

MIL-STD-1553 Interface for PC/104 Computers

Features

- BC, RT, and Monitor modes
- 32K x 16 memory
- Powerful μ MMIT protocol processor
- MIL-STD-1760 support
- Configurable discretes (4 in/2 out)
- Custom versions available
- PC/104 compliant

Description

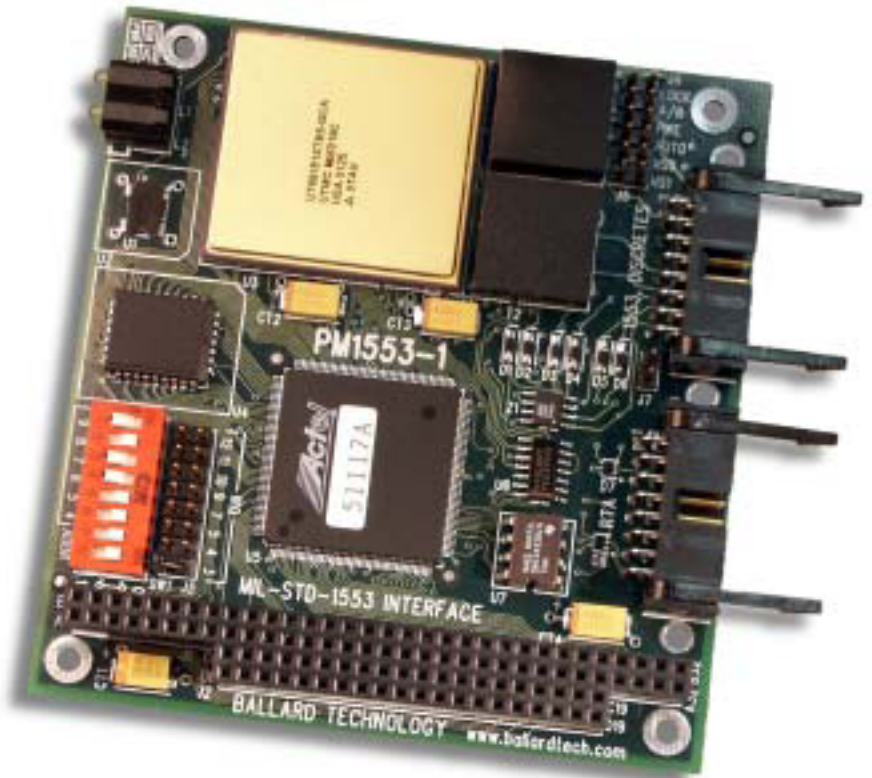
The PM1553-1 is a low-cost dual-redundant MIL-STD-1553 interface for PC/104-embedded computers. It can be programmed to function as a 1553 Bus Controller, Remote Terminal, or Monitor. In addition to 1553 capability, the PM1553-1 has configurable input and output discretes. The PM1553-1 has many features that minimize the load on the host processor and can even eliminate the need for additional cards. The straightforward architecture and I/O-mapped registers make integration and applications programming a simple task in any operating system.

Designed for flexibility, the PM1553-1 can be ordered in various configurations to provide the most cost-effective solution for a given application. Industrial temperature range is standard; military temperature range is also available. For rugged applications, the standard switches and moveable jumpers can be replaced with fixed settings, and conformal coating is available. Input discretes may be configured for different voltages in a variety of series and shunt circuits. Output discretes are open-collector with an optional internal pull-up resistor. The PM1553-1 is available with or with-

out discretes and MIL-STD-1760 capability. An RT-only version is also available.

MIL-STD-1553

MIL-STD-1553 functionality is provided by an Aeroflex UTM C μ MMIT[®] protocol processor. Once configured by software, the μ MMIT runs autonomously, handling messages without further host intervention. In Bus Controller mode, frame timing, retries, and exception processing are all programmable and handled automatically. In Remote Terminal mode, subaddresses and mode codes may be selectively illegal-



ized during initialization. Messages may be buffered in an indexed 256-message buffer or in a ping-pong double buffer on a subaddress-by-subaddress basis. A record of interrupts is maintained in an interrupt log list. When in Monitor mode, the PM1553-1 records a time-tagged command and data history of bus traffic to and from all or selected terminals.

Autoinitialization

The mode, RT address, and data structures can be either initialized by the host processor or automatically initialized at power-on. Jumpers and an on-board EEPROM select the settings and provide data for initialization. The host can re-program the contents of the EEPROM. For critical applications, a PROM may be used in place of the EE-PROM. Fast autoinitialization enables the PM1553-1 to respond to 1553 command words on the databus even before the host processor has finished booting.

MIL-STD-1760 Features

The PM1553-1 may be used in MIL-STD-1760 systems, which require connector-programmable RT addresses and fast initialization. Jumpers enable this capability, and the EEPROM provides the autoinitialization data. The five RT address lines and the required address parity are inputs to a connector on the PM1553-1.

Discretes

The PM1553-1 is available with up to four input and two output discretes. The input discretes are factory-configured to the desired circuit and threshold voltage. A variety of series and shunt configurations (open/ground, voltage/ground, and voltage/open) are

available. In addition to analog filtering, inputs are debounced through a programmable digital circuit. Each input discrete may be programmed to issue a service request on the positive and/or negative edge of the input signal. Output discretes are under host control and have open-collector circuits with optional pull-up resistors.

Programming

The PM1553-1 may be programmed in most languages and operating systems. All accesses to the PM1553-1 are through registers in an I/O address window. Polling and/or interrupts may be used to handle the service requests generated by the various resources. Provided with the PM1553-1 are files containing many software helper functions and examples that demonstrate how easy it is to program and use the PM1553-1.

Ordering Information

PM1553-1/xyz: MIL-STD-1553 PC/104 card (where xyz is the configuration number). Please contact Ballard Technology for configuration numbers. Includes circuit board, manual, and software disk.

Technical Specifications: PM1553-1

MIL-STD-1553

- BC, RT, monitor, or RT/monitor modes (RT-only version available)
- Dual-redundant
- Transformer or direct coupled
- MIL-STD-1553A or B (Notice 2)
- SpMMIT XTE protocol processor (or SpMMIT RTE for RT-only)
- 32K x 16 memory
- BC frame timing options
 - Internal schedule
 - External clock
 - Single step
- RT watchdog timer
 - Enable/disable
 - Sets subsystem flag in status word
 - 0 to 174 ms (programmable)

Message Buffering

- single
- ping-pong

MIL-STD-1760

- Fast autoinitialization
 - From EEPROM or PROM
 - No host processing required
- RT address
 - Connector-programmable
 - Internal pull-up resistors
 - Odd parity

DISCRETES

- Inputs: Up to 4
 - 5, 12, 28 VDC or other
 - Series or shunt
 - Transient voltage protected
- Outputs: Up to 2
 - Open-collector (optional pull-up)
 - 50 VDC at 500 mA (max)

OTHER

- PC/104: 8 or 16-bit
- Interrupts: 3, 4, 5, 7, 9, 10, 11, 12
- Power required
 - 5 VDC
 - (+/-12 VDC is not used)
- Size: 3.55 x 3.75 in. (90.2 x 95.9 mm)
- Weight: 3.3 ounces (94 grams)
- Temperature grades
 - Industrial (std): -40° to +70° C
 - Military: -55° to +85° C

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