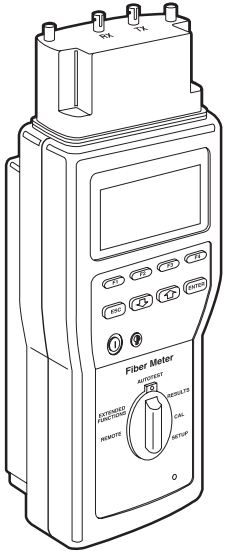
1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746

BLACK BOX®
NETWORK SERVICES

MAY 2003
TS1250A

Fiber Meter



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

Precautions for Handling Fiberoptic Cabling

Observe the following precautions when handling fiberoptic cabling:

- Fibers can be broken by poor handling, especially at connectors.
- Dirt is harmful to fiberoptic connectors.
- Clean the ends of connectors with alcohol cleaning pads before testing or reassembling equipment.
- Do not bend fibers too tightly, especially near connectors.
- Do not drop connectors on hard surfaces.
- Do not touch the ends of the connectors with your fingers.
- Do not leave connectors without dust caps.

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Contents

Contents (continued)

Chapter **Page**

Contents (continued)

Chapter **Page**

1. Specifications

1.1 Test Standards

Test Standard	850 nm	1300 nm	Propagation	Length
TIA 568A Horizontal (62.5 µm and 50 µm)	2.0 dB	2.0 dB	N/A	90 m
TIA 568A Backbone (62.5 µm)	Equation 1	Equation 2	N/A	2000 m
IEC 11801 Horizontal (62.5 µm and 50 µm)	Equation 3	Equation 4	N/A	500 m
IEC 11801 Backbone 62.5 µm and 50 µm)	Equation 3	Equation 4	N/A	90 m
1000BASE-SX 62.5 µm	2.53 dB	N/A	N/A	275 m
1000BASE-SX 50 µm	3.43 dB	N/A	N/A	550 m
1000BASE-LX	N/A	2.32 dB	N/A	550 m

Equation 1: Max Loss = (# of mated connectors x 0.75) + (# of splices x 0.3) + (length x 3.75 dB/km)

Equation 2: Max Loss = (# of mated connectors x 0.75) + (# of splices x 0.3) + (length x 1.5 dB/km)

Equation 3: Max Loss = (# of mated connectors x 0.75) + (# of splices x 0.3) + (length x 3.5 dB/km)

Equation 4: Max Loss = (# of mated connectors x 0.75) + (# of splices x 0.3) + (length x 1.0 dB/km)

1.2 General

Wavelengths Measured: 850 nm, 1300 nm

Multimode Length: Range: 6600 ft. (2011.7 m);
Resolution: 1 ft. (0.3 m)

Multimode Length Accuracy: 0 to 1000 ft. (0 to 304.8 m) ± 2 ft. (± 0.6 m) ± 2% ± IOR uncertainty;
1001 to 6600 ft. (305.1 to 2011.7 m) ± 2 ft. (± 0.6 m) ± 3% ± IOR uncertainty

Multimode Propagation Delay: Range: 10 to 10,000 ns

Multimode Loss: Dynamic Range: +3 dBm to -50 dBm;
Resolution: 0.01 dB/dBm;
Accuracy: ± 0.3 dB @ -20 dBm

Photodiode Detector: Indium Gallium Arsenide (InGaAs)

Light Source: Light-emitting diode (LED) over multimode fiber

Display: (1) Backlit, graphical LCD per handset

Connectors: (1) DB9 serial port, (2) ST® per handset

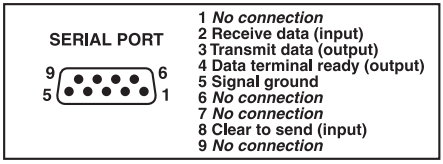

Figure 1-1. Serial port pin assignments.

User Controls: (10) Buttons: F1, F2, F3, F4, ESC, up arrow, down arrow, ENTER, Power, Backlight; (1) 6-position rotary dial (positions include SETUP, CAL, RESULTS, AUTOTEST, EXTENDED FUNCTIONS, and REMOTE)

Operating Humidity: 10 to 90%, noncondensing

Temperature Range: *Operating:* 32 to 122°F (0 to 50°C); *Storage:* -4 to +140°F (-20 to +60°C)

Power Source (per handset): Batteries: 8 AA alkaline batteries, AC/mains battery eliminator and charger, Nickel Metal Hydride (NiMH) rechargeable battery pack (optional);
Battery-Charge Life: 12 hours

Size: 12"H x 3.9"W x 2.5"D (30.5 x 9.9 x 6.4 cm)

Weight: 2.4 lb. (1.1 kg)

2. Introduction

2.1 Description

The Fiber Meter certifies multimode fiber in pairs by comparing bi-directional, dual-wavelength 850-nm and 1300-nm loss, length, and propagation delay measurements against a user-selected industry testing standard. It also provides pass-fail results. The Fiber Meter uses an automated link loss budget calculation as part of the pass-fail determination.

The Fiber Meter can store up 2000 Autotest records (1000 in each handset). The Autotest reports can be printed directly to a serial printer or uploaded to a PC using Report Manager. See the **Appendix** for more information.

2.2 What the Package Includes

- (2) Fiber Meter handsets
- (4) Test jumpers
- (2) Earphones
- (16) AA alkaline batteries

- (1) Carrying case
- (2) Handset impact cases
- (1) PC interface cable
- (1) Report Manager software
- (1) AC/mains battery eliminator and charger

If any of these items are missing or damaged, contact Black Box at 724-746-5500.

2.3 Features

- Tests two multimode fibers with one setup.
- Measures bi-directional loss at 850 nm and 1300 nm simultaneously.
- Calculates the link loss budget.
- Measures cable length to 2000 m.
- Measures propagation delay.
- Performs pass-fail certification against cabling standards and network requirements.

- Determines margin beyond pass-fail limits.
- Stores up to 2000 Autotest reports.
- Uploads test reports to a PC for archiving and printing.
- Contains a built-in audio communication system.

2.4 The Handset

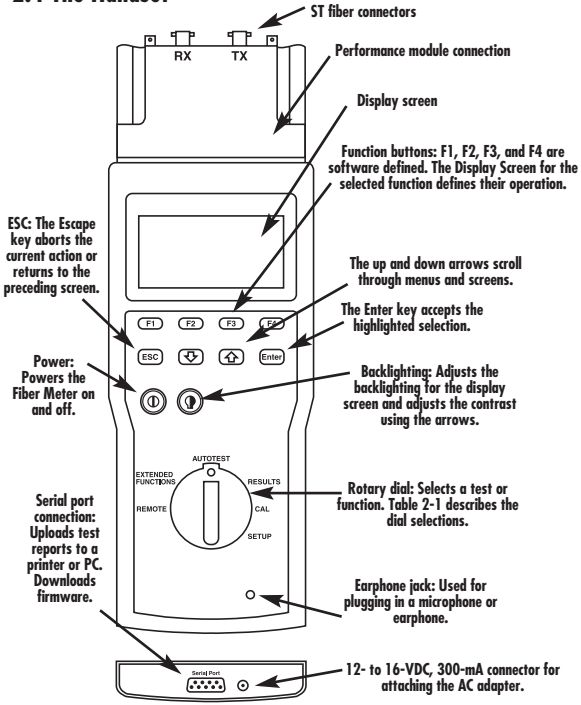

Figure 2-1. Handset components.

Table 2-1. Rotary dial selections.

Selection	Description
AUTOTEST	Performs the automated testing of a pair of multimode optical fibers.
RESULTS	Views Autotest reports, prints reports from the Fiber Meter, and changes the serial settings during printing.
CAL	Calibrates the cable index of refraction (IOR) and sets the Autotest reference power.
SETUP	Defines each of the basic operational settings for the Fiber Meter including: • Test Mode • Number of Connections • Number of Splices • Core Diameter • Units • PowerDown • Backlighting • Power Frequency • Baud Rate • Flow Control • Date • Time • Audible Tones • Circuit Names • Company Name • Reset to Defaults Each of the SETUP functions has a default value that is established by the factory. See **Chapter 3** for specific instructions.

Table 2-1 (continued). Rotary dial selections.

Selection	Description
REMOTE	Places the Fiber Meter handset into Remote mode.
EXTENDED FUNCTIONS	Performs extended operations including: • LinkTalk • Manual Power Meter mode • Manual LED Source mode • Manual Multimode Loopback Measurements • Self-Test • Download Firmware • Upload Reports

2.5 Battery Information

Each Fiber Meter handset is shipped with eight AA alkaline batteries. The Fiber Meter handset can also be equipped with an optional rechargeable Nickel Metal Hydride (NiMH) battery pack. (Call Technical Support at 724-746-5500 for details.)

2.5.1 Low Battery Message

A low battery message appears on the display screen when it is time to replace the batteries. When the low battery message is shown, you have 60 seconds to save your test results before the Fiber Meter automatically shuts itself off.

IMPORTANT

The Fiber Meter memory is powered from an internal, long-life lithium cell. This cell permits stored test results and setup conditions to remain saved in non-volatile memory when you replace the AA alkaline batteries or rechargeable battery pack. The lithium cell should last for years. Replacement of the lithium cell must be performed by an authorized service representative.

2.5.2 Changing the Batteries

To change the alkaline batteries in the handset:

1. Remove the battery compartment cover, located on the back of the instrument. See Figure 2-2.

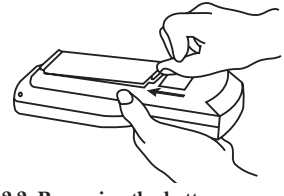

Figure 2-2. Removing the battery compartment cover.

2. Remove the old batteries.

3. Install new batteries, paying attention to the polarity markings on the inside of the battery well. See Figure 2-3. Then close the battery compartment.

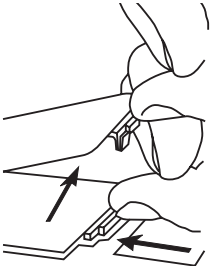

Figure 2-3. Installing new batteries.

4. Press the Power button to continue regular operations.

2.5.3 Recharging the NiMH Battery Pack

When the AC/mains adapter is used and the Fiber Meter is powered off, the tester goes into a sleep mode. When the optional NiMH rechargeable battery pack is installed, the tester goes into a Recharge mode. A fully discharged battery pack can take approximately 10 to 12 hours to recharge to full capacity.

To resume testing after recharging the battery pack, turn the Fiber Meter on by pressing the Power button. The information shown in Figure 2-4 appears.

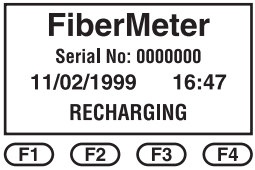

Figure 2-4. Display during charging mode.

2.6 Changing Performance Modules

Each Fiber Meter handset comes with a fiberoptic performance module that attaches to the top of the unit. The fiberoptic performance module contains much of the key optical measurement circuitry that's used during Fiber Meter operation.

The Fiber Meter is shipped with the fiberoptic performance module installed. If you need to remove the module for servicing or for a performance upgrade, use the following procedure.

NOTE

The performance module is designed to be installed and removed without tools.

CAUTION

Turn off the power to the Fiber Meter handset before adding or changing a performance module.

To remove a performance module:

1. Loosen the thumbscrews on either side of the performance module until the screws are free of the retainer.

2. Grip the performance module on either side and slide the module out of the handset.

To install a performance module:

1. Slide the performance module into the handset until the screws rest against the retainers.

2. Hand-tighten the screws until the performance module is properly seated.

CAUTION

Avoid damaging the Fiber Meter's case. Tighten the screws evenly using finger pressure only. Make sure to turn both screws in small increments.

3. Setup

The Fiber Meter includes two identical Fiber Meter handsets. Use one handset as the Main Unit. The Main Unit controls all the testing and stores the test results. The other handset is the Remote Unit. To designate the second handset as the Remote Unit, set the Rotary Dial to REMOTE.

Before you begin a fiber certification test, set the Main Unit to the specific configuration you want to use. Many of the Setup functions offer a factory-determined default setting. See Table 3-1.

NOTE

Changes to the Setup settings are automatically stored in non-volatile memory. The settings are not lost when you replace the batteries.

Table 3-1. Setup functions.

Function	Key Sequence	Factory-Default Setting
Test Mode	**F4** to toggle between OneWay and TwoWay	OneWay
Number of Connections (0–99)	**F2** to decrease the number **F3** to increase the number	2
Number of Splices (0–99)	**F2** to decrease the number **F3** to increase the number	0
Core Diameter	**F2** for 50 µm, **F3** for 62.5 µm	62.5 µm
Units	**F4** to toggle between Feet and Meters	Feet
PowerDown (2 to 30 minutes or disabled)	**F2** to decrease time until power down **F3** to increase time until power down	30 min.
Backlighting (15 seconds to 10 minutes)	**F2** to decrease backlighting time **F3** to increase backlighting time	1 min.
Power Frequency	**F4** to toggle between 60Hz and 50Hz	60Hz
Baud Rate (1200 to 38,400 baud)	**F2** to decrease baud rate **F3** to increase baud rate	9600 baud
Flow Control	**F4** for Hardware **F2** for XON/XOFF **F1** for None	Hardware

Table 3-1 (continued). Setup functions.

Function	Key Sequence	Factory-Default Setting
Date	**F1** to format the date **F2** to change the month **F3** to change the day **F4** to change the year	mm/dd/yy
Time	**F2** to change the hour **F3** to change the minute **F4** to change the seconds to zero	hh:mm:ss
Audible Tones (on or off)	**F4** to toggle between enabling and disabling tones	On
Circuit Names	**F1** for None **F2** for Blank **F3** for Next **F4** for Same	Next
Company Name	Press **F4** or **ENTER**; then **F1** for left or **F4** for right; then **F2** for previous or **F3** for next; then press **ENTER**	Blank
Reset to Defaults	**F2** to reset all parameters **F3** to reset the IOR value	1.490 (IOR)

3.1 Set the Test Mode

The Fiber Meter includes two identical Fiber Meter handsets. Use these handsets to perform multimode fiber certification Autotests. This allows you to specify whether loss measurements are made on each fiber in one direction (one-way testing—see Figure 3-1) or on each fiber in both directions (two-way testing—see Figure 3-2). When running Autotests, one handset is used as the Main Unit. It controls all of the testing and stores the test results. The other handset is used as the Remote Unit.

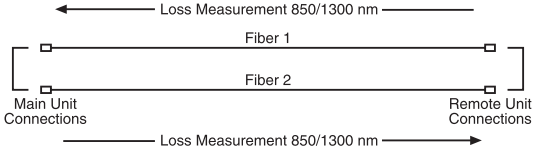

Figure 3-1. One-way testing.

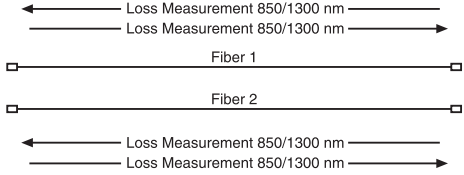

Figure 3-2. Two-way testing.

If you select two-way testing, Autotest pauses after completing the first set of loss measurements so that you can swap test jumper connections at both ends of the fiber. See **Chapter 5** for specific information about Autotest.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow buttons until **Test Mode** is highlighted.

3. Press the **F4** button to toggle between **OneWay** and **TwoWay**.

3.2 Set the Number of Connections

IMPORTANT

Specifying the number of fiber link connections, splices, and the fiber core diameter establishes the loss budget for multimode Autotests. See **Chapter 5** for more information about Autotest.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **# Of Connections** is highlighted (see Figure 3-3).

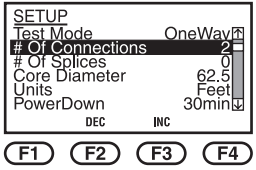

Figure 3-3. Number of connections (for loss budget).

3. The number of connections can be 0 to 99. The default value is 2. Press the **F2** button to decrease the number of connections. Press the **F3** button to increase the number of connections.

3.3 Set the Number of Splices

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **# Of Splices** is highlighted.

3. The number of splices can be 0 to 99. The default value is 0. Press the **F2** button to decrease the number of connections. Press the **F3** button to increase the number of connections.

3.4 Set the Core Diameter

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Core Diameter** is highlighted.

3. Press the **F2** button to select a core diameter of **50** µm. Press the **F3** button to select **62.5** µm.

3.5 Set the Length Measurement Units

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Units** is highlighted.

3. Press the **F4** button to toggle between **Feet** and **Meters**.

3.6 Set the PowerDown Time

PowerDown sets the time interval for the Fiber Meter's automatic power down. The Fiber Meter will power down after a set time interval during which no keys were pressed or when there has been no communication with the other end. The default time is 30 minutes.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **PowerDown** is highlighted.

3. Press the **F2** button to decrease the amount of time until power down.

4. Press the **F3** button to increase the amount of time until power down.

To disable PowerDown:

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **PowerDown** is highlighted.

3. Press the **F3** button until **Disabled** is selected.

3.7 Adjust the Backlighting Time

The Backlighting adjustment sets how long it takes for the display screen to become backlit.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Backlight** is highlighted.

3. Press the **F2** button to decrease the amount of time the backlighting stays on.

4. Press the **F3** button to increase the amount of time the backlighting stays on.

3.8 Set the Power Frequency

Power Frequency sets the Fiber Meter with the frequency of the local AC/mains power. Setting the Power Frequency properly avoids display flicker caused by the interaction of the LCD display and light sources.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Power Frequency** is highlighted.

3. Press the **F4** button to toggle between **60Hz** and **50Hz**.

3.9 Set the Baud Rate

Baud Rate matches the serial output of the Fiber Meter with that of the printer or PC. The default setting is 9600 baud, which is the most common input baud rate for a serial printer.

1. Set the rotary dial on the Main Unit to SETUP.
2. Press the up- and down-arrow keys until **Baud Rate** is highlighted.
3. Press the **F2** button to decrease the baud rate.
4. Press the **F3** button to increase the baud rate.

3.10 Set the Flow Control

Flow Control determines what method is used to control data flow between the Fiber Meter and the printer or PC.

1. Set the rotary dial on the Main Unit to SETUP.
2. Press the up- and down-arrow keys until **Flow Control** is highlighted.

3. Press the **F4** button to select **HARDWARE**, the **F2** button to select **XON/XOFF**, or the **F1** button to select **NONE**.

3.11 Set the Date

The Fiber Meter records the date when a test report is saved and includes this date on test reports. There are three available date formats: mm/dd/yy (default), dd/mm/yy, or yy/mm/dd.

1. Set the rotary dial on the Main Unit to SETUP.
2. Press the up- and down-arrow keys until **Date** is highlighted.
3. Press the **F1** button to change the date format.
4. Press the **F2** button to change the month.
5. Press the **F3** button to change the day.
6. Press the **F4** button to change the year.

3.12 Set the Time

A 24-hour time clock is maintained in the Fiber Meter. Press the **F4** button to set the seconds to zero.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Time** is highlighted.

3. Press the **F2** button to change the hour.

4. Press the **F3** button to change the minutes.

5. Press the **F4** button to set the seconds to zero.

3.13 Set Audible Tones

Use this parameter to enable audible tones at the end of tests. A different audible tone is created for the pass-fail test results.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Audible Tones** is highlighted.

3. Press the **F4** button to toggle between enabling or disabling the tones.

3.14 Set the Circuit Names

Circuit Names sets the default name used for circuit identification when saving Autotest results.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Circuit Names** is highlighted.

3. Press the **F1** button to select **NONE**, the **F2** button to select **BLANK**, the **F3** button to select **NEXT**, and the **F4** button to select **SAME**. See Figure 3-4.

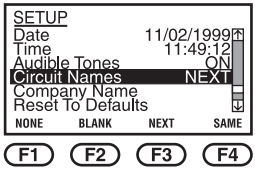

Figure 3-4. Circuit naming.

The available selections include:

- **NONE**. No Circuit ID is used. A sequential tester-assigned report number is provided.

- **BLANK**. No circuit ID is entered (not even a tester-assigned report number).

- **NEXT**. You can enter a Circuit ID that's one number, letter, or number/letter combination greater than the last ID used. If the last ID used ends in a 1, the next ID will end in a 2, and so on. If the last ID ends in a B, the next ID will end in a C, and so on. Numbers used can be 0 through 9 and letters used can be A through Z.

- **SAME**. You can enter the Circuit ID that's the same as the last ID used.

NOTE

If you use **NEXT**, and the Circuit ID that's one number (or letter) greater than the last ID has already been used, the circuit ID that's two numbers or letters greater than the last ID will be entered.

Notice the following example sequences:

ID-ABY	ID-AB8
ID-ABZ	ID-AB8
ID-ACA	ID-AB9
	ID-AC0

3.15 Set the Company Name

Test reports can be customized to include a company name of up to 20 characters long. See Figure 3-5.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Company Name** is highlighted.

3. Press the **F4** button or the **ENTER** button to modify the name.

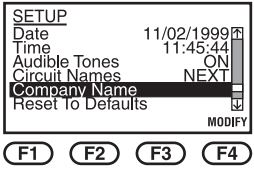

Figure 3-5. Selecting the company name.

4. Enter the Company Name as follows:

- Press the **F1** button to move the cursor to the left. Press the **F4** button to move the cursor to the right.

- Press the **F2** or **F3** buttons (for the previous and next characters, respectively) to enter alpha or numeric characters. Hold down the **F2** or **F3** button to accelerate scrolling of characters.

- Press the **ENTER** button to save the new name.

3.16 Reset to Defaults

Reset to Defaults allows you to return the Fiber Meter's internal settings to their factory defaults.

1. Set the rotary dial on the Main Unit to SETUP.

2. Press the up- and down-arrow keys until **Reset To Defaults** is highlighted. See Figure 3-6.

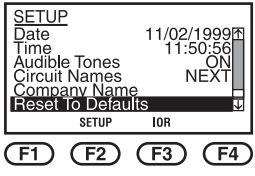

Figure 3-6. Reset to defaults.

3. Press the **F2** button to reset all setup parameters to their default values. The default values are defined in Table 3-1 at the beginning of this chapter.

4. Press the **F3** button to reset the IOR (Index of Refraction) value to its default value of 1.490.

NOTE

Index of refraction (IOR) is a measure of the speed of light through a fiber. You must set this appropriately for accurate multimode fiber length measurements.

4. Calibration

The Calibration (**CAL**) function allows you to set the Fiber Meter to the cable's index of refraction (IOR) and set the Autotest power reference. Refer to **Chapter 5** for instructions on setting the Autotest power reference.

INDEX OF REFRACTION (IOR)

Index of refraction (IOR) is a measure of the speed of light through a fiber. Setting the appropriate IOR value is important to making accurate multimode fiber length measurements.

You can set the IOR as follows:

- Use the system-default IOR setting of 1.490.
- Manually input an IOR value, if known. IOR values are those specified at 1300 nm.

We recommend that you set the IOR each time you test a cable from a different manufacturer or spool.

NOTE

Setting the IOR is only necessary when performing Autotest multimode fiber certification tests that include length measurements.

To set IOR:

1. Set the rotary dial on the Main Unit to **CAL**.

2. Press the up- and down-arrow keys until **IOR** is highlighted.

3. Press the **F4** button to calibrate IOR. Figure 4-1 appears.

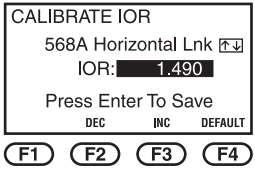

Figure 4-1. Setting IOR.

4. Select one of the following responses:

   - Press the **F4** button to use the default setting.

   - Press the **F2** button to manually change the IOR to a number that is less than the default setting. Press the **F3** button to change the IOR to a number that is greater than the default setting.

5. Press the **ENTER** button to save the new IOR setting.

6. Press the **ESC** button to return to the CALIBRATE menu.

5. Autotest

Certification of duplex multimode cable requires use of both Fiber Meter handsets. One handset is the Main Unit. It controls all of the testing and stores the test results. The other handset is the Remote Unit.

NOTE

The roles of the two Fiber Meter handsets can be reversed to use the report storage capability of both handsets.

An Autotest requires you to perform the following steps:

- Set the loss budget (see **Section 5.1**).
- Set the reference power (see **Section 5.2**).
- Run Autotest (see **Sections 5.3** through **5.8**).

5.1 Set the Loss Budget

To set the loss budget, specify the following settings for the link under test:

- Set the number of connections.
- Set the number of splices.

- Set the fiber core diameter.

This allows the Fiber Meter to automatically calculate pass-fail limits based on the test standards for different optical fiber types and allowable losses for the optical components. These settings are applied to all of the links you test.

5.2 Set the Reference Power

You are required to set the Autotest reference power before testing. Setting the reference stores the loss from the test jumpers (launch cables) and subtracts this loss from the measured values using the cable-under-test to determine the loss from the cable and its connections.

We recommend that you set the reference at the beginning of each day and after any of the following:

- Test jumpers changes.
- Any changes to the test configuration.
- Changing the batteries.
- Significant changes in ambient temperature

- Switching the Fiber Meter handsets from Remote to Main operation.

The Fiber Meter compensates for changes in ambient temperature. For optimum performance, allow the test system to adjust to the ambient temperature of the test area before setting the Autotest reference.

You'll also need to re-establish the reference when there has been a significant change in temperature since the reference was last established. If the Fiber Meter is used over long intervals of time, you should re-establish the reference every couple of hours to allow for changes in ambient temperature.

NOTE

Use test jumpers that are of the same type of fiber as the cable you will test (either 50/125 µm or 62.5/125 µm).

You can use either of the following two reference setting methods:

- Method B per TIA/EIA-526-14A (OFSTP-14A); this is described in **Section 5.2.1**.

- Method A per TIA/EIA-526-14A (OFSTP-14A); this is described in **Section 5.2.2**.

5.2.1 OFSTP-14A Method B Reference

Method B is the recommended method for testing multimode cable under TIA/EIA-568A and ISO/IEC 11801. This method is appropriate when measuring a cable plant with patch panels on both ends, or with a patch panel on one end and a wall outlet on the other. See Figure 5-1.

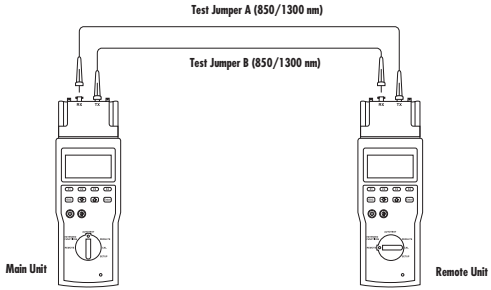

Figure 5-1. Setting reference per TIA/EIA-526-14A (OFSTP-14A), Method B.

To set the Method B reference:

1. Attach the test jumpers to connect the Main Unit and Remote Unit as shown in Figure 5-1.

2. Turn the rotary dial on the Main Unit to **CAL**.

3. Press the up- and down-arrow keys until **Set Reference** is highlighted. See Figure 5-2.

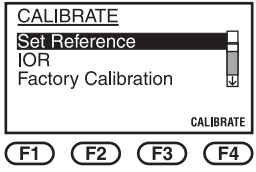

Figure 5-2. Highlighting Set Reference.

4. Press the **F4** button to calibrate.

When you finish setting the power reference, a message confirms that the references were set. This message is followed by the reminder shown in Figure 5-3.

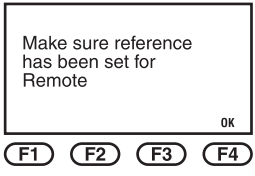

Figure 5-3. Reminder to set references at both handsets.

If you are planning to start all Autotests from the same Fiber Meter Main handset, ignore this message. Press the **F4** button to acknowledge the message.

NOTE

If you expect to change the operation roles of the Fiber Meter handsets (for example, to initiate tests from either end of the fiber), you will need to set the power references in the Remote handset separately. To do this, turn the rotary dial on the Fiber Meter Main Unit to **REMOTE**, turn the dial on the Remote Unit to **CAL**, and repeat the reference-setting procedure as described on the previous page.

IMPORTANT

Once the reference measurement is made and you are ready to begin testing, disconnect the test jumpers from the receive (RX) ports as shown in Figure 5-1. Do not disconnect the test jumpers from the transmit (TX) ports after the reference has been set.

5.2.2 OFSTP-14A Method A Reference

1. Attach the test jumpers to connect the Main Unit and Remote Unit as shown in Figure 5-4.

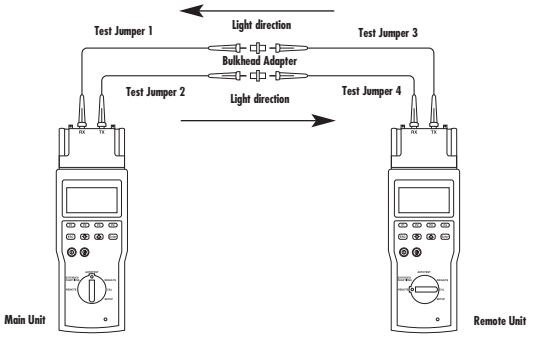

Figure 5-4. Setting reference, per TIA/EIA-526-14A (OFSTP-14A), Method A.

2. Turn the rotary dial on the Main Unit to **CAL**.

3. Press the up- and down-arrow keys until **Set Reference** is highlighted.

4. Press the **F4** button to calibrate.

When you finish setting the power reference, a message confirms that the references were set. This message is followed by the reminder shown in Figure 5-5.

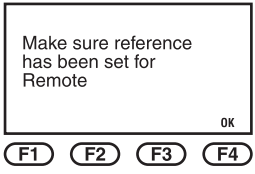

Figure 5-5. Reminder to set references at both handsets.

If you are planning to start all Autotests from the same Fiber Meter Main handset, ignore this message. Press the **F4** button to acknowledge the message.

NOTE

If you expect to change the operation roles of the Fiber Meter handsets (for example, to initiate tests from either end of the fiber), you will need to set the power references in the Remote handset separately. To do this, turn the rotary dial on the Fiber Meter Main Unit to **REMOTE**, turn the dial on the Remote Unit to **CAL**, and repeat the reference-setting procedure as described on the previous pages.

IMPORTANT

Once the reference measurement is made and you are ready to begin testing, disconnect the test jumpers from the receive (RX) ports (not shown). Do not disconnect the test jumpers from the transmit (TX) ports after the reference has been set.

After you set the reference, you are ready to make Autotest measurements. Connect the two handsets, the test jumpers, and the installed fiberoptic cable as shown in Figures 5-6 and 5-7.

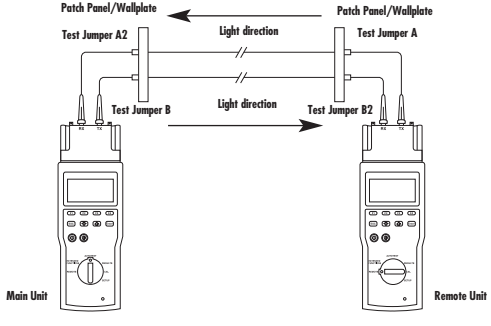

Figure 5-6. Fiberoptic cable testing per TIA OFSTP-14A, Method B.

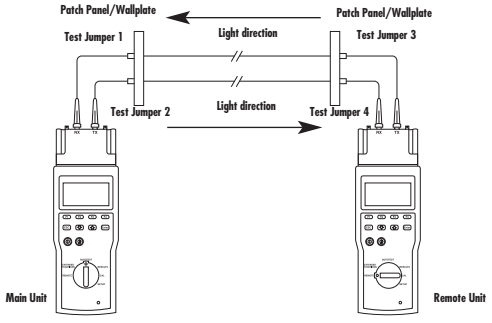

Figure 5-7. Fiberoptic cable testing per TIA OFSTP-14A, Method A.

5.3 Autotest Optical Power Measurements

Set the rotary dial on the Main Unit to **AUTOTEST**. The Fiber Meter displays the optical power measured at the receiving end of both cables (see Figure 5-8):

- RX: Results for the cable connected to the Main Unit's RX port.
- TX: Results for the cable connected to the Main Unit's TX port.

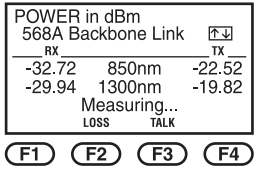

Figure 5-8. Autotest Optical Power Measurements.

5.4 Autotest Using One-Way Testing

1. From the Autotest Optical Power Measurements display screen (see Figure 5-8), press the **F2** button on the Main Unit to start Autotest loss measurements. The Autotest Summary screen is displayed at the completion of the Autotest. See Figure 5-9.

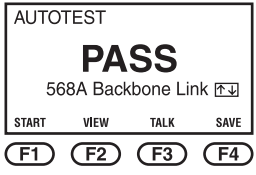

Figure 5-9. Autotest Summary screen.

2. Press the **F1** button to restart the Autotest measurement.

To view One-Way test results:

1. On the Autotest Summary screen (see Figure 5-9), press the **F2** button on the Main Unit.

   The Autotest TX Loss screen displays the loss in dB at both wavelengths for the cable connected to the Main Unit's TX port. This screen also shows the measured length and propagation delay. See Figure 5-10.

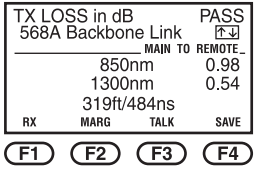

Figure 5-10. Autotest TX Loss screen.

2. Press the **F1** button to display the Autotest RX Loss screen. This screen displays the loss in dB at both wavelengths for the cable connected to the Main Unit's RX port. It also shows measured length and propagation delay. See Figure 5-11.

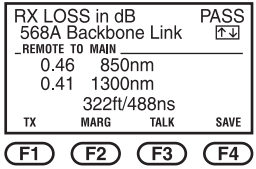

Figure 5-11. Autotest RX Loss screen.

3. From either the TX Loss or RX Loss screen, press the **F2** button to display the Autotest Margin Screen (see Figure 5-12). This screen shows the amount of headroom between the loss budget and the measured loss.

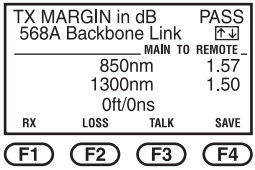

Figure 5-12. Autotest Margin screen.

NOTE

All failing test results are displayed in reverse video.

CAUTION

Length measurement accuracy may be affected by excessive cable attenuation. If measured loss fails the selected cable's standard loss limit, the length/propagation delay measurements will be incorrectly high. We recommend that you correct excessive loss and retest the cable to achieve accurate length/propagation delay values.

If the Main Unit displays the message "REMOTE SEARCH Remote Not Found,"make sure that the Main Unit and Remote Unit are properly connected to test jumpers and to the cable under test. To do that, check the following:

- Verify that the RX port on the Main Unit is connected through the cable to the TX port on the Remote Unit.
- Verify that the TX port on the Main Unit is connected through the second cable to the RX port on the Remote Unit.

If connections to Fiber Meter are correct, then there is a break or substantial loss in one of the two cables. To isolate the problem cable, the Fiber Meter handsets can be used as a manual optical source and power meter. See **Chapter 6** for details. Identify and correct the problem cable, then repeat the Autotest connections and test.

5.5 Autotest Using Two-Way Testing

1. From the Autotest Optical Power Measurements display screen (see Figure 5-8), press the **F2** button on the Main Unit to start Autotest loss measurements. A message on the Autotest Summary screen will prompt you to swap the connections when the first step of the Autotest is completed. See Figure 5-13.

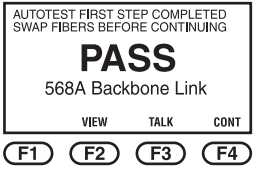

Figure 5-13. Autotest Summary screen.

2. Swap the cables and press the **F4** button to continue with the second step of the Autotest. The Autotest Summary screen is displayed at the completion of the Autotest.

3. Press the **F1** button to restart the Autotest measurement.

To view Two-Way test results:

1. On the Autotest Summary screen (see Figure 5-13), press the **F2** button on the Main Unit.

   The TX Loss Screen displays the loss in dB at both wavelengths for the cable that was connected to the Main Unit's TX port during the first step of the Autotest. Loss results are displayed in both the Main-to-Remote and Remote-to-Main directions. This screen also shows the measured length and propagation delay. See Figure 5-14.

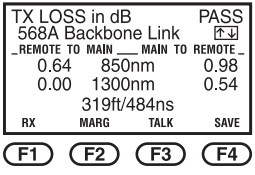

Figure 5-14. Autotest Two-Way TX Loss screen.

2. Press the **F1** button to display the RX Loss Screen. It displays the loss in dB at both wavelengths for the cable that was connected to the Main Unit's RX port during the first step of the Autotest. See Figure 5-15.

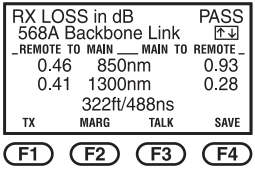

Figure 5-15. Autotest Two-Way RX Loss screen.

NOTE

Test result TX designates measurements made on the fiber connected to the TX port of the Main Unit during the first part of the Autotest. Test result RX designates measurements made on the fiber connected to the RX port of the Main Unit during the first part of the Autotest.

5.6 Changing The Cable Test Standard

You can select or change the cable test standard that the Fiber Meter uses for Autotest pass-fail determinations. The currently selected cable test standard is displayed on the Autotest Optical Power, Auto Test Summary, Autotest Loss, and Autotest Margin display screens. You can change the cable test standard from any of these display screens using the following procedure:

1. Press the up- and down-arrow keys on the Main Unit to display the **CABLE TEST STANDARD LIBRARY**.

2. Highlight the desired cable test standard (see Figure 5-16).

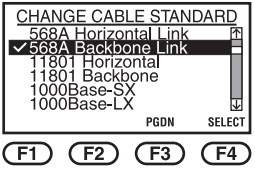

Figure 5-16. Library of cable test standards.

3. Press the **F4** button or the **ENTER** button.

5.7 Save Autotest Results

Each Fiber Meter can store the results of up to 2000 Autotests (1000 in each handset.) These results can later be uploaded to a PC or printer. See **Chapter 7** for a description of how to output test results.

Since Autotest performs measurements on two separate fiberoptic cables, you must assign a circuit identifier to each cable under test. In addition, each Autotest results in two reports. When you are using one-way testing, the Autotest results identified as TX are measurements made on the cable connected to the Main Unit's TX port. When you are using two-way testing, the Autotest

results identified as TX are measurements made on the cable connected to the Main Unit's TX port during the first step of the Autotest.

1. On the Main Unit, press the **F4** button or the **ENTER** button on the Autotest Summary screen, any Autotest Loss screen, or any Margin screen. The Fiber Meter automatically assigns a sequential report number. You can press the up- and down-arrows keys to change the report number. See Figure 5-17.

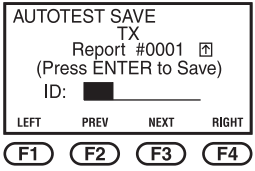

Figure 5-17. Saving Autotest reports.

NOTE

If desired, you can enter a circuit identifier. See **Section 5.8**.

2. Press the **ENTER** button to save the Autotest results.

CAUTION

If you select a report number that is in use, the Fiber Meter beeps and displays the message "In Use" beneath the report number. See Figure 5-18. The Fiber Meter has no overwrite protection. Nothing prevents you from saving a second report to the same number as a previous report, erasing the earlier one.

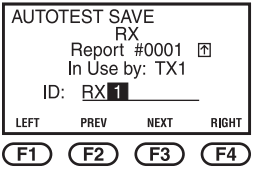

Figure 5-18. Warning on use of same report number.

After saving, a message in the upper right of the screen displays the report number (for example, **Saved #001**).

Autotest report details remain available for viewing until the next test is started.

NOTE

Autotest results can be lost if these results are not saved before the Fiber Meter powers down.

5.8 Enter a Circuit Identification Name

To speed up entering circuit identifiers, the Fiber Meter can be set up to automatically go on to the next circuit identifier. See **Section 3.14** for specific information.

The selection of a circuit ID that has already been assigned to another stored report will cause the following warning to appear:
`Circuit ID Not Unique`.

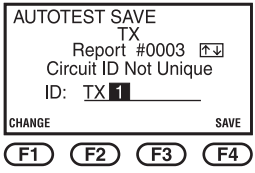

Figure 5-19. Assignment of circuit ID.

To enter the next circuit identifier:

1. Press the **F1** and **F4** buttons on the Main Unit to move the cursor left or right along the ID line.

2. Press the **F2** (previous) or **F3** (next) buttons to enter numeric or alpha characters.

3. Press the **ENTER** button to save the Autotest results with the chosen circuit identifier.

6. Extended Functions

6.1 LinkTalk

LinkTalk is a special feature that allows two Fiber Meter handsets to function as an audio communication system over duplex multimode fiber. This feature provides half-duplex voice communication between the Main Unit and Remote Unit.

NOTE

To function, Fiber Meter handsets must be connected using a pair of multimode fibers with one handset set to **REMOTE** and the other operating in **EXTENDED FUNCTIONS** as shown on the following pages.

LinkTalk can be activated following any Autotest—even if the test fails to meet the selected cable standard—provided the link loss on each cable is less than 10 dB. LinkTalk can be activated from any Autotest Summary display screen, any Autotest Loss screen, or any Autotest Margin screen by pressing the **F3** button.

LinkTalk can also be activated in **EXTENDED FUNCTIONS** by using the procedure on the next page.

To activate LinkTalk:

1. Set the rotary dial on the Remote Unit to **REMOTE**.

2. Attach the earphones to the jack on the lower right side of both the Main Unit and Remote Unit.

3. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

4. Press the up- and down-arrow keys to highlight **LinkTalk**.

5. Press the **ENTER** button. When the Remote Unit enters Talk mode, an alert bell will ring at that Remote Unit.

6. Press the **F3** button to stop the bell (see Figure 6-1).

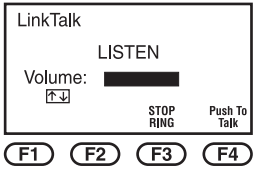

Figure 6-1. LinkTalk display at Remote Unit.

7. Press the **F4** button on either the Main Unit or Remote Unit to talk.

8. Press the up- and down arrow keys to adjust the earphone volume up or down.

9. Press the **ESC** button to exit Talk mode.

6.2 Manual Power Meter

The Manual Power Meter function allows either Fiber Meter handset to perform as a manual optical power meter for measuring optical power and loss of multimode fiber at either an 850 nm or 1300 nm wavelength. Connections are made to the RX port. You can use the other Fiber Meter handset as a manual optical source for testing installed fiberoptic cable. See **Section 6.3** for instructions that describe how to set the other Fiber Meter as an LED light source.

To establish a Manual Power Meter reference, connect the Fiber Meter handsets as shown in Figure 6-2.

NOTE

Test jumpers should be the same type and core size as the fiber to be tested. For multimode fiber testing, test jumpers should be either 50/125-µm or 62.5/125-µm multimode cables. Test jumpers should be periodically checked to ensure that they have not become worn through and are not adding excessive loss. Always clean the connector ferrules before making connections.

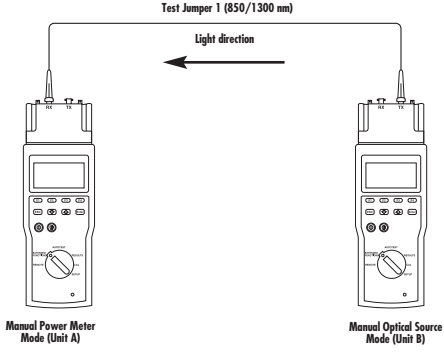

Figure 6-2. Setting the manual power meter reference per TIA OFSTP-14A, Method B.

To set the Manual Power Meter:

1. Set the rotary dial on Fiber Meter Unit A to **EXTENDED FUNCTIONS**.

2. Press the up- and down-arrow keys until **Power Meter** is highlighted.

3. Press the **ENTER** button.

4. Select the **F3** button, which toggles between **850** and **1300 nm** wavelengths (see Figure 6-3).

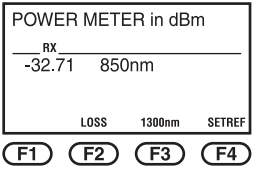

Figure 6-3. Manual Power Meter mode.

5. Set Fiber Meter Unit B to **EXTENDED FUNCTIONS**, select **LED Source**, then press the **F3** button, which toggles between **850** and **1300 nm** wavelengths.

6. Press the **F4** button on Unit A to set the **850 nm** reference.

7. Press the **F3** button on the Unit A Manual Power Meter for the **1300 nm** wavelength.

8. Press the **F3** button on Fiber Meter Unit B to select **1300 nm**.

9. Press the **F4** button on Unit A to set the **1300 nm** reference.

NOTE

The Manual Power Meter mode allows you to set an optical reference. The Manual Power Meter reference is only retained while the unit is in the Manual Power Meter mode. Setting a Manual Power Meter reference does not change an Autotest reference set using the **CAL** function. See **Chapter 4** for specific information.

10. Connect the Fiber Meter handsets to the installed fiber as shown in Figure 6-4. Loss measurements are automatically displayed.

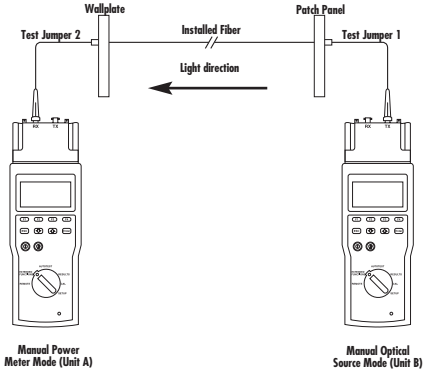

Figure 6-4. Testing installed fiber in Manual Power Meter mode per TIA OFSTP-14A, Method B.

11. To obtain the loss measurement at the other wavelength, select that wavelength both at the Power Meter unit and the source unit. Press **F3** to change the wavelength for the Fiber Meter Power Meter.

CAUTION

Once the reference measurement has been made and you are ready to begin testing, do not disconnect the test jumper from the optical source (TX port of the Fiber Meter handset.) Disconnecting the test jumper from the optical source will affect the reference and will require re-establishing references at 850 nm and 1300 nm.

NOTE

A Fiber Meter handset placed in Manual Power Meter mode (RX port input) also automatically becomes an LED optical light source via the TX port of the same handset. This feature allows you to test fiberoptic patch cords or a reel of fiberoptic cable using a single handset. The source unit automatically switches to the same wavelength selected for the Manual Power Meter unit.

6.3 Manual LED Source

The Manual LED Source function allows either Fiber Meter handset to function as a manual optical light source at either 850 nm or 1300 nm wavelengths. This capability is particularly useful in troubleshooting individual fibers of a duplex cable that fails Autotest due to a break or excessive loss in one of the fibers.

1. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

2. Press the up- and down-arrow keys until **LED Source** is highlighted.

3. Press the **ENTER** button.

4. Select either **850 nm** (by pressing the **F2** button) or **1300 nm** (by pressing the **F3** button) as the wavelength.

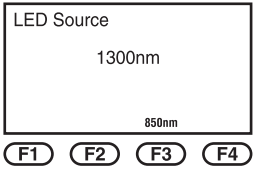

Figure 6-5. Manual LED Source mode.

6.4 Manual Multimode Loopback Measurements

Each Fiber Meter handset can be used as a loss test set to test single multimode cables, including patch cords.

1. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

2. Press the up- and down-arrow keys until **Power Meter** is highlighted.

3. Press the **ENTER** button.

4. Connect the test jumper between the RX and TX ports (see Figure 6-6).

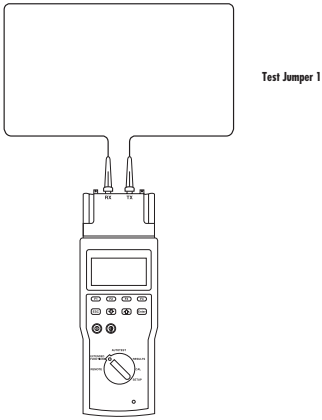

Figure 6-6. Setting the reference in Manual Multimode Loopback mode.

5. Press the **F3** button to set **850 nm** as the wavelength.

6. Press the **F4** button to set the **850 nm** reference.

7. Press the **F3** button to select the **1300 nm** wavelength.

8. Press the **F4** button to set the **1300 nm** reference.

9. Connect the single fiber, patch cord, or fiber link to the launch cable connections as shown in Figure 6-7. Loss measurements will be displayed.

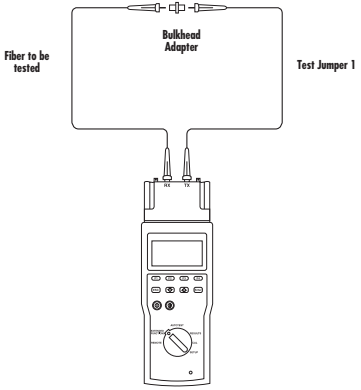

Figure 6-7. Making loss measurements in Manual Loopback mode.

NOTE

Do not remove the test jumper from the Fiber Meter TX port after the reference is set.

10. To obtain the loss measurement at the other wavelength, select that wavelength at the Power Meter unit.

6.5 Self-Test

If the Fiber Meter fails to operate as expected or exhibits inaccurate readings, you should perform a self-test as described below.

1. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

2. Press the up- and down-arrow keys until **Self Test** is highlighted.

3. Press the **ENTER** key. The test begins immediately, and the display screen shows the test results.

If the self-test fails, make a note of which test failed and contact Black Box Technical Support at 724-746-5500.

6.6 Download Firmware

You can transfer firmware upgrades to the Fiber Meter handset using the Report Manager. See the **Appendix** for specific instructions.

6.7 Upload Reports

You can upload stored Autotest results to the PC using the Report Manager. See the **Appendix** for details.

7. Test Results

The **RESULTS** function allows you to use the Fiber Meter to:

- View test reports before printing or uploading.
- Print all or selected reports to a printer.
- Delete reports.

NOTE

You can load plain ASCII text files of the test results for viewing or printing, and you can load several report files at the same time. Loaded files cannot be altered by the Report Manager.

7.1 View Test Reports

The Fiber Meter allows you to view test reports before uploading or printing.

1. Set the rotary dial on the Main Unit to **RESULTS**.
2. Press the up- and down-arrow keys until the number of the test report you want to view is highlighted.
3. Press the **F3** button to view the report.

4. Press the up- and down-arrow keys to view different test results.

5. Press the **ESC** button to return to the Reports screen.

7.2 Print Test Reports

Fiber Meter allows you to print test reports directly from the handset to a serial printer with individual reports printed on separate pages.

IMPORTANT

You can print test reports directly from the Fiber Meter handset to a serial printer only. Contact Technical Support at 724-746-5500 for details.

CAUTION

The PC interface cable supplied with the Fiber Meter may not connect properly to all serial printers. We recommend that you use only straight-through adapters to connect the PC interface cable to a printer. Connectors with pin assignments that are different than straight through may affect output operation. See **Chapter 1** for the serial port pin assignments.

To print test reports:

1. Set the rotary dial on the Main Unit to **RESULTS**.

2. Select one of the following options:

- To print a single report, press the up- and down-arrow keys until the number of the test report you want to print is highlighted. See Figure 7-1.

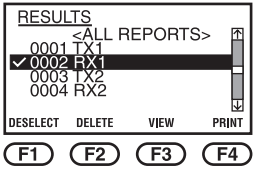

Figure 7-1. Results menu (Test 0002 selected).

- To print a selection of reports, press the up- and down-arrow keys until the number of each test report you want to print is highlighted. Press the **F1** button to place a checkmark next to the report number. Continue to select additional reports using the **F1** button.

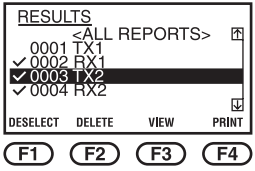

Figure 7-2. Selected tests from the RESULTS menu.

- To print all reports, highlight **ALL REPORTS** and press the **F1** button.

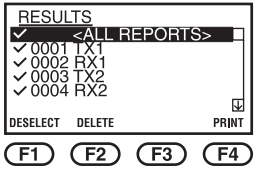

Figure 7-3. All tests selected from the RESULTS menu.

NOTE

Reports can be de-selected by highlighting a selected report and pressing the **F1** button prior to printing.

3. Press the **F4** button or the **ENTER** button to print the reports.

7.3 Sample Autotest Reports

Figures 7-4 and 7-5 show sample Autotest reports.

Fiber Meter CABLE CERTIFICATION REPORT #1

Circuit ID: TX1
Cable Test Standard: 568A
Backbone Link
Location:
Date Tested: 11/21/2000

Module Type: MultiMode
Remote Module Type: MultiMode

Serial Number: 9904401 V1.00D0
Cable IOR: 1.490

Test Mode: One-Way
TEST SUMMARY: PASS

Number of Connections: 2
Number of Splices: 0
Core Diameter: 62.5

Length: PASS

Measured Length	Limit	Delay
322 ft	6560 ft	488 ns

Optical Loss: PASS

Direction	Main->Remote			
Wavelength	Loss dB	Limit dB	Margin dB	Status
850 nm	0.45 dB	1.87 dB	1.42 dB	PASS
1300nm	0.47 dB	1.65 dB	1.18 dB	PASS

Direction	Remote->Main			
Wavelength	Loss dB	Limit dB	Margin dB	Status
850nm	N/A	N/A	N/A	N/A
1300nm	N/A	N/A	N/A	N/A

Operator: _____ Date: _____
Comments: END REPORT #1

Figure 7-4. Sample one-way Autotest report.

Fiber Meter CABLE CERTIFICATION REPORT #3

Circuit ID: TX2
Cable Test Standard: 568A
Backbone Link
Location:
Date Tested: 11/21/2000

Module Type: MultiMode
Remote Module Type: MultiMode

Serial Number: 9904401 V1.00D0
Cable IOR: 1.490

Test Mode: Two-Way
TEST SUMMARY: PASS

Number of Connections: 2
Number of Splices: 0
Core Diameter: 62.5

Length: PASS

Measured	Length	Limit	Delay
	322 ft	6560 ft	488 ns

Optical Loss: PASS

Direction	Main->Remote			
Wavelength	Loss dB	Limit dB	Margin dB	Status
850 nm	0.45 dB	1.87 dB	1.42 dB	PASS
1300 nm	0.47 dB	1.65 dB	1.18 dB	PASS

Direction	Remote->Main			
Wavelength	Loss dB	Limit dB	Margin dB	Status
850 nm	0.89 dB	1.87 dB	0.98 dB	PASS
1300 nm	0.33 dB	1.65 dB	1.32 dB	PASS

Operator: _____ Date: _____
Comments: END REPORT #3

Figure 7-5. Sample two-way Autotest report.

7.4 Delete Test Reports

Reports can be deleted from the Fiber Meter's non-volatile memory using the following procedure.

1. Set the rotary dial on the Main Unit to **RESULTS**.

2. Select one of the following options:

   - To delete a single report, press the up- and down-arrow keys until the number of the test report you want to delete is highlighted. Then press the **F1** button.

   - To delete a selection of reports, press the up- and down-arrow keys until the number of each test report you want to delete is highlighted. Press the **F1** button to place a checkmark next to the report number. Continue to select additional reports using the **F1** key.

   - To select all reports, highlight **ALL REPORTS** and press the **F1** button.

3. Press the **F2** button. The display screen shows the selected report numbers and asks you to confirm the deletion of the tests.

NOTE

If no reports were selected, the highlighted report is deleted.

4. Select one of the following responses:

   - Press the **F4** button or the **ENTER** button to delete the report. After the report is deleted, the RESULTS menu screen is displayed.

   - To cancel the deletion, press the **F1** button or the **ESC** button. This takes you back to the RESULTS menu.

7.5 Change Serial Port Settings

The RESULTS function allows you to adjust the following serial port settings:

- Baud rate for serial output with that of the PC or printer.

- Flow-control method to control data flow between the Fiber Meter and the PC or printer.

- Output format for the report.

NOTE

The data format for serial data is fixed at 8 bits, no parity, and 1 stop bit (8N1).

To change the serial port settings for printing:

1. Set the rotary dial on the Main Unit to **RESULTS**.

2. Press the up- and down-arrow keys until your report selection is highlighted. See **Section 7.2** for specific instructions.

3. Press the **F4** button.

4. Press the **F1** button to increase the baud rate from 1200 bps to up to 38,400 bps.

5. Press the **F2** button to select the flow control:

   - **XON/XOFF** (software)

   - **HARDWARE** (CTS/DTR)

   - **NONE** (for no flow control)

6. Press the **F3** button to select the output format as follows:

   - **TEXT** for a pre-formatted report ready for printing.

   - **COMMA** for comma-separated values (CSV) to import data to a database or spreadsheet.

7. Press the **F4** button to print the reports.

Serial port settings changes are automatically stored in non-volatile memory.

NOTE

To abort a report printout, press the **ESC** button.

Appendix. Report Manager

Report Manager is a PC-based utility program that allows you to conveniently upload, display, print and save test reports, and download Fiber Meter firmware upgrades.

Reports can be selectively uploaded from the Fiber Meter and saved to disk in a secure (protected from tampering), encrypted and compressed format, or in a text format for use by another program. Report Manager allows you to print the reports with optional headers and footers.

A.1 Installation

A.1.1 System Requirements

- PC running Windows® 95 or Windows NT® 4.0 or above, with a dedicated serial COM port.
- 4 MB of free disk space.

A.1.2 Installation Procedure

1. Insert the program disk in your computer's disk drive.
2. Click **Start**, then select **Settings**.

3. Click **Control Panel**.

4. Double-click on the **Add/Remove Programs** icon.

5. Click **Install** to find and run the Report Manager Setup program.

A.2 Report Manager Components

Report Manager components include:

- Menus
- Toolbar
- Status Bar
- Help

A.2.1 Menus

All Report Manager functions can be accessed from standard menus (see Figure A-1).

Help for the highlighted menu command is shown in the status bar.

Figure A-1. Menus.

A.2.2 TOOLBAR

Toolbar buttons (see Figure A-2) provide quick access to these commonly used functions:

- Open file
- Save file
- Print reports
- Upload reports
- Help

The Toolbar can be enabled or disabled from the **View** menu.

Figure A-2. Toolbar.

A.2.3 Status Bar

Program status, Help tips, report page number, communications status, date and time are shown in the status bar at the bottom of Report Manager window.

Several status bar options can be changed from the **View** menu.

A.2.4 Help

For help on any menu command, Toolbar button or other Report Manager item, click on the **What's This? Help** button (or press **Shift+F1**)—the mouse pointer changes to an arrow and question mark. You can move this pointer above the item in question to display the Help topic for that area.

To view a list of available Report Manager help topics, select **Help Topics** in the **Help** menu.

A.3 Setting Up Report Manager

A.3.1 Detecting the COM Port

Report Manager is designed to automatically detect the active COM port on your PC, usually COM1 or COM2. Some PC configurations may require you to manually select a COM port.

IMPORTANT

Some PCs are unable to properly respond to the automatic searches by Report Manager. When this occurs, the PC can slow down or exhibit erratic mouse operation.

If your COM port is not being detected automatically, you can manually set the active COM Port in Report Manager using the following procedure:

1. Select **View**, then **Options**, then the **Communications** tab.

2. Select **Manually Select Communications Port**.

3. Highlight the proper COM port.

4. Click **OK**.

A.3.2 Connecting the Fiber Meter to a PC

1. Connect the single, 9-pin connector end of the standard serial interface (null-modem) cable to an available PC COM port on the Fiber Meter.

2. Connect the other end (dual connector, use either a 9- or 25-pin connector) to a PC. See Figure A-3.

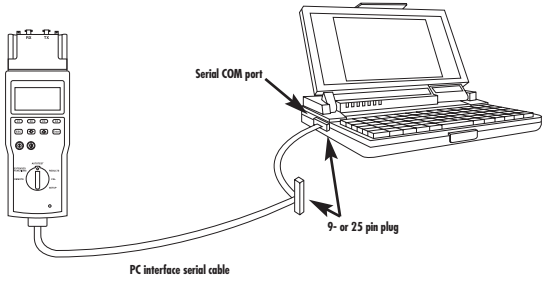

Figure A-3. Connecting the Fiber Meter to the PC.

A.4 Using Report Manager

Report Manager allows you to perform the following functions:

- Upload test results from the Fiber Meter to the PC.
- View test reports.
- Print test reports.
- Save test reports to disk.
- Load test reports from disk.
- Download firmware from the PC or Web site to the Fiber Meter.

A.4.1 Upload Test Reports

You can upload Autotest results from the Fiber Meter to the PC using Report Manager.

1. Connect the Fiber Meter to the PC serial port. See **Section A.3.2** for specific instructions.
2. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

3. Press the up- and down-arrow keys until **UPLOAD REPORTS** is highlighted.

4. Press the **ENTER** key. Wait until the message **Link Established** is shown in the Report Manager's status bar.

NOTE

If the status bar continues to display **No Communications Link Established**, check the COM port settings. See **Section A.3.1** for specific instructions.

5. Select **Tester Reports** from the **Upload** menu (see Figure A-4).

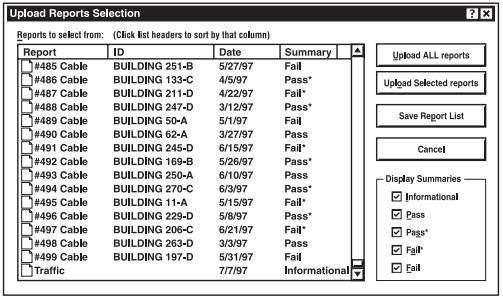

Figure A-4. Upload menu.

A summary of the Fiber Meter's available reports is uploaded to Report Manager.

The Fiber Meter may store hundreds of reports. To help locate specific reports, click the header for any column to sort the list by that column. The types of test summaries shown can be restricted by selecting or deselecting options in the Display Summaries box.

6. To save the summary list to a text file, click **Save Report List**.

7. To upload the reports, select one of the following responses:

   - From the Upload Reports Selection list, select the reports you want to upload, then click **Upload Selected Reports**.

   - Click **Upload All Reports** to upload every test report in the tester (see Figure A-5).

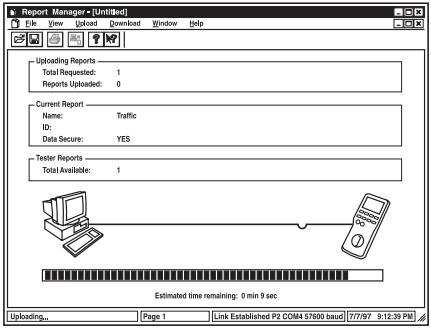

Figure A-5. Upload All Reports.

On the upload screen, progress is shown by the bar graph and an animated graphic. An estimate of the time required to complete the download is given below the bar graph. A message indicates when the report upload is complete.

A.4.2 View Test Reports

Reports are displayed on the screen after loading. When the report is displayed, you can use the scroll bar or cursor keys to move through the file. The current page number is shown in the status bar.

If more than one report file is open, you can arrange them for convenient viewing using the commands in the **Window** menu.

A.4.3 Print Test Reports

1. Select **Print** from the **File** menu.

2. Select the printer, pages to print, and number of copies in the Print dialog box.

NOTE

Headers and footers that can include the filename or window title, page number, and date printed can be added before printing if needed. To check the header and footer option settings, select **Options** from the **View** menu, then click the **Print** tab.

3. Click **OK** to print the report. Individual reports are printed on separate pages.

A.4.4 Save Test Reports to Disk

1. Select **Save** from the **File** menu.

2. If the report has not yet been saved to disk, the Save As dialog box is displayed. Type a file name in the File Name box. Then click **Save** to save the file.

To save a report with a different file type:

1. Select **Save As** from the **File** menu.

2. From the **Files of type** list, select one of the following:

   - **Report Manager Tester Reports File** (default secure format). The file is encrypted and compressed to reduce the likelihood of file modification. All report data is saved.

   - **Report Manager Text Reports File**. This file stores report information in a text file format that can be loaded by Windows Notepad and other text editors (not secure). Only text report data is saved.

   - **Comma-Separated Value File**. This file stores report information in the CSV (comma-separated value) file format. A CSV file can be imported into many database and spreadsheet programs (not secure.) Only CSV report data is saved.

3. Type a file name in the File name box. Make sure it has the correct file extension.

4. Click **Save** to save the file.

A.4.5 Load Test Reports from Disk

1. Select **Open** from the **File** menu.

2. Use **Report Manager Tester Reports File** (default file type). To load a different file type, select the type in the Files of Type list.

3. Choose a file from the file list. Change the drive and/or folder if necessary to locate the file.

4. Click **Open** to load the file.

A.4.6 Download Firmware to the Fiber Meter

Firmware provides the Fiber Meter with performance capabilities. For firmware upgrades, please contact Technical Support at 724-746-5500.

Once the firmware upgrade resides on your PC, you can extract the executable files and follow the directions in the accompanying readme.txt file to load the upgrade. Report Manager is used to transfer firmware to each Fiber Meter handset.

CAUTION

When you upgrade the Fiber Meter firmware, all of the test results you have currently stored are erased. To avoid losing existing test results, we recommend that you print the stored test results or upload them to a PC before upgrading the firmware.

To download a firmware upgrade file from disk:

1. Connect the Fiber Meter to the PC serial port. See **Section A.3.2** for specific instructions.

2. Set the rotary dial on the Main Unit to **EXTENDED FUNCTIONS**.

3. Press the up- and down-arrow keys until **Download Firmware** is highlighted.

4. Press the **ENTER** button. Wait until the message **Link Established** is shown in the Report Manager's status bar.

NOTE

If the status bar continues to display **No Communications Link Established**, check the COM port settings. See **Section A.3.1** for specific instructions.

5. Select **Firmware Update** from the **Download** menu.

6. Select the firmware upgrade file from the list. Change the drive and/or folder if necessary to locate the file.

7. Click **Open** to load the firmware file. The display shows the version number and other information for both the upgrade and the Fiber Meter's current firmware.

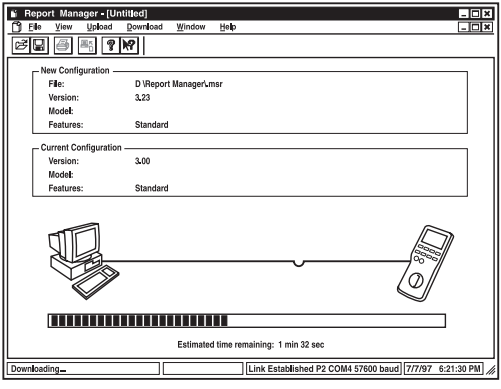

Figure A-6. Firmware update.

8. Confirm the firmware update operation.

On the download screen, progress is shown by the bar graph and an animated graphic. An estimate of the time required to complete the download is given below the bar graph. A message indicates when the firmware download is complete.