Fiber Optic Light Sources

7XT Light Source

375

The Photodyne 7XT Light Source is used as a stand alone single-mode dual wavelength laser light source, or in conjunction with the Photodyne 17XTG/I Power Meter, to perform a variety of measurements on fiber optic cables, splices and connectors. Applications include:

- Attenuation testing
- Link conformance testing
- Fiber identification

Rugged design for maximum durability

The Photodyne 7XT light source is housed in a sturdy metal frame covered in polyurethane that can easily handle the punishment of typical field use. Membrane switches on the control panel keep contaminants out of the unit, assuring greater long-term reliability.

The 7XT light source includes:

- Light source
- AC adapter
- Instruction manual
- 9V NEDA alkaline battery
- Carrying case

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2XT Optical Mini-Source

376

The Photodyne 2XT Optical Mini-Source is a pocket-sized, low cost dual wavelength LED light source that can be combined with the Photodyne 3XT Optical Mini-Meter to provide complete optical power measurement capabilities.

The 2XT is available in two models featuring surface-mount circuit integration. The only difference between the two models is the wavelengths at which they operate–either 850 nm/1300 nm or 1300 nm/1550 nm.

The 2XT optical mini-source includes:

- 2XT Mini-source
- 9V NEDA alkaline battery
- Instruction card

Features — Benefits

7XT Light Source

Single connector dual wavelength output	Eliminates need for two separate sources for dual wavelength testing
Auto power level calibration (-10.0 dBm)	Ensures accurate and stable loss readings at two (1310/1550 nm) wavelengths
Modulation (tone) at 270 Hz, 1 kHz, 2 kHz	Provides signal for fiber identification with either a fiber identifier or power meter
AC, 9V Alkaline or rechargeable batteries	Flexibility

2XT Optical Mini Source

Two wavelength in one compact package	Eliminates need for two instruments

Product Referral Generator

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Specifications for Fiber Optic Light Sources

Product number	7XT	2XT 8513X	2XT 1315X
Market Code			
Description	Light Source	Optical Mini-Source	
Size H x W x D cm (in.)	18.6 x 9.5 x 4.6 (7.7 x 3.75 x 1.8)	5.7 x 9.4 x 1.5 (2.25 x 3.7 x 0.6)	
Net weight kg (lbs.)	0.49 (1.09)	0.13 (0.28)	
Shipping weight kg (lbs.)	1.0 (2.28)	0.21 (0.46)	
Operating temperature	0° to 40°C (-32° to 104°F)	0° to 40°C (32° to 104°F)	
Storage temperature	-40° to 70°C (-40° to 158°F)	-40° to 70°C (-40° to 158°F)	
Relative humidity	5% to 95%	5% to 90%	
Internal battery	Single 9V alkaline battery or 9V rechargeable nickel cadmium	Single 9V alkaline battery	
Typical battery life	12 hours	10 hours	
External power supply	AC	—	—
Laser safety	Class 1	—	—
Emitter type	Laser	LED	LED
Wavelength (nm)	1310/1550	850/1300	1300/1550
Connector types available	C, J, T	T	C, J, T
Output power (dBm)			
9/125 µm	-10	—	-20 typical
62.5/125 µm	—	-10	—
100/140 µm	—	—	—
Wavelength vs. temperature	0.45 nm/°C typical	—	—
RMS spectral width	<3 nm typical, 10 nm maximum	—	—
Repeatability	±0.25 dB	—	—
Stability			
1 hour	±0.05 dB	—	—
24 hour	±0.10 dB	—	—
Modulation	270 Hz, 1 kHz, 2 kHz	—	—
Display type	LCD	—	—

Ordering information	7XT	2XT-8513X	2XT-1315X
Packaging	1/cs.	1/cs.	1/cs.
Minimum order	1 each [87202766]	1 each [464578]	1 each [464577]
With SC interface (C),	054007-92682	N/A	054007-92723
With FC/PC interface (J),	054007-92680	054007-92416	054007-92679
With ST* interface (T),	054007-92681	N/A	054007-92722

Fiber Optic Power Meters

17XTG Hand-Held Power Meter

378

The most powerful, full-featured optical power meter on the market.

The Photodyne 17XTG Hand-Held Fiber Optic Power Meter represents the cutting edge in fiber optic testing technology. Extremely powerful and flexible, the Photodyne 17XTG power meter boasts a wider dynamic range and higher accuracy than previous units. The unit is designed for:

- Single-mode and multimode use
- LAN applications
- Link commissioning
- Maintenance and restoration
- Engineering and testing

The Photodyne 17XTG power meter works in conjunction with the Photodyne 7XT Light Source.

Designed for a variety of applications

The extended dynamic range of the power meter allows the unit to provide testing capabilities for a wide spectrum of applications.

High-performance applications such as analog cable TV systems and erbium-doped amplifiers are accommodated with the upper end of the Photodyne 17XTG power meter's dynamic range (+20 dBm).

More basic applications, such as today's SONET and ATM digital systems, are handled easily.

As today's communications industry continues to evolve, the Photodyne 17XTG will provide total testing capabilities for current and future applications.

The 17XTG hand-held power meters include:

- 17XTG power meter
- AC adapter
- 9V NEDA alkaline battery
- Instruction manual
- Carrying case

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Features — Benefits

17XTG Power Meters

Power level measurements up to +20 dBm	Provides power level testing for high performance applications such as Analog CATV and Erbium-Doped Amplifiers
Store/recall up to 1200 measurements (600 memory locations)	Eliminates printer or PC at field test location for data print and storage
User adjustable threshold setting	Allows user to select dB reference level to alert user of excess loss on a fiber
RS232C	Allows for printing or uploading of stored data
AC, 9V alkaline or rechargeable batteries	Flexibility

Product Referral Generator

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3XT Optical Mini-Meter

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The Photodyne 3XT Optical Mini-Meter is a pocket-size optical power meter that can be used with the Photodyne 2XT Optical Mini-Source to provide complete optical power measurement capabilities. The 3XT features state-of-the-art surface mount circuit integration and a large-area Ge detector that is calibrated to provide measurement capabilities at 850 nm, 1300 nm and 1550 nm. A universal adapter interface allows the user to easily change connectors as needed.

The 3XT mini-meter includes:

- 3XT mini-meter
- 9V NEDA alkaline battery
- Instruction card

Features — Benefits

3XT Optical Mini-Meter

Surface mount circuit integration	Small, lightweight and highly reliable
850,1300,1550 nm calibrations	Can be used in multimode and single-mode applications

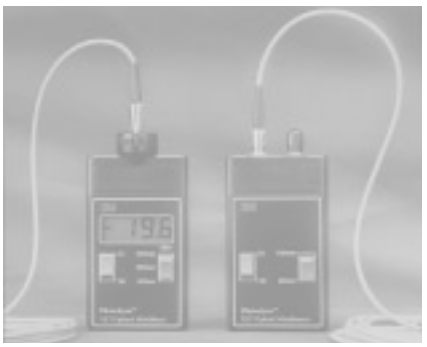
Specifications for Fiber Optic Power Meters

Product number	17XTG	3XT
Size H x W x D cm (in.)	18.6 x 9.5 x 4.6 (7.7 x 3.75 x 1.8)	5.7 x 9.4 x 1.5 (2.25 x 3.7 x 0.6)
Net weight kg (lbs.)	0.5 (1.1)	0.13 (.25)
Shipping weight kg (lbs.)	1.41 (3.1)	0.21 (.5)
Operating temperature	-5° to 50°C (23° to 122°F)	0° to 40°C (-32° to 104°F)
Storage temperature	-40° to 70°C (-40° to 158°F)	-40° to 70°C (-40° to 158°F)
Relative humidity (non-condensing)	5% to 95%	5% to 95%
Power	9V NEDA 1604 alkaline battery or external AC power supply	9V alkaline battery
Battery life	20 hours alkaline	20
AC power	External AC power supply	N/A
Optical interface	2000 series adapter caps	2000 series adapter caps
Sensor type	Large area Ge	Ge
Wavelengths (nm)	780, 820, 850, 980, 1310, 1480, 1550	850, 1300, 1550
Measurement accuracy (@ -20 dBm) dB	±0.25	10% of reading
Dynamic range (dBm) 1300 nm 1550 nm	 +21 to -64 +20 to -64	 +3 to -50 +3 to -50
Measurement resolution (dBm)	0.01	0.1
Display type	LCD	LCD
Printer interface	RS232C, RJ-11 connector	N/A
Printer port speed (bits/second)	300, 600, 1200, 2400, 4800, 9600	N/A

Ordering information	17XTG	3XT
Packaging	1/cs.	1/cs.
Minimum order	1 each	1 each [87000011]
UPC		
With SC interface, 110V, 2-prong AC	054007-92449	054007-92417
With SC interface, 220V, 2-prong AC	051138-36217	—
With FC interface, 110V, 2-prong AC	051138-36207	—
With FC interface, 220V, 2-prong AC	051138-36208	—
With ST* interface, 110V, 2-prong AC	051138-36206	—
With ST* interface, 220V, 2-prong AC	051138-36213	—
PC-based loss analysis software	051138-36222	—

Fiber Optic Test Sets

23XT Fiber Optic Test Kit



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The Photodyne 23XT Fiber Optic Test Kit combines the Photodyne 2XT Optical Mini-Source and 3XT Optical Mini-Meter to provide a low cost test set. Using the latest in cost-effective design technology, the units perform a variety of measurements including:

- Attenuation testing
- Link conformance testing

The 23XT test kits are complete loss test kits configured for either single-mode or multimode loss testing. All components are housed in a compact rugged case for transportation to and from the job site.

The 23XT test kit includes:

- 2XT mini-source
- 3XT mini-meter
- Adapter caps
- Batteries
- Instruction card
- Appropriate jumper cable

177XTG Test Set

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The Photodyne 177XTG Test Set is a fiber optic test set that reduces measurement time, improves quality of test results, stores loss measurements and automatically calibrates to reduce windshield time in end-to-end testing. Loss measurements are stored in the power meter's 600 internal memory locations for downloading to a printer or uploading to a personal computer. The

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177XTG test set is designed to test optical networks for dB loss and provide power level measurements and fiber identification. The test set's wide dynamic range allows testing of single-mode fiber networks in all markets; such as CATV, Telco and Premises.

The 17XTG -PC Upload Software package is a Windows-based product that automatically uploads data from the 177XTG test set for documentation. The uploaded data may then be converted to an Excel spreadsheet for maintaining a network database. The 177XTG, along with the upload software, is an economical fiber test management system.

The test set includes:

- 7XT light source
- 17XTG hand-held power meter
- Connector adapter cap
- Two AC adapters
- Field portable carrying case
- Instruction manuals

Optional accessories are:

- 17XTG-PC upload software

Product Referral Generator

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Specifications for Fiber Optic Test Sets

Model	23XT-8513	23XT-1315	177XTG
Size H x W x D cm (in.)	22 x 14.4 x 9 (10 x 7 x 4.5)	22 x 14.4 x 9 (10 x 7 x 4.5)	18.6 x 9.5 x 4.6 (7.7 x 3.25 x 1.8)
Net weight kg (lbs.)	0.9 (2)	0.9 (2)	1.4 (3)
Shipping weight kg (lbs.)	3.4 (7.4)	3.4 (7.4)	3.6 (8)
Operating temperature	0° to 40°C (32° to 105°F)	0° to 40°C (32° to 105°F)	-5° to 50°C (23° to 122°F)
Storage temperature	-40° to 70°C (-40° to 158°F)	-40° to 70°C (-40° to 158°F)	-40° to 70°C (-40° to 158°F)
Battery type	9V alkaline	9V alkaline	Rechargeable
Battery life (hours)	20/5	20/5	5/20
AC power	N/A	N/A	Adapter
Transmitter	LED	LED	Laser Diode
Wavelength (nm)	850/1300 ±30	1300/1550 ±30	1310/1550 ±20
Output power (dBm) 62.5/125 9/125	 -10/-20 —	 — -20/-20	 — -10
Spectral width (nm)	60	60	< 3 nm
Stability typical (dB) 1 hour 24 hours	 ±0.1 N/A	 ±0.1 N/A	 ±0.05 ±0.05
Repeatability (dB)	0.2	0.2	0.2
Receiver			
Type of detector	Ge	Ge	Ge
Wavelength range (nm)	850 to 1550	850 to 1550	780 to 1600
Measurement accuracy (dB)	±0.5	±0.5	±0.25
Dynamic range (dBm) 850 nm 1310 nm 1550 nm	 +3 to -50 +3 to -50 +3 to -50	 +3 to -50 +3 to -50 +3 to -50	 +24 to -54 +21 to -64 +20 to -64
Measurement resolution (dBm)	0.1	0.1	0.01
Display type	LCD	LCD	LCD
Other			RS-232C
Ordering information	**23XT-8513**	**23XT-1315**	**177XTG**
Packaging	1/cs.	1/cs.	1/cs.
Minimum order	1 each	1 each [87014699]	1 each [87203667]
With SC interface (C)	N/A	92748	36204
With FC-PC interface (J)	N/A	92749	36202
With ST* interface (T)	054007-92751	054007-92750	051138-36203

Fiber Optic PC based OTDRs

5350 Modular Optical Test Instrument

384

Convert a notebook computer into a full-featured OTDR

The Photodyne 5350 Modular Optical Test Instrument brings complete fiber optic testing to any notebook computer. With testing capabilities at 1310 nm and 1550 nm, the 5350 provides all the power and features of larger, more expensive mainframe OTDRs—in a highly portable, battery- or AC-operated package.

The 5350 consists of three basic elements:

- Modular tray that simply attaches to the underside of a notebook computer
- Optical modules which are inserted into slots in the modular tray
- 3M application software easily installed by the user

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Product Referral Generator

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ScotchMark™ Electronic Marker System	pg. 222
Fibrlok Splice Trays	pg. 170

Features — Benefits

Photodyne 5350 Modular Optical Test Instrument

Auto test operation	Easy to use, user friendly
PC-based flexibility	Compatible with most computers to provide PC and OTDR capabilities in one package
Modular	Small package accommodates customer testing needs
Battery powered	Transportable for use in field environments
Auto splice analysis	Saves time
Automatic (ORL)	Saves time and improves accuracy
On-line help	No need to carry instruction manual
Fine cursor and trace movement	Improves measurement accuracy

The user can install three optical modules, or two optical modules and one battery module for prolonged operating life. This modularity allows the user to customize the unit to fit a variety of applications.

The 5350 provides all the applications of a dedicated OTDR:

- Link installation and restoration
- Splice loss measurement
- Troubleshooting fiber systems
- Long-term link analysis

The 5350 is easy to use and requires minimal training. Using simple, menu-driven operation, the 5350 guides the user through a wide range of concise OTDR measurements:

- Absolute distance
- Two-point distance
- Two-point loss
- Fiber attenuation
- Splice loss
- Back reflectance
- ORL

The unit provides concise, easy-to-read [illegible] standard PC graphics printer. Future measurement needs are met through 3M software upgrades.

By pressing a single "auto-test" button, the 5350 automatically scans the fiber trace and measures distance, loss and back reflection values for all fiber features. This allows the user to quickly pinpoint breaks or locate the end of the fiber.

The unit's ability to compare a new fiber trace with a previous trace of the same fiber allows the user to quickly identify where a fault has occurred. Enormous trace file storage capacity allows the OTDR to carry a complete archive of the fiber network for easy access during restoration.

Advantages of PC-based [illegible]

The 5350 is not a stand-alone unit; its PC-based architecture provides a cost-effective solution that offers many advantages:

- Can use notebook for other software applications
- Fully upgradeable—easy to reconfigure to meet changing needs
- Disk storage and modem capabilities allow unlimited data transfer
- Convenient off-line analysis
- User-programmable and RS-232 controllable
- Easy configuration via serial port

The 5350 is controlled by 3M OTDR Operating Software, which offers standard OTDR features and more:

- Auto splice
- Accurate measurements of saturated back-reflections
- Total optical return loss measurement
- Improved marker and cursor movement
- Easier installation

Specifications for Fiber Optic OTDRs

Model	5350 Single-Mode 1310-010	1550-010	1310-010	5350 Multimode 0850-062	1300-062	8513-062
Type	OTDR			OTDR		
Size H x W x D cm (in.)	3.1 x 31.5 x 24.5 (1.2 x 12.4 x 9.65)			3.1 x 31.5 x 24.5 (1.2 x 12.4 x 9.65)		
Net weight kg (lbs.)	2.0 (4.5)			2.0 (4.5)		
Shipping weight kg (lbs.)	5.0 (11)			5.0 (11)		
PC requirements	AT, 386, 486, or compatible PC, or laptop with math coprocessor; 1 MB RAM, hard disk, DOS 3.3 or above; VGA, EGA, or Hercules/color, monochrome, LCD, or gas plasma			AT, 386, 486, or compatible PC, or laptop with math coprocessor; 1 MB RAM, hard disk, DOS 3.3 or above; VGA, EGA, or Hercules/color, monochrome, LCD, or gas plasma		
Operating temperature	0° to 50°C (32° to 122°F)			0° to 50°C (32° to 122°F)		
Storage temperature	-40° to 70°C (-40° to 158°F)			-40° to 70°C (-40° to 158°F)		
Relative humidity	5% to 95%			5% to 95%		
Distance resolution	5 cm			5 cm		
Distance accuracy	±0.3 m ± 0.01% of measured value			±0.3 m ± 0.01% of measured value		
Horizontal scale	10 m to 160 km full screen			10 m to 160 km full screen		
Attenuation resolution (dB)	0.01			0.01		
Attenuation linearity (dB/dB)	0.05			0.05		
Vertical scale (dB)	1.6 to 40 full screen			1.6 to 40 full screen		
Interface options	RS232C			RS232C		
Battery life	8 hours			8 hours		
Wavelengths (nm)	1310 ± 20	1550 ± 20	1310/1550 ± 20	850 ± 20	1300 ± 20	850/1300 ± 20
Fiber types (µm)	9/125	9/125	9/125	62.5/125	62.5/125	62.5/125
Dynamic range backscatter (dB)	24	22	23/21	21	20	20/19
Attenuation deadzone (m)	12	12	13/13	13	13	14/14
Distance range (km)	160	160	160	160	160	160
Pulse widths (ns)	50/150/600/2400/10000			20/50/200/400/600		
Fault detection threshold (dB)	0.05	0.05	0.05	0.05	0.05	0.05
Connector type	C, J, T			T		

Ordering Information for Fiber Optic OTDRs

Model number	Packaging	Minimum Order	UPC
5300 Operating Software	1/cs.	1 each	054007-92419
5350 1310 nm SM Module w/SC Interface	1/cs.	1 each	054007-92423
5350 1310 nm SM Module w/FC Interface	1/cs.	1 each	054007-92424
5350 1310 nm SM Module w/ST* Interface	1/cs.	1 each	054007-92425
5350 1550 nm SM Module w/SC Interface	1/cs.	1 each	054007-92426
5350 1550 nm SM Module w/FC Interface	1/cs.	1 each	054007-92439
5350 1550 nm SM OTDR Module w/ST* Interface	1/cs.	1 each	054007-92440
5350 1310 nm/1550 nm SM Module w/SC Interface	1/cs.	1 each	054007-92441
5350 1310 nm/1550 nm SM Module w/FC Interface	1/cs.	1 each	054007-92427
5350 1310 nm/1550 nm SM OTDR Module w/ST* Interface	1/cs.	1 each	054007-92428
5350 850 MM OTDR Module w/ST* Connector	1/cs.	1 each	054007-92420
5350 1300 nm MM OTDR Module w/ST Connector	1/cs.	1 each	054007-92421
5350 850 nm/1300nm MM OTDR Module w/ST Connector	1/cs.	1 each	054007-92422
5350 Battery Module	1/cs.	1 each	054007-92429
5351 Expansion Tray	1/cs.	1 each	054007-92430
5358 Transit Case	1/cs.	1 each	054007-92437
5359 Expansion Bus Interface Cable	1/cs.	1 each	054007-92438

Fiber Identifier

8000XGT Fiber Identifier

386

The Photodyne 8000XGT Fiber Identifier is designed for fast, accurate identification and traffic testing of fiber optic lines without cutting the fiber line or interrupting normal service. Ideal for use during routine maintenance and line modification, this small, hand-held unit can be used to locate any particular fiber line, non-intrusively identify live fibers and determine whether or not traffic is present.

The 8000XGT includes:

- Instruction manual
- 9V alkaline battery
- Carrying case
- Piston head adjustment tool

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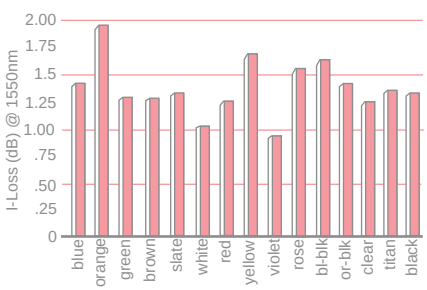
Features — Benefits

Photodyne 8000XGT Fiber Identifier

Greater than -50 dBm sensitivity at 1550 nm	Assures positive identification of traffic
Automatic self-test after each fiber insertion	Assures accurate performance
Transmission direction indicators	Accurate identification of signal
Low insertion loss at 1310 nm and 1550 nm	Eliminates system interruption
Internal tri-piston head design	Can be used on 250 µm, 900 µm, ribbon, and 3 mm jacketed cable



8000XGT Fiber Identifier - Fiber Color

Product Referral Generator

Specifications for Photodyne™ 8000XGT Fiber Identifier

Model	8000XGT
Body H x W x L cm (in.)	6.1 x 3.4 x 22.4 (2.40 x 1.15 x 8.83)
Test head H x W x L cm (in.)	2.0 x 2.9 x 3.8 (0.80 x 1.15 x 1.50)
Carrying case H x W x L cm (in.)	4.9 x 22.5 x 26.5 (1.93 x 8.85 x 10.43)
Shipping weight	0.9 kg (2 lbs.)

Environmental Specifications

Operating temperature	0° to 40°C (32° to 104°F)
Storage temperature	-20° to 65°C (-4° to 149°F)
Relative humidity (non-condensing)	5% to 95%

Performance

Spectral operating range		800 nm to 1600 nm			
Fiber*	**Wavelength**	**Sensitivity****		**Bend Loss****	
Size & type	nm	Fiber Core Power, dBm		dB	
		Minimum	Typical	Typical	Maximum
250 µm O.D.	1550	-48	-52	1.2	1.5
250 µm O.D.	1310	-40	-43	0.2	0.5
900 µm O.D.	1310	-37	-40	0.5	0.8
3 mm O.D.	1550	-30	-33	2.7	3.5
3 mm O.D.	1310	-27	-30	0.6	1.0
Tone	1 kHz ± 5% sq. wave and 2 kHz ± 5% sq. wave				
Power	SIngle 9V alkaline				
Battery life	> 8 hours (typical operation)				

Ordering information

Packaging	1/cs.
Minimum order	1 each
UPC	054007-92325 [465629]

Note:
*All specifications are defined with Corning/Siecor Smf-28 type single-mode fiber.
**Sensitivity and bend loss specifications are defined with Corning 250 µm O.D. white coated fiber and Siecor 3 mm O.D. yellow jacketed patch cable with internal 900 µm O.D. white coated fiber.

Fiber Optic Adapters

2000 Series Fiber Optic Adapters

Fiber Optic Adapters are designed to thread onto most Photodyne Power Meters. These adapters can also be used on the 3XT and 17XTG instruments with built-in threaded sensors. These adapters mate Photodyne sensors to a wide variety of industry standard fiber optic connectors.

Ordering Information for Fiber Optic Adapters

Product number	Description	Pkg. kg (lbs.)/cs.	Min. order	UPC
2003	Amphenol 905/906 Series SMA Adapter	1/cs. 0.4 (1.0)	1 each	054007-71962
2005	Blank Adapter	1/cs. 0.4 (1.0)	1 each	054007-71965
2012	NEC D4 Adapter	1/cs. 0.4 (1.0)	1 each	054007-71971
2017	Lucent 3M Biconic Adapter	1/cs. 0.4 (1.0)	1 each	054007-71975
2021	FC/PC Adapter	1/cs. 0.4 (1.0)	1 each [573633]	054007-91154
2041	Lucent (3M) ST* Adapter	1/cs. 0.4 (1.0)	1 each [632069]	054007-72024
2058	NTT SC Adapter	1/cs. 0.4 (1.0)	1 each [464586]	054007-72089
2059	FDDI Adapter Cap	1/cs. 0.4 (1.0)	1 each	051138-19482

Fiber Optic Testing Accessories

#	Product description	Pkg.	Min. order	UPC
1.	**Customer Training Seminars-Fiber Optic Training**			
	3M offers comprehensive training programs designed to benefit fiber optic supervisors, managers, and systems engineers as well as construction and maintenance personnel. Training is conducted at the Austin, Texas training facility, year-round. This course is conducted by 3M Technical Service utilizing several instructors with years of field application experience. Course attendance is limited to ensure a low student-to-instructor ratio, maximizing student participation. Classroom instruction provides the theory of operation, fiber splicing, cable terminating and practical troubleshooting techniques using Photodyne™ test equipment. The course is intermixed with hands-on training to reinforce classroom presentations and lecture/discussions. Outline of course: • Basic principles of fiber optic transmission • Fiber optic cable construction and application • Parameters for joining fibers • Hands-on cable splicing fibers • Fiber termination and interconnection techniques • Hands-on connector terminations and testing • Interconnection devices • Cable termination and protection • Field applications and terminating options • Fiber optic system testing theory • Photodyne test equipment training (For more information, contact our training administrator at 1-800-426-8688 ext. 984-3975.)	80-6107-8071-4	N/A	054007-92683