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VIAVI Solutions 5G

# *Enabling Australia's Field Technicians to build, troubleshoot and maintain better communications networks.*

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JDSU

COMMUNICATIONS TEST & MEASUREMENT SOLUTIONS

# T-BERD®/MTS-4000 Multiple Services Test Platform

## Multimode/Single-mode OTDR Modules


**Key Features**

- Combines Dual-, Quad-lambda multimode (MM), and single-mode (SM)
- Dynamic range of 27/25 dB (MM), 37/35 dB (SM)
- First-to-market MM/SM OTDR with truly integrated Loss Test Sets
- Automated bend detection
- Propagation delay measurement in multimode (TIA-568-C)
- Combines with the Ethernet Services Application Module* (ESAM)

* Requires ESAM compatible mainframe

### Applications

- Optimized for testing 10 MB to 10 GigE
- Enables Tier 1 and Tier 2 certification of Premises networks
- Install, turn up, and maintain Access networks/LAN/WAN
- Wireless backhaul construction, turn-up, and maintenance

### Compliance

- IEC 61280-4-1 using an external mode conditioner

In today's demanding communications market, test solutions must be even more cost-effective, must increase productivity, and must reduce the complexity of field testing. The JDSU Multimode (MM)/Single-mode (SM) Optical Time Domain Reflectometer (OTDR) Modules offer unmatched test functionality specifically developed in response to emerging industry demands.

The MM/SM OTDR module is an all-in-one field test instrument that integrates flexible configuration options and offers multiple wavelength test capabilities (850/1300 nm multimode, 1310/1550 nm single-mode).

With pace-setting short dead zones and enviable dynamic range performance, the MM/SM OTDR modules enable effective testing on both multimode and single-mode fiber links, addressing the needs of providers of Premises/Enterprise networks as well as wireless backhaul infrastructure.

Combining a true loss test set with the OTDR on the same port enables users to perform a full range of fiber certification tests (continuity check, total link loss, length, reflectivity of connectors, and events loss measurements) without changing fibers. This capability is integrated in both Single-mode and Multimode optical ports.

The Quad and Multimode OTDR modules work with the modular T-BERD/MTS-4000 platform to provide multi-layer testing capabilities with additional optical options including visual fault locator, talk set, and digital fiber inspection probes (with automated Pass/Fail analysis).

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## Specifications

### Generic Technical (Typical at 25°C)

| | |
|---|---|
| Weight | 0.400 kg (0.88 lb) |
| Dimensions (W x H x D) | 128 x 134 x 40 mm (5.04 x 5.28 x 1.58 in) |
| Storage | Bellcore/Telcordia-compatible (Version 1.1 and Version 2.0) |

### Optical Interfaces

| | |
|---|---|
| Interchangeable optical connectors | FC, SC, DIN, LC, and ST |

### Technical Characteristics

| | |
|---|---|
| Laser safety class (21 CFR) | Class 1 |
| Distance units | Kilometers, feet, kilofeet, 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 | 3.25 m to 260 km |
| Cursor resolution | 1 cm |
| Sampling resolution | 4 cm |
| Accuracy | ±1m±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 to 55 dB |
| Display resolution | 0.001 dB |
| Cursor resolution | 0.001 dB |
| Linearity | Multimode/Single-mode: ±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 to –99 dB in 1 dB steps |

### OTDR Multimode Module Technical (Typical at 25°C)

| Central Wavelength [1] | Pulse Width | RMS Dynamic Range [2] | Event Dead Zone [3] | Attenuation Dead Zone [4] |
|---|---|---|---|---|
| 850/1300 nm ±30 nm | 3 ns to 1 µs | 27/25 dB | 0.8 m | 4 m |

### OTDR Multimode/Singlemode Module Technical (Typical at 25°C)

| Central Wavelength [1] | Pulse Width | RMS Dynamic Range [2] | Event Dead Zone [3] | Attenuation Dead Zone [4] |
|---|---|---|---|---|
| 850/1300 nm ±30 nm | 3 ns to 1 µs | 27/25 dB | 0.8 m | 4 m |
| 1310/1550 nm ±20 nm | 3 ns to 20 µs | 37/35 dB | 0.9 m | 4 m |

### Power Meter (Optional–Typical at 25°C)

| | Single-mode | Multimode |
|---|---|---|
| Optical connector | Shared with the OTDR (on the same port) | |
| Power level range | –2 to –50 dBm | –3 to –30 dBm |
| Measurement wavelengths | 1310, 1490, 1550, 1625 and 1650 nm | 850 and 1300 nm |
| Measurement accuracy [5] | ±0.5 dB | ±1 dB |

### Light Source (Optional–Typical at 25°C)

| | Single-mode | Multimode |
|---|---|---|
| Optical connector | Shared with the OTDR (on the same port) | |
| Central wavelength | 1310, 1550 nm | 850, 1300 nm |
| CW output power level | –3.5 dBm | –3.5 dBm |
| Modulation frequency | CW; 270 Hz, 330 Hz, 1 kHz and 2 kHz; Auto-λ; TWINtest | |

1. Laser at 25°C.
2. The one-way difference between the extrapolated backscattering level at the start of the fiber and the RMS noise level, after 3 minutes averaging, with the largest pulse width.
3. Measured at ±1.5 dB down from the peak of an unsaturated reflective event, at shortest pulse width.
4. Measured at ±0.5 dB from the linear regression using a typical FC/UPC reflectance, at shortest pulse width.
5. At –30 dBm for single-mode, and at –15 dBm for multimode using a mode conditioner.

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## Ordering Information

| Ordering Information | |
|---|---|
| **Part Number** | **Description** |
| E4146QUAD | Multimode/Single-mode 850/1300/1310/1550 nm OTDR |
| E4123MM | Multimode 850/1300 nm OTDR |
| EFJEF50CONSCPC | EF Modal Controller for 50 µm MM Fiber—SC/PC |
| EFJEF50CONFCPC | EF Modal Controller for 50 µm MM Fiber—FC/PC |
| E410TDRLS | Continuous and Modulated Source Option |
| E410TDRPM | Broadband Power Meter Option |

| Universal Optical Connectors | |
|---|---|
| EUNIPCFC, EUNIPCSC, EUNIPCST, EUNIPCDIN, EUNIPCLC | Straight Connectors (Single-mode port) |
| EUNIAPCFC, EUNIAPCSC, EUNIAPCDIN, EUNIAPCLC | 8° Angled Connectors (Single-mode port) |
| EUNIPCFCMM, EUNIPCSCMM, EUNIPCSTMM, EUNIPCDINMM, EUNIPCLCMM | Straight Connectors (Multimode port) |

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