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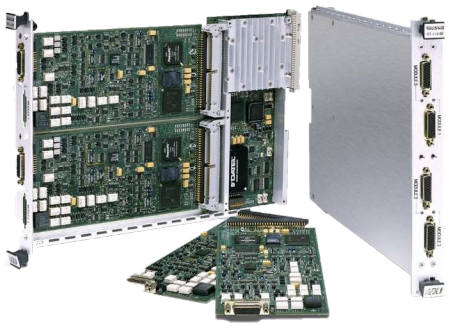
Find the *Teradyne BI410-00* at our website: ***Click HERE***

Bi4-Series Bus Test Instruments

Multiple Module Serial Bus Test Instrument

Teradyne's Bi4-Series™ Bus Test Instruments (BTI) combine superior performance with all the advantages of a standard, commercial-off-the-shelf (COTS) solution, including test applications flexibility, configurability, high reliability, and lower acquisition and lifecycle costs.

Teradyne's Bi4-Series bus test subsystem is designed specifically to address the unique functional test requirements of real-time bus test and emulation.



Synthetic Instrument Flexibility for Current and Next Generation Test

The Bi4-Series provides the key features needed to test all levels of integration from board level (SRA/SRU) to box level (WRA/LRU). Using the BTI ensures complete communications bus access without the need to reconfigure the test system for each application.

Reprogrammable XML bus models support:

- Standard busses
- Variants of standard busses
- Custom busses

With the power of Bi4-Series synthetic instrument architecture, test engineers have the necessary tools to address both current and next generation test needs.

Every bus module has the capability to transmit, to receive, and to record bus data in real time. This gives the instrument complete flexibility to interact with a bus system in any capacity, such as an emulator, a controller, or a monitor. In addition to the primary differential driver/receiver, each module has three sets of drivers/receivers for functions such as triggering and handshaking. These channels can also be used in single-ended mode to provide additional serial bus interfaces.

Flexible Programming Techniques for Easy Test Integration

With software drivers and hardware that are compliant with industry interface standards, the Bi4-Series BTI capabilities are easily integrated into automatic test systems.

The Bi4-Series BTI driver provides two levels of programming. The high level interface hides many of the details associated with bus programming and performs tasks that apply to specific bus type. The lower level interface is designed to allow users maximum flexibility in creating a bus protocol test. Bus Model definitions of various protocols are provided in XML files. These XML-based Bus Models specify serial bus parameters such as:

- Transmit and receive voltages
- Parity
- Termination settings
- Word sizes
- Timeouts
- Interword gaps
- Intermessage gaps

Creating new models or modifying existing ones makes it possible to support bus variants and custom serial bus protocols.

The VXIplug&play™ software driver supports a C programming interface. The soft front panel (SFP) provides:

- Configuration and execution of a test project
- Bus monitoring
- Code generation
- Log reader

The applications programming interface (API) provides access to the Bi4-Series

Features

- Synthetic Instrument Flexibility for testing multiple standard and custom bus protocols using a single instrument
- Operational Test that increases LRU fault capture through both complete bus emulation as well as functional test
- Proven Reliability that reduces obsolescence risks and logistics costs

hardware to support the popular ADEs, including Microsoft VisualStudio and National Instruments LabVIEW/LabWindows CVI.

Parametric and Operational Test Capability for Increased Coverage

The BTI provides error injection and error detection capabilities. For instance, it can both detect and send bit errors, symbol errors, parity errors, and timing errors. Both the outgoing and incoming data streams can be logged together with a time stamp for each word. The embedded micro-processor provides the test engineer with branching and conditional test flow capability that enables bus testing using recirculating and asynchronous messages.

The BTI has selectable transformer configurations to support both transformer coupling and direct connect coupling configurations frequently used in 1553 and similar bus connections.

The main driver/receiver also contains termination circuitry to provide selectable output impedance, termination voltages, and resistance. The output signal slew rate is adjustable providing the flexibility to perform parametric testing and emulation. All drivers and receivers have relayed disconnects to provide full isolation.

A unique advantage of the Bi4-Series is the full inter-module triggering. Each module can share trigger events with every other module providing the precise triggering necessary in device test and emulation required for operational testing.

Calibration and Self-Test

Calibration can be performed interactively in the filed by connecting NIST-traceable instrument standards to a front panel connector. The Bi4-Series driver and SFP include calibration routines to make it easy to ensure your system remains in calibration. Self-test efficiently verifies hardware performance using only internal resources.

- Confidence test confirms basic instrument capabilities.
- Functional and Diagnostic test perform more in-depth self-test.

Per Module Capabilities

- Differential T/R
- (2) Bi-directional handshake
- (1) External Clock in
- (1) Clock Out
- Trigger In
- Slew Rate Control (0.5 – 500 V/s)
- ±12 V (18-37 V 1553)
- Transformer/Direct Coupling
- Selectable output impedance: -5 to 100Ω
- Selectable termination: 25 to 100Ω
- Selectable load: 1 kΩ to 8kΩ
- Voltage Swing: 0.9 to 26 V
- Inter-message timing: 4 μs (< 1 μs using lower level calls)
- 10 Mb/s transfer rate
- Real-time 16-bit CRC
- On/Off time ±30 ns
- Programmable glitch rejection

Proven Reliability

Teradyne has applied 40 years of experience in the test business to ensuring the reliability of the Bi4-Series and minimizing support costs. Rigorous reliability testing maximizes mean time between failures (MTBF), and high-density packaging reduces the number of components and interconnections.

The functional test capabilities supplied by the Teradyne technology are field proven in a wide range of both military and commercial applications.

Teradyne's high-performance CSi family of instruments have been integrated in test equipment supplied to the U.S. Department of Defense, including the U.S. Marine Corps, U.S. Air Force, U.S. Army and the U.S. Navy. They are also designed into Spectrum-9100 systems as well as third party test systems.

Specifications

Formats
BPRZ
Harvard Biphase
Manchester
NRZ
NRZI
PWM
RZ
RI
R0

Serial Busses	Bi-410	Bi-411
ARINC 429	x	x
ARINC 573	x	x
MIL-STD-1553 A/B	x	x
MIL-STD-1773 A/B	x*	x*
RS-232	x	x
RS-422	x	x
RS-423	x	x
RS-485	x	x
MIC		x†
CAN		x†

* Using external optical coupler

† Requires additional Cable Interface Board: M-996-85

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