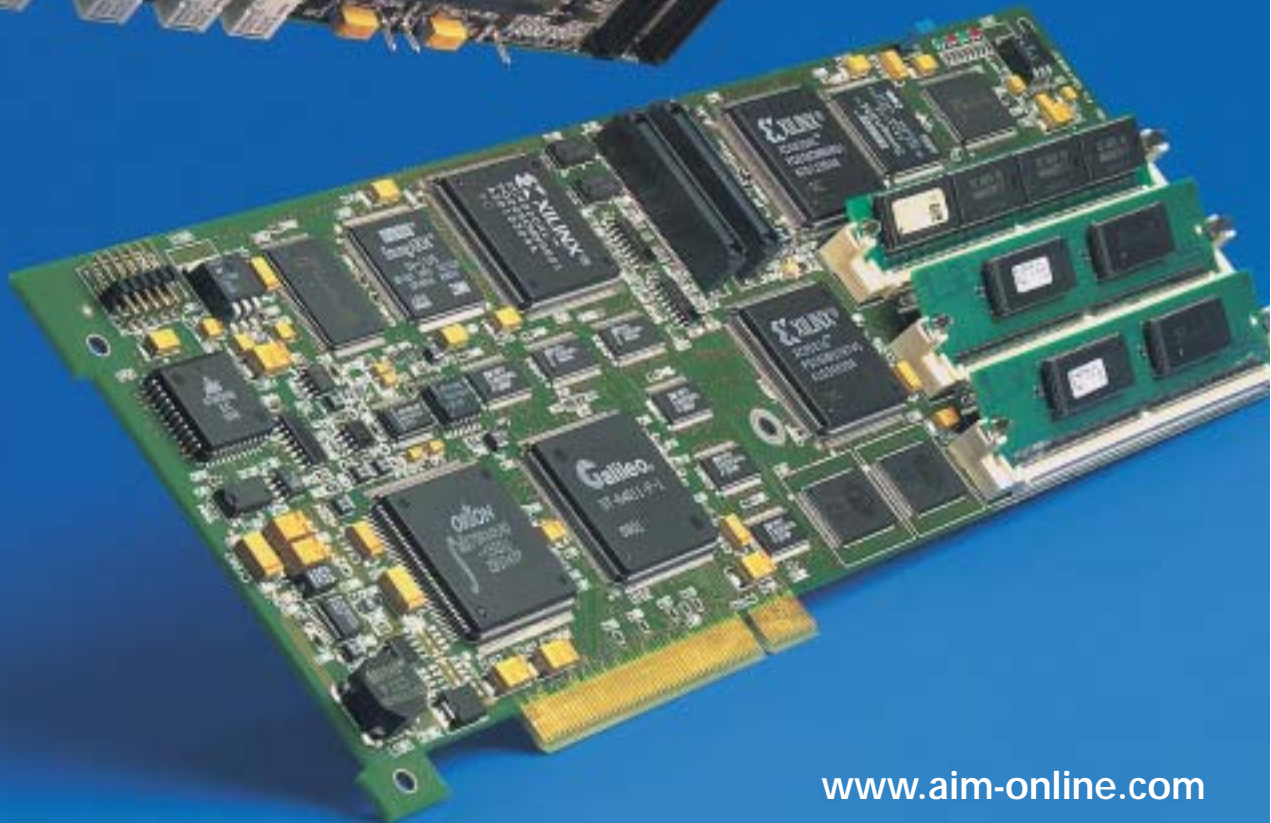
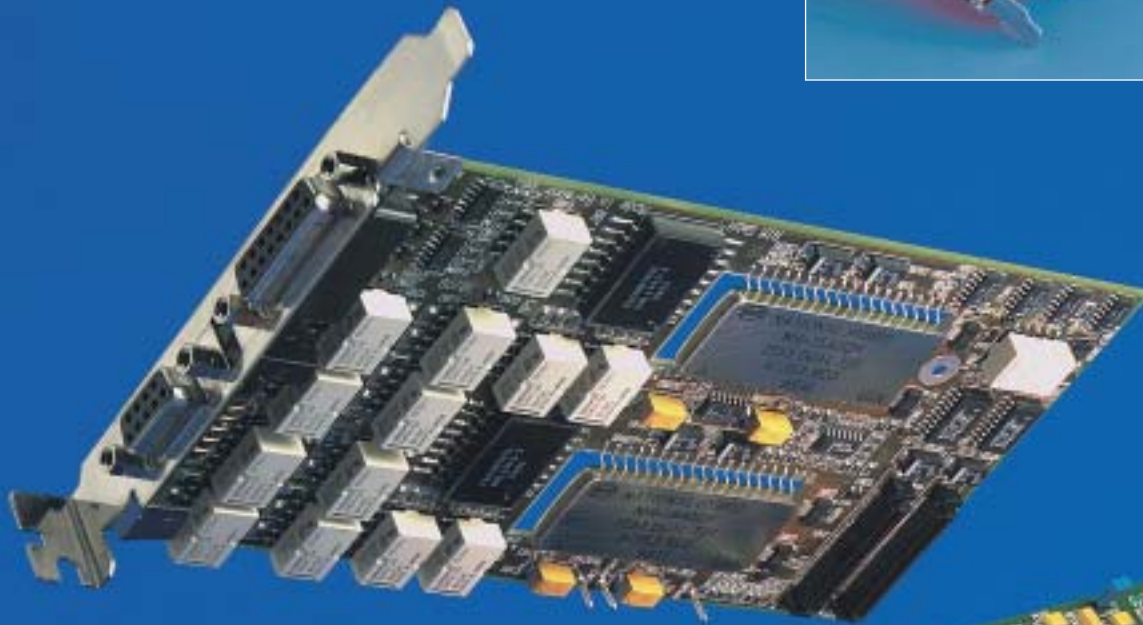
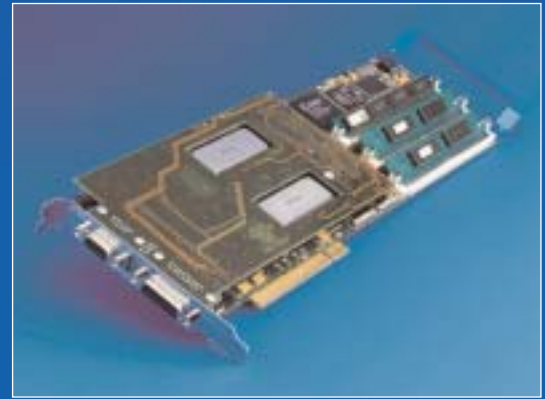


API1553-1/2



SINGLE OR DUAL STREAM MIL-STD-1553A/B
TEST & SIMULATION MODULES FOR PCI



API1553-1/2

SINGLE OR DUAL STREAM MIL-STD-1553A/B TEST & SIMULATION MODULES FOR PCI

GENERAL FEATURES

The API1553-1/2 is part of a new family of PCIbus cards offering full function Test, Simulation, Monitoring and databus analyser functions for MIL-STD-1553A/B applications. Two independent dual redundant MIL-STD-1553A/B streams are provided on the API1553-2 module (full length) and one single dual redundant MIL-STD-1553A/B stream on the API1553-1 module (short length).

The API1553-1/2 can be used for Protocol Testing and Simulation of MIL-STD-1553A/B Bus Controller, Multiple Remote Terminals and Chronological Monitoring at full bus load. All operations are performed concurrently with no degradation of performance in any operating mode. The API1553-1/2 module incorporates full protocol error injection and detection features with software programmable output amplitude and bus coupling modes of the electrical bus signals. The module fully supports the Protocol Testing requirements defined by the RT and BC Production Test Plans according to SAE-AS 4112 / 4114.

An on board IRIG-B time decoder / generator allows users to accurately synchronise single or multiple API1553-1/2 modules to a common time source.

The use of an Application Support Processor (ASP) executing the Driver Software allows application specific functions to be processed on-board significantly off-loading the host PC processor and PCIbus. This new concept allows users to implement system level functionality on a single interface card.

The API1553-1/2 uses a 'Common Core' hardware design utilising multiple RISC processors. A Physical Bus Interface (PBI) daughter board provides MIL-STD-1553A/B bus connections including a resistive terminated bus network.

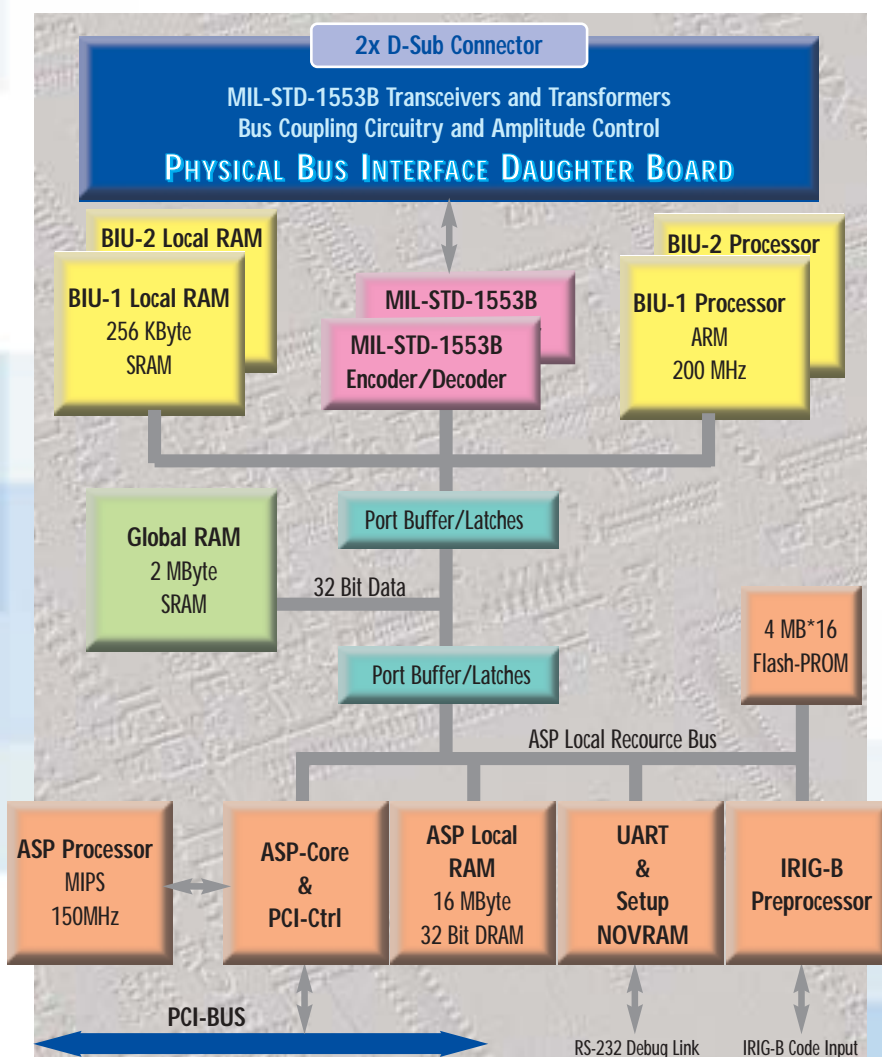
The API1553-1/2 module operates with the optionally provided PBA-2000 MIL-STD-1553B Databus Analyser Software for Windows.

BUS CONTROLLER

The API1553-1/2 provides real time Bus Controller functions on one or two dual redundant MIL-STD-1553A/B buses concurrently with Multiple RT and Chronological Monitor operation. A 200MHz RISC Processor provides true simulation of Bus Controller operations without host computer interaction.

Key features of the Bus Controller Mode include:

- Autonomous Operation including sequencing of Minor/ Major Frames
- Support for acyclic message insertion/deletion
- Programmable BC Retry without host interaction
- Full Error Injection down to word and bit level (AS4112 Compliant)
- Multi-Buffering for Data Consistency and Message Multiplexing
- Synchronisation of BC operation to external trigger inputs
- 4 µsec Intermassage Gaps



MULTIPLE REMOTE TERMINAL

The API1553-1/2 simulates up to 32 Remote Terminals including all sub-addresses on one or two MIL-STD1553A/B bus systems concurrently with BC and Chronological Monitor operation. Alternately each of the 31 RT's can operate in a message oriented 'Mailbox Monitor Mode' to monitor non-simulated RT's.

Key features of the RT Mode include:

- ▣ Programmable RT Response Time down to 4 µsecs for each simulated RT
- ▣ Programmable & Intelligent Response to Mode Codes
- ▣ Full Error Injection down to word and bit level (AS4112 Compliant)
- ▣ Multi-Buffering with Real Time Data Buffer Updates

CHRONOLOGICAL BUS MONITOR

The API1553-1/2 offers single or dual stream bus monitoring and analysis with programmable trigger and capture features. The Bus Monitor provides accurate Time Tagging of all bus traffic to 1 µs resolution including response time and gap time measurements down to 0.25 µs resolution concurrently with BC and Multiple RT operation

Key features of the Chronological Monitor include:

- ▣ 100% Data Capture on two streams at full bus rates
- ▣ Autonomous message synchronisation and Full Error Detection
- ▣ Two Static/ Dynamic Complex Triggers with up to 8 sequences
- ▣ Message Filter and Selective Capture
- ▣ Bus Activity recording independent from trigger and capture mode
- ▣ External Trigger Inputs and Outputs
- ▣ Programmable Response Time Out

BUS REPLAY

The API1553-1/2 module is able to electrically reconstruct previously recorded MIL-STD-1553A/B databus traffic physically to the bus with excellent timing accuracy. Recorded data files can be selected for Physical Bus Replay with the ability to disable any or all RT responses from the record file to perform systems integration and test.

IRIG-B TIME CODE DECODER

An on board IRIG-B time decoder and generator allows synchronization of MIL-STD-1553A/B bus traffic using single or multiple API1553-1/2 modules. Multiple API1553-1/2 modules can be synchronised using one common IRIG-B time source or the on-board Time Code Generator of one API1553-1/2 module as the reference for accurate correlation of data across multiple MIL-STD-1553A/B data streams.

APPLICATION SUPPORT PROCESSOR

A 150 MHz Application Support Processor (ASP) provides unique on module processing functions typically provided by host PC processing systems.

Operational features include:

- ▣ Driver Software Execution on the board
- ▣ Control of RS232C debug Port for Firmware Updates
- ▣ Dynamic Data Generation
- ▣ Automatic Test Sequence Generation
- ▣ User Application processing on-board

MIL-STD-1553A/B PHYSICAL BUS INTERFACE

DRIVER SOFTWARE SUPPORT

Since the Driver Software resides on the API1553-1/2 module, a High Level Application Interface is provided which is compatible with Windows 95/98 and Windows NT/2000. Host applications can be written in MSVC, Visual Basic, Delphi, Borland C++ etc. A LabVIEW application interface and LabWindows/CVI Function Panels are also provided.

A Physical Bus Interface Daughter board (PBI) provides MIL-STD-1553A/B transformer or direct bus coupling with variable output transceivers and a resistive bus termination to enable the direct connection of external BC or RT devices. The coupling mode to the external bus system is software programmable.

SUB-SYSTEM INTERFACE

PCibus Master & Slave (Revision 2.1)

PROCESSORS

Two 32-Bit, 200MHz ARM Processors
One 64-Bit, 150MHz MIPS Processor

MEMORY

API1553-1: 1 MByte Global RAM
16 MByte ASP RAM
API1553-2: 2 MByte Global RAM
16 MByte ASP RAM

ENCODER/DECODER

One MIL-STD-1553A/B Encoder/Decoder per BIU
with full error injection & detection capability

TIME TAGGING

46 Bit absolute IRIG-B Time with 1µsec resolution

PHYSICAL BUS INTERFACE (PBI):

One or Two Dual Redundant MIL-STD-1553A/B
Transceivers with Variable Output Amplitude,
Programmable Bus coupling mode with
on-board terminated Bus Network

CONNECTORS

PCibus Standard backplane connector
9 way D-Sub for MIL-STD-1553A/B connections
15 way D-Sub for Trigger and Timecode I/O

DIMENSIONS

API1553-1: 175 mm x 107 mm "short length" PCI Format
API1553-2: 312 mm x 107 mm "full length" PCI Format

POWER CONSUMPTION

API1553-1: 12.5 Watts typical @ 5V
API1553-2: 17.5 Watts typical @ 5V

OPERATING TEMP. RANGE:

Standard: 0°C ... +45°C ambient
Extended: -15°C ... +60°C ambient

STORAGE TEMPERATURE RANGE:

-40°C ... + 85°C ambient

HUMIDITY

0 to 95% non-condensing

ORDERING INFORMATION

API1553-1

Single Stream, Dual Redundant PCibus to MIL-STD-1553A/B Interface:
BC, Multi-RT Simulator with Mailbox & Chronological Monitor
including IRIG-B Time Decoder. 1 MB Global RAM, 16 MB ASP RAM

API1553-2

Dual Stream, Dual Redundant PCibus to MIL-STD-1553A/B Interface:
BC, Multi-RT Simulator with Mailbox & Chronological Monitor
including IRIG-B Time Decoder. 2 MB Global RAM, 16 MB ASP RAM

API1553S-1, API1553S-2

Simulator only configuration available. Single Stream or Dual Stream.

API1553M-1, API1553M-2

Monitor only configuration available. Single Stream or Dual Stream.

ACB1553-PCI-1

Ready Made Adapter Cable. D-Sub to two TWINAX Connectors.
2m length. For all variants of API1553-1 cards.

ACB1553-PCI-2

Ready Made Adapter Cable. D-Sub to four TWINAX Connectors.
2m length. For all variants of API1553-2 cards.

AIM GmbH

Sasbacher Str. 2
79111 Freiburg, Germany
Phone: +49-761-45 22 90
Fax: +49-761-45 22 93 3
sales@aim-online.com

AIM GmbH

Vertriebsbüro München
Terofalstraße 23 a
80689 München
Telefon: +49-89-70 92 92 92
Telefax: +49-89-70 92 92 94
waldmann@aim-online.com

AIM UK

Cressex Enterprise Centre
Lincoln Rd, Cressex Business Park
High Wycombe
Bucks HP12 3RB, England
Phone: +44-1494-44 68 44
Fax: +44-1494-44 93 24
salesuk@aim-online.com

AIM USA

69 Ginger Woods Road
Valley, NE 68064
Phone: +1-866-AIM-1553 or
Phone: +1-866-AIM-A429
Fax: +1-402-359-5410
salesusa@aim-online.com

www.aim-online.com