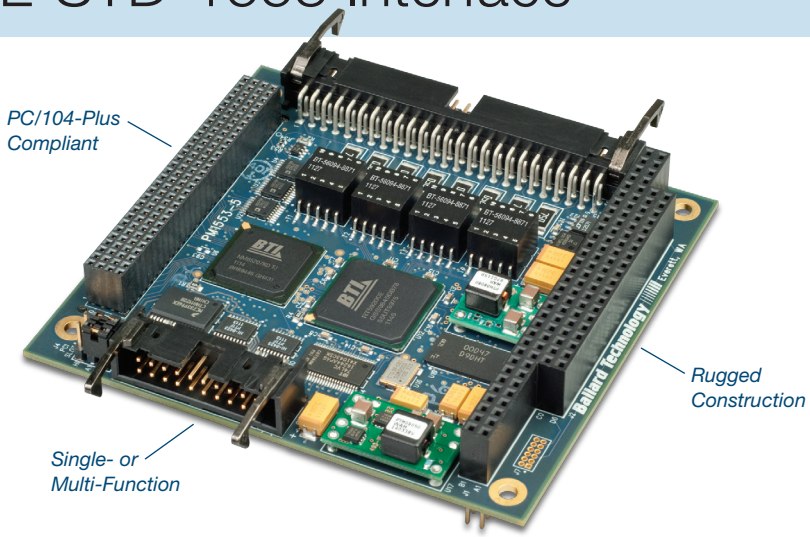
Technical Datasheet

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

Ballard Technology is a member of the PC/104 Consortium.

Ballard TECHNOLOGY
AN ASTRONICS COMPANY

www.ballardtech.com

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 (1µs 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.

Ballard TECHNOLOGY
AN ASTRONICS COMPANY

Aerospace
Military
Commercial
Interfaces
Embedded Systems
Software

Ballard Technology is committed to quality and is AS9100 and ISO 9001 registered.

11400 Airport Road
Everett, WA 98204 USA
T 800.829.1553 **T** 425.339.0281
F 425.339.0915
E sales@ballardtech.com
W www.ballardtech.com

BR191-20120627