

MTS/T-BERD™ Platforms

Short Range LAN (SRL) OTDR Module



Key Features

- Optimized for 10 Gigabit Ethernet (GigE) multimode testing
- FTTx-ready with 1310 and 1550 nm wavelengths
- CWDM/DWDM-ready with 1310, 1550, and 1625 nm wavelengths
- Dual-, Quad- and Penta-lambda multimode and singlemode combined
- 0.5/0.8 meter (m) event dead zone in multimode/singlemode for highest network precision
- High dynamic range (24/24/40/38/37 dB)
- Bend detection in singlemode
- Propagation delay measurement in multimode



Applications

- Access/Local Area Network (LAN) construction and turn-up
- Access/LAN troubleshooting

Multi-application optical test module

In today's telecommunications market, test solutions must be cost-effective, increase productivity, and reduce the complexity of field testing. The JDSU Short Range LAN (SRL) optical time domain reflectometer (OTDR) module offers a high-performance test functionality that has been specifically developed in response to these industry demands.

Configurable at the time of order, the SRL OTDR module offers multiple wavelength test capabilities (850, 1300, 1310, 1550, and 1625 nm), providing field technicians with all-in-one test instrument.

The SRL OTDR module's performance enables effective testing on short-haul (Access and LAN) in both multimode and singlemode.

OTDRs are the primary test tool for fiber optic characterization and enable several measurements, including fiber link attenuation, attenuation coefficient, reflection, splice/connector loss, and point-of-error.

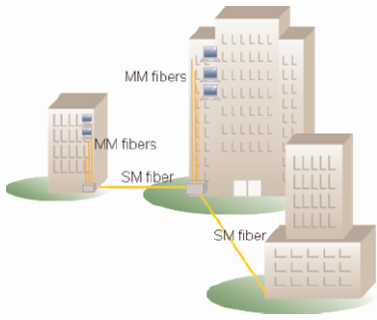


Figure 1 LAN network architecture

The right test solution at the right wavelength

As fiber installers and technicians continue to look for ways to reduce time and costs during field operation, it is essential for them to use the right tool for the job at hand. The combination of an unprecedented 0.1 s refreshing time, the shortest event resolution (0.5/2 m event/attenuation dead zones in multimode, 0.8/4 m in singlemode), and a high dynamic range makes the SRL OTDR module an ideal tool for the qualification of any type of LAN or Access network. The SRL OTDR module accommodates multiple applications:

- For multimode LAN, a dual-wavelength (850/1300 nm) SRL OTDR Module is available for fiber characterization, installation and troubleshooting
- For LAN and Access networks, multimode and singlemode are combined in a quad-wavelength (850/1300/1310/1550 nm) SRL OTDR Module, offering full flexibility in the field. A penta-wavelength version combines out-of-band testing capabilities at 1625 nm with the quad module

A new standard in OTDR performance

The SRL OTDR module is a high-performance OTDR capable of characterizing multimode and singlemode fiber link sections that are traditionally difficult. With a 0.5/0.8 m event dead zone in multimode/singlemode, it is now possible to qualify and troubleshoot problems in never before investigated sections of the fiber link:

- Pinpoint any fault in the network
- Discriminate a failure or break within the patch panel or distribution frame
- Reduce testing time for short-haul and multimode LAN
- Obtain a superior and cleaner trace form for high link loss

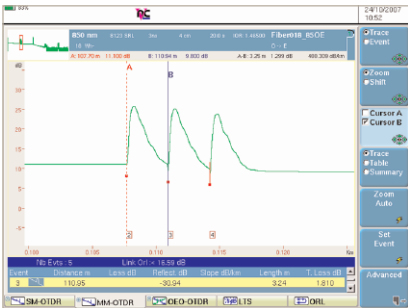
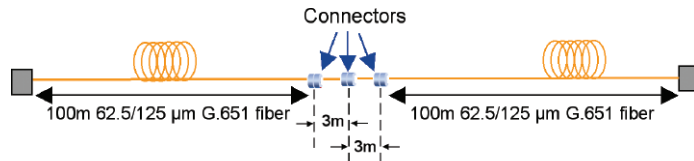


Figure 2 High detection of close events



Improve productivity and efficiency in the field with JDSU's innovative software

With the impressive performance of the SRL OTDR module, the time required to characterize, test and troubleshoot a fiber network is drastically reduced. Test any fiber link or network configuration in record time!

- The SRL OTDR module configures itself with its automated functionality and sets the best-suited acquisition parameters, including optimized acquisition time, as defined by the instrument
- Obtain the trace form with the correct auto zoom, evaluate the fiber link, and save the results through one-button operation
- Quickly review your test result thanks to the summary screen, including bend detection in singlemode and the propagation delay measurement in multimode (according to ANSI/TIA/EIA 568 B.3 and ISO/IEC 11801 standards)
- Minimize handling errors with the pass/fail indicator—by viewing a quick snapshot, technicians can easily identify incorrect results

| Summary Table | | | | | | |
|-------------------|----------------------|---------------|------------|---------------|------------------|-----------------|
| Laser nm | T. Loss dB | Total OTDR dB | Distance m | Splice Max dB | Connector Max dB | Reflect. Max dB |
| 1300 | 0.853 | < 19.13 | 212.79 | | 0.065 | -28.18 |
| Nb. Evts 6 | | | | | | |
| Propagation Delay | | | | | | |
| Laser nm | Propagation Delay us | | | | | |
| 1300 | 1.040 | | | | | |

Figure 3 Summary page in Multimode

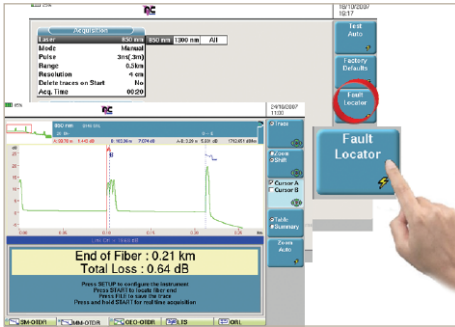


Figure 4 Fault locator mode

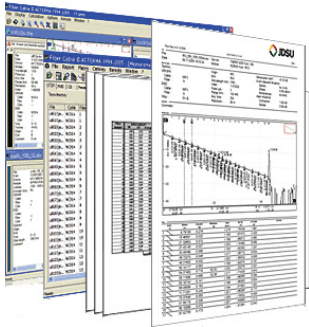


Figure 5 Acceptance report



Figure 6 MTS/T-BERD 6000 platform with OTDR module

Test 10 GigE and Enterprise networks with the best-available performance

With the combination of an impressive acquisition time, event dead zone, and dynamic range, technicians are able to test any type of LAN with unprecedented accuracy using the SRL OTDR Module:

- Optimized for any type of multimode Ethernet link, including 10 GigE according to IEEE 802.3ae (10GBase-SX/LX)
- Complies with ITU-T G.651, the SRL OTDR module provides two mono-wavelength versions (850 and 1300 nm) and one dual-wavelength version (850/1300 nm)
- Combines a high dynamic range and short event dead zone in order to characterize short fiber lengths

Two-in-one functionality... From simple Fault Locator to Expert OTDR

MTS/T-BERD platforms combine a powerful, easy-to-use Fault Locator and a complete, fully-configurable OTDR instrument. With the SRL OTDR module, you are free to test LAN and Access networks according to your own needs!

The Fault Locator boosts your productivity in the field by providing:

- Completely automatic, no settings required
- One-click operation
- End of fiber, Loss and ORL displayed automatically after measurement

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

- Manual settings (pulse, average time, events)
- Connector and Splice characterization
- A large screen for convenient multi-trace analysis (with zoom, cursors)
- A detailed event table

Error-free professional report

A complete PC-based software application within a Microsoft Windows environment offers detailed generation of professional OTDR trace reports, including:

- Proof-of-performance reports with a high degree of customization capabilities
- Dedicated tables for each test result (splice loss, connector, and length)
- Out-of-range value summaries with analysis of macro-bends
- Results comparison between the different wavelengths to identify bends and constraints
- Complete fiber characterization reports, including OTDR, CD, PMD, and spectral attenuation

Enhanced testing solution

The SRL OTDR module is compatible with the MTS/T-BERD 6000 optical test platform and its full range of fiber characterization test modules (OTDR, CD, and spectral attenuation measurement) as well as DWDM testing capabilities. The SRL OTDR module is also compatible with the scalable MTS/T-BERD 8000 platform and can be combined with additional measurement capabilities that comprise the broadest fiber optic test solution on the market, making JDSU the provider of choice for all telecommunications operators and fiber optic installers.

Specifications
Multimode/Singlemode SRL
OTDR Module General (typical at 25°C)

| | |
|------------------------|--|
| Weight | 0.6 kg (1.1 lb) |
| Dimensions (w x h x d) | 213 x 124 x 32 mm (8.38 x 4.88 x 1.26 in) |

Optical interfaces

| | |
|------------------------------------|---|
| Applicable fiber | MMF 50/125 µm, MMF 62.5/125 µm, SMF 9/125 µm |
| Interchangeable optical connectors | FC, SC, DIN, LC and ST |

Technical characteristics

| | |
|-----------------------|---|
| Distance units | Kilometers, feet, and miles |
| Group index range | 1.30000 to 1.70000 in 0.00001 steps |
| Number of data points | Up to 128,000 data points |
| Distance measurement | Automatic or dual cursor |
| Display range | 2.6 m to 260 km |
| Cursor resolution | 1 cm |
| Sampling resolution | 4 cm |
| Distance Accuracy | ±1 m ±sampling resolution ±1.10-5 x distance (Excluding group index uncertainties) |

Attenuation measurement

| | |
|--|-------------------------------------|
| Automatic, manual, 2-point, 5-point, and LSA | |
| Display range | 1.25 dB to 55 dB |
| Display resolution | 0.001 dB |
| Cursor resolution | 0.001 dB |
| Linearity | Multimode / Singlemode: ±0.03 dB/dB |
| Threshold | 0.01 to 5.99 dB in 0.01 dB steps |

Reflectance/ORL measurements

| | |
|----------------------|--|
| Reflectance accuracy | +/-2 dB |
| Display resolution | 0.01 dB |
| Threshold | -11 dB to -99 dB in 1 dB steps |
| Storage | Bellcore/Telcordia compatible Version 1.1 and Version 2.0 |

Ordering information

| | |
|--|-----------|
| Short Range LAN 24dB 850nm OTDR plug-in | E8111SRL |
| Short Range LAN 24dB 1300nm OTDR plug-in | E8112SRL |
| Short Range LAN 24/24dB 850/1300 OTDR plug-in | E8123SRL |
| Short Range LAN 24/24/40/38dB 850/1300/1310/1550nm OTDR plug-in | E8146SRL |
| Short Range LAN 24/24/40/38/37dB 850/1300/1310/1550/1625nm OTDR plug-in | E8156SRL |
| Continuous Source option (singlemode wavelength only) | E810TDRLS |

Universal optical connectors

Straight connectors (singlemode port)
EUNIPCFC, EUNIPCSC, EUNIPCST, EUNIPCDIN, EUNIPCLC
8° angled connectors (singlemode port)
EUNIAPCFC, EUNIAPCSC, EUNIAPCST, EUNIAPCDIN, EUNIAPCCLC
Straight connectors (multimode port)
EUNIPCFCMM, EUNIPCSCMM, EUNIPCSTMM, EUNIPCDINMM

For more information on the MTS/T-BERD platforms, test modules, adapters, cables, and fiber optic couplers, refer to the separate datasheets and brochures.

OTDR Optical performance–Multimode SRL Plug-in

| Central Wavelength ¹ | Laser safety class (21 CFR) | Pulse Width | Distance Range | RMS Dynamic Range ² | Event Dead Zone ³ | Attenuation Dead Zone ⁴ | Continuous Wave Output Power |
|---------------------------------|--------------------------------|----------------|----------------|--------------------------------|------------------------------|------------------------------------|------------------------------|
| 850/1300 nm ±20 nm | Class 1M | 3 ns to 300 ns | Up to 80 km | 24/24 dB | 0.5 m | 2 m | – |

OTDR Optical performance–Multimode/Singlemode SRL Plug-in

| Central Wavelength ¹ | Laser safety class (21 CFR) | Pulse Width | Distance Range | RMS Dynamic Range ² | Event Dead Zone ³ | Attenuation Dead Zone ⁴ | Continuous Wave Output Power |
|---------------------------------|--------------------------------|----------------|----------------|--------------------------------|------------------------------|------------------------------------|------------------------------|
| 850/1300 nm ±20 nm | Class 1M | 3 ns to 300 ns | Up to 80 km | 24/24 dB | 0.5 m | 2 m | – |
| 1310/1550/1625 nm ±20 nm | Class 1M | 3 ns to 20 µs | Up to 380 km | 40/38/37 dB | 0.8 m | 4 m | -3.5 dBm |

¹Laser at 25°C and measured at 10 µs. Other wavelengths are available.

²The one-way difference between the extrapolated backscattering level at the start of the fiber and the RMS noise level, after 3 minutes averaging.

³Measured at ±1.5 dB down from the peak of an unsaturated reflective event.

⁴Measured at ±0.5 dB from the linear regression using a FC/PC type reflectance.

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