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HSSI Line Interface

Agilent Technologies Broadband Series Test System

E4204A



A line interface for the modular Broadband Series Test System, the E4204A transmits and receives data at rates from 1 to 52 Mb/s.

Product Features

- 1 Mb/s to 52 Mb/s operation with internal or external clocking
- Accumulates statistics: 8HDLC and to Timing Measurements
- Can be used to test Frame Relay, SDMDS DXI and FUNI
- 16 Bit or 32 Bit CRC Support
- Maximum Frame size of 65532 octets
- Works with Cell Protocol Processor

The Agilent Technologies E4204A HSSI Line Interface is a physical line interface implemented in a single-slot VXI module for the modular Agilent Broadband Series Test System (BSTS). It transmits and receives data at line rates ranging from 1 Mb/s up to 52 Mb/s.

Once installed in your BSTS chassis, the E4204A HSSI Line Interface module performs physical layer testing. The E4204A HSSI Line Interface Module, used in conjunction with an E4209 Cell Protocol Processor module and E4213 DXI Test Software will monitor and simulate the SMDS Data Exchange Interface (DXI) protocol. In addition, when used with an E4209 Cell Protocol Processor module and E6279A Frame Relay over HSSI Test Software, the E4204A HSSI Line Interface Module facilitates testing Frame Relay permanent virtual circuit (PVC) operation over a HSSI interface.

Ideal for R&D engineering, product development, quality assurance, performance testing, type approval, and conformance testing, the design of this module is based on the HSSI: High Speed Serial Interface Specification Revision 2.11 standard published by Cisco Systems Inc. and T3Plus Networking Inc.

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Key Features

Measurements

- Real-time measurements count and time of protocol errors and alarms

Sophisticated clock generation and recovery

- Gapping control for stress testing Accepts external DCE clock
- Uses internal clock in DCE mode

Modes

- DTE emulation (transmit and receive)
- DCE emulation (transmit and receive)
- Passive Monitoring

Typical Applications

The Broadband Series Test System (BSTS) is a modular test platform for high-speed broadband transmission and protocol testing. The BSTS can perform comprehensive testing of all layers from physical to higher services. Due to its modular nature you can create a customized configuration that suits your specific test needs. The full programmable BSTS is ideal for R&D engineering, product development, quality assurance, performance, and type approval.

DXI

The E4204 HSSI Line Interface, in conjunction with an E4209 Cell-Protocol Processor (CPP), can be used with the E4213A DXI test software. This configuration of the BSTS supports monitoring and simulation testing of the SMDS DXI protocols.

Frame Relay

The E4204 HSSI Line Interface, in conjunction with a E4209 Cell-Protocol Processor (CPP), can be used with the E6279A Frame Relay over HSSI Test Software. This configuration facilitates testing Frame Relay PVC operation over a HSSI interface.

User Programming

You can automate testing or set up complex scenarios by executing your own programs on the BSTS's embedded UNIX®-based controller.

Access the E4204 HSSI Line Interface by simply linking your code with a library of test routines. A standard UNIX work-station environment is provided on the BSTS, including networking tools and utilities.

Configuration & Use With Other BSTS Line Interfaces, Hardware Modules & Test Software

The E4204A HSSI Line Interface module requires a BSTS chassis with UNIX® controller, Cell Protocol Processor and optional Test Software (Frame Relay over HSSI, SMDS DXI) to perform the tests described in this datasheet.

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Warranty & Support Options

All BSTS hardware components are warranted for a period of 3 years. Products must be returned to an authorized Agilent service center for service. At the time of purchase you may select warranty option W01, a no-charge option which converts the standard 3-year return to Agilent warranty to a 1-year on-site warranty.

Support option UK6, available at time of purchase, is a standards-compliant calibration which ensures that your BSTS test system operates within specified tolerances. A certificate of calibration is issued for compliance with ISO 9000 standards which require that records documenting the calibration of measuring and test equipment are maintained. Certificates of calibration are not available for products which do not contain components requiring calibration (such as software).

Two other types of calibration, commercial and standards-complaint, are available at any time from your local Agilent service center. Both provide test data and a certificate for your records. With a commercial calibration, any problems are resolved as they are detected, and test data reflecting performance of your calibrated test system is provided. The standards-compliant calibration provides comprehensive before and after test data to document problem resolution.

If you should have an out-of-warranty test system, you can arrange for service simply by contacting your local Agilent sales office.

Product Numbers

- E4204A HSSI Line Interface
- E4204A#QA0 Scheduled manual updates, must order with UAF
- E4204A#UK6 Standard Commercial Calibration
- E4204A#W01 Convert warranty to one year on-site
- E4200A/B BSTS Form-7 Transportable Chassis
- E4210A/B BSTS Form-13 Mainframe Chassis
- E4209A/B Cell Protocol Processor
- E4213A DXI Test Software
- E6279A Frame Relay over HSSI Test Software

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Technical Specifications

Monitoring

The E4204A takes real-time HSSI statistical measurements over a 100 millisecond sample period and accumulates results over a user-specified measurement period ranging from 1 second to 3 days. Results from the most recent complete measurement period are displayed, along with those from the measurement period currently in progress. Measurements can be continuously repeated. The HSSI statistical measurements listed below are available. Note that clock frequencies are accurate to within +/- 250 kHz.

HDLC Counts	• SD total frames • SD truncated frames • SD FCS errors • SD aborted frames • RD total frames • RD truncated frames • RD FCS errors • RD aborted frames
Timing	• RT clock loss seconds • ST clock loss seconds • TT clock loss seconds • RT clock frequency • ST clock frequency • TT clock frequency

Clocking

The E4204A provides sophisticated clock generation and recovery.

- Clock Gapping

When in DCE mode, the transmit clock may be gapped to allow stress testing of clock recovery systems. Eight steps of gaps from 1-in-256 to 1-in-2 can be selected under user control.

- External Clock

When in DCE emulation mode, you can use an external clock to determine the HSSI/DXI data transmission rate. The external clock frequency can range from 1 to 51.84 MHz.

- Internal Clock

When testing DTE, the E4204A line interface module emulates the DCE and can provide a transmit clock of 34.368 MHz, 44.736 MHz, or 51.84 MHz.

DXI Framing Format

- Receiver frame Length

You can specify the maximum allowable frame length over the range 4 to 65532 bytes.

- Transmitter Flags

The minimum number of allowable flags inserted between transmitted frames may be specified from 1 to 257.

- Frame Check Sequence

The Frame Check Sequence (FCS) may be set as 16 bit as specified in Q.921, or as 32 bit as specified in ISO 3309-1984.

Input & Output Connectors

toDCE	• Used when emulating DCE equipment • 50 pin SCSI II connector • Signal levels are balanced differential ECL
toDTE	• Used when emulating DTE equipment • 50 pin SCSI II connector • Signal levels are balanced differential ECL
Ext Clk	• Used to connect an external clock source • BNC connector with 50 ohm impedance • DC coupled with TTL signal levels

LED Status Indicators

Access	• Module is accessed via VXIbus
Error	• Indicates VXI command error
Failed	• Self-test is running Self-test has failed
Gating	• Indicates measurement is in progress
LnErr	• Received frame exceeds the selected frame truncation length
CRCErr	• FCS errors are detected
DATA	• Data on either the SD or RD leads is present
Abort	• Received DXI frame is aborted
RxClk	• Valid TT clock is detected in DCE emulation mode • Valid RT clock is detected in DTE emulation mode • Valid RT and TT clock is detected in monitor mode.
TxClk	• Valid ST clock is detected
toDTE	• The toDTE connector is active
toDCE	• The toDCE connector is active

VXIbus Characteristics

Device type	• Message based
Backplane connectors	• P1 and P2 (as per VXIbus Specification Rev 1.3)
Local bus	• Active connection to LBUSA and LBUSC
Module keying	• ECL
Power dissipation	• 35 W max

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Size and Weight

Size	• 1 C-sized slot
Weight	• 1.3 kg (2.9 lb) nominal

Operating Environment

Operating temperature	• 0 to 55 degrees C
Storage temperature	• -40 to 75 degrees C
Humidity	• 0 to 95% RH over 25 to 40 degrees C

Applicable Standards

Cell format	• HSSI: High Speed Serial Interface Specification Revision 2.11
EMC	• CISPR11 • IEC 801-1 • IEC 801-2 • IEC 801-3 • IEC 802-4

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Agilent Technologies Broadband Series Test System

The Agilent Technologies BSTS is the industry-standard ATM/BISDN test system for R&D engineering, product development, field trials and QA testing. The latest leading edge, innovative solutions help you lead the fast-packet revolution and reshape tomorrow's networks. It offers a wide range of applications:

- ATM traffic management and signalling
- Packet over SONET/SDH (POS)
- switch/router interworking and performance
- third generation wireless tesing
- complete, automated conformance testing

The BSTS is modular to grow with your testing needs. Because we build all BSTS products without shortcuts according to full specifications, you'll catch problems other test equipment may not detect.

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