

T-BERD® 6000

Compact Optical Test Platform



Key Features

- Compact, lightweight, and highly integrated platform
- More than 40 application modules already supported for multimode and single-mode
- Built-in VFL, power meter, LTS, ORL, and video inspection scope options
- Choose from IL/ORL, OTDR, PMD, CD, AP and/or WDM plug-ins
- Exceeds Telcordia specifications for ruggedness, drop testing, and extended battery life
- Compatible with plug-in modules from the MTS-5100¹ and T-BERD 8000

Applications

- Performs multimode and single-mode OTDR and optical loss test (bidirectional)
- Conducts connector inspection and continuity testing
- Finds faults and identifies traffic
- Tests FTTx/PON and CWDM networks
- Performs fiber dispersion testing (PMD/CD/AP) for 10G/10GE/40G
- Allows for use of talk set/data port for automated end-to-end communication and unit control
- Generates proof-of-performance reports

The JDSU T-BERD 6000 is a highly integrated test platform designed for all phases of the fiber network life cycle. It provides field service technicians with the highest levels of performance and upgradeability on the market today.

The modular design of the T-BERD 6000 offers an extensive portfolio of test functionality with over 40 different fiber modules supporting a wide range of applications. The versatility of the T-BERD 6000 allows technicians to standardize using one type of test equipment and then introduce new testing capabilities in the field without incurring additional training or device costs.

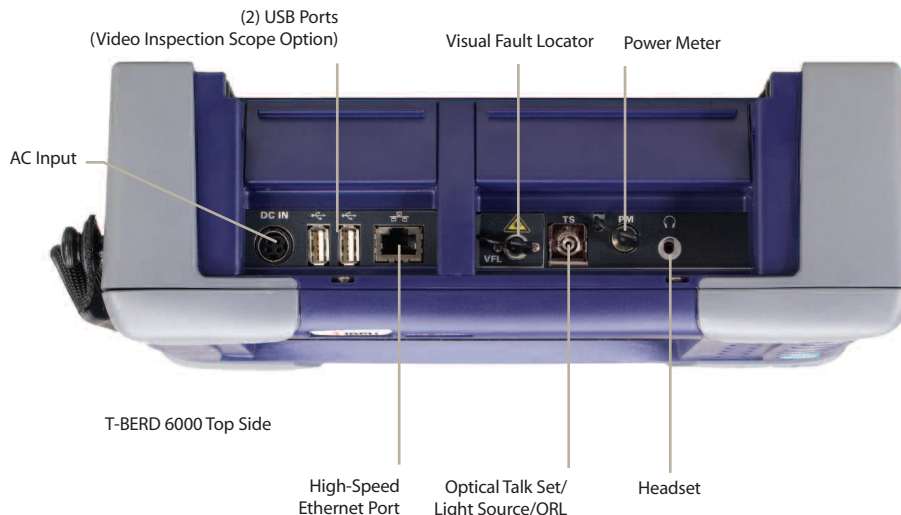
The T-BERD 6000 is compatible with our existing fiber module product line, so technicians can exchange plug-in modules between the T-BERD-8000 Scalable Optical Test Platform and the T-BERD 6000, in the field and without the need for additional tools. To ensure the highest level of return on your capital investment for test equipment, an extension allows you to upgrade existing OTDR modules from the MTS-5100 for use with the T-BERD 6000.

To ensure the highest-level return on investment for your test equipment, upgrade existing optical time domain reflectometer (OTDR) modules from the MTS-5100 (with an extension) for use with the T-BERD 6000.

¹ Compatible with the MT S-5100 line of MM, SR, DR, HD, and VHD OTDR modules

Ideal for Field Testing

The T-BERD 6000 is a highly integrated platform with a single module slot and the option to extend internal memory up to 1 gigabyte. The platform features an intuitive graphical user interface (GUI) shown on a large 8.4 inch transreflective color display (with an optional touchscreen) to improve viewing under any condition. The high capacity Lithium ion battery adds extended life. Other features include an optional video inspection scope (via USB port), and optional built-in optical test functions, such as a visual fault locator (VFL), power meter, optical return loss (ORL) and loss test sets (LTS). The T-BERD 6000 also has a built-in optical talk set option for communicating and controlling remote units along the fiber, and it can transfer data fast using the USB or Ethernet port.



Overview of Fiber Optic Applications

Compact and Highly Integrated

The versatility of the T-BERD 6000 allows it to address premises to long-haul networks comprising new technologies, such as various fiber networks (FTTx), remote optical add/drop multiplexers (ROADMs), and 40 G.

- Built-in VFL, laser source power meter, LTS, talk set/data, and video inspection scope options (simultaneously)
- Bidirectional insertion loss (IL) and ORL capabilities combined in one module
- OTDR and chromatic dispersion (CD) capabilities combined in one module
- Polarization mode dispersion (PMD), wave division multiplexing (WDM), and attenuation profile (AP) capabilities combined in one module
- PMD, CD, and AP capabilities combined in one module

Wide Range of Test Applications

LAN/WAN Premises	<ul style="list-style-type: none"> – 10 GigE local area network (LAN) qualification <i>Solution:</i> T-BERD 6000 with the unique universal SRL 850/1300/1310/1550/1625 nm OTDR Module
FTTx/Access Networks	<ul style="list-style-type: none"> – End-to-end connectivity on point-to-point networks, including sectionalized testing on a passive optical network (PON) (without a splitter) <i>Solution:</i> T-BERD 6000 with the VSRe, SRe, MR OTDR module at 1310/1550 nm – End-to-end connectivity on PONs, including splitter qualification <i>Solution:</i> T-BERD 6000 with the MR, LR, or VLR at 1310/1490/1550 nm OTDR module Add optional VFL, power meter, and video inspection scope – In-service maintenance and troubleshooting without service disruption <i>Solution:</i> T-BERD 6000 with the filtered LR OTDR module at 1625 nm
Metro/Core Networks	<ul style="list-style-type: none"> – End-to-end connectivity and fiber splice qualification <i>Solution:</i> T-BERD 6000 with the MR, LR, or VLR at 1310/1550/1625 nm OTDR module Add optional VFL, power meter, and video inspection scope

Ultralong-Haul Networks	<ul style="list-style-type: none">– End-to-end connectivity and fiber splice qualification <p><i>Solution:</i> T-BERD 6000 with the UHD OTDR module at 1310/1550/1625 nm Dynamic range of 50 dB available at 1550 nm</p>
10G/40G Fiber Characterization	<ul style="list-style-type: none">– Characterize fiber in high-speed transmission systems for loss/dispersion <p><i>Solution:</i> T-BERD 6000 with the PMD/CD/AP, ODTR, and OFI module</p>
CWDM/DWDM	<ul style="list-style-type: none">– Characterize fiber and prove suitability to carry multiple channels (water peak) <p><i>Solution:</i> T-BERD 6000 with the VLR OTDR module at 1383 nm Add the combined PMD/WDM/SA or CDWM OTDR module</p>
Modular Platform	<ul style="list-style-type: none">– New technologies developed in the future <p><i>Solution:</i> T-BERD 6000 with the new JDSU field-upgradeable application module</p>



Modular design

Industry leader for dynamic range with 50 dB

Revolutionary 50 cm dead zone

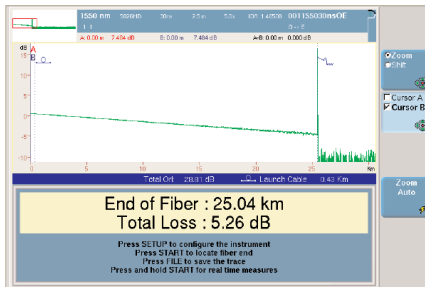


Figure 2 Fault locator mode

OTDR and IL/ORL Testing

A Wide Range of OTDR Modules

The JDSU OTDR plug-in module family provides a wide range of high-performance OTDRs. Over 40 field-interchangeable modules are compatible with the T-BERD 6000 for testing and troubleshooting any multimode or single-mode network. The OTDR family includes six lines of OTDRs featuring:

- New wavelengths to cover 1383 nm (CWDM) and 1490 nm (FTTx)
- Highest dynamic range up to 50 dB
- Shortest dead zones down to 0.5 m in multimode and 0.8 m in singlemode
- Fastest scan speed at 0.1 s in real-time mode

From Simple Fault Locator to Expert OTDR...

The fault locator boosts productivity in the field by providing:



- Fast detection
- Precise fault location
- One-button automation
- No specific settings required
- Distance, loss, and ORL measurements

The **expert mode** offers high-level trace analysis possibilities, making your T-BERD 6000 platform a powerful instrument for commissioning and troubleshooting by offering:

- Manual settings (pulse, acquisition time, resolution, distance range)
- Manual addition and deletion of events
- Manual slopes, splices, and reflectances measurement

Unique to the market:
Fully automatic bidirectional
acquisition and analysis

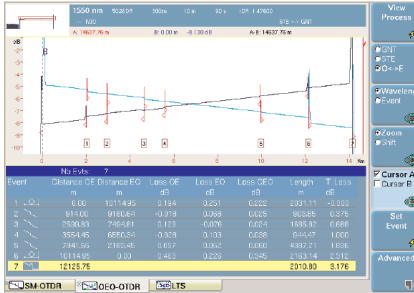
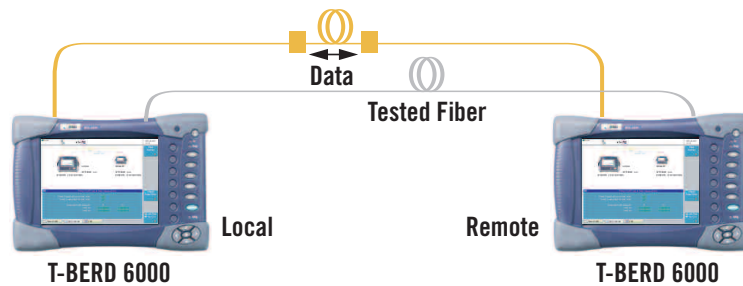


Figure 3 Bidirectional OTDR measurement

Ideal for End-to-End Commissioning

OTDR bidirectional testing is required to obtain true and accurate splice loss readings. JDSU has developed an innovative automatic bidirectional analysis function that is integrated directly into the T-BERD 6000 platform, saving at least 50 percent of the time required for traditional bidirectional analysis.

- Offers communication between two units via the link under test to set up the same optimized acquisition parameters
- Displays and saves automatic acquisitions in both directions on both units
- Eliminates operator error



CWDM OTDR Modules

The CWDM OTDR module allows in-service OTDR measurements at International Telecommunications Union (ITU-T) G.694.2 CWDM wavelengths.

This solution was developed to help network operators and dark fiber providers characterize, maintain, and troubleshoot CWDM systems from short- to medium-haul fiber networks.

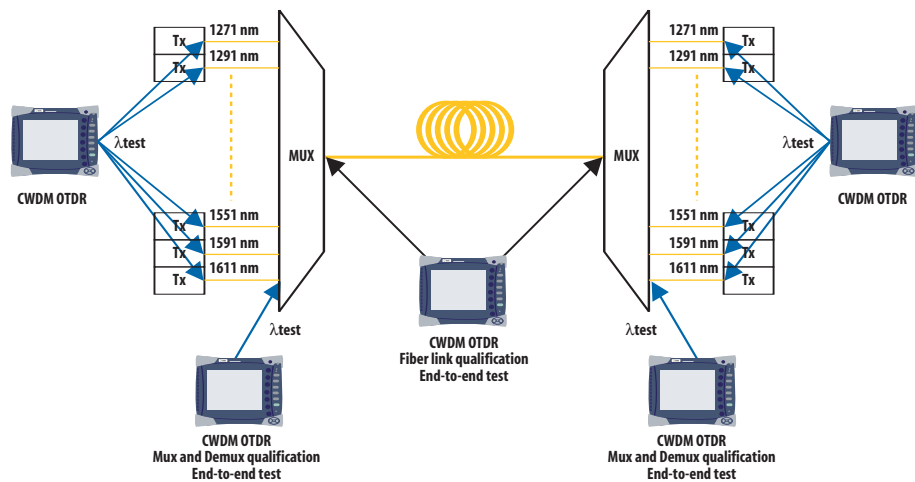


Figure 4 Qualification of a CWDM network

FTTx/PON In-Service Modules

To avoid interrupting customer traffic (in-service testing) of B/G/E-PON networks the filtered OTDR module performs an out-of-band test using 1625 nm wavelength.

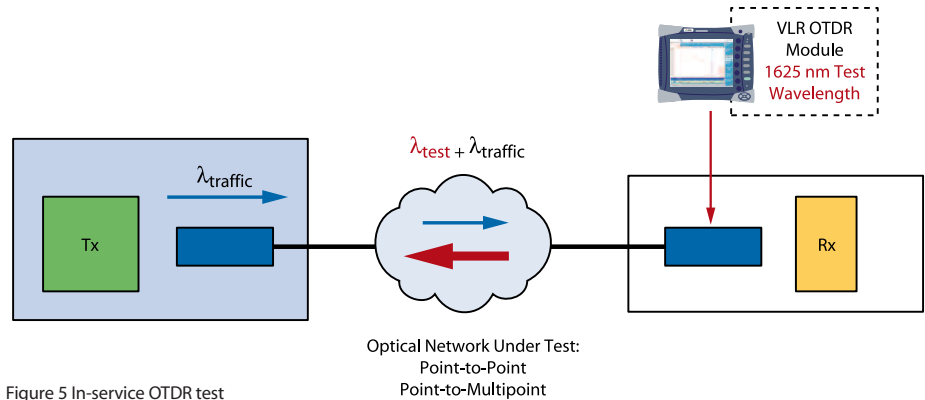
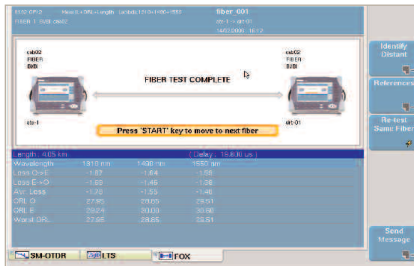


Figure 5 In-service OTDR test

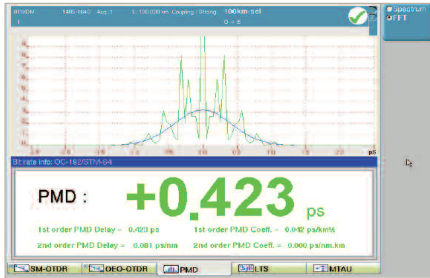


Insertion Loss and Optical Return Loss Testing

- Measures bidirectional IL, ORL, and fiber length
- Offers one-button automated testing
- Choose three wavelengths from 1310, 1490, 1550, and 1625 nm
- Compatible with the OFI-2000 Multifunction Loss Test Set

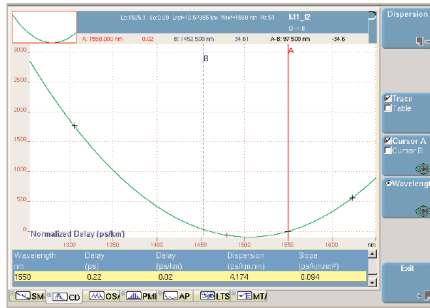
CD, PMD, AP, and WDM Testing

The T-BERD 6000 enables CD and PMD measurements to identify fiber viability for very high-speed transmission systems. It also enables WDM and AP tests to validate the link compatibility with DWDM system implementation.



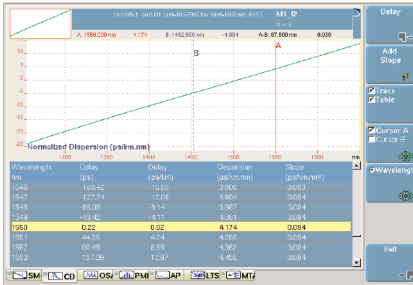
Polarization Mode Dispersion Testing

- Fast and accurately measures PMD delay, PMD coefficient, and second-order values
- Offers high dynamic range (up to 65 dB) dedicated for metropolitan, long haul, and very long haul fiber optic links
- Offers shock- and vibration-proof design (with no moving parts)
- Allows for measurement through multiple amplifiers
- Provides statistics and long-term monitoring



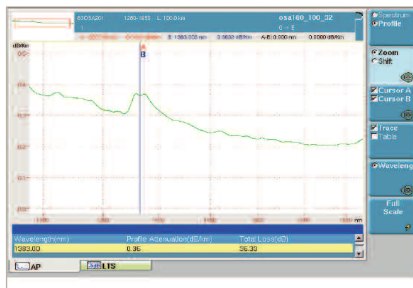
Chromatic Dispersion Testing - OTDR-Based Method

- Requires access to only one end of the fiber
- Offers dynamic range (up to 120 km) dedicated for any metropolitan fiber optic links
- Includes acquisition points around 1310, 1480, 1550, and 1625 nm for accurate CD from 1260 to 1650 nm
- Integrates a four-wavelength OTDR and light source
- Provides sectional analysis capability for troubleshooting
- Offers shock- and vibration-proof design (with no moving parts)



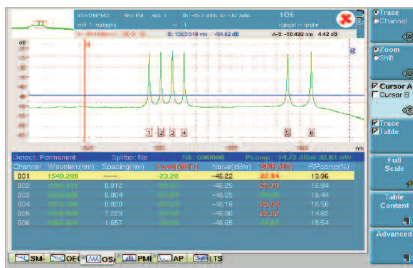
Chromatic Dispersion Testing - Phase-Shift Method

- Offers high dynamic range (up to 55 dB) dedicated for metropolitan, long haul, and very long haul fiber optic links
- Provides full wavelength range characterization (1260 to 1640 nm)
- Allows for measurement through multiple amplifiers
- Offers shock- and vibration-proof design (with no moving parts)



Attenuation Profile Testing

- Provides total loss and dB/km values for full band testing (1260 to 1640 nm)
- Allows CDWM and dense wavelength division multiplexing (DWDM) transmission band characterization
- Provides water peak (1383 nm area) characterization
- Offers shock- and vibration-proof design (with no moving parts)
- Combined with WDM and PMD functions or with CD and PMD functions



DWDM Maintenance Testing

- Measures channel level, power, and wavelength in the S, C, and L bands
- Provides the most compact DWDM test solution that measures optical signal-to-noise ratio (OSNR)
- Tests wavelengths from 1260 to 1640 nm or 1485 to 1640 nm
- Offers high wavelength accuracy
- Provides statistics and long-term monitoring
- Offers shock- and vibration-proof design (with no moving parts)

Options and Accessories

Greater Productivity with Communications

With limited telephone line and cell phone coverage during fiber testing, the T-BERD 6000 offers a built-in optical talk set option for permanent communication between test technicians. Near- and far-end technicians can communicate with each other, avoiding many of the testing mistakes that can prove costly if another truck roll is required to fix a problem.

For bidirectional testing that requires both the near- and far-end units to acquire data, the Data mode on the optional talk set synchronizes data acquisition for both units during OTDR testing and retrieves test results for pass/fail analysis.

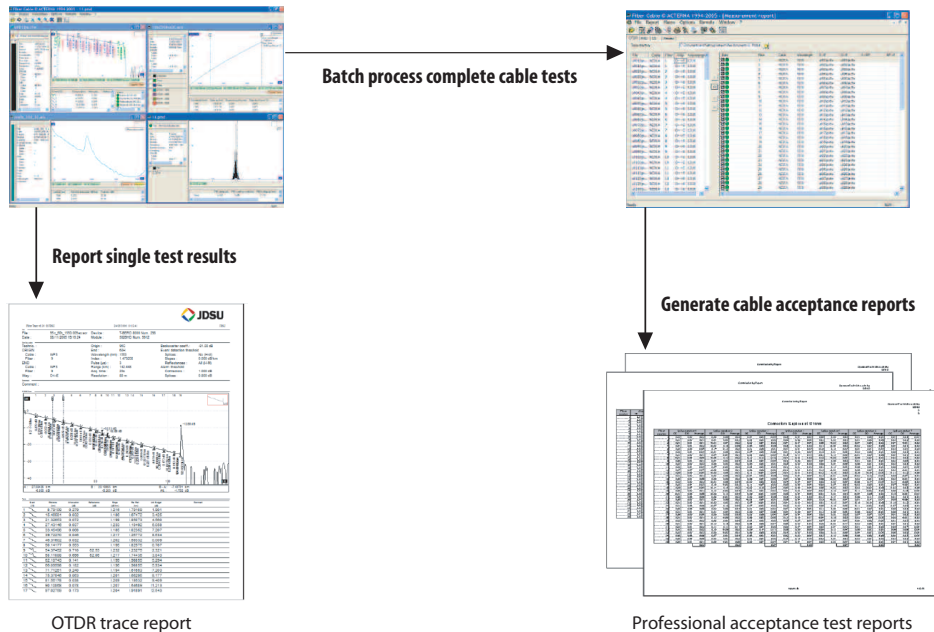
- Provides 45 dB optical talk set
- Provides file transfer capability through the fiber
- Provides remote control of the far-end unit
- Provides a talk set compatible with the OFI-2000 and with the OTS-55 Optical Talk Set stand-alone unit

Effective Test Report Generation

Transfer data and generate comprehensive reports using JDSU FiberTrace and FiberCable analysis software.

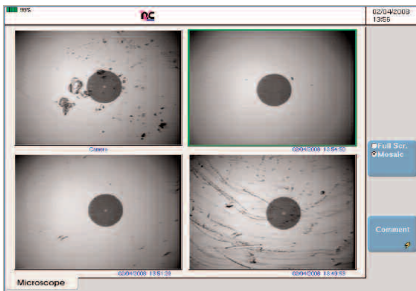
- Generate proof-of-performance reports with a high degree of customization
- Create dedicated tables for each test result (OTDR, CD, PMD, and ORL)
- Provides pass/fail indicators for quick analysis of problem areas
- Identifies macro bends and provides fault report summary

Multi-application post-analysis software





The T-BERD 6000 with the optional mouse, keyboard, battery, headset, AC/DC adapter charger, and video inspection scope



View clean and dirty fiber end faces with the connector inspection option.



T-BERD 8000 field-scalable optical test platform

Comprehensive Line of Accessories

A wide range of available accessories provide technicians with everything needed to benefit from the complete testing capabilities of the of the T-BERD 6000.

Join the T-BERD Family of Optical Test Solutions

Based on the same graphical user interface (GUI) and file formats, the T-BERD 6000, T-BERD 6000A, and the T-BERD 8000 form a family of solutions for high-performance field testing. In addition, the fiber application plug-in modules are field interchangeable with the T-BERD 6000, T-BERD 6000A, and the T-BERD 8000, ensuring maximum flexibility and investment protection.

The T-BERD 6000 can house one fiber application plug-in module. The T-BERD 6000A with the Multi-Services Application Module (MSAM) offers Ethernet and SONET/SDH testing at line rates from 10 Mb/s up to 10 Gb/s, as well as the ability to verify and troubleshoot higher-layer IP video, Layer 4 UDP/PCP, FTP, and HTTP. The T-BERD 8000 can house multiple modules simultaneously, enabling the performance of almost any combination of network test functions in a single unit. In addition, the T-BERD 8000 also offers:

- DWDM turn-up testing
- Dual-port optical spectrum analysis
- DWDM channel isolation for BERT analysis
- E1/T1 to 10G BERT analysis
- 10/100/1000/1G/10G Ethernet testing



T-BERD 6000 LITE
Compact OTDR



T-BERD 6000
Compact Optical Test Platform



T-BERD 6000A
Compact Network Test Platform



T-BERD 8000
Scalable Optical Test Platform

Specifications

Specifications for Typical 25°C

Display

TFT color, 8.4 in LCD, 800 x 600, high-visibility (standard)
 Touchscreen, TFT color, 8.4 in LCD, 800 x 600, high-visibility (optional)

Storage and I/O Interfaces

Internal memory 1000 test results
 Extended memory (optional) Minimum 1 GB (optional)
 2x USB V1.1, 1x RJ45 Ethernet

Power Supply

Battery type Standard removable Li-ion batteries
 AC/DC adapter Input 100–240 V, 50–60 Hz,
 Output 19 V DC/3.1 A
 Operation time Up to 11 hrs with standard display,
 Telcordia GR-196-CORE

Size and Weight

Mainframe with one plug-in module
 and battery (L x H x W) 285 x 195 x 93 mm
 (11.2 x 7.7 x 3.7 in)
 Mainframe only (without battery and module) 2.4 kg (5.3 lb)
 Mainframe (with one plug-in module
 and battery) 3.4 kg (7.5 lb)

Environmental Specifications

Operating temperature range on mains (no options)
 –20 to +50°C
 (–4 to 122°F)
 Operating temperature range (all options) 0 to +40°C
 (32 to 104°F)
 Storage temperature range –20 to +60°C (–4 to 140°F)
 Humidity, non-condensing 95%

Base Unit Optical Interfaces (optional)

Power Meter

Power level +10 to –60 dBm
 Calibrated wavelengths 850, 1310, and 1550 nm
 Connector type Universal push/pull (UPP)

Talkset

Wavelength 1550 nm ±20 nm
 Dynamic range 45 dB
 Function With data/file transfer
 Laser safety Class 1M laser
 Connector type Field interchangeable

Optical Return Loss

Selectable wavelength 1310 / 1550 nm
 Measurement range 0 dB to 45 dB
 Measurement uncertainty ± 1 dB
 Display resolution 0.01 dB

Visual Fault Locator

Wavelength 635 nm ±15 nm
 Output power level <1 mW
 Laser safety Class 2 laser
 Connector type Universal push/pull (UPP)

Continuous Wave Light Source

Wavelengths (selection) 1310, 1550, and 1625 nm
 Output power level –3.5 dBm
 Stability in 15 min ± 0.02 dB
 Stability in 8 hrs ± 0.2 dB
 Laser safety Class 1M laser
 Connector type Field interchangeable

Video Inspection Scope (via USB)

Magnification 250X and 400X, through the USB port

Ordering Information

Base Instrument

T-BERD 6000 platform with high-visibility
 color display and battery pack TB6000
 T-BERD 6000 platform with high-visibility
 touchscreen color display and battery pack TB6000T
 Extended memory (1 GB) E60EXTMEM
 VFL with 2.5 mm UPP E80VFL
 Optical talk set E80TS
 Optical power meter with UPP connector
 (2.5 mm provided as standard) E80PM
 Optical loss test set 1550/1625 nm with talk set E8029LTSTS
 Optical loss test set with talk set
 (1310/1550/1625 nm) E8036LTSTS
 Combined LTS and ORL with talk set
 (1310/1550 nm) E8026LTSTSORL
 Bidirectional OTDR acquisition
 option for single-mode module E80bidir
 Quick capture video microscope,
 200x/400x with USB converter EFSCOPE400

Accessories

Cigarette lighter power adapter E80lighter
 Additional Li-Ion rechargeable battery E60Lilon
 Wrap around carrying case for 6000 platform ESCASE5

Application Software

Optical FiberTrace software (for post-analysis) EOFS100
 Optical FiberCable software
 (for acceptance report generation) EOFS200

Optical connectors for the loss test set and talk set options (connector must be of the same type)

Field replaceable connectors: EUNIPCFC, EUNIPCSC, EUNIPCST,
 EUNIPCDIN, EUNIPCLC, EUNIAPCFC, EUNIAPCSC, EUNIAPCST,
 EUNIAPCDIN, EUNIAPCLC

Please refer to the separate module datasheets for detailed specifications.

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