

# Medium-Range Optical Dispersion Measurement (ODM) Module

For T-BERD/MTS-6000A, -8000 Platforms



The VIAVI Optical Dispersion Measurement (ODM) Module for the T-BERD/MTS-6000A, and -8000 offers chromatic dispersion (CD), polarization mode dispersion (PMD), and attenuation profile (AP) test functions in a single plug-in module. This module is the industry's most compact and integrated dispersion solution dedicated to field testing Metro and Access fiber-optic networks.

Today's demand of broadband access technology deployment not only drives the need for higher speed in long-haul networks but in the Metro/Access network environment as well. The Medium-Range ODM Module provides the exact performance and price point to help characterize the suitability of the network for required transmission speeds.

Both T-BERD/MTS test platforms provide an ideal, all-in-one solution for the challenges of deploying and maintaining long-haul and Metro/Access networks. The T-BERD/MTS platforms leverage small, highly integrated plug-in modules, battery operation, and rugged, drop-tested housing. Their weather-resistant design and long battery life are ideally suited for use in the field, and their modularity allows for field upgrades to support new testing requirements. The T-BERD/MTS is easily upgradeable with technologies and advanced options that support the changing needs of field technicians.

T-BERD/MTS-8000



T-BERD/MTS -6000A



## KEY FEATURES

- Combined CD, PMD, and AP in one plug-in module
- Provides the most integrated dispersion solution dedicated to Metro and Access network field testing
- Patented phase-shift solution for CD measurement
- Complete and accurate fiber characterization over the DWDM wavelength range (1450-1640 nm)
- Best performance/price compromise

## KEY APPLICATIONS

- Suitable for any test requirement
- Tests very high-speed network
- 40 Gb/s and higher
- Tests DWDM systems
- Tests amplified links
- Tests Metropolitan network and medium-haul fiber optic links



## The Right Combination

The combination of CD, PMD, and AP test functions allows technicians to validate the compatibility of the fiber link with high-speed dense wavelength division multiplexing (DWDM) system implementation, including reconfigurable optical add/drop multiplexer (ROADM) networks. The performance of each individual function makes the ODM the right tool to characterize fiber for transmission speeds of 40 and 100 Gb/s in the metropolitan environment.

### Chromatic Dispersion

- Two-ended test using one fiber based on phase-shift method
- 1450-1640 nm wavelength range characterization
- Suitable for any fiber type
- Dynamic range up to 33 dB

### Polarization Mode Dispersion

- Based on the fixed analyzer method using the Fourier transform
- Established in the market
- High dynamic range up to 45 dB

### Attenuation Profile

- dB loss/km over the full wavelength range: 1450-1640 nm
- Allow DWDM transmission band characterization

## Characterizing Metro and Access Networks

In addition to its high level of integration and industry-leading field test performance features, all international standardization bodies have approved or referenced all test methods used in the ODM module.

The compactness, ease of use, and low cost make the ODM module the product of choice for metropolitan links and network characterization. Module features include:

- Test through non-bidirectional components, including erbium doped fiber amplifiers (EDFAs) and filters
- Very fast acquisition time (from 20 to 40 seconds) with minimum 250 acquisition points
- One input port for any test configuration

## Field-Dedicated Solution

Housed in the T-BERD/MTS platform, the ODM module offers the highest level of integration and ruggedness.

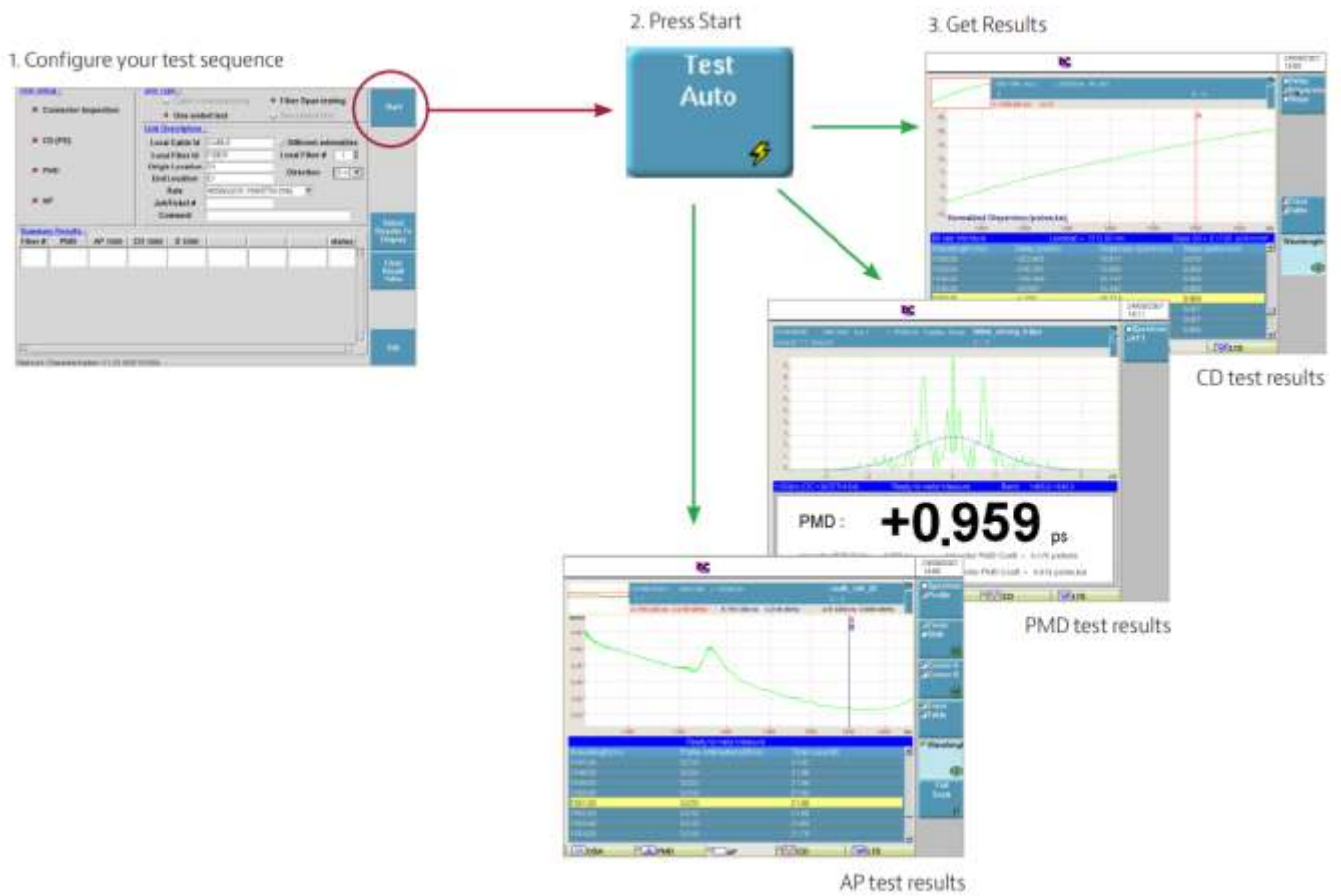
When used in tandem with another T-BERD/MTS or a VIAVI handheld source, the ODM module can adapt to all existing fiber optic field measurement conditions. Its size and weight makes it the ideal solution for outside plant testing and its suite of personal computer interfaces and remote control capability offer the best fit for indoor use.

- Most compact dispersion test solution on the market
- A shock- and vibration-proof instrument with no moving parts (drop tested at 70 cm)
- Internal/online wavelength referencing
- Rugged, handheld, battery-operated light source

## Intuitive and Easy-to-Use Interface

The T-BERD/MTS user interface enables technicians to quickly learn how to use the three primary ODM test functions.

- One test setup for all three functions with script test sequence
- Intuitive test parameters and acquisition time setup
- Indicates Pass/fail with predefined values according to bit rate



## Specifications

ODM Module–Typical Specifications <sup>1</sup> at 25°C	
Weight	600 g (1.32 lbs)
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	SMF 9/125 μm
Interchangeable optical connectors	FC, SC, DIN, LC
Chromatic Dispersion	
Wavelength Range Acquisition Display	1435–1640 nm 1260–1650 nm
Wavelength Uncertainty	±0.1 nm
Minimum length	1 km
Dynamic Range (dB)	33 dB
	<b>80 km</b> <b>10 km</b> <b>G.652</b> <b>G.655</b>
Zero dispersion wavelength uncertainty (nm)	n/a    ±4.5
Zero dispersion wavelength repeatability <sup>2</sup> (nm)	n/a    0.4
Dispersion uncertainty <sup>3,4</sup> (ps/nm.km)	±0.06    ±0.3
Dispersion repeatability <sup>2,3</sup> (ps/nm.km)	0.02    0.02
Measurement time	10 to 30 s
Polarization Mode Dispersion	
Dynamic range <sup>5</sup>	45 dB
PMD measurement range <sup>6</sup>	0.08 to 130 ps
PMD absolute uncertainty <sup>7,8</sup>	±0.02ps ±2% PMD
PMD repeatability <sup>7,8</sup>	0.025 ps
Measurement time <sup>9,8</sup>	seconds, independent of PMD value
Attenuation Profile	
Dynamic range	45 dB
Wavelength Uncertainty	±0.1 nm
Measurement uncertainty <sup>10</sup> at 1550nm at 1625nm	±0.003 dB/km ±0.004 dB/km
Measurement time <sup>9</sup>	3 s

## Ordering Information

Medium-Range ODM Module	
Chromatic dispersion + PMD + Attenuation profile test module (1450–1640 nm)	E81MRDISPAP
Broadband Source	
Handheld Broadband Sources CD/PMD/AP (1460–1640 nm) With high Dynamic range (1525–1570 nm)	EOBS500 EOBS550
Broadband Source module for CD/PMD/AP (1260–1640 nm)	E81BBS2A

1. With broadband source wavelength type OBS500 (1460–1625 nm)
2. Repeatability refers to the typical one-sigma standard deviation value, obtained for system cycling over 20 measurements
3. 1530–1570 nm band
4. Excluding reference fiber uncertainties
5. With averaging
6. Up to 60 ps in strong-mode coupling
7. Weak-mode coupling, between 0.1 and 60 ps DGD range
8. Up to 35 dB attenuation and NPL standard traceable
9. Minimum value without averaging
10. Measured with 80 km G.652 fiber