

Adaptive Fiber Test Heads OTU-8000 Optical Test Unit

Rack-mounted fiber test head for backbone, metro, and access networks for construction, service activation and monitoring



The Adaptive Fiber Test Head lies at the core of the VIAVI optical network monitoring system (ONMSi). Combining optical time-domain reflectometry (OTDR) and optical-switch technology, a single OTU-8000 unit can test thousands of fiber links. When a fiber fault occurs, the ONMSi reports the GPS location of the fault within minutes. This adaptive racked Fiber Test Head is great for Access PON or DAA networks as well as rings, data center interconnects, and long haul networks utilizing xWDM wavelength plans.

The modularity of the OTU-8000 meets all of the requirements for monitoring light or dark fiber-optic networks. Integrated with the latest technology, it can monitor both long-haul and FTtx networks

With the OTU-8000 installed at the central office, providers can test hundreds of live passive optical networks (PONs), regardless of the split ratio. It can accelerate PON installations when setting up new customers and troubleshooting by enabling technicians to sectionalize the network to determine the cause of a fault.

Organizations concerned with network security issues can use the OTU-8000 to detect and locate fiber tapping after only a few tenths of a decibel are inserted.

KEY BENEFITS

- Reduce MTTR by locating fiber optic faults in minutes instead of hours
- Reduce operational costs by eliminating erroneous dispatches
- Anticipate service disruptions by detecting fiber degradation before it affects service
- Protect your fiber investment by monitoring the long-term performance of installed fibers
- Reduce construction costs by accelerating test processes and empowering test staff
- Protect network integrity by quickly detecting and locating fiber intrusion

KEY FEATURES

- Large range of OTDRs, including tuneable DWDM
- High sensitivity detection algorithm to locate low attenuation fiber tapping devices
- High accuracy trace for the whole fiber including the near end
- Dual IP communication channels
- Switch scalability up to 4464 ports with external switches
- Web-browser access
- Advanced, rapid fault location
- E-mail and SMS notifications
- Small size (2 RU) with dual power feeds, low power consumption
- Solid-state disk
- LAN-based firmware downloads
- Expandable by adding an additional test module

KEY APPLICATIONS

- Fiber monitoring for service providers, utilities, and dark-fiber providers
- FTtx construction, provisioning, and maintenance tests
- Fiber-tapping detection for critical applications

Specifications (typical at 25°C)

Base Unit	
Height	2 RU
Width	19, 21 (ETSI), or 23"
Depth	260 mm (ETSI) 280 mm (19 or 23")
Operating temperature	–20 to 50°C
Storage temperature	–20 to 60°C
Humidity	95% without condensing
EMI/ESD	CE compliant
Interfaces	2 RJ45 Ethernet 10/100/1000BaseT ports, GSM in option
Media	Solid-state disk
Power Supply consumption	–36 to –60V 35W
Internal Optical Switch	
Number of ports Internal ports are available in SC/APC, LC/APC, MPO-12	4,8,12,16,24 (SC/APC) 36,48 (LC/APC) 288, 576 (MPO-12)
Insertion loss (excluding connectors)	0.6 dB (up to 48 SC/APC or LC/APC ports) <2.9 db (288,576 MPO)
Backreflection	–60 dB
Repeatability	±0.01 dB
Wavelength range	1260–1670 nm
Lifetime	100 million cycles
Housing Up to 576 ports Higher port counts	Included in the OTU-8000 External 1 RU racks

Description	Part Number
Base Unit	
OTU-8000 base unit - Front Power Input	E98-FP-RF
Base Unit Options	
GSM interface for alarm notification	E98EGSM
Relay for external alarm reporting device	E98RELAYS
23 in rack-mounting kit for OTU-8000	E98KIT23
21 in rack-mounting kit for OTU-8000	E98KIT21
19 in rack-mounting kit for OTU-8000	E98KIT19
AC/DC converter (external unit)	E98ACDC
Optical Switch Plug-In Modules	
Optical switch 1x4 plug-in module (SC/APC)	E98X04
Optical switch 1x8 plug-in module (SC/APC)	E98X08
Optical switch 1x12 plug-in module (SC/APC)	E98X12
Optical switch 1x16 plug-in module (SC/APC)	E98X16
Optical switch 1x24 plug-in module (SC/APC)	E98X24
Optical switch 1x36 plug-in module (LC/APC)	E98X36LCAPC
Optical switch 1x48 plug-in module (LC/APC)	E98X48LCAPC
Optical switch 1x288 plug-in module (MPO)	E98X288MPO*
Optical switch 1x576 plug-in module (MPO)	E98X576MPO*
*Both the 288 and 576 MPO switch modules offer the Pay as You Grow model in which you can license additional port capacity over time in increments of 12 ports. Part number is PAYG.	

OTDR (general)					
Laser safety		Class 1			
Number of data points		Up to 512,000			
Sampling resolution		From 4 cm			
Distance range		Up to 360 km			
Distance accuracy		$\pm 0.75 \text{ m} \pm \text{sampling resolution} \pm \text{distance} \times 1.10^{-5}$			
Laser safety		Class 1			
OTDR Modules	B	C	D	C-HR	DWDM Tuneable
Wavelength ¹ (nm)	1550/1625/1650	1550/1625/1650	1550/1625/1650	1650	C-band tuning – @ 100GHz
Wavelength accuracy ¹ (nm)	$\pm 20/\pm 20/+15, -5$	$\pm 20/\pm 10/\pm 1$	$\pm 20/\pm 10/\pm 1$	± 5	N/A
Dynamic range ² (dB)	40/40/43	47/47.5/46	50/50/48	43	44
Pulse width	5 ns to 20 μ s	2 ns to 20 μ s	2 ns to 20 μ s	1 ns to 20 μ s	10 ns to 20 μ s
Event dead zone ³ (m)	0.65	0.6	0.5	0.3	1.5 m
Attenuation dead zone ⁴ (m)	2	2	2.5	2	4
Splitter attenuation dead zone ⁵ (m)	25	25	15	25	N/A

1. Laser at 25°C and measured at 10 μ s. 1650 nm ± 1 nm for the E81165C module.

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 and using the largest pulsewidth.

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

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

5. Measured on a 15 dB attenuation with -70 dB reflectance.

External Optical Switch Units	
External optical Switch unit 36 ports SC/APC	EOSX8000
External optical Switch unit 24 ports LC/APC	E9E-EXTX-24
External optical Switch unit 36 ports LC/APC	E9E-EXTX-36
External optical Switch unit 144 ports LC/APC	E98OSX144
OTDR Plug-In Modules	
OTDR module D with 1550 nm wavelength	E8115D-APC
OTDR module D with 1625 nm filtered wavelength	E81162D-APC
OTDR module D with 1650 nm filtered wavelength	E81165D-APC
OTDR module D 1550/1625 nm	E8129D-APC
Ultra high resolution filtered 1650 nm OTDR	E81165C-HR-APC
OTDR module C with 1550 nm wavelength	E8115C-APC
OTDR module C with 1625 nm filtered wavelength	E81162C-APC
OTDR module C with 1650 nm filtered wavelength	E81165C-APC
Tunable DWDM OTDR module C band for OTU8000	E81WDM-C
OTDR module B with 1650 nm filtered wavelength	E81165B-APC
OTDR module B with 1550 nm wavelength	E8115B-APC
OTDR module B 1310/1550/1625 nm	E8136B-APC