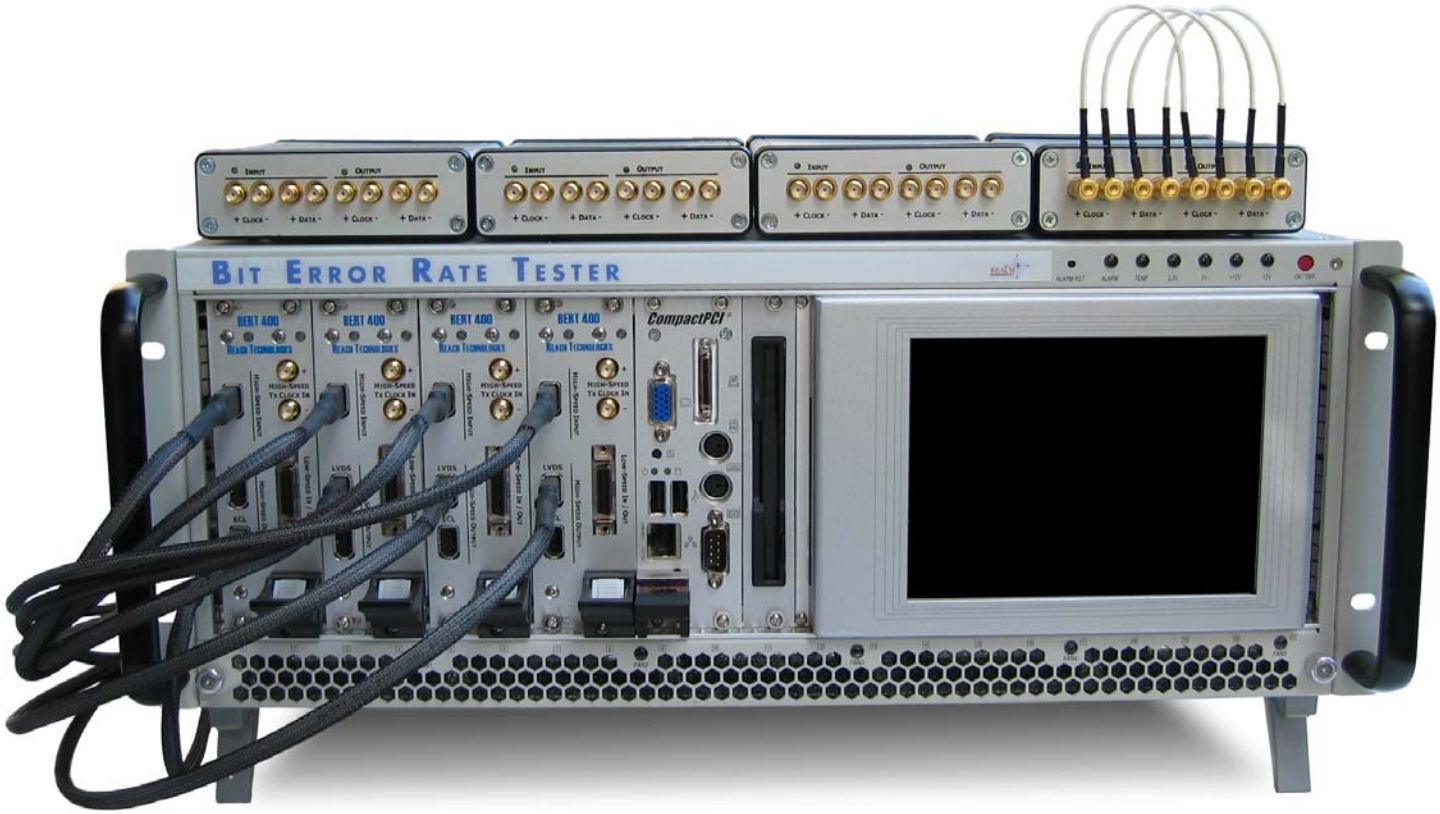
BIT ERROR RATE TESTER



REACH
TECHNOLOGIES INC.

Bit Error Rate Testers

Our Bit Error Rate Tester is designed for testing synchronous serial communications equipment, communications links, and radio telemetry systems.

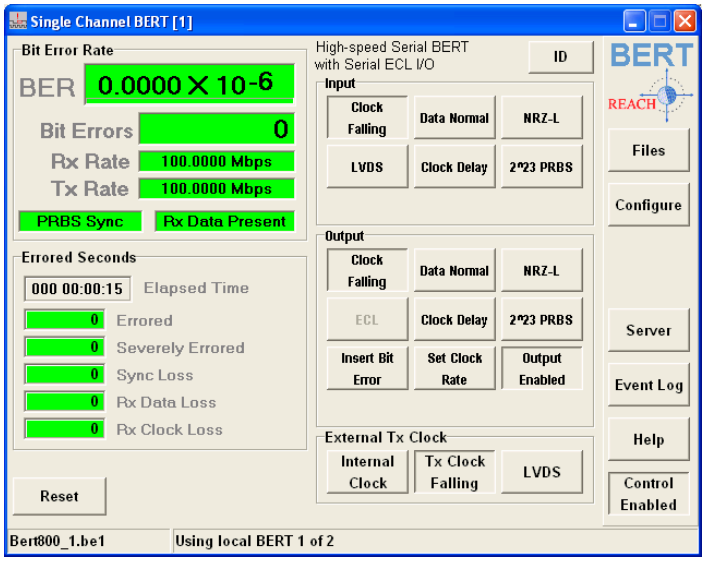
Our BERTs handle serial data rates up to 800 Mbps and parallel data rates up to 100 MBps.

Our BERTs are available in single or multi-channel configurations.

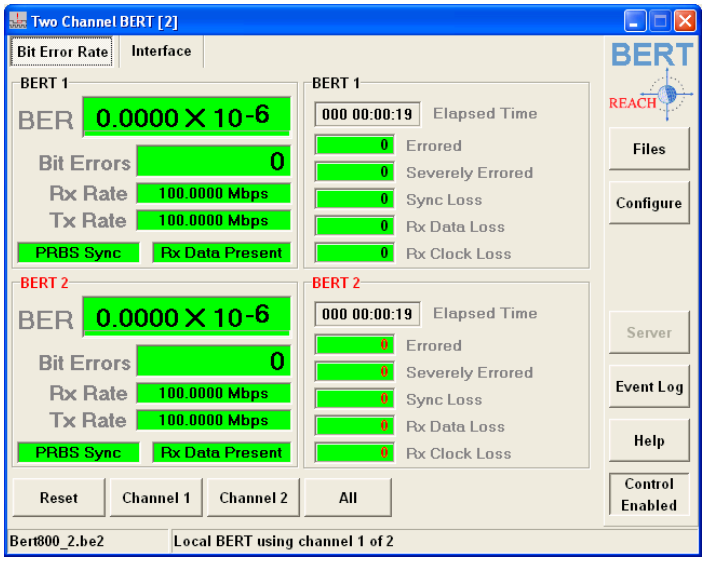
Our BERTs are available in as turn key CompactPCI systems or in some cases as a board and software only solution

BERT User Interface

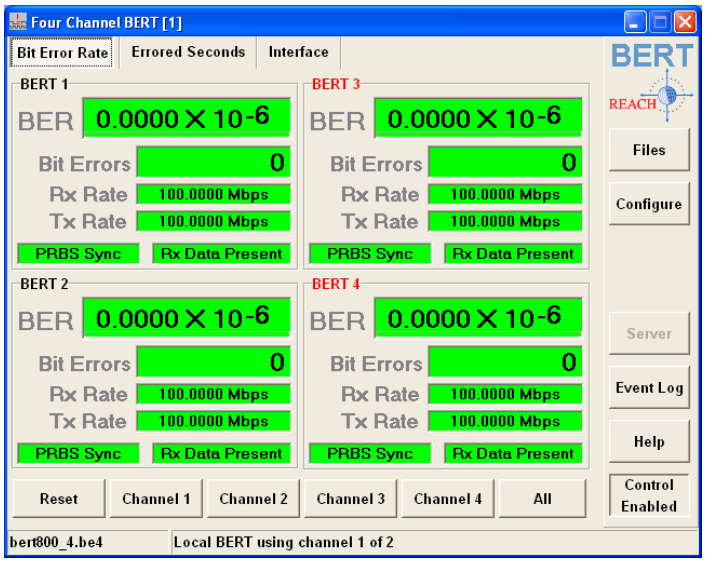
Our BERTs have an easy to use graphical user interface that displays the bit error statistics and allows the user to control the operation of the BERT hardware. The screens below show four different user interfaces that are available:



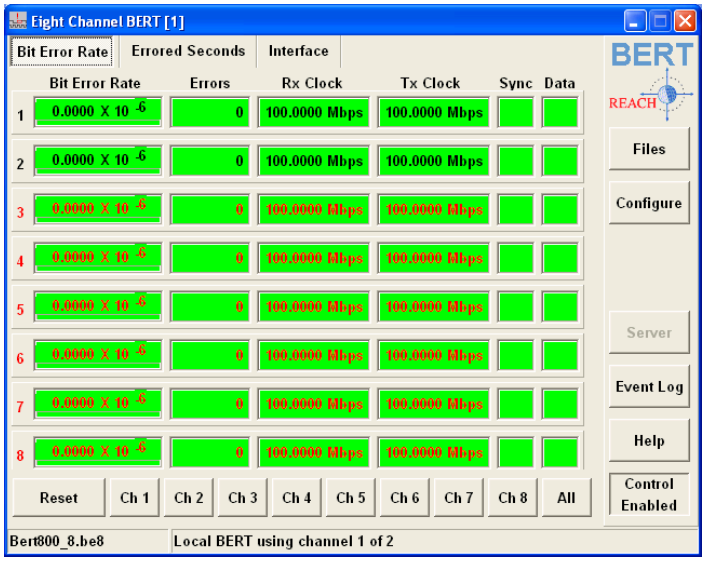
Single Channel User Interface



Two Channel User Interface



Four Channel User Interface



Eight Channel User Interface

BERT User Interface (Continued)

The BERT displays:

- Bit error rate
- Bit errors
- Actual transmitted data rate
- Actual receive clock rate
- Actual transmit clock rate
- Errored seconds statistics
  - Errored seconds
  - Severely errored seconds
  - Sync loss seconds
  - Receive data loss seconds
  - Receive clock loss seconds

The BERT interface allows control of:

- Checker Properties:
  - BER calculation interval from 1 second to infinity
- Input Properties:
  - Data polarity
  - Clocking edges
  - Data decoding
  - PRBS or user defined pattern
  - Input type*
- Output Properties:
  - Bit rate
  - Data polarity
  - Clock edges
  - Data encoding
  - PRBS or user defined pattern
  - Insert a single bit error
  - Output type*

* Depends on I/O module and may include one or more of the following:
  - TTL, RS-422, LVDS, ECL

Features And Options

All measurements have user-defined thresholds. When these thresholds are exceeded the information is sent to an event log. This event log is saved to disk and may be viewed at any time.

Turn key system (as shown on cover):
- Can be configured with up to seven low speed channels or up to four high speed channels
- Provides touch screen user input (standard mouse, keyboard and VGA connectors are also provided)
- Provides 4U high rack mount option

Board and software only solutions:
- Are available in low speed versions (contact representative for high speed board and software only options)
- Provide keyboard and mouse user input
- Are available in PCI or Compact PCI bus board with application software and device drivers for Windows 2000

High Speed I/O Options

High speed interfaces require I/O modules to connect to standard connectors. I/O module choices include:
- SMA I/O modules
- Triax I/O modules
- BNC I/O modules



SMA I/O module and connection cable

Rack mountable I/O modules are also available.

The TCP/IP Remote Control Option

The TCP/IP remote control option allows control of the BERT over a TCP/IP network. Control software for Windows based computers is provided. This control software provides the same user interface as the BERT but over a TCP/IP network. A single control computer may control up to eight remote BERTs. A BERT may control up to seven other BERTs on the TCP/IP network using the eight-channel user interface.

Software Development Kit ("SDK") Option

The software development kit option enables the user to easily create software to control the BERT hardware. Custom user interfaces as well as completely automated test systems can be developed. The SDK includes Active-X components that encapsulate the BERT hardware and allow the user software to control all aspects of the BERT operation and collect error statistics. The SDK is supplied with the Delphi visual development package. The Active-X controls may be used with Delphi, Microsoft Visual C++, and Microsoft Visual Basic, LabView, etc.

Specifications

Checker

- Accepts input data from 0 bps up to the maximum rate of the tester
- $1x10^{-2}$ maximum BER detected
- $1x10^{-20}$ minimum BER detected
- Errored seconds statistics
- Display of actual received data rate
- Data decoding: NRZ-L, M, S
- PRBS patterns of 2^{23}-1, 2^{15}-1, 2^{11}-1, and 2^{7}-1
- 32-bit user patterns
- Eight user defined preset patterns are stored

Generator

- Internal clock Synthesizer: 100 bps up to the maximum rate of the tester
- External clock input
- Display of actual transmitted data rate
- Data encoding: NRZ-L, M, S
- PRBS patterns of 2^{23}-1, 2^{15}-1, 2^{11}-1, and 2^{7}-1
- 32-bit user patterns
- Eight user defined preset patterns are stored
- Single bit errors may be inserted with a button push

High-Speed Interfaces

400 and 800 Mbps Synchronous Serial Interfaces

- Synchronous serial data and clock
- Various connector options using I/O modules

Inputs

These interfaces have Rx Clock, Rx Data, and External Tx Clock inputs. Clock and data inputs are capable of receiving LVDS, Single-ended ECL, or Differential ECL level signals.

External Tx clock inputs are capable of receiving LVDS, Differential ECL or Single-ended AC Coupled level signals.

Outputs

These interfaces provide differential Tx Clock and Tx Data outputs. These interfaces are available with either ECL or LVDS level outputs and utilize I/O modules which are available with SMA, Triax, or BNC connectors. Single-ended output is available by using only the positive signal.

50 MBps and 100 MBps Parallel Interfaces

- 8-Bit parallel data with clock
- 2 x 26-Pin high density connector

Inputs

These interfaces have Rx Clock, Rx Clock enable, Tx Clock enable, eight bits of Rx Data, and External Tx Clock inputs. Clock, data and enable inputs are capable of receiving LVDS, Single-ended ECL, or Differential ECL level signals.

External Tx clock inputs are capable of receiving LVDS, Differential ECL or Single-ended AC Coupled level signals.

Outputs

These interfaces are available with either LVDS or ECL level outputs

- LVDS output provides Tx Clock and eight bits of LVDS Tx Data
- Differential ECL output provides Tx Clock and eight bits of Differential or Single-ended ECL Tx Data. Single-ended output is available by using only the positive signal.

Low-Speed Interface

50 and 100 Mbps Synchronous Serial Interface

- Synchronous serial data and clock
- Differential or single-ended
- High density connector with BNC transition cable supplied

Inputs

These interfaces provide Rx Clock, Rx Data, and External Tx Clock inputs. They have a 'universal' input section capable of receiving single-ended or differential signals. Single-ended inputs have programmable input thresholds. This allows the interface to receive TTL, RS-422, LVDS, Single-ended ECL and Differential ECL level signals.

Outputs

These interfaces provide differential Tx Clock and Tx Data outputs. These interfaces have a 'universal' output section that allows the interface to output TTL, RS-422, LVDS, and ECL level signals. Single-ended output is available by using only the positive signal.

Bit Error Rate Tester Model Summary

Bit Error Rate Tester Turn Key Model Summary

Channels	Channel Data Rates			
	Low-Speed Models		High-Speed Models	
	50 Mbps Serial	100 Mbps Serial	400 Mbps Serial	800 Mbps Serial
1	BERT-50S-1	BERT-100S-1	BERT-400S-1	BERT-800S-1
2	BERT-50S-2	BERT-100S-2	BERT-400S-2	BERT-800S-2
4	BERT-50S-4	BERT-100S-4	BERT-400S-4	BERT-800S-4
7	BERT-50S-7	BERT-100S-7		
			50 MBps Parallel	100 MBps Parallel
1			BERT-400S-1	BERT-800S-1
2			BERT-400S-2	BERT-800S-2
4			BERT-400S-4	BERT-800S-4

Bit Error Rate Tester Board And Software Only Summary

Our BERT's are also available in PCI or Compact PCI bus board and software only solutions (See Features and Options Section).

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