

VIAVI

DTS (Distributed Temperature Sensing) Module

For T-BERD/MTS-6000 and ONMSi/OTU-8000 platforms

Distributed Fiber Optic solution for measuring temperature using single-ended Raman OTDR.

Forget heavy devices and field generators when you need to measure temperature. The VIAVI T-BERD®/MTS-6000 DTS solution, is the first ruggedized field portable singlemode DTS (Distributed Temperature Sensing) interrogator to market. Its unique, lightweight, battery-powered form factor makes it easy to use anywhere and the ideal tool for field based temperature measurement.

This singlemode DTS is based on Raman scattering technology. Measure the temperature along a singlemode optical fiber cable or signal loss with the integrated traditional dual wavelength Rayleigh OTDR. Perform optical fiber cable attenuation analysis for bend detection and fiber integrity monitoring (Patent pending) without requiring two specialized OTDR instruments.

This Raman OTDR module can be set up in VIAVI portable platform (T-BERD/MTS-6000,8000) for quick measurement campaigns or placed in rack-mounted platform (OTU-8000) for permanent monitoring through the widely deployed fiber monitoring system ONMSi.



Key Benefits and Form Factors

- 1st ruggedized, lightweight, battery powered portable DTS and OTDR
- Battery-operated: No generators needed
- Scalable fiber qualification tools
- Rack-mounted DTS: allows temperature and loss monitoring of many fibers at once for low cost monitoring with ONMSi
- Easy DTS/OTDR measurements: Avoid a double ended test. The single ended, dual wavelength source measurement with automated computation frees users from complex procedures and calculations
- No training required with intuitive GUI

Key Features

- Single mode Raman (Temperature) + Dual wavelength Rayleigh OTDR in one module
- From 1m, up to 80km
- Portable, compact, modular, battery-operated, lightweight (<4kg),
- Large 8 inch transreflective TFT color display
- Scalable Rack-mounted form factor (19", ETSI, 23"), low power consumption (<50W) offering Multi-port measurement (up to 48 ports, and more)
- Connected product (Bluetooth, WIFI and remote control operation with Smart Access Anywhere (SAA))

Applications

- Pipeline Monitoring (leak detection)
- Power cable monitoring (hot spot)
- Dike monitoring (SHM)
- Field based fiber cable identification with use of cold spray
- True Rayleigh OTDR testing or monitoring

Specifications

DTS (Raman Single-end, Portable & Rackable version)

General Description (base unit with DTS module)		
Base Unit	Portable, MTS/TB6000 or 8000	Rack-able
Height	189 mm	2U
Width	285 mm	19", 21" (ETSI), 23"
Depth	95 mm	260mm (ETSI) / 280 mm (19" & 23")
Weight	3.4kg with module	Less than 15kg
Power Supply	AC 110/220 V Battery offering 5 hours min	-20 to -72VDC Dual inputs
Consumption	Lower than 50W	Lower than 50W
Operating Temperature	0°C to +40°C	+5°C to +45°C
Storage Temperature	-20°C to +60°C	-20°C to +60°C
Humidity	95% without condensing	95% without condensing
EMI/ESD	CE Compliant	CE Compliant
ROHS	Compliant	Compliant
Interface	1RJ45 Ethernet 10/100/1000baseT ports	2RJ45 Ethernet 10/100/1000baseT ports
Media	SATA hard disk 250GB	Solid State Disk 4GB (32GB option)
Screen	Yes (10.4" TFT color touch screen)	No
Temperature Sensor		
Input	Two on front panel	Two on front panel
PT100	Yes (4 wires Platinum, 5 meters long)	Yes (4 wires Platinum, 5 meters long)
Connector & Optical switch		
Connector Type	E2000/APC with cord & caps	SC/APC
Optical Switch	No	Yes, internal 4,8,12,16,24 ports SC/APC 36 & 48 ports LC/APC Lifetime : 100 millions of cycle Possibility to go with external switches
DTS Specifications (typical at 25°C)		
Technology	Dual laser source, Single Ended OTDR, Singlemode	
Laser Safety	Class1	
Distance Range	Up to 80km	
Measurement time	From 15s to 5 hours	
Spatial Resolution (IEC 61757)	From 1m	
Spatial Resolution (10%-90% rise time)	From 0.8m	
Spatial Step (sampling resolution)	8 cm min	
Temperature Range	-200°C to +700°C depending on fiber cable	
Temperature Repeatability (IEC 61757) ^(A)	0.5°C	
Temperature Measurement Error (IEC 61757)	0.4°C	
Measurement Variables	Temperature, true Rayleigh OTDR measurement	
OTDR Specifications (typical at 25°C)		
Testing wavelength	1550 / 1625 nm	
Dynamic range ⁽¹⁾	36dB	
Pulse width	5 ns to 1µs	
Event dead zone ⁽²⁾	0.6 m	
Attenuation dead zone ⁽³⁾	3 m	

Specifications (Typical at 25°C)

A. At 2σ, according to the process described in IEC 61757 standard, 2 external references mode, Spatial Resolution: R5M, Measurement time: 10mn, Distance range: 12km, including 1 dB test equipment loss.

1. The one-way difference between the extrapolated backscattering level at the start of the fiber and the RMS (SNR=1) noise level, after 3 minutes averaging using the largest pulse width.

3 DFOS-DTS Raman OTDR Module

2. Measured at ±1.5 dB below the peak of an unsaturated reflective event using the shortest pulse width.

3. Measured ±0.5 dB from the linear regression using an FC/UPC reflectance and the shortest pulse width.

Ordering information

Portable solution

Part Number	Description
Hardware package	
PACK-DTS-MTS	Fiber Sensing complete package including T-BERD/MTS-6000 platform and Raman OTDR E2000APC
EM6000AV2S	MTS 6000A V2 Compact Platform
E6100	Single Fiber Optic Module Carrier
E40SCASE1	Soft Case for 4000 Platform
E60V2HDISK	Built-In Hard Disk Option for 6000A V2
E60V2WIFI	Built-In WiFi Option for 6000A V2
SAA-6KAV2-L2	SMARTACCESSANYWHERE FOR 6000A PLATFORM - L2
EDFOS-DTS-SM	SINGLE MODE RAMAN OTDR MODULE FOR MTS/TB6K, MTS/TB8K, OTU-8000
EDFOS-MTS-PT100	PT100 TEMPERATURE SENSOR 5 METERS LONG (MTS)
Application software options	
EDFOS-TRACE	Fiber Sensing data post-processing PC Software
Services options	
EDFOS-Wk-Rate	Renting DTS pack during one week
EDFOS-Mo-Rate	Renting DTS pack during one month
E9STRAINING	One day of training
E9SSUPPORT	One day of support



Rackable solution

Part Number	Description
Base unit	
E98OTU-FP-RF	OTU8000 BASE UNIT 48VDC - 2U – Front power input - FAN
EDFOS-OTU-SW	OTU software license for ONMSi & Fiber Sensing
Base unit options	
E98KIT19	19 inches rack-mounting kit for OTU-8000
E98KIT21	21 inches rack-mounting kit for OTU-8000
E98KIT23	23 inches rack-mounting kit for OTU-8000
E98RELAYS	Relay for external alarm reporting device
E98SSD32GB	32GB SSD for OTU-8000 (Fiber Sensing)
E98LEFTFAN	Left fan
E98ACDC	AC/DC converter (external unit)
Base unit Optical Switch options	
E98X04	Optical switch 1x4 plug-in module (SC/APC)
E98X..	Optical switch 1x.. plug-in module (SC/APC)
E98X24	Optical switch 1x24 plug-in module (SC/APC)
E98X36LCAPC	Optical switch 1x36 plug-in module (LC/APC)
E98X48LCAPC	Optical switch 1x48 plug-in module (LC/APC)
Raman OTDR module	
EDFOS-DTS-SM	SINGLE MODE RAMAN OTDR MODULE FOR T-BERD/MTS-6000, T-BERD/MTS-8000, OTU-8000
EDFOS-OTU-PT100	PT100 Temperature sensor 5 meters long (OTU)
ONMSi Software options	
EDFOS-ONMSI-SW	Temperature and strain monitoring under ONMSi



Learn more about Fiber Sensing with DTSS B-OTDR and DTS Raman-OTDR:

www.viavisolutions.com/fibersensing



Contact Us **+1 844 GO VIAVI**
(+1 844 468 4284)

To reach the VIAMI office nearest you,
visit viavisolutions.com/contact

© 2022 VIAVI Solutions Inc.
Product specifications and descriptions in this document are subject to change without notice.
Patented as described at
viavisolutions.com/patents
dfos-dts-raman-otdr-br-fop-nse-ae
30187700 901 1122

viavisolutions.com