AFL Telecommunications

A Fujikura Business

Test & Inspection

OFL 200 Single-mode
Optical Time Domain Reflectometer
User's Guide

NOYES

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Limited Warranty

One Year Limited Warranty

All Noyes products are warranted against defective material and workmanship for a period of one year from the date of shipment to the original customer. Any product found to be defective within the warranty period will be repaired or replaced by Noyes. In no case will Noyes liabilities exceed the original purchase price of the product.

Exclusions

The warranty on your equipment shall not apply to defects resulting from the following:

- Unauthorized repair or modification

- Misuse, negligence, or accident

CE Information

These instruments have been designed and tested to comply with the relevant sections of any applicable specifications including full compliance with all essential requirements of all applicable EU Directives.

Returning Equipment

To return equipment, please contact Noyes to obtain additional information and a Service Request (S.R.) number. To allow us to serve you more efficiently, please include a brief description specifying the reason(s) for the return of the equipment.

AFL Telecommunications

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Important Safety Information

⚠️ **WARNING!** Use of controls or adjustments other than those specified herein may result in hazardous radiation exposure.

Single-mode OTDR port	CLASS 1 LASER PRODUCT — This is a CLASS I LASER output
VFL port	This is a CLASS II LASER output. Do not stare into beam. LASER RADIATION DO NOT STARE INTO BEAM CLASS 2 LASER PRODUCT WAVELENGTH: 650 nm MAX OUTPUT: 1.0 mw PULSE RATE: 2 Hz, 50% DUTY IEC825-1:1993, EN60825-1:1994

⚠️ **WARNING!** Do not connect the OTDR to any fiber that is not dark, or that is terminated by a device with reflectivity > -13 dB.

⚠️ **CAUTION!** To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords, or test jumpers. Always assume that optical outputs are on. Refer to your company's safety procedures when working with optical systems.

⚠️ **WARNING!** Use only the specified AC adapter. Use of another type of AC adapter can

damage the instrument and create the danger of fire and electrical shock.

⚠ **WARNING!** To avoid the danger of fire and electrical shock:

- Never use a voltage that is different from that for which the AC adapter is rated.

- Do not plug the unit into a power outlet that is shared by other devices.

- Never modify the power cord or excessively bend, twist, or pull it.

- Do not allow the power cord to become damaged. Do not place heavy objects on the power cord or expose it to heat.

- Never touch the AC adapter while your hands are wet.

- Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.

⚠ **CAUTION**: Do not run any tests or perform functions that activate the OFL 200 laser unless fiber is attached to the OTDR port.

ⓘ **NOTICE!** An OFL 200 OTDR contains no user serviceable parts. Except for changing batteries and cleaning optical ports, these units must be returned to Noyes or authorized agents for repair and calibration.

ⓘ **IMPORTANT!** Proper care in handling should be taken when using any precision optical test equipment. Scratched or contaminated optical connectors can impact the performance of the instrument. It is important to keep the dust caps in place when the unit is not being used.

Section 1: General Information

Introduction

The purpose of this User's Guide is to explain how to use and maintain Noyes test equipment. Please check our web site at **www.AFLtele.com (select Products, then Noyes Test & Inspection)** for updates to this manual, software updates, and additional application information. If you have any questions about your instruments and recommended accessories, or if you need technical or sales support, please contact Noyes Customer Service.

Contacting Noyes Customer Service

You may call Noyes Customer Service between 8 a.m. and 5 p.m., United States Eastern Time, as follows:

Phone:	800-321-5298 (North America)
	603-528-7780
Fax:	603-528-2025
Web:	www.AFLtele.com (select Products, then Noyes Test & Inspection)

Unpacking and Inspection

This instrument has been carefully packed in accordance with standard shipping procedures. Examine the equipment for damage that may have occurred during shipment. If you find any damage, or if any of the following items are not included, please contact Noyes.

The OFL 200 package includes:

- OFL 200 OTDR
- Protective rubber boot
- Rechargeable NiMH battery pack (or 4 x AA user supplied)
- Modular SC and FC adapter caps (LC and ST available at request)

- AC power adapter/charger and cord
- Serial cable
- Trace analysis PC software and User's guide
- OFL 200 User's guide
- Carry case

Recommended Accessories

You will need fiber optic test cables (or jumpers) to connect your OFL 200 to the fiber under test. Test cables must have the same core and cladding size as the fiber under test. The connector at one end of the test cable must mate with the appropriate optical port on the OFL 200. The connector on the other end must mate with the fiber optic link under test. Test cables and jumpers with a variety of lengths and connector styles are available from Noyes.

Fiber Rings may be used as launch and receive cables, which are required to measure the insertion loss and reflectance of the near-end and far-end connectors respectively, on the fiber

link being tested. Fiber Rings and Fiber Boxes with a variety of lengths and connector styles are available from Noyes.

Optical ports must be kept free from dirt or other contaminates to ensure accurate measurements and operation.

For cleaning connector end faces on OFL 200 OTDRs, test jumpers, and in fiber frames or adapters, Noyes recommends using our exclusive FCC2 non-hazardous cleaning fluid and CCT molded cleaning tips.

The FCC2 fluid is a non-flammable, environmentally safe, residue free solvent engineered to clean fiber connector end-faces.

The CCT molded cleaning tips introduce a new fiber connector end face cleaning technology. Rather than a fabric-covered or foam-covered stick, we are offering a molded cleaning tip that will trap contamination and wick cleaning solvents from bulkhead connectors. This new cleaning tip is a molded, sintered polymer that is both porous and pliable conforming to virtually any fiber end-face polish geometry while trapping and absorbing contaminants.

CCT cleaning tips and FCC2 cleaning fluid may be combined into FCP1 fiber optic cleaning kits. Noyes offers a complete selection of FCP1 cleaning kits for field cleaning. The FCP1 Series of kits delivers compact, safe, easy to use, reliable cleaning for all types of fiber optic connector end faces. Visit our web at **www.AFLtele.com (select Products, then Cleaning Supplies)** for more information.

Alternatively, a supply of optical cleaning wipes and IPA (Reagent Grade Isopropyl Alcohol 99% or better) and a can of filtered compressed air may be used for cleaning.

Feature Overview

The OFL 200 OTDR sets new standards for size, weight, ease-of-use, and value in a telco/broadband OTDR. Smaller than many optical loss test sets, the OFL 200 has the range, features, and price to make it the perfect OTDR for outside plant crews installing and maintaining optical fiber cables in broadband, metro, access, and FTTH networks.

Unlike 'optical fault locators', which detect only reflective events, the OFL 200 is a true OTDR, which detect fiber backscatter as well as fresnel reflections. Thus, the OFL 200 can locate reflective and non-reflective breaks, including those caused by crushed fibers. In addition, the OFL 200 provides an integrated 650 nm visual fault locator (VFL) for short-distance troubleshooting and fiber tracing.

In its [Full Auto] mode, the OFL 200 measures fiber length and sets range, pulse width, and averaging time automatically. A [Full Auto] mode is ideal for operators not familiar with OTDRs. A [Semi Auto] mode allows the user to set range while the OFL 200 sets other parameters. A [Manual] mode is available for experienced users. A [Live] mode is provided for first connector checking and troubleshooting.

The universal connector interface provides fast operation with many connector styles without changing an adapter. The OFL 200 can internally store up to 48 traces. Using the supplied serial cable, saved traces can be transferred to a PC for archiving, printing, and analyzing with the supplied Trace600 Windows® software. Test results are stored in Bellcore [*.sor] GR-196 Version 1.1 format.

Section 2: Functional Description

OFL 200 Ports and Indicators

The table below and Figure 2-1 describe the OFL 200 ports, indicators, and display.

| Ref#	OFL 200 Feature	Description
1	SM optical port ![CLASS 1 LASER PRODUCT]	1550 or 1625 nm single-mode OTDR port. **This is a CLASS I LASER output.**
2	VFL port ![laser label]	VFL module, 650 nm Visible Fault Locator (red laser). **This is a CLASS II LASER output.**
3	[Test Port] indicator	When on, indicates test in progress.
4	[VFL] indicator	When on, indicates that the laser is turned on.
5	Display	Used to show the test Setup screens, OTDR [Trace] screen, and other sub-screens and menus.
6	Power port	Interface for the supplied AC power adapter/charger.
7	[Charging] indicator	[On - Green] - AC adapter is plugged in (battery is charged). [On - Red] - battery is charging.
8	Serial transfer cable port	Allows connection to a PC for downloading test results.
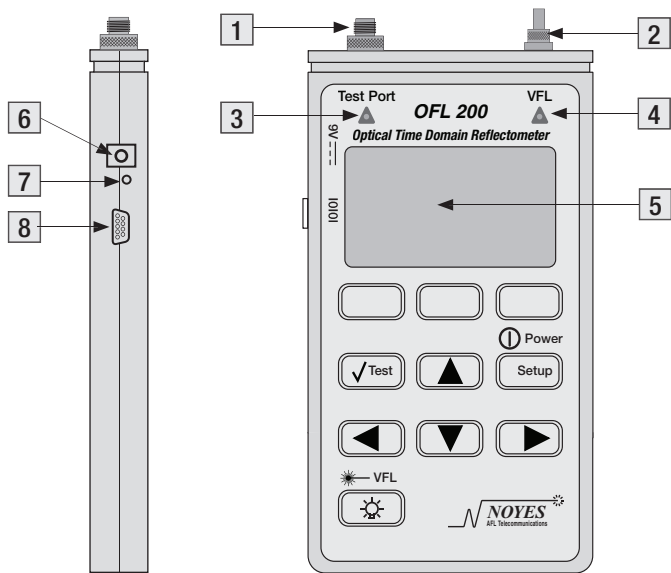
Figure 2-1. OFL 200 ports and indicators

OFL 200 Front Panel Keys

The function of the [Setup/ Power], [Test], and [Backlight/ VFL] key is fixed. The use of the soft function keys and arrow keys depend on which screen or menu they are displayed.

The table below and Figure 2-2 describe the OFL 200 keys.

Ref#	Front Panel Key	Description
1	① Power (Setup)	• Press and hold for 2 seconds to turn the OFL 200 [On] or [Off]. The unit will turn off automatically 10 min. after the last key press. • Press to access the [Setup] screen.
2	(Test)	Press to start or stop a test.
3	☀ VFL ☼	• Press a to turn the display backlight [On] or [Off]. • Press and hold for 2 seconds to turn the VFL [On] or [Off].
4	▲ and ▼	• In the [Setup] screen, press to select the available test parameter. • In the [Trace] screen, press to zoom in and out.
5	◀ and ▶	• In the [Setup] screen, press to change the selected test parameter. • In the [Trace] screen, press to move the current cursor.
6	Soft Functional keys	The label shown on the display above each key indicates the current use of each function key.
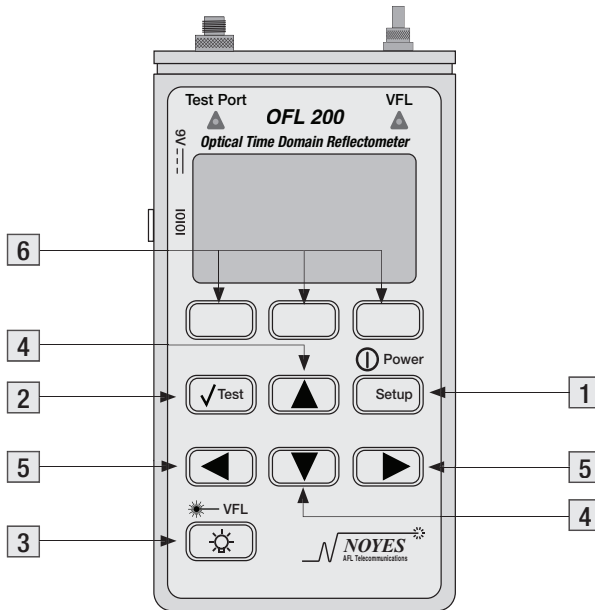
Figure 2-2. OFL 200 front panel keys

Section 3: OFL 200 Screens

Setup Screen

When the OFL 200 is turned on, it displays the default [Setup] screen. The [Setup] screen is used to view and edit OTDR parameters for the next test. Figure 3-1 illustrates the [Setup] screen features. To access the [Setup] screen and set OTDR parameters, perform the following:

1 If in any other then the [Setup] screen, press the [Setup] key to enter.

2 Select the Test mode as follows:

   • Use either [▲] or [▼] arrow key to highlight the [Mode] parameter.

   • Use either [◄] or [►] arrow key to select the desired Test mode.

3 Depending on the selected Test mode, a list of the available test parameters will be displayed.

4 Use either [▲] or [▼] arrow key to highlight the test parameter to be changed.

5 Use either [◄] or [►] arrow key to edit the selected parameter.

6 Pressing the [Trace] soft key will display the [Trace] screen.

7 Pressing the [File] soft key will display the [File] screen.

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Figure 3-1. Setup screen.

1550 nm SETUP

⬍ MODE	MANUAL
RANGE	0.3 km
PULSE WIDTH	0.03 us
AVERAGES	3 s
INDEX	1.4684
RANGE UNITS	km

FILE   TRACE

Battery status indicator

Select Test mode

Test parameters available for the selected test mode

Editable fields

Press to access the [File] screen

Press to access the [Trace] screen

Soft functional keys located on the Front panel. The label shown on the display above each key indicates the current use of each function key.

Trace Screen

The [Trace] screen is displayed when a test is complete, or when saved tests are retrieved. The [Trace] screen may be accessed from the [Setup] screen by pressing the [Trace] soft key.

The table below and Figure 3-2 describe the [Trace] screen features.

Ref#	[Trace] screen feature	Description
1	Header field	See Header field description, page 13.
2	Test results field	Displays test data: [A] cursor location, distance from [B] to [A], loss and reflectance based on the cursors location.
3	Trace	This is a graph of insertion loss in dB vs. distance in km.
4	Cursors [A] and [B]	Used to measure loss, reflectance, and distance. They can be moved using either [◄] or [►] arrow key.
5	Active cursor box	Indicates the currently active cursor.
6	Active zoom box	Indicates the currently active zoom mode.
7	Soft function key label	The label shown on the display above each key indicates the current use of each function key.
8	Battery status indicator	Displays estimated battery life remaining.
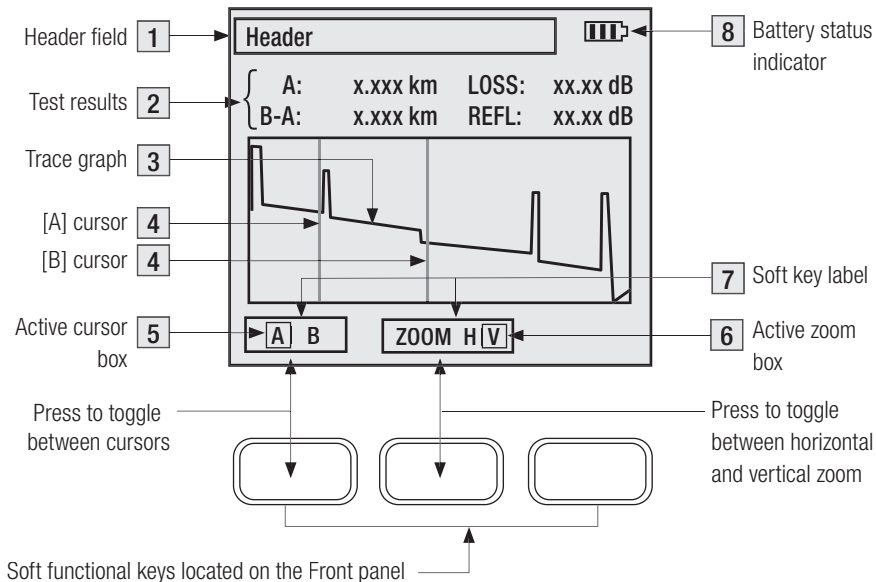
Figure 3-2. Trace screen.

Trace Screen Header

Depending on the selected test mode and test progress, the [Trace] screen header will display various labels. The table below and Figure 3-3 describe the [Trace] screen header meaning.

Ref#	Header Contents	Meaning
1	[TRACE NEW]	Displayed trace is not saved.
2	[TRACE] followed by a file name, for example: TRACE CABLE001_002_S15	Displayed trace has been saved using indicated file name.
3	[LOCATING END]	In the [Full Auto] and [Semi Auto] modes, OFL 200 is locating the end of fiber.
4	[TESTING] followed by a progress bar.	Test is in progress. Bar indicates what fraction of the test has been completed.
5	[TESTING] followed by [LAUNCH]indicator.	Test is in progress in the [Live] mode, or in the [Manual] mode with [Averages] set to [Live]. To terminate the test press the [Test] or [Setup] key.
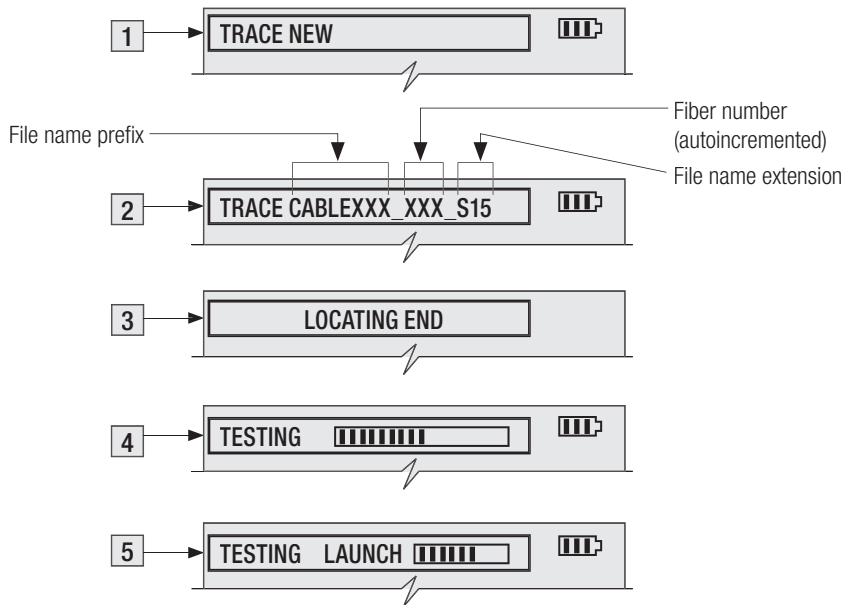
Figure 3-3. Trace screen header.

Launch Indicator

The [Launch] indicator is shown in the [Trace] screen header while a test is in progress in the [Live] mode, or in the [Manual] mode with [Averages] set to [Live]. This indicator may be displayed as a full bar, a half bar, or no bar. The table below describe the [Launch] indicator meaning.

[Launch] indicator state	Meaning
Full bar	A full bar indicates a good (low-loss, low reflection) connection to the OFL200.
Half bar No bar	A half bar or no bar indicates one of the following conditions: • test cable may not be properly seated in the OFL200 test port • connector on the test cable, OFL200 test port, or both is dirty or damaged These conditions can reduce the effective range of the OFL200, or make it hard to see and measure the loss of the first connector on the link under test.

! **Important:** Scratched or contaminated optical connectors can impact the performance of the OFL 200. Refer to the section titled "Cleaning Optical Ports" for details

When a half bar or no bar is displayed, remove the test cable from the test port, remove the test port adapter (see section titled "Cleaning Optical Ports", page 38), clean the connector on both the test cable and OFL200 test port, and then reconnect the adapter and test cable to the OFL200 test port. If these steps do not improve launch quality, you may need to replace the test cable or in rare cases return the OFL200 to the factory for service.

File Screen

The [File] screen is used for saving new files and for opening or deleting saved files. The [File] screen may be accessed from the [Setup] screen by pressing the [File] soft key. Figure 3-4 illustrates the [File] screen features.

A list of saved files

Bar indicates the selected file

This field displays file name of the selected file

Press to save a file

This field displays the selected file data as follows: [07]-number of the selected file; [23] - number of saved files; [48] - OFL 200 memory capacity

Press to open the selected file

Press to delete the selected file

FILE
CABLE000_001_S15
CABLE000_002_S15
CABLE000_003_S15
CABLE000_004_S15
CABLE000_005_S15
CABLE000_006_S15

CABLE000_006_S15   06/23/48

| SAVE | DELETE | OPEN |

Figure 3-4. File screen.

File Name Format

The OFL 200 OTDR saves traces in the following format:

Fiber number (autoincremented)

File name prefix

File name extension

CABLE000_001_S15
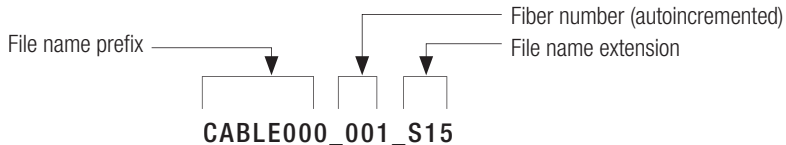
File Name Prefix - consists of user editable eight characters. [CABLE000] is the default File Name Prefix.

Fiber Number - consists of user editable three characters. Fiber number automatically increments after each save.

File Name Extension - consists of three characters. This number is added automatically by the OFL 200 depending on wavelength as follows:

Wavelength	Extension
single-mode, 1550 nm	_S15

Changing File Name

A file name may be changed in the [Save File] sub-screen, which may be accessed from the [File] screen by pressing the [Save] soft key.

1 When in the [File] screen, use either [▲] or [▼] arrow key to highlight the desired file to be renamed.

2 Press the [Save] soft key to access the [Save File] sub-screen.

3 To change the selected file name, perform the following:

   • Use either [▶] or [◀] arrow key to select the character to be changed.

   • Use either [▲] or [▼] arrow key to change the character.

4 Press [Save] to save the current entry or [Cancel] to exit the editing mode without saving.

   Note: After the renamed file is saved, you need to delete the original file that was renamed; otherwise there are two files of the same trace. To delete the original file:

   • Use either [▲] or [▼] arrow key to select the file that was renamed.

   • Press and hold the [Delete] soft key for about 1 second to delete it.

Section 4: Setting Test Parameters

OTDR Test Mode

The [Mode] parameter allows selecting the OTDR test mode. Depending on the selected test mode, various test parameters are available for viewing and editing them for the next test. The table below gives a summary of the available test modes and test parameters.

Available Test Parameter	Full Auto test mode	Semi Auto test mode	Live test mode	Manual test mode
Quality	●	●		
Range		●	●	●
Pulse Width				●
Averages				●
Index				●
Range Units				●

To set the OTDR Test Mode:

1 From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Mode] label.

2 Use either [▶] or [◀] arrow key to select the desired OTDR test mode. A list of the available test parameters corresponding to the selected test mode will be displayed (refer to the table above).

Range Units

Note: This parameter is set in the [Manual] test mode only for all modes.

To set Range Units:

1   From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Range Units] label.

2   Use either [▶] or [◀] arrow key to select the desired units as follows:

   • km (kilometer), m (meter), kf (kilofoot), ft (feet), mi (mile).

3   If setup is complete, press the [Test] key to start a test.

Distance Range

Note: This parameter is set for [Manual], [Semi Auto], and [Live] test modes.

The [Distance Range] parameter determines the distance range of the full (unzoomed) trace. It also determines Resolution - the distance between data points in the trace: the longer the range, the wider the data point spacing. We recommend selecting the shortest distance range that is longer than the fiber under test. For example, to test a fiber that is 1.5 km long, select the 2.5 km range.

To set Range:

1   From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Range] label.

2   Use either [▶] or [◀] arrow key to select the desired Range as follows:

Range Units	Available Range
km	0.3, 0.6, 1.2, 2.5, 5, 10, 20, 40, 70
m	300, 600, 1200, 2500, 5000, 10000, 20000, 40000, 70000
kf	1, 2, 4, 8.2, 16.4, 32.8, 65.6, 131.2, 229.6
ft	1000, 2000, 4000, 8200, 16400, 32800, 65600, 131200, 229600
mi	0.19, 0.37, 0.75, 1.5, 3.1, 6.2, 12.4, 24.8, 43.5

3   If setup is complete, press the [Test] key to start a test.

Pulse Width

Note: This parameter is set for [Manual] test mode only.

The OFL 200 can operate using different pulse widths. Short pulse widths provide the shortest event and attenuation dead zones. Long pulse widths provide the best event detection on long fibers. We recommend setting the [Pulse Width] parameter to the lowest value that provides the event detection range you need.

To set Pulse Width:

1   From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Pulse Width] label.

2   Use either [▶] or [◀] arrow key to select the desired [Pulse Width] as follows:

Wavelength, nm	Pulse Width, μS
SM 1550	0.01, 0.03, 0.1, 0.3, 1, 3, 10

3   If setup is complete, press the [Test] key to start a test.

Note: Because [Pulse Width] availability depends on [Range], always set the [Range] parameter before setting [Pulse Width].

Averages

Note: This parameter is set for [Manual] test mode only.

The [Averages] parameter determines the number of samples taken and averaged per trace data point during a test. This parameter also determines the duration of a test.

To set Averages:

1   From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Averages] label.

2   Use either [▶] or [◀] arrow key to select the desired average setting as follows:

   • 3 s, 10 s, 20 s, 1 min, 3 min, Live.

3   If setup is complete, press the [Test] key to start a test.

Note: Increasing the number of averages reduces trace noise and, therefore, makes it easier to

see events at the end of a long fiber. However, increasing the number of averages also increases test time. We recommend setting Averages to the lowest value that provides the trace smoothness that you need.

Index (group index of refraction -GIR)

Note: This parameter is set in the [Manual] test mode only for all test modes.

The refractive index of an optical fiber, also known as its Group Index of Refraction or GIR, determines the speed of light in the fiber. Refractive index is used by the OFL 200 to determine cursor and event distances. When setting Refractive Index, enter the value specified by the manufacturer of the fiber optic cable you are testing.

To set Index:

1   From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Index] label.

2   Use either [▶] or [◀] arrow key to increase or decrease the [Index] value.

3   If setup is complete, press the [Test] key to start a test.

Note: If you don't know the refractive index value of the fiber you are testing, use the default value (1.4681). This value is within 1% of the values specified for most fiber optic cables.

Quality

Note: This parameter is set for [Full Auto] and [Semi Auto] test modes only.

To set Quality:

1 From the [Setup] screen, use either [▲] or [▼] arrow key to highlight the data field beside the [Quality] label.

2 Use either [▶] or [◀] arrow key to select the desired [Quality] as follows:

   • Normal, Fast, Best Resolution, Smoothest.

3 If setup is complete, press the [Test] key to start a test.

Section 5: Operation

Performing a Test

1 Turn on the OFL 200 by pressing and holding the [Power] key for two seconds.

   Note: When the OFL 200 is turned on, it displays the default [Setup] screen. Use this screen for viewing and editing settings for the next test.

2 Connect the OFL 200 to the fiber under test and press the [Test] key to begin testing.

3 You may press the [Test] key to stop the test before all of averages have been run or wait until the test is complete.

4 When a test is complete or stopped, the OFL 200 will switch to the [Trace] screen.

Moving Cursors

The [A] and [B] cursors may be positioned to measure distance, reflectance, and loss between any two points on a trace.

In the [Manual] and [Live] test modes both cursors are located at the location set in prior test.

In the [Full Auto] and [Semi Auto] the [A] cursor is located at the location set in prior test, and the [B] is located at the end of the trace. To move a cursor, you need to make it active.

1 Press the [A/B] soft key to toggle between cursors (refer to Figure 5-1).

2 Press the [▶] key to move the active cursor to the right; press and hold for fast movement.

3   Press the [◀] key to move the active cursor to the left; press and hold for fast movement.

Note: The active cursor set for the current test will remain active for the following tests, as long as the setup parameters stay the same between tests.
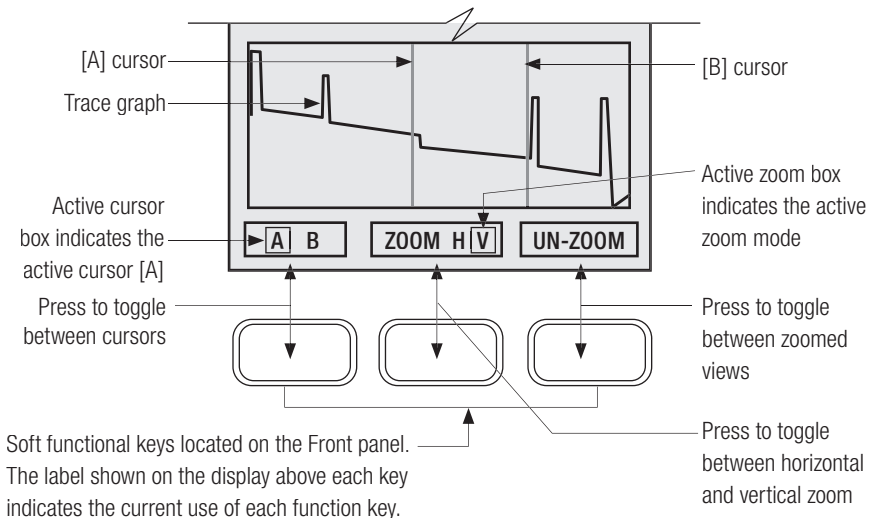

Figure 5-1. Moving cursors.

Zooming

To view different parts of a trace at various magnifications, you can zoom (expand) the trace graph in the horizontal or vertical direction. OFL 200 zooms horizontally around the active cursor and vertically from the trace level at the active cursor.

To zoom a trace image perform the following steps:

1   Press the [Zoom H/V] soft key to toggle between horizontal and vertical zoom modes (refer to Figure 5-2).

2   Press the [▲] key to zoom-in (increase magnification).

3   Press the [▼] key to zoom-out (decrease magnification).

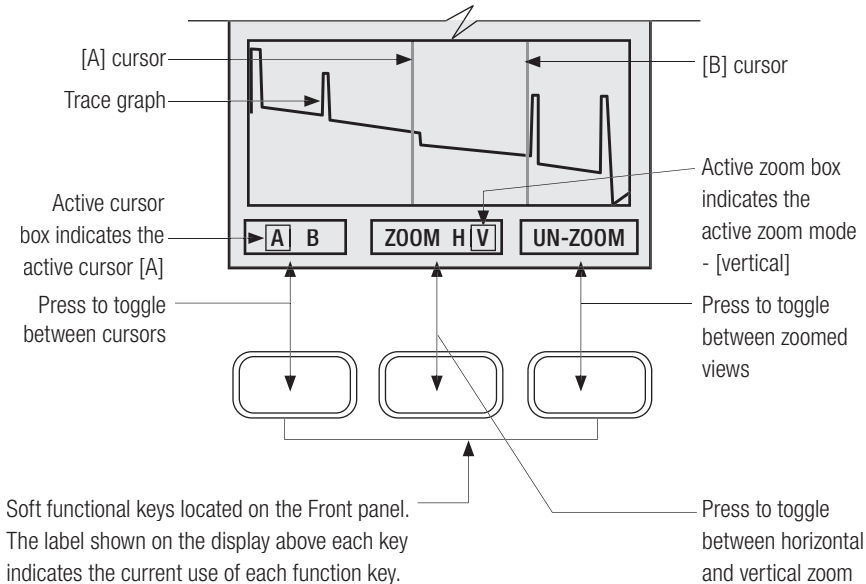4   If needed, you may press the [Un-zoom/ Re-zoom] soft key to switch back and force between zoomed views.

Figure 5-2. Zooming.

Saving Trace Files

When a test is complete or stopped, the OFL 200 will switch to the [Trace] screen and display test results. To save a new trace displayed om the [Trace] screen, perform the following:

1   From the [Trace] screen, press the [Setup] soft key to access the [Setup] screen.

2   From the [Setup] screen, press the [File] soft key to display the [File] screen (refer to Figure 5-3).

3   Press the [Save] soft key to access the [Save File] sub-screen and display the file name of the trace to be saved.

4   If you need to edit the displayed file name, perform the following:

   • Use either [▶] or [◀] arrow key to select the character to be changed.

   • Use either [▲] or [▼] arrow key to change the character.

5   Press the [Save] soft key to store the displayed trace or the [Cancel] soft key to cancel.

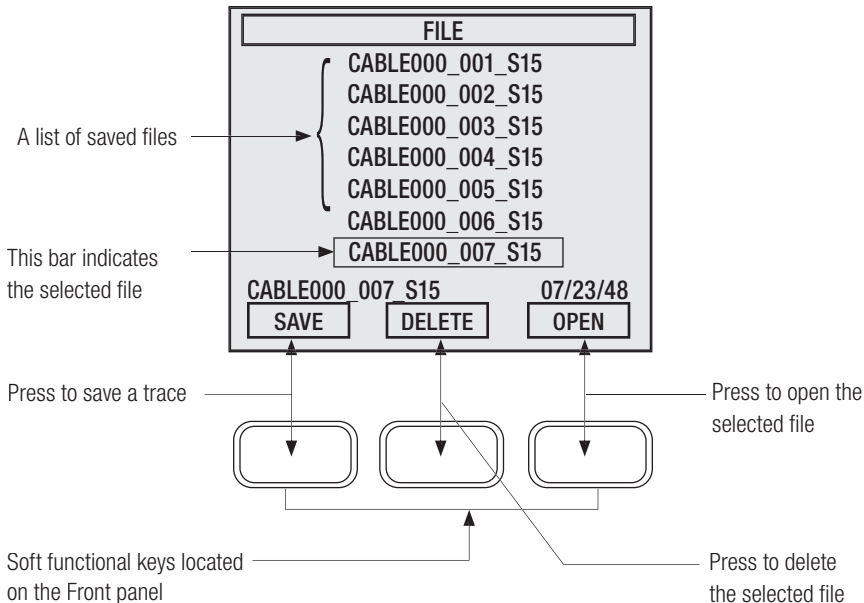6   Pressing either [Save] or [Cancel] soft key will bring you back to the [File] screen.

Figure 5-3. File screen.

Retrieving Saved Files

1 From the [Setup] screen, press the [File] soft key to display the [File] screen (refer to Figure 5-3).

2 Use either [▲] or [▼] arrow key to select the desired file.

3 To open the selected file, press the [Open] soft key. This will bring you back to the [Setup] screen.

4 Press the [Trace] soft key to display the selected trace.

Deleting Saved Files

1 From the [Setup] screen, press the [File] soft key to display the [File] screen (refer to Figure 5-3).

2 Use either [▲] or [▼] arrow key to select the desired file.

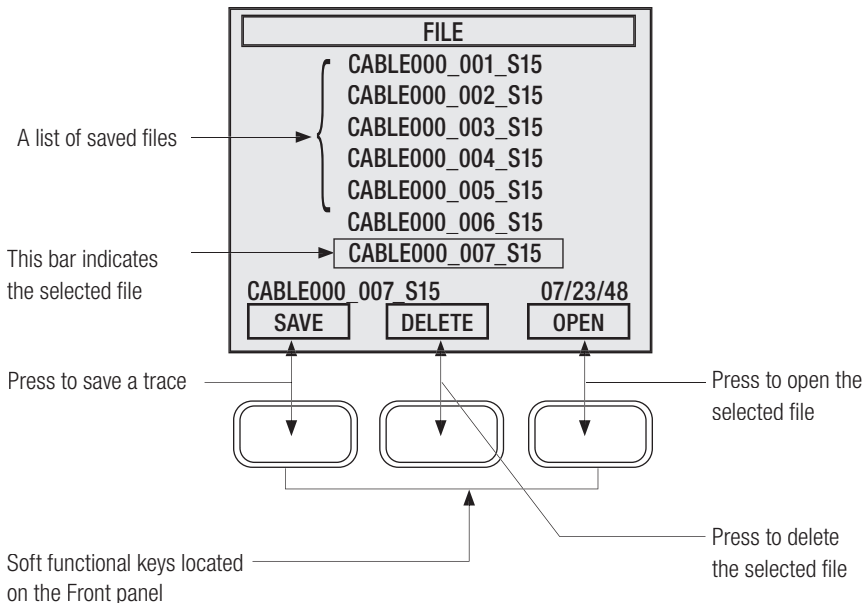3 To delete the selected file, press and hold the [Delete] soft key for about 1 second until the file is deleted.

Figure 5-3. File screen.

Transferring Files to a PC

With the supplied Trace600 software, you can analyze, edit, and print OFL 200 traces using your PC.

To transfer files to a PC:

1 Install the supplied Trace600 software on your PC .

2 Turn the OFL 200 on.

3 Connect the OFL 200 to your PC using the supplied serial cable.

4 Open Trace600.

5 From the Trace600 [File] menu, select the [Transfer files from OFL 200] option (you may experience several seconds delay until the [File Transfer] screen is displayed).

6 You should see the [Remote] soft key label on the OFL 200 display. Press the [Remote] soft key on the OFL 200.

Note: If the [Remote] soft key label is not displayed on the OFL 200 screen, perform the following steps:

- Following the Trace600 on-screen instructions, choose the appropriate COM port.
- The [Remote] soft key label will appear on the OFL 200 display. Press the [Remote] soft key on the OFL 200.
- From the Trace600 [File Transfer] screen, click the [Refresh] button to display files saved with the OFL 200 OTDR.

7 From the displayed list, select the files to be transferred. Click [Transfer files].

8 When the files are transferred from the OFL 200 to your PC, you may use the Trace600 software to perform the following:

   – Save traces to a folder on your PC

   – Analyze traces

   – Edit traces and event tables

   – Print /batch print traces

Note: Refer to the supplied Trace600 User's Guide for instructions.

Using the VFL Port

⚠ **WARNING! This is a CLASS II LASER output. Do not stare into beam.**

1 Connect the fiber under test to the VFL port.

   Note: The VFL port is a 2.5 mm universal connector adapter that can be used on ST, SC, FC or any other connectors with a 2.5 mm ferrule.

2 Turn [On] the VFL port by pressing the [VFL] key for about 2 seconds until the [VFL] indicator is [On].

   Note: The VFL port will automatically turn [Off] after 1 hour.

3 The VFL port can be used for locating faults in fiber links and to trace fibers.

Section 6: Maintenance

Cleaning Optical Ports

⚠️ **CAUTION:** Before conducting the following procedures, be sure to have the OFL 200 turned off.

Optical ports must be kept free from dirt or other contaminants to ensure accurate measurements and operation. Always clean all test jumpers before conducting the test procedures outlined in this Guide. It is important to keep dust caps in place when instruments are not being used.

Noyes recommends using our exclusive FCC2 non-hazardous cleaning fluid and CCT molded cleaning tips for cleaning connector end faces in fiber frames, adapters, and on jumpers.

To clean the Test port

1 Rotate the adapter base counterclockwise approximately four times.

2 Pull the adapter directly out away from the universal adapter mount.

3 Perform one of the following:

   #### If using Noyes Cleaning Supplies:

   • Leaning the FCC2 can back (30°), press the button on the FCC2 to fill the well.

   • Dip the CCTP tip into the well of the FCC2 to dampen the tip with optical cleaning fluid.

- Place the damp tip over the ferrule to be cleaned.

- Rotate the tip clockwise 10 revolutions while applying varying pressure to create a gentle pumping action where the tip contacts the ferrule.

- Discard the CCTP stick after using both tips.

If using lint-free optical cleaning pads and isopropyl alcohol:

- Be sure to use 99% IPA that has not been contaminated.

- Dampen the wipe with the alcohol and gently wipe the exposed ferrule. Then dry the ferrule using a new optical wipe.

4 Using a can of filtered compressed air (held vertically), blow out any contaminants from the adapter.

5 Once completed, replace the adapter over the ferrule, centering it onto the alignment pin. Tighten the adapter base.

To clean the VFL port

1 Unscrew the adapter (counterclockwise) and pull the adapter straight out to expose the ferrule.

2 Perform one of the following:

If using Noyes Cleaning Supplies:

- Leaning the FCC2 can back (30°), press the button on the FCC2 to fill the well.
- Dip the CCTP tip into the well of the FCC2 to dampen the tip with optical cleaning fluid.
- Place the damp tip over the ferrule to be cleaned.
- Rotate the tip clockwise 10 revolutions while applying varying pressure to create a gentle pumping action where the tip contacts the ferrule.
- Discard the CCTP stick after using both tips.

If using lint-free optical cleaning pads and isopropyl alcohol:

- Be sure to use 99% IPA that has not been contaminated.
- Dampen the wipe with the alcohol and gently wipe the exposed ferrule. Then dry the ferrule using a new optical wipe.
- Using a can of filtered compressed air (held vertically), blow out any contaminants from the adapter.

3 Replace and tighten the adapter.

Replacing AA Batteries

To replace the discharged AA batteries:

1 Remove the protective rubber boot from the instrument.

2 Remove the battery compartment cover located on the back of the instrument.

3 Replace the discharged batteries; align the polarity of the batteries with the polarity indicators in the battery compartment.

4 Replace the battery compartment cover and rubber boot.
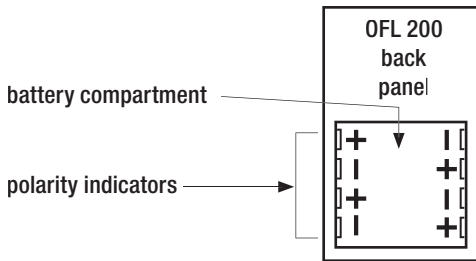
Recharging NiMH Battery Pack

You may charge the NiMH battery pack with the OFL 200 switched [On] or [Off] by attaching an AC power adapter. The NiMH battery pack may be recharged to full capacity in about 4 hours.

1 Plug the correct AC adapter/charger into a standard wall outlet.

2 Connect the AC adapter/charger to the [Power] port located on the OFL 200 left side panel (refer to Figure 2-1, page 7).

3 The [Charging] indicator on the left side panel will turn [On - Red].

4 Charge batteries for approximately 4 hours or until the [Charging] indicator turns [Green].

Note: If used occasionally, the OFL 200 may be left connected to an AC power adapter to maintain batteries at full charge.

Installing NiMH Battery Pack

When installing the NiMH battery pack, verify that it is inserted into the OFL 200 battery compartment with the [+] sign in the upper left corner as shown.

OFL 200
back
panel

+
NiMH
battery
pack
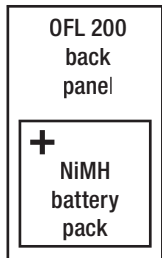
Repair and Calibration

Repair of the Noyes test equipment in the field is NOT recommended.

Calibration is recommended every 12 months. Noyes' Calibration Department is in compliance with ANSI/NCSL Z540-1, ISO 10012-1, MIL STD 45662A, ISO Guide 25 and traceability to the National Institute of Standards and Technology. Call Customer Service to obtain a Service Request (S.R.) number before sending units in for calibration.

Section 7: Specifications

OTDR Optical Specifications

Emitter type	Laser	
Safety class	Class I, FDA 21 CFR 1040.10 & 1040.11	
Center wavelength (nominal)	1550 nm	1625 nm
Dynamic range (SNR = 1)	24 dB @ 10 μs, 3 min. test	23 dB @ 10 μs, 3 min. test
Event dead zone [1]	2 m typical / 3 m maximum	
Attenuation dead zone [2]	14 m typical / 18 m maximum	
Number of data points	4000 on ranges ≥ 4 km	
Resolution	1 m on ranges ≤4 km; Range / 4,000 on ranges > 4 km	
Pulse width	10 ns, 30 ns, 100 ns, 300 ns, 1 μs, 3 μs, 10 μs	
Distance ranges	300 m to 70 km	
Group Index of Refraction adjustment range	1.4000 to 1.6000	

[1] 1.5 dB down from each side of the peak, -45 dB reflective event

[2] From the start of an event to within 0.5 dB of backscatter, -45 dB reflective event.
Unless specified, all specifications are at 25°C.

Distance accuracy	$\Delta L = \pm (dl + L \cdot \Delta n / n + 5 \cdot 10^{-5} L)$, where:
	$dl =$ 1 m at the 300 m to 2.5 km range,
	2 m at 5 km, 10 m at 40 km,
	3 m at 10 km, 18 m at 70 km
	5 m at 20 km,
	$L =$ length of fiber under test in meters
	$n =$ fiber group index of refraction (GIR)
	$\Delta n =$ GIR setting error
Trace file format	Bellcore GR-196, Version 1.1
Trace file storage	Internal, up to 48 traces

Visual Fault Locator (VFL) Specifications

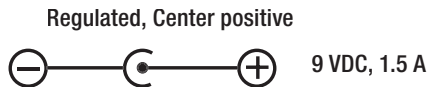|	
Emitter type	Laser
Safety class:	Class II FDA 21 CFR 1040.10 & 1040.11
	IEC 825-1: 1993, EN60825-1: 1994
Wavelength	650 nm
Output power (nominal)	0.8 mW into 9 μm single-mode optical fiber

Unless specified, all specifications are at 25°C.

General Specifications

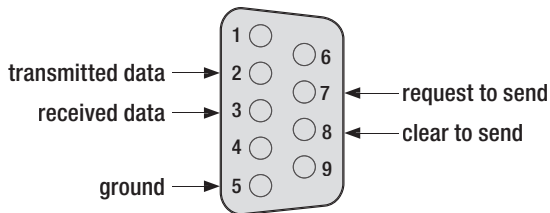|	
Size (H x W x D)	190 x 112 x 47 mm (7.5 x 4.4 x 1.9 inches)
Weight	0.6 kg (1.3 lb)
Operating temperature	-10 °C to + 50 °C
Storage temperature	-20 °C to + 60 °C
Relative humidity	0 to 95%, non-condensing
Power	Rechargeable NiMH or 110/220 VAC 50/60/Hz adapter. Optional 4 x AA Alkaline batteries
Battery life with backlight ON	NiMH: > 8 hours; 4 x AA: > 13 hours
AC adapter	9 VDC, 1.5 A (center positive)

Unless specified, all specifications are at 25°C.

Specifications are subject to change without notice.

OFL 200 AC Adapter Input

Regulated, Center positive

9 VDC, 1.5 A

OFL 200 Serial Cable

DB 9 Female (OFL 200)

transmitted data → 2
received data → 3
ground → 5

request to send ← 7
clear to send ← 8

AFL Telecommunications
A Fujikura Business

Thank you for choosing Noyes

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Belmont, NH 03220
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Fax:　　603-528-2025
www.AFLtele.com
(select Products, then Noyes Test & Inspection)

NOYES
ISO
9001
CERTIFIED

C E

NOYES
Test & Inspection