33-960 Series – Micro OTDRs

Designed with installers in mind, 33-960 Series Micro OTDRs offer excellent performance and ease of use in a truly handheld, lightweight and rugged package. Available as either an 850/1300 nm (multimode) or 850/1300/1310/1550 nm (multimode and single mode) OTDR, they are ideally suited for the installation and troubleshooting of LAN, campus and WAN fiber networks. Both models combine high measurement precision with the user friendliness of one-button operation resulting in accurate characterization of connectors and splices in addition to fast and reliable fault location.

With the MB option, these OTDRs provide clear PASS/FAIL indications. Distance, loss and ORL for each event is reported in a trace summary table making full certification of the link possible. Each OTDR is shipped in a kit containing everything you need to get started on the job, including a ruggedized carrying case, PC software, rechargeable batteries and wall charger.

- **Short Attenuation and Event Dead Zones** – for accurate location and characterization of events
- **Autotest Function** – provides simple one-button operation
- **Fast Data Acquisition** – important for troubleshooting intermittent problems
- **Certifying OTDR Option** – for tier-2 certification
- **Optional Macro Bend detection** – accurately detects macro bends in singlemode fiber

Specifications

Testing	33-960-10	33-960-30
Wavelength [nm]	850, 1300	850, 1300, 1310, 1550
Dynamic Range [dB]	24 / 25	24 / 25 / 29 / 28
Attenuation dead zone [m]	11 / 11	11 / 11 / 11 / 12
Pulse width [ns]	10, 30, 100, 275, 1000, 2500, 10000	
Event dead zone [m]	2.5 worst case	
Launch Conditions (MM)	Class CPR 1 or 2	
Linearity [dB / dB]	± 0.03	
Loss threshold [dB]	0.05	
Loss resolution [dB]	0.01	
Sampling resolution [m]	0.16 to 5	
Sampling points	Up to 30000	
Typical real time refresh [1/sec]	4	
Distance uncertainty [m]	± (0.75 + 0.0025% x distance + sampling resolution)	
Distance range [km]	0.1 to 40	MM: 0.1 to 40 SM: 0.65 to 160
Stable source output power [dBm]	-1.5	MM: -1.5 SM -6.5
Laser Safety	21 CFR 1040.10 and IEC 60825-1:1993+A2:2001 / Class 1M	
Hardware	**All Models**	
Memory capacity	500 traces	
Data connectivity	USB A and USB B	
Size (HxWxD) [mm]	250 x 125 x 75 (9.8 x 4.9 x 2.9 in.)	
Weight	1 kg (2.2 lbs.)	
Temperature	Operating: -18°C to 50°C , Storage: -40°C to 70°C	
Batteries	2 x Li-Ion	
Power supply (mains)	110 – 230 V AC	
Power supply (unit)	9 - 24 V DC, 12 Watt	
Operating time	8 hours (per Bellcore™ TR-NWT-001138)	
Warranty	1 year	

Kits

33-960-10 MM OTDR Kit	33-960-30 Quad OTDR Kit
MM OTDR with 850/1300nm	Quad OTDR with 850/1300/1310/1550nm
Ruggedized carrying case	Ruggedized carrying case
PC-Software	PC-Software
CD with manual and Quick Reference Guide	CD with manual and Quick Reference Guide
Wall charger	Wall charger
2 Li-Ion rechargeable batteries	2 Li-Ion rechargeable batteries
SC Adapter	1 SC and 1 FC Adapter
33-960-10MB	OTDR Kit with Tier 2 certification option and macro bend detection
33-960-30MB	

Ordering Information

Description	Cat. No.
200x and 400x video probe w/USB port	**33-960-VP**
Adapter for FC connectors	**33-961-10**
Adapter for SC connectors	**33-961-20**
Adapter for ST connectors	**33-961-30**
Adapter for E2000 connectors	**33-961-40**
Adapter for DIN 47256 connectors	**33-961-50**
Adapter for HMS-10/AG connectors	**33-961-60**
Cleaning Kit	**1219-00-1621**
Rechargeable battery	**33-960-BP**
Foldable USB Keyboard	**33-960-KB**

FiberMASTER™ Fiber Optic Test Kit

Measure fiber optic power in milliwatts (mW) and decibel-milliwatts (dBm) to test and troubleshoot active LANs. Quickly measure cabling loss with the automatic calibration feature that stores reference power from any light source for quick dB loss calculations. Plus, the 1490nm wavelength measurement mode is perfect for troubleshooting emerging Fiber-To-The-Home cabling systems.

- **Fiber Optic Power Meter & Light Source** – Four wavelength power meter for multimode and single mode testing, and 850nm multimode LED light source.
- **Calibration Function** – Stores reference power level for quick dB loss measurements eliminating the need to manually calculate loss.
- **Save Time and Money** – Power meter features 2.5mm universal and FC adapters, light source includes ST®, SC and FC adapters to test the most common interfaces.
- **Ready for FTTx** – 1490nm measurement wavelength for use with nearly all single mode Fiber-To-The-Home applications.
- **Designed for the Field** – Unique "docking" light source and easy three-button operation make this the perfect fiber tester for use in the field.

FiberMASTER™ Kit Includes:

- 33-926 Light source, 850nm LED with ST®, SC and FC adapters
- 33-927 Power meter, 4 wavelength with universal 2.5mm and fixed FC adapter
- 2x FC-SC 62.5um multimode cables
- 1 SC calibration coupler
- Carrying case
- English, Spanish, German, French, Portuguese, Italian and Chinese user's manual

Power Meter Specifications

Wavelength	850, 1300/1310, 1490, 1550nm
Detector	InGaAs
Measurement Range	-60 to +3dBm
Accuracy	±5%
Display Resolutio•	.01
Connector	Universal 2.5mm w/FC adapter
Power Supply	AAA Alkaline Battery x 3
Operating Time	360 hours
Operating Temp	-10 to +60°C
Storage Temp	-25 to +70°C

Light Source Specifications

Wavelength	850, 1300, 1310, 1550nm laser diode
Output Power	-6 to -7 dBm Typical
Stability	.05dB after 15min, 0.1dB over 8 hrs
Connector	2.5mm w/ST®, SC, FC adapters
Power Supply	AAA Alkaline Battery x 3
Operating Time	40 hours
Operating Temp	-10 to +60°C
Storage Temp	-25 to +70°C

Description	Cat. No.
850NM Fiber light source	**33-926**
Power meter only	**33-927**
Power meter with 850NM fiber light source (33-926 & 33-927)	**33-928**
Four wavelength MM/SM light source only	**33-929**
Power meter with four wavelength MM/SM light source (33-927 & 33-929)	**33-931**

33-929

Fiber Inspection Microscope

- 100X magnification for viewing multimode connectors
- Includes 2.5mm connector "Universal Adapter" for FC, ST® and SC style connectors
- Oblique illumination provides excellent view of ferrule cleanliness and core condition
- Rugged, rubberized metal housing, precision glass optics and a built-in laser safety filter
- White LED illumination delivers 100,000 hours bulb life
- Optional 200X Conversion Eyepiece threads on for viewing finish/polish of singlemode connectors

Description	Cat. No.
Fiber Inspection Microscope w/carrying case	**45-332**
1.25mm Connector Adapter	**45-334**
MTRJ-Style Connector Adapter	**45-335**
200X Conversion Eyepiece for Singlemode Connectors	**45-336**

Note: ST® is a registered trademark of AT&T.

Visual Fault Finder

Laser light source used to locate breaks, faulty splices and crimps

- 2.5mm Universal Adapter for all ST®, SC and FC connectors
- Useful over a distance of 5km (3 miles)
- Two AA batteries provide over 30 hours of continuous use
- Slim, pocket-sized tool in rugged solid aluminum body
- Nylon carrying case with belt loop included

Description	Cat. No.
Visual Fault Finder 	**VFF5**

Note: ST® is a registered trademark of AT&T.

Mini-Lite-Strip™ Optical Fiber Stripper

- Small strip notch engineered and precision-ground to strip 900 micron or 250 micron buffer coatings from 125 micron fiber
- Larger round strip notch machined to remove the 3mm outer jacket
- Strip notches pre-set and locked, no field adjustment necessary

Description	Cat. No.
MiniLite-Strip™ Optical Fiber Stripper	**45-352**

Lite-Strip™ Optical Fiber Stripper

V-notch blades strip a wide range of outer cable jacket. Precision-ground, replaceable knife-type blades strip tight buffer tube insulations (900µm). Also strips mechanically strippable coatings from 250 microns to 900 microns.

- Replaceable precision-ground blades cleanly strip buffer coatings
- New funneled hole makes cable insertion easier
- Improved spring mounting returns handles to original position after every application
- One-step, 900 micron stripping hole provides broader stripping range
- Extra durable to withstand normal drops without requiring tool realignment
- New gauge color makes fiber and hole identification easier
- Improved comfort-grip handles for an easier, more comfortable stripping process

Description	Fiber Sizes	Cat. No.
Lite-Strip™ Optical Fiber Stripper (900µm/250µm)	125µm, 140µm	**45-350**
Replacement Blade Set		**LB-661**

Stripmaster® Ribbon Fiber Jacket Stripper

- Removes jacket from Ribbon Fiber without damage to the Kevlar® strength member of the Ribbon Fiber

Note: Frame and blade-set sold separately.

Description	Cat. No.
Stripmaster® Wire Stripper Frame only	**L-5620**
Blade-set for use with Corning® Plenum and Riser Ribbon Fiber Cable	**LB-1152**
Blade-set for use with Corning® "Fanout" Ribbon Cable	**LB-1153**

Note: Kevlar® is a registered trademark of DuPont. Corning® is a registered trademark of Corning, Inc.

DualScribe™ Double-Ended Fiber Optic Scribes

- Three professional quality blade styles to choose from to meet your specific needs – Ruby, Sapphire, Carbide
- Color-coded handles for quick, easy identification
  Red – Ruby
  Blue – Sapphire
  Black – Carbide
- 30° single bevel – DualScribe™ reversible blade doubles tool life
- Soft non-slip grip provides precise control during scribing
- Clear safety cap protects the blades from damage when not in use

Description	Handle Color	Cat. No.
Ruby Blade Fiber Optic Scribe 	Red	**45-357**
Sapphire Blade Fiber Optic Scribe 	Blue	**45-358**
Carbide Blade Fiber Optic Scribe 	Black	**45-359**

Serrated Cutter (For Kevlar®) with Breaker Notch

- Two-Step process significantly increases the life of this rugged tool
- Superior quality high-carbon stainless steel with molybdenum and vanadium provides the super-hard edges needed to stand up to the demands of today's market
- Textured cushioned-grip handles
- Value-priced for contractors, cable assembly houses, fiber installers/technicians and tool kits

Description	Cat. No.
Serrated Cutter w/Breaker Notch (Patent pending)	**45-344**

Note: Kevlar® is a registered trademark of DuPont.

Stainless Steel Polishing Fixture for Optical Fiber ST® and SC Type Connectors

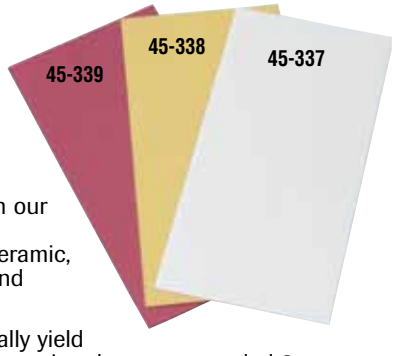
Produces polished fiber optic ST® and SC type connectors for optimum connector performance.

- Precision-machined, stainless-steel disk provides accurate polishing angle for desired end face finish
- Stainless-steel hardness maintains long life and resists uneven wear
- Stepped surface reduces drag and friction for easier polishing

Description	Cat. No.
Polishing Fixture for Optical Fiber ST/ST® Type Connectors	**45-341**

Note: ST® is a registered trademark of AT&T.

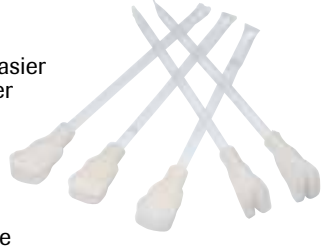
Polishing Films for Fiber Optic Connectors



- For optimum connector polishing results, we recommend a three-step procedure using 0.5µm, 3µm and 12µm 3 in. x 6 in. aluminum oxide polishing films
- Lot-to-lot consistency in our films means repeatable connector finishes on ceramic, stainless steel, plastic and composite ferrules
- A single sheet will typically yield 10 to 20 connectors when using the recommended 3-step procedure

Description	Color	Qty.	Cat. No.
0.5µm, 3" x 5", Aluminum Oxide	Ivory	20 films/sleeve	**45-337**
3.0µm, 3" x 5", Aluminum Oxide	Lt. Yellow	20 films/sleeve	**45-338**
12µm, 3" x 5", Aluminum Oxide	Lt. Red	20 films/sleeve	**45-339**

Split-Tip Fiber Optic Swabs



- Split-tip design cleans fiber easier and more efficiently than other methods
- Tube/handle is pre-loaded with 99% isopropyl alcohol
- A single swab can be used for many cleanings or until the alcohol is gone

Description	Qty.	Cat. No.
Split-Top Fiber Optic Swabs	Bag of 20	**45-360**