

Selection of Dedicated Optical Communication Bit Error Rate Tester for Industrial Ethernet

Article Overview

For Industrial Ethernet, selecting a BERT requires considering data rate, protocol support, interface type, and multi-layer testing capabilities to ensure accurate BER measurement and network reliability.

Key Considerations for Industrial Ethernet BERT Selection

1. **Data Rate and Channel Support** Industrial Ethernet networks can operate at speeds from 1 Gbps up to 100 Gbps or higher. BERT devices like the OptoBERT OPB-BERT-400G-P8 support up to 30 Gb/s per channel across 8 channels, while the Dimension BERT800 series supports 100G to 800G optical transceiver testing with NRZ/PAM4 modulation . Ensure the BERT matches or exceeds the network's maximum data rate. 2. **Protocol and Layer Support** Industrial Ethernet often involves multiple layers, including Ethernet/IP, VLAN, MPLS, and UDP. Devices like the PacketExpert(TM) 100G provide wirespeed BER testing across Layer 2 to Layer 4, supporting PRBS and user-defined patterns, and can intentionally introduce bit errors to validate network resilience . Multi-layer support is critical for end-to-end performance verification. 3. **Interface Type** BERTs may offer optical, electrical, or hybrid interfaces. For optical Industrial Ethernet, testers like the OptoBERT OPBX110 provide both electrical and optical interfaces up to 11.5 Gb/s, suitable for field and lab testing . Ensure the interface type matches the network medium (fiber or copper). 4. **Test Patterns and Error Analysis** Effective BERTs use Pseudorandom Binary Sequences (PRBS) to stress the network and detect errors efficiently. Advanced testers allow real-time BER plotting, error insertion, and automated reporting, which is essential for production and R&D environments . 5. **Automation and Integration** For industrial applications, integration with test automation suites (LabVIEW, Visual BASIC, HP VEE) can streamline repetitive testing and data collection. OptoBERT devices provide software drivers and spreadsheet output for easy automation . 6. **Portability and Field Use** Handheld or compact BERTs, such as the VIAVI T-BERD/MTS-5800-100G, are suitable for on-site network verification, while modular systems like Dimension BERT800 are ideal for lab and production environments .

Recommended Options

- o OptoBERT OPB-BERT-400G-P8: 8-channel, 30 Gb/s, optical/electrical, ideal for R&D and manufacturing .
- o Dimension BERT800: Modular, supports 100G-800G transceivers, NRZ/PAM4, flexible interface boards for production and verification .
- o PacketExpert(TM) 100G: Wirespeed BER testing for Ethernet/IP, VLAN, MPLS, and UDP, with real-time BER visualization .
- o VIAVI T-BERD/MTS-5800-100G: Handheld, field-deployable, supports multi-protocol testing .

Conclusion



Selection of Dedicated Optical Communication Bit Error Rate Tester for Industrial Ethernet

When selecting a BERT for Industrial Ethernet, prioritize data rate compatibility, protocol coverage, interface type, and automation capabilities. For high-speed optical networks, modular systems like Dimension BERT800 or multi-channel devices like OptoBERT OPB-BERT-400G-P8 provide flexibility for R&D, production, and field testing, while PacketExpert(TM) 100G ensures comprehensive multi-layer Ethernet/IP testing. Proper selection ensures accurate BER measurement, network reliability, and efficient troubleshooting.

Ethernet/ MAC, IP, UDP BER Testers PacketExpert(TM) 1G, PacketExpert(TM) 10G : Perform Wire speed BERT simultaneously on all

Simplifying high speed testing Optellent, Inc. specializes in electrical and opto-electronic test and measurement solutions for product

PacketExpert(TM) 10GX is a comprehensive ethernet IP test solutions for 1Gbps, 2.5Gbps and 10Gbps WireSpeed Ethernet/IP

BERT or bit error rate test is a testing method for digital communication circuits that uses predetermined stress patterns consisting of

Bit Error rate control & Bit Error testing (BERT) is crucial to network performance especially for Ethernet,

This buyer's guide for bit error rate testers provides technical background, comparison of major types, selection criteria, and an

The OPTELLENT OptoBERT(TM) OPB5000 is a cost-effective easy-to-use bit-error-rate tester (BERT) for testing datacom ICs,

Semight-we can provide high-end test instruments including high-speed bit error tester, network tester,optical communication, high

For the VLC system, the variability analysed is the BER with distance, bit rate, and angle. It is found that with this

As transmission rates continue to accelerate, accurately measuring bit error rates in optical modules is crucial to ensure reliable



Selection of Dedicated Optical Communication Bit Error Rate Tester for Industrial Ethernet

Learn how to use a sampling scope and jitter bit error ratio tester to verify optical transceiver compliance. USB4 Version 2.0 receiver

Combine our electrical signal test instruments and optical test instruments for efficient end-to-end

Regular maintenance and monitoring can also help identify potential issues before they escalate, ensuring a stable

This paper describes the end-to-end performance of single mode Fiber Optic Network (FON), implemented for Unmanned

High-Speed Bit Error Rate Tester Provides accurate and cost-effective testing methods for the optoelectronic signal testingand

The BERT is a 4-channel PPG and Error Detector for the design, characterization and production of optical transceivers and opto

Web: <https://www.in-au.co.za>

