

PM1553-5 MIL-STD-1553 Interface

*PC/104-Plus Interfaces
to MIL-STD-1553*

Features

- Up to 4 MIL-STD-1553 Channels
- 16 Avionics Discrete I/O
- IRIG A/B PWM and AM
- 32 MB Data Memory
- PC/104-Plus Compliant
- Rugged Extended Temperature Design

Description

The PM1553-5 family of PC/104-Plus cards enable embedded computers to interface with MIL-STD-1553 avionics databuses. These rugged modules provide reliable 1553 functionality for communicating with, and monitoring 1553 equipment and systems. The family includes single or multi-function models with a choice of 1 to 4 dual-redundant 1553 channels.

This interface card is easy to install and operate. It supports maximum data throughput on all 1553 channels and has a large 32 MB built-in memory. With all its capability and versatility, the PM1553-5 is suitable for a wide range of MIL-STD-1553 applications.

Hardware

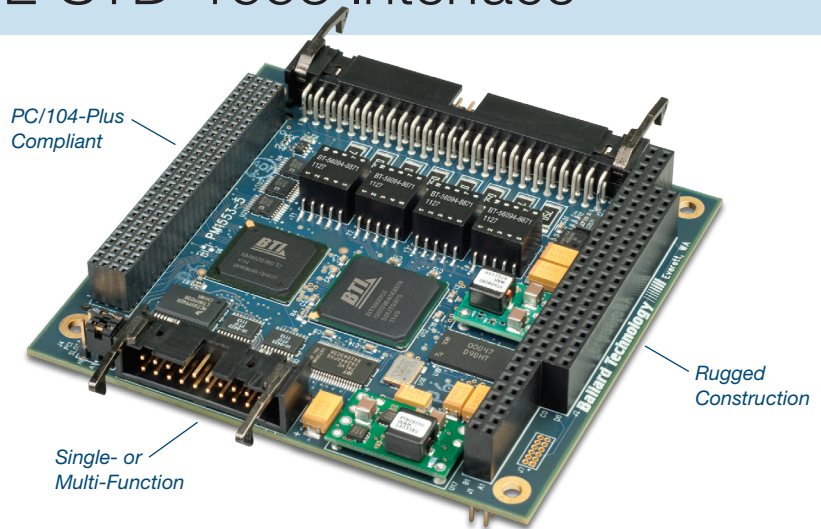
PM1553-5 interfaces have the latest 5th generation protocol engine and bus mastering to yield high performance. The cards are fully compliant with the PC/104-Plus standard. All models include sixteen avionics level input/output discretes and IRIG time synchronization/generation.

Depending upon the hardware model, 1553 channels may be either single-function or multi-function. Single-function channels can be configured in software as either a Bus Controller (BC), a Bus Monitor (BM), or up to 32 Remote Terminals (RTs). Multi-function channels have protocol error injection capability and can simultaneously be a BC, BM, and up to 32 RTs.

Software

Users can develop their own software applications with the included BTIDriver API. With only a few function calls, a program can operate the PM1553-5 and process messages to and from the avionics databuses. Functions include routines for transmitting, receiving, scheduling, recording, time-tagging, and manipulating data.

The PM1553-5 can use applications developed for other Ballard devices. Code migrates seamlessly from BTIDriver compatible devices or through a translation driver from older Ballard devices.



MIL-STD-1553

- Full MIL-STD-1553 functionality
- BC, RT, and/or Monitor
- 1 to 4 Dual-redundant channels
- Models available: Single-function and Multi-function
- Error injection (Multi-function only)
- Transformer and direct coupling

Software

- Universal BTIDriver™ API compatible
- Efficient DMA monitoring
- Compatible with other Ballard hardware
- Translator for older Ballard devices

Benefits

- Powerful protocol engine
- Easy installation
- Free customer support for product life
- RoHS compliant

Applications

- Mission computers
- Embedded monitor/recorder systems
- LRU and system interfacing
- System analysis and integration testing
- Performance monitoring and analysis
- OEM equipment



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PM1553-5 MIL-STD-1553 Interface

MIL-STD-1553 Features

Bus Controller

Automatic or custom scheduling
 Programmable: frame times, intermessage gaps, conditional retries, and branches
 Run modes: continuous, loop N times, single-step
 Start on software or external trigger
 Aperiodic and one-shot messages
 Sync out on all or selected messages
 Programmable BC timeout values

Remote Terminal

Multi-terminal simulation (32 RTs)
 Configurable 1553A or B response time
 Programmable response time and status word bits
 Auto Busy Bit option
 Support for all 1553B mode codes
 Selectable mode code subaddress
 Enable broadcast on a per-RT basis
 RT 31 as broadcast or valid RT
 Configure/legalize selected SA/MCs
 RT "Shadow Monitor" mode

Bus Monitor

Capture all 1553 traffic or filter by RT/SA
 Capture and time-tag discrete I/O
 Sequential record includes:
 command/status/data words, time-tag, errors, bus, and response time(s)
 Efficient DMA monitor to host

Message Data

Comprehensive error detection
 Guaranteed data integrity
 Buffering schemes facilitate data handling:
 Single buffers (default)
 Circular lists transmit a repeated pattern
 FIFO list buffers for sequential data
 Data initialization options
 Track activity by min, max, or elapsed time

Error Injection (Multi-Function only)

Trigger from software or an external signal
 Inject errors in all or tagged messages
 Parity, bit count, inverted sync, Manchester, gap, and word count (relative or absolute)

Specifications

Base Model Features

- Model dependent 1553 capability
- 16 Avionics Discrete I/O
- IRIG A/B input and output
- 32 MB on-board memory

Avionics Discrete I/O

16 programmable inputs/outputs
 Output: Open/Gnd, 35 VDC, 200 mA (max), self monitoring, inductive load protected
 Log transitions to sequential record

Time-tag/IRIG

48-bit hardware time-tag (1 μ s resolution)
 IRIG A or B, AM, PWM, and PPS modes
 Generate or synchronize (AM input only)
 Synchronize hardware time-tags

Interrupts/Logging

Poll or use interrupts
 Configurable event log
 Programmable event logging/interrupts from messages, BC schedule, and buffers

Channel Details

All channels dual redundant – Bus A and B
 Single-function: BC, 32 RTs, or Bus Monitor
 Multi-function: Error injection, BC, 32 RTs, and Bus Monitor simultaneously
 Transformer and direct coupling
 Jumper for direct coupled termination

Environmental/Mechanical

Component temperature: -40 to + 85 deg C
 Storage temperature: -55 to +100 deg C
 Weight: 3.5 oz (99 g)
 Dim: 3.55 x 3.75 inch (90.2 x 95.9 mm)

PCI Bus

32-bit, 33/66 MHz, Universal signaling, bus mastering
 Power: +5 and +12 VDC

Software

Universal BTIDriver API for C/C++, C#, VB, VB.Net, and LabVIEW™
 MS Windows® and Linux® OS drivers
 Translation DLLs for older Ballard devices
Call for latest language and OS support.

Connectors

MIL-STD-1553 I/O & IRIG connector
 AMP 50-pin latching header
 IDC Socket: 2-1658526-4 Mate
 Wire Socket: 1-102387-0 Mate
 Wire Contacts: 87667-5
 Discrete I/O connector
 AMP 20-pin latching header
 IDC Socket: 1-1658526-3 Mate
 Wire Socket: 102387-4
 Wire Contacts: 87667-5

Ordering Information

Hardware

Includes manuals and software CD.
 Part Number Example: PM1553-5/**1M**

Channel Count

1, 2, 3, or 4

Functionality

S = Single, **M** = Multi

Options

Conformal coating
 Disable 1553 transmit on one/all channels
 Ship without I/O connectors
 PCI-104 compliance

Cables and Accessories

Order separately. Ballard offers a wide selection. Visit www.ballardtech.com or call for more information.

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