
BC, Multi RT Simulator with Mailbox & Chronological Monitor;  
IRIG-B Time Decoder, 2 Discrete In, 2 Discrete Out and Trigger 1x In/1x Out; 128MB Global RAM  
All I/O (1553, Discretes, Trigger, IRIG-B) via 14-pin dis-connectable crimp style Connector.  
Includes Driver Software for Linux, Windows and VxBus.

**Single Function** Versions available  
Chronological & Mailbox Monitor OR BC and Chronological & Mailbox Monitor OR Multi-RT and Chronological & Mailbox Monitor

### Options

#### Tx Inhibit

Available as assembly option  
add suffix -I to Part Number

#### Conformal Coating

Available as costed option  
add suffix -COAT to Part Number

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