OV-1000 Optical Time Domain Reflectometer (OTDR)

A LANscape® Solutions Product

features and benefits |

Windows® CE technology	Faster power-up time from sleep mode
80 MB internal flash memory	Eliminates need for a hard drive
USB ports and compact flash slot	Portable file transfer
Rugged and water/chemical resistant	Use in harsh conditions

Corning Cable Systems OV-1000 Optical Time Domain Reflectometer (OTDR) provides testing flexibility by combining a rugged platform with field-interchangeable multimode, single-mode and advanced testing modules. Designed for testing and troubleshooting of LAN, Telco, CATV and FTTx networks, all OTDR modules can be used as continuous wave (CW) light sources. A power meter and visual fault locator (VFL) are available as options on the mainframe. The OV-1000 utilizes Windows® CE technology, which allows for a fast power-up time of four seconds from sleep mode.

The OV-1000 also has an 80 MB internal flash memory that typically stores up to 1500 traces and eliminates the need for a hard drive, which can fail under extreme field conditions. For extra storage capacity, the unit offers USB A/B ports and a compact flash slot for portable file transfer. The OV-1000 OTDR product line offers a wide variety of multimode and single-mode modules and has the capacity to hold up to two modules at the same time. Modules can be easily switched out in the field in just a matter of seconds, without the use of tools.

(continued)

OV-1000 OTDR | Photo LAN731

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OV-1000 Optical Time Domain Reflectometer (OTDR)

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OV-1000 OTDR Kit | Photo LAN730

The OV-1000 has a touch screen keyboard that eliminates the need for an external keyboard and the rugged, splash-proof mainframe allows for testing in harsh conditions. The 6.4-in color touch screen is resistant to shock, water and most common chemicals used in the field. It is large enough to view both the trace and the event table simultaneously, which eliminates the need to toggle back and forth between the two. The unit accommodates up to two field-interchangeable modules, which eliminates the need to change modules as often and offers instantaneous AutoSync USB making it easier and faster to transfer files and perform software upgrades. Along with offering three OTDR test modes — auto, advanced and template trace — the OV-1000 is future-ready with the ability to accept protocol testing modules, such as Gigabit Ethernet.

Note: This test equipment is classified as a category 9 item under RoHS (Directive 2002-95-EC) and is exempt from the restriction.

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OV-1000 Optical Time Domain Reflectometer (OTDR)

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specifications |

Parameter	Specification
OV-1000 OTDR Mainframe[1]	
Display	Color touch screen; 640 x 480 TFT, 163 mm (6.4 in)
Interfaces	USB A main, USB B remote, compact flash, fiber inspection probe connector port (video)
Storage	Internal 80 MB (flash), USB stick 2 GB (optional), compact flash cards (optional)
Batteries[2]	Rechargeable Li-ion
Battery Operating Time	8 hrs as per Bellcore TR-NWT-001138
Power Supply	AC/DC adapter; input: 100 to 240 V, 50 to 60 Hz, 2 A max; output: 24 V DC, 90 watts
Operating Temperature	-5º to +50ºC (+23º to +122ºF)
Storage Temperature[3]	-40º to +70ºC (-40º to +158ºF)
Relative Humidity	0% to 95% max, non-condensing
Size (H x W x D)	32.2 x 19.7 x 10.9 cm (12.6875 x 7.75 x 4.3125 in)
Weight	2.5 kg (5.4 lb)
Vibration	< 1.5 g at 10 to 500 Hz (on 3 main axes)
Mechanical Shock	< 760 mm on 6 sides and 8 main edges (according to GR-196-CORE)
Power Meter - Optional	
Calibrated Wavelengths (nm)	850, 1300, 1310, 1490, 1550, 1625, 1650
Detector	InGaAs
Power Range	10 to -86 dBm
Power Uncertainty[4]	± 5 % ± 3 pW
Display Resolution	0.01 = max to -76 dBm; 0.1 = -76 dBm to -86 dBm; 1 = -86 dBm to min
Automatic Offset Nulling Range[5]	Max to -63 dBm
Tone Detection	270 Hz, 1 kHz, 2 kHz
Visual Fault Locator (VFL) – Optional	
Central Wavelength	Laser, 650 nm ± 10 nm
Pulse	Continuous wave (CW)
Typical Power Output[6]	3 dBm (2 mW)
Safety	Class 3R Laser Product

[1]All specifications valid at 23ºC ± 2ºC.
[2]Standard recharge time is three hours. Recharge temperature: 0º to 35ºC (32º to 95ºF).
[3]Not including internal batteries. Battery maximum storage temperature: 60ºC (140ºF).
[4]Up to 5 dBm.
[5]For ± 0.05 dB, from 18º to 28ºC.
[6]Typical values when coupled to detector with air gap.

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OV-1000 Optical Time Domain Reflectometer (OTDR)

A LANscape® Solutions Product

specifications | (continued)

Multimode Module[1]

Model	Wavelength (nm)	Dynamic Range[2,3] (dB)	Event Dead Zone[4] (m)	Attenuation Dead Zone[4] (m)
400-MD26	850 ± 20/1300 ± 20	27/26	1/1	3/4

Single-Mode Modules[1]

Model	Wavelength (nm)	Dynamic Range[5] at 10 µs (dB)	Dynamic Range[5] at 20 µs (dB)	Event Dead Zone[6] (m)	Attenuation Dead Zone[6] (m)
400-SD34	1310 ± 20/1550 ± 20	35/34	37/35	1/1	4.5/5
400-SD37	1310 ± 20/1550 ± 20	38/37	39/38	1/1	5/6

Quad Module[1]

Model	Wavelength (nm)	Dynamic Range[2,3,5] at 10 µs (dB)	Event Dead Zone[4,6] (m)	Attenuation Dead Zone[4,6] (m)
400-MDSD	850 ± 20/1300 ± 20	27/26	1/1	3/4
	1310 ± 20/1550 ± 20	35/34	1/1	4.5/5

[1]All specifications valid at 23ºC ± 2ºC.
[2]Typical dynamic range with longest pulse and three-minute averaging at SNR = 1.
[3]Multimode dynamic range is specified for 62.5 µm fiber. a 3 dB reduction is seen when testing 50 µm fiber.
[4]Typical dead zone of multimode reflectance below -85 dB.
[5]Typical dynamic range with three-minute averaging at SNR = 1.
[6]Typical dead zone of single-mode modules for reflectance below -45 dB, using a 5 ns pulse.

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OV-1000 Optical Time Domain Reflectometer (OTDR)

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specifications | (continued)

General

	400-MD26/400-MDSD	400-SD34/400-SD37/400-MDSD
Distance Range (km)	0.1, 0.3, 0.5, 1.3, 2.5, 5, 10, 20, 40	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260
Pulse Width (ns)	5, 10, 30, 100, 275, 1000	5, 10, 30, 100, 275, 1000, 10,000, 20,000
Multimode Launch Conditions	Class CPR 1 or 2	N/A
Linearity	± 0.03 dB/dB	± 0.03 dB/dB
Loss Threshold	0.01 dB	0.01 dB
Loss Resolution	0.001 dB	0.001 dB
Sampling Resolution	0.04 to 2.5 m	0.04 to 5 m
Sampling Points	Up to 128,000	Up to 128,000
Distance Uncertainty[1]	± (0.75 + 0.0025% x distance) m	± (0.75 + 0.0025% x distance) m
Measurement Time	User-defined (60 min. maximum)	User-defined (60 min. maximum)
Real-time Refresh	Guaranteed: ≤ 0.4 sec	Guaranteed: ≤ 0.4 sec, Typical: ≤ 0.3 sec
Stable Source Output Power[2]	-1.5 dBm	-8 dBm (SD34, MDSD), -4.5 dBm (SD37)
Recommended Calibration Cycle	1 year	1 year
Safety	Class 1M Laser Product	Class 1M Laser Product

[1]Does not include uncertainty due to fiber index and sampling resolution.
[2]Typical output power is given at 1300 nm for multimode and 1550 nm for single-mode.

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OV-1000 Optical Time Domain Reflectometer (OTDR)

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ordering information |

Part Number	Description
Basic Kits	
Basic Kits include OV-1000 mainframe, power supply, battery, appropriate OTDR port adapters, CD with OTSView PC emulation software and manual, cleaning supplies and hard-shell transit case.	
1000BK-SD34	Short-Range Dual Single-Mode OTDR (module 400-SD34) with SC and FC OTDR port adapters
1000BK-SD37	Mid-Range Dual Single-Mode OTDR (module 400-SD37) with SC and FC OTDR port adapters
1000BK-MD26	Dual Multimode OTDR (module 400-MD26) with SC and ST® Compatible OTDR port adapters
1000BK-MDSD	Dual Multimode and Single-Mode OTDR (module 400-MDSD) with SC and ST Compatible OTDR port adapters
Deluxe Kits	
Deluxe Kits include OV-1000 mainframe with power meter and VFL, power supply, battery, appropriate OTDR port adapters, CD with OTSView PC emulation software and manual, OTS PC batch processing software, cleaning supplies and hard-shell transit case.	
1000DK-SD34	Short-Range Dual Single-Mode OTDR (module 400-SD34) mainframe has power meter and VFL, SC and FC OTDR and meter port adapters, OTS batch software
1000DK-SD37	Mid-Range Dual Single-Mode OTDR (module 400-SD37) mainframe has power meter and VFL, SC and FC OTDR and meter port adapters, OTS batch software
1000DK-MD26	Dual Multimode OTDR (module 400-MD26) mainframe has power meter and VFL, SC and ST Compatible OTDR and meter port adapters, OTS batch software
1000DK-MDSD	Dual Multimode and Dual Single-Mode OTDR (module 400-MDSD) mainframe has power meter and VFL, SC and ST Compatible OTDR and meter port adapters, OTS batch software
Mainframes	
Standard components on mainframes include 6.4-in color touch screen, USB A/B ports, RJ-45 port and compact flash slot.	
1000-MAINF	OTDR Controller (same frame as basic frame)
1000-MAINF-VPM	OTDR Controller with power meter and VFL (same frame as deluxe frame)
OV-1000 Modules	
Includes SC OTDR port adapter(s).	
400-MD26	Multimode OTDR Module, 850/1300 nm
400-SD34	Single-Mode Short-Range OTDR Module, 1310/1550 nm
400-SD37	Single-Mode Mid-Range OTDR Module, 1310/1550 nm
400-MDSD	Multimode/Single-Mode Quad OTDR Module, 850/1300/1310/1550 nm

OV-1000 Optical Time Domain Reflectometer (OTDR)

A LANscape® Solutions Product

ordering information | (continued)

Part Number	Description
Accessories	
UI-SC	Universal Interface Source / OTDR Connector Adapter, SC
UI-ST	Universal Interface Source / OTDR Connector Adapter, ST® Compatible
UI-FC	Universal Interface Source / OTDR Connector Adapter, FC
OA-SC	Power Meter Connector Adapter, SC
OA-ST	Power Meter Connector Adapter, ST Compatible
OA-FC	Power Meter Connector Adapter, FC
OA-LC	Power Meter Connector Adapter, LC
OA-MTRJ	Power Meter Connector Adapter, MT-RJ
OTSREPORTER	PC Batch Processing Software
CASE-OV-1000	Hard-Shell Transit Case with wheels
PS-OV-1000	Power Supply for 100-240 V AC with US line cord
1000-OV-BATT	Replacement Battery for OV-1000
1000-MEMORY-2G	OV-1000 Memory Stick for 2GB of USB Storage (Windows® CE compatible)
1000-STYLUS	Replacement Stylus for OV-1000
TE-WARRANTY-1	1-Year Extended Warranty, includes all repairs and replacement charges of defective parts excluding freight; does not include normal, yearly calibration
TE-WARRANTY-2	2-Year Extended Warranty, includes all repairs and replacement charges of defective parts excluding freight; does not include normal, yearly calibration
OTDR Access Jumpers	
PTF-100M-6P5050	Portable Test Fiber Box, MM 62.5 µm fiber, ST Compatible to ST Compatible, 100 m
PTF-100M-6P3950	Portable Test Fiber Box, MM 62.5 µm fiber, SC to ST Compatible, 100 m
PTF-100M-6P3939	Portable Test Fiber Box, MM 62.5 µm fiber, SC to SC, 100 m
PTF-100M-5P5050	Portable Test Fiber Box, Pretium® 300 Multimode Solution, ST Compatible to ST Compatible, 100 m
PTF-100M-5P3950	Portable Test Fiber Box, Pretium 300 Multimode Solution, SC to ST Compatible, 100 m
PTF-300M-SP5865	Portable Test Fiber Box, single-mode fiber, SC UPC to SC APC, 300 m
PTF-300M-SP5454	Portable Test Fiber Box, single-mode fiber, FC UPC to FC UPC, 300 m
PTF-300M-SP5858	Portable Test Fiber Box, single-mode fiber, SC UPC to SC UPC, 300 m
PTF-300M-SP6161	Portable Test Fiber Box, single-mode fiber, ST Compatible UPC to ST Compatible UPC, 300 m

Note: Additional portable test fiber box configurations are available on request. Please contact a Corning Cable Systems Customer Service Representative for more information.

OV-1000 OTDR Optional Video Probe for Connector Inspection

A LANscape® Solutions Product

features and benefits |

Variety of applications	Patch cord and back panel connector inspection
Truly rugged and light-weight solution	Field ready
Image-capture capability	Enables report documentation
Ideal for all types of connectors	UPC, APC and more
Slim design	Easy use in crowded patch panels
Corning Cable Systems test equipment compatible	Less equipment and software to purchase

OV-1000 Tester with Probe | Photo LAN1669

Corning Cable Systems Handheld Video Probe is the ideal solution for inspecting the quality of a fiber optic connector end-face. The resulting images can be used to document end-face quality and cleanliness, since the coaxial illumination provides a clear view of end-face condition. The probe's design allows for one-hand operation with a magnification control wheel for users to adjust the image from 200x to 400x, as well as a focus control wheel to bring the image into focus.

The probe has an 8-pin mini-DIN output connector for a seamless connection to the OV-1000, OTS-600 and OVMini platform. There is no need for an additional external monitor and the images can be saved in JPEG format to the OV-1000, OTS-600 and OVMini flash memory. A variety of precision inspection tips are available for the video probe. The "universal" tips are used when viewing a patch cord connector end-face or when viewing a connector before plugging it into the patch panel. The "bulkhead" tips are used when viewing a connector on the backside of patch panels through the front of the adapter. This allows for convenient inspection without removing the connector from the patch panel. The video probe is available in two different packages to provide flexibility.

The video probe accessory package (VIPROBE-DUAL) allows both viewing and storage of connector images on the OV-1000, OTS-600 and OVMini. The USB module (VIPROBE-USB2) combined with the video probe accessory package allows output and image storage to personal computers or laptops.

OV-1000 OTDR Optional Video Probe for Connector Inspection

A LANscape® Solutions Product

OTS-600 Optical Tester | Photo LAN1668

OV-MINI Optical Tester | Photo LAN1670

Video Inspection Probe (VIP) | Photo LAN1672

specifications |

Model Number	**VIPROBE-DUAL**
End-Face Lighting	Coaxial illumination
Magnification	200x and 400x
Connector Output	8-pin mini-DIN
Weight	0.2 kg (0.44 lb)
Image Storage	Computer or Corning TEQ
Display	Computer or Corning TEQ
Battery Power Supply	Computer or Corning TEQ
AC Power Supply	Computer or Corning TEQ

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OV-1000 OTDR Optional Video Probe for Connector Inspection

A LANscape® Solutions Product

ordering information |

Part Number	Description
VIPROBE-DUAL	Video Inspection Probe (200x/400x magnification), FC-SC tip for bulkheads, U25M universal patch cord tip for 2.5 mm ferrules, compartmented plastic case for tips
VIPROBE-DUAL Tips	
VIPROBE-FSE	FC and SC Tip for bulkhead adapter
VIPROBE-FSA	FC and SC/APC Tip for bulkhead adapter
VIPROBE-LC	LC Tip for bulkhead adapters
VIPROBE-LCA	LC/APC Tip for bulkhead adapter
VIPROBE-MTP	MTP® Tip for bulkhead adapter - extended
VIPROBE-MTPA2	MTP/APC Tip for bulkhead adapter - extended, reversible
VIPROBE-ST	ST® Tip for bulkhead adapter
VIPROBE-U12	Universal Patch Cord Tip for 1.25 mm ferrules
VIPROBE-U12A	Universal Patch Cord Tip for 1.25 mm ferrules APC
VIPROBE-U25	Universal Patch Cord Tip for 2.5 mm ferrules
VIPROBE-U25A	Universal Patch Cord Tip for 2.5 mm ferrules APC
VIPROBE-OTAPA	OptiTap® Bulkhead Adapter
VIPROBE-OTIAM-OTIAF	OptiTip™ MT Bulkhead Adapter, includes tip plus male and female adapters
VIPROBE-OTIAM	Male Adapter Tube for FIPT-400-OTIP-MT-APC tip
VIPROBE-E2K	E-2000 Tip for bulkhead adapter
VIPROBE-E2KA	E2000 APC Tip for bulkhead adapters
VIPROBE-AD	Adapter Tip (allows the user to attach any Westover probe tip that does not include optics to EXFO's probe)

OV-1000 OTDR Optional Ethernet Module

A LANscape® Solutions Product

features and benefits |

Connection to OV-1000 platform	Eliminates need for external monitor
Verifies connectivity in native formats	Can test both copper and optical-based networks
Transmits and analyzes multiple streams	Install, commission and maintain Ethernet networks
Expert-mode capability	Set test thresholds for clear pass/fail test results

This Gigabit Ethernet testing module brings performance assurance to Ethernet-based services. Its testing functionality provides all the necessary measurement tools for verifying connectivity in its native format: 10/100/1000BASE-T, 1000BASE-SX, 1000BASE-LX and 1000BASE-ZX.

The Gigabit testing module can be used in three configurations:

- Module to Module - requires two modules; in this setup, one of the modules is placed in loop back mode so that it can act as a switch
- Module to Diverter - requires one module and the 1000-DIVERTER; the diverter is a simple switch which flips the sender and receiver MAC address and transmits the packet of data back to the module
- Module to Switch - requires one module and one installed Gigabit switch; this setup is typically used for troubleshooting an existing Gigabit network

(continued)

Gigabit Ethernet Module | Photo TEQ33

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OV-1000 OTDR Optional Ethernet Module

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Gigabit Ethernet Module in OV-1000 | Photo TEQ34

The Gigabit testing module offers three essential Ethernet testing methods:

Ethernet Performance Validation (RFC 2544)

- The Internet Engineering Task Force (IETF) has put together a test methodology to address the issues of performance verification at the layer two and three levels. RFC 2544, a "Benchmarking Methodology for Network Interconnect Devices," specifies the requirements and procedures for testing throughput, back-to-back frames (burst), frame loss and latency. The Gigabit Testing Module can perform the RFC 2544 test suite for 10/100/1000BASE-T and optical GigE interfaces at all frame sizes and at full-line rate. The Gigabit Testing Module supports automated RFC 2544 testing, which helps ensure repeatable results. Automation also provides ease of use for field technicians by enabling accurate, efficient measurements and results through a clear and simple pass/fail indication.

Bit-Error Rate Testing (BERT)

- Ethernet is increasingly carried across a variety of layer-one media for longer distances. This creates a growing need for the certification of Ethernet transport on a bit-per-bit basis, which can be done using bit-error rate testing (BERT).

  BERT uses a pseudo-random binary sequence (PRBS) encapsulated into an Ethernet frame, making it possible to go from a frame-based error measure ment to a bit-error-rate measurement. This provides the bit-per-bit error count accuracy required for the acceptance testing of physical-medium transport systems. BERT over Ethernet is typically used when Ethernet is carried transparently over layer-one media.

(continued)

OV-1000 OTDR Optional Ethernet Module

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Diverter with Media Converter | Photo TEQ31

Quality of Service (Frame Analysis)

- Data services are making a significant shift towards supporting a variety of applications on the same network. This shift has fueled the need for quality of service (QoS) testing to ensure the condition and reliability of services. Service providers need to assign different qualities of service to each type of service they offer. By providing the ability to configure different Ethernet and IP QoS parameters such as VLAN ID (802.1Q), VLAN priority (802.1p), VLAN stacking (802.1ad Q-in-Q), ToS and DSCP on multiple streams, the Gigabit Testing Module allows service providers to simulate and qualify different types of applications running over their Ethernet network.

  This frame analysis feature enables multi-stream traffic generation and analysis, which allows for troubleshooting Ethernet circuits as well as customer-traffic analysis and error identification. Thanks to its packet jitter-measurement capability (RFC 3393), the Gigabit Testing Module lets service providers efficiently benchmark transport networks when it comes to delay-sensitive traffic such as voice and video over IP.

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specifications |

Optical Interfaces

	1000-SFP-850	1000-SFP-1310	1000-SFP-1550
PMD	1000BASE-SX	1000BASE-LX	1000BASE-ZX
Wavelength	850 nm	1310 nm	1550 nm
Tx Level	-9 to -3 dBm	-9.5 to -3 dBm	0 to +5 dBm
Rx Level Sensitivity	-20 dBm	-22 dBm	-22 dBm
Maximum Reach	550 m	10 km	80 km
Transmission Bit Rate	1.25 Gb/s	1.25 Gb/s	1.25 Gb/s
Reception Bit Rate	1.25 Gb/s	1.25 Gb/s	1.25 Gb/s
Tx Operational Wavelength Range	830 to 860 nm	1270 to 1360 nm	1540 to 1570 nm
Laser Type	VCSEL	FP	DFB
Eye Safety	CLASS 1	CLASS 1	CLASS 1
Connector	LC	LC	LC
Transceiver Type	SFP	SFP	SFP

OV-1000 OTDR Optional Ethernet Module

A LANscape® Solutions Product

specifications | (continued)

Electrical Interfaces

	10BASE-T	100BASE-T	1000BASE-T
Tx Bit Rate	10 Mb/s	125 Mb/s	1 Gb/s
Tx Accuracy	± 100 ppm	± 100 ppm	± 100 ppm
Rx Bit Rate	10 Mb/s	125 Mb/s	1 Gb/s
Rx Measurement Accuracy	± 4.6 ppm	± 4.6 ppm	± 4.6 ppm
Duplex Mode	Half and full duplex	Half and full duplex	Full duplex only
Jitter Compliance	IEEE.802.3	ANSI X3.263-1995	IEEE.802.3
Connector	RJ-45	RJ-45	RJ-45
Maximum Reach	100 m	100 m	100 m

Gigabit Module

	1000-GIG-MOD
Ports	(2) 10/100/1000BASE-T and (1) GigE SFP
Connector Types	RJ-45 (ISO 8877) and SFP
Duplex Mode	Full/half duplex auto-negotiation
Maximum Port Capacity	2000 (bi-directional) Mb/s
Size (H x W x D)	250 x 96 x 260 mm (9.75 x 3.74 x 10.14 in)
Weight (without transceivers)	0.5 kg (1.1 lb)
Operating Temperature	0°C to +40°C (+32°F to +104°F)

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OV-1000 OTDR Optional Ethernet Module

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ordering information |

Part Number	Description
1000-GIG-MOD	Gigabit Ethernet Testing Module for OV-1000 platform; module has (2) 10/100/1000BASE-T and (1) Gigabit Ethernet SFP optical port; performs RFC 2544, BERT and frame analysis
1000-SFP-850	1000BASE-SX (850 nm) Optical SFP Transceiver Module with LC connectors for Gigabit testing module (VCSEL source)
1000-SFP-1310	1000BASE-LX (1310 nm) Optical SFP Transceiver Module with LC connectors for Gigabit testing module (FP Laser source)
1000-SFP-1550	1000BASE-ZX (1550 nm) Optical SFP Transceiver Module with LC connectors for Gigabit testing module (DFB Laser source)
1000-DIVERTER	Diverter for Gigabit Ethernet testing; includes Ethernet Network Interface Unit with a loop back testing feature with RJ45 interface; also includes a media converter with SFP interface; power supplies and manual; SFP purchased separately

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