

[Noyes OFL-100 LR Specs](http://www.AAATesters.com)
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Operations Manual
for the
OFL 100 Mini-OTDR

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Part Number: OFL1-00-1000



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1.0 General Information

Thank you for purchasing the Noyes Fiber Systems OFL 100 OTDR. The OFL 100 is designed to be a rugged, reliable, portable test instrument having the many features required to measure and maintain fiber optic networks. Its' easy "one button" operation provides event location, length measurements, splice loss measurements, and trace documentation. This instrument utilizes standard OTDR (Optical Time Domain Reflectometer) technology to make measurements. When used with an optional thermal printer or with the supplied PCPLOT3 software it will provide complete fiber network documentation and trace analysis.

1.1 Unpacking and Inspection

This instrument has been carefully packed in accordance with standard shipping procedures. Should damage be observed as a result of shipment, or if any of the following items are not included, please notify Noyes Fiber Systems at 603-528-7780 or 800-321-5298.

- OFL 100 OTDR
- Carrying Case
- User Guides
- AC Power Adapter
- Serial Cable
- Warranty Registration Card
- Trace Recording Note pads
- PCPLOT3 Trace Analysis Software diskettes

1.2 Precautions

Use care when working with any optical transmission equipment. It is good practice to avoid looking directly at the output of any optical fibers or sources. Refer to your company's safety procedures when working with optical systems.

CAUTION: Use of controls or adjustments other than those specified herein may result in hazardous radiation exposure. The OFL 100 is a CLASS 1 LASER PRODUCT.



It is important to keep all optical connections and surfaces free from dirt, oils, or other contaminants to ensure proper operation. Proper cleaning techniques must be performed on fiber connectors, connector adapters, etc., before conducting any test procedures that are outlined in this manual. Please refer to the section on maintenance for more information on cleaning methods. Scratched or contaminated connectors can reduce system performance. Always replace protective dust caps when available.

1.3 Recommended Accessories

Jumper cables are required to interface the OFL 100 to the fiber under test (be certain the jumper cables used are the same core/cladding size as the fiber under test). One end of the jumper cable must interface to the front panel connector on the OFL 100. The other end can be any number of styles, allowing connection to different systems. Various cable styles and lengths are available from Noyes Fiber Systems.

A supply of industry approved optical cleaning pads would be helpful to maintain optical connectors. Also, a can of filtered compressed air is useful for blowing contaminants out of connector adapters.

2.0 Functional Description

Using standard optical time domain reflectometer (OTDR) techniques, the OFL 100 transmits a short pulse of light down the optical fiber and examines the reflections coming back. The reflections are known as backscatter. The OFL 100 interprets these reflections and determines event losses, distances and the fiber end. Optical time domain reflectometry allows the user to identify problems on a system while having access to only one end of the fiber.

- Event Location

The OFL 100 can be used to automatically locate events using the SCAN command, or manually by using the PCPLOT3 software. Each event location will be displayed along with the event magnitude measured in dB.

- End Detection

The OFL 100 can be used to measure the length of an installed cable. It is also useful to verify cable lengths prior to installation.

- Fiber Trace Documentation

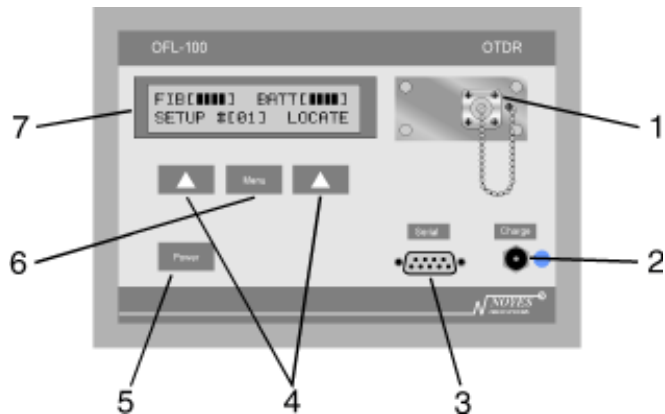
The OFL 100 provides OTDR trace documentation via the serial port. Direct plotting of traces is possible by connecting a thermal printer. The OFL 100 can be connected to a personal computer for computer storage of traces. For more information on the available PC features please refer to the PCPLOT3 user's guide.

2.1 Panel Buttons & Connector Ports

Please refer to the front panel drawing to the right when becoming familiar with the OFL 100.

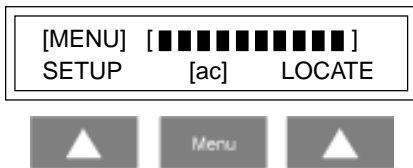
1. Optical Port - The optical port allows connection to various fiber optic jumper cables. To clean the optical connector please refer to the maintenance section.

2. AC Adapter Input - The OFL 100 is designed to operate continuously with the AC adapter plugged in. Depending upon model the OFL 100 will operate for approximately 4-6 hours from a fully charged battery. A "LOW BATT" message will appear in the display when the battery voltage is low. The AC adapter should be inserted at this time. If it is not, the OFL 100 will still operate for up to one hour before shutdown occurs. Please note that the AC adapter will have a blue band wrapped around the end of the cord corresponding to the blue dot on the OFL 100.



3. Serial Port - A DB9 connector is provided for the downloading of traces to an external printer or PC. Please refer to the section 3.7 for more information.

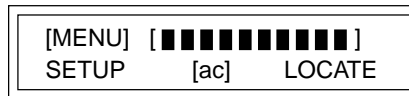
4. Soft Arrow Keys - These keys “point” to the words displayed in the bottom row of the Liquid Crystal Display (LCD). By pressing these keys you select the function, or parameter displayed above it. Because the meaning of the soft keys may change from screen to screen they will be referred to by the function or parameter displayed above the key. For example:



In the above display, if the manual says “Press SETUP”, you should press the soft arrow key below the word “SETUP”.

5. Power Key - Pressing the ‘POWER’ key will turn the unit on or off. See section 3.1 for more information on the events that occur during power up.

6. Menu Key - At anytime during the operation of the OFL 100 you may choose to return back to the main menu by selecting this key.



Main Menu

7. Display - The OFL 100 incorporates a 2 x 20 Alphanumeric Liquid Crystal Display (LCD) for listing menu selections and displaying fiber information.

3.0 OFL 100 Operation

3.1 Power-Up Sequence

3.1.1 HR and MM Models

Press 'POWER'. The following screen will appear.

```
NOYES FIBER OFL-100
X.XXxx — Self test —
```

This screen shows the model number, and internal software revision (shown here as X.XXxx) while performing self-test diagnostics. This screen will be displayed for about 2 seconds then it will change to two rows of solid blocks. Next, the unit checks its internal memory for errors.

```
PERFORMING CHKSUM
```

The unit will then display the main menu:

```
{MENU} [ < 100 m ]
SETUP LOCATE
```

3.1.2 LR Models

Press 'POWER'. The following screen will appear.

```
MODEL OFL-100LR
X.XXxx — Self test —
```

This screen shows the model number and internal software revision (shown here as X.XXxx) while performing self-test diagnostics. This screen will be displayed for about 10 seconds then it will change to the main menu screen.

```
[MENU] [■■■■■■■■■■]
SETUP [ac] LOCATE
```

3.1.3 DM and DS Models

Press 'POWER' and the following screen will appear.

```
NOYES FIBER OFL-100
X.XXxx — Self test —
```

This screen shows the model number and internal software revision (shown here as X.XXxx) while performing self-test diagnostics. This screen will be displayed for about 2 seconds then it will change to two rows of solid blocks. Next, the unit checks its internal memory for errors.

```
PERFORMING CHKSUM
```

If no errors occur, the main menu screen will appear.

```
FIB[ ■■■■ ] BATT [ ■■■■ ]
SETUP #[XX] LOCATE
```

If the OFL 100 detects an error in the trace data stored in its internal memory, it will display the screen shown below. The 'NEXT' key must be pressed before the unit will proceed to the main menu. In this situation, it is advised that you transfer the stored data to a PC before storing more fiber records (traces). Refer to section 3.7 for more information on saving a trace to a PC. Then, clear the unit's memory to remove the corrupted records. The OFL 100 is now ready to measure and store more fiber records. Note: Viewing the saved records with the PCPLOT3 software will allow you to determine which records are not corrupt and which are corrupted.

```
SOME RECORD(S) BAD
NEXT
```

An alternative screen may appear during the start up procedure. If this occurs, then check the setup options following this message.

```
RAM CHKSUM FAILED
PLEASE PERFORM SETUP
```

If during the start up procedure the following screen appears, an error in the internal optics has occurred and will require repair. Refer to section 5.3 for more information on returning equipment.



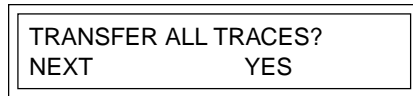
3.2 Selecting Operational Parameters

The OFL 100 provides a number of user adjustable parameters, allowing customization for optimum performance. These parameters are stored in memory and will remain even after the unit is shut off. The following sections will explain about each SETUP screen for the different OFL 100 models.

3.2.1 HR, LR and MM Models

From the Main Menu, selecting 'SETUP' provides a series of internal operational parameters.

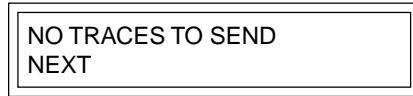
The OFL 100 will display the following screen. If 'YES' is selected the unit will search the memory for stored traces. Selecting 'NEXT' will return you to the next setup parameter.



If there are no traces stored the display will show the following and then will automatically return to the main menu:



or



If there are traces stored in memory the following screen is displayed. Selecting 'YES' will allow you to transfer all stored traces to a PC. Before selecting 'YES' please refer to the PCPLOT3 user's guide for more information on transferring traces. Selecting 'NO' will return you to the main menu.



The screen will change to:

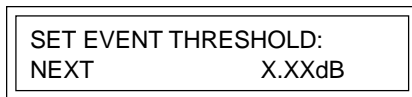


The OFL 100 is now transferring all traces stored in memory. The screen will change to:



Refer to the Clear Storage Memory section on the next page for the YES option on this screen.

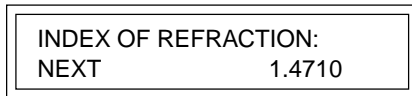
Selecting 'NEXT' from either the Transfer All Traces or Clear Storage Memory options above will change the screen to the next setup parameter.



The Set Event Threshold option allows you to select the threshold level that the unit will use during operation.

Press the arrow key below the dB value to toggle through the available thresholds. The available thresholds (shown above as X.XX) are 0.25, 0.50, 1.00, 2.00, and 4.00 dB.

Selecting 'NEXT' will change the screen to the next setup parameter.



This screen allows you to change the Index of Refraction from 1.4000 to 1.6999. The fourth digit to the right of the decimal point will be underscored. This number can be edited by pressing the arrow key below the refraction value. The underscored number will increment from 0 to 9, and back to 0.

When the digit is at the desired value selecting 'NEXT' will shift the underscore marker one digit to the left. This process is repeated until all digits have been selected. (NOTE: The tenth's place can only be a 4, 5, or 6, and the whole number "1" cannot be edited).

Selecting 'NEXT' a fourth time will change the screen to the next setup parameter.

SET DISPLAY UNITS :
NEXT METERS

The right arrow key will toggle the measurement units between meters and feet.

Selecting 'NEXT' will change the screen to the next setup parameter:

CLEAR STORAGE MEMORY
NEXT YES

Selecting 'NEXT' will return you to the Main Menu.

Selecting 'YES' will change the screen to:

ARE YOU SURE?
NO YES

Selecting 'NO' will return you to the Main Menu.

Selecting 'YES' will change the screen to:

PERFORMING CHKSUM

and / or

CLEARING MEMORY

A few moments later the screen display will change to;

MEMORY CLEARED
NEXT

and all previously stored traces are deleted. Selecting 'NEXT' will return to the Main Menu.

3.2.2 DM and DS Models

From the main menu, selecting 'SETUP' provides a series of internal operational parameters. The first screen is shown in the next column. If YES is selected and there are no records in the internal memory, a message, NO RECORDS STORED, will appear and the main menu screen will follow.

SEND RECORDS TO PC:
NEXT YES

If there are previously stored records, selecting YES allows you to transfer all stored records to computer (For more information on record transfer please refer to the PCPLOT3 user's guide). The screen will change to:

(DUAL) SENDING
X OF X

Note: X of X represents the number of records to be transferred.

The OFL 100 is now transferring all records stored in memory. When complete, the screen will change to:

CLEAR STORAGE MEMORY
NEXT YES

If the YES option is selected, the screen will change to:

ARE YOU SURE?
NO YES

If the NO option is selected, the setup screens will continue. Selecting 'YES', all previously stored records will be deleted and the screen will change to:

PERFORMING CHKSUM:

A few moments later, the next setup screen will follow.

Selecting 'NEXT' from either the Send Records to PC or Clear Storage Memory screens, will change the screen to the next setup parameter.

SET TEST WAVELENGTH: NEXT DUAL
--

The Set Test Wavelength option provides the user with a choice between *single wavelength operation* or *dual-wavelength operation*. After selecting the desired wavelength with the right arrow key, select 'NEXT' to advance to the next setup parameter.

SET EVENT THRESHOLD: NEXT X.XXdB
--

The Set Event Threshold option allows the user to select the threshold level that the unit will use during operation. Press the right arrow key below the dB value to toggle through the thresholds. The available thresholds (shown here as X.XX) are 0.25, 0.50, 1.00, 2.00, and 4.00 dB.

Selecting 'NEXT' will change the screen to the next setup parameter.

SET INDEX AT XXXnm: NEXT 1.4776

This screen allows the user to change the Index of Refraction from 1.4000 to 1.6999. The fourth digit to the right of the decimal point will be underscored. This number can be edited by pressing the arrow key below the refraction value. The underscored number will increment from 0 to 9 and back to 0. When the digit is at the desired value, selecting 'NEXT' will shift the underscore marker one digit to the left. This process is repeated until all digits have been selected. NOTE: The tenth's place can only be a 4, 5, or 6, and the whole number "1" cannot be edited. The same procedure must be followed for the next screen involving the index at other wavelengths.

SET INDEX AT XXXXnm: NEXT 1.4719
--

Selecting 'NEXT' again will change the screen to the next setup parameter.



The right arrow key will toggle the measurement units between meters and feet.

Selecting 'NEXT' will change the screen to the next setup parameter.



The right arrow key will toggle between on and off. If the beeper is on the unit will beep after various commands or when a task is complete.

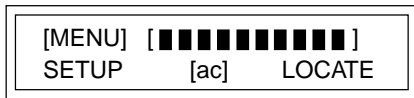
Selecting 'NEXT' the main menu screen will appear.

3.3 Verifying Test Conditions

Before making any measurements you should prepare a jumper cable by inspecting and cleaning the fiber ends. Connect the OFL 100 to the fiber under test with the jumper cable.

3.3.1 HR, LR and MM Models

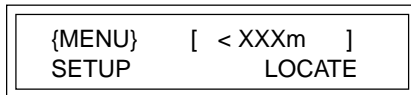
The number of blocks displayed in the main menu, as shown below, indicates the quality of the launch condition or connection to the system. For the greatest range, the display bar graph should show ten blocks, each block representing approximately 1 dB of operating range.



Should the display show less than 9 blocks in models HR and LR or 8 blocks in MM models, then the front panel connection may be contaminated and should be checked. If after cleaning, there are still less than the specified number of blocks showing then there may be an event of excessive loss near the launch such as a break in the fiber or a poor splice.

The OFL 100 will still measure fiber when there are fewer blocks but its range will be significantly shortened.

Alternately the display will read:



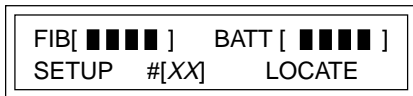
If the display indicates < 50 m for MM models, < 100 m for HR models, or < 1000 m for LR models, as shown above as <XXXm, the unit is not seeing any fiber beyond these specified lengths. This could indicate a poor launch condition or fiber break within 50, 100 or 1000 meters of the specified unit.

The OFL 100 will still measure the fiber end on lengths less than 50, 100 or 1000 meters respectively, but will not give an indication of front end connection quality.

The OFL 100MM and HR models will measure distances as short as 10 meters (reflective). The OFL 100LR models will measure distances as short as 50 meters (reflective).

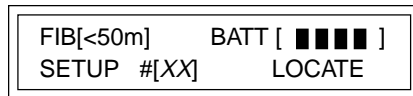
3.3.2 DM and DS Models

The number of blocks displayed in the main menu, as shown below, indicates the quality of the launch condition, or connection to the system. For the greatest range, the display bar graph should show four blocks next to FIB. Each block represents approximately 2 dB of operating range.



Should the display show less than 2 blocks, then the front panel connection may be contaminated and should be checked. If after cleaning, there are still less than 2 blocks showing, an event of excessive loss may be near the launch such as break in the fiber or a poor splice.

The OFL 100 will still measure fiber when there are fewer blocks, but its range will be significantly shortened.



If the display indicates <50 m, the unit is not seeing any fiber beyond 50 meters. This could indicate a poor launch condition or fiber break within 50 meters of the unit.

The unit will still measure the fiber end on lengths less than 50 meters, but will not give an indication of front end connection quality.

The OFL 100DM models will measure distances as short as 10 meters (reflective). The OFL 100DS models will measure distances as short as 25 meters (reflective).

3.4 Locating the End of the Fiber

3.4.1 HR, LR and MM Models

Select 'LOCATE' to measure the distance to the end of the fiber. The display will indicate that the OFL 100 is searching for the end.

The measurement is first done by 'COARSE' approximation,

```
---LOCATING END---  
[ ■ COARSE ]
```

then more accurately by 'FINE' measurement.

```
---LOCATING END---  
[ ■ FINE ]
```

After several seconds, the display will read;

```
FIBER END: XXXX m R  
SCAN      PLOT/SAVE
```

XXXXm is the distance of the fiber end measured in meters (m), or feet (ft). The OFL 100 will indicate whether or not the end termination is reflective. The letter "R" indicates that the end is reflective, a 'N' indicates the end is non-reflective.

NOTE: After selecting LOCATE, the display may read;

```
OVERRANGE AT XXXX m  
SCAN      PLOT/SAVE
```

This means the OFL 100 was unable to locate the fiber end, however, the unit did identify fiber as far as XXXX meters.

This over-range feature is useful when measuring a fiber that is longer than the maximum range of the OFL 100. If the unit over-ranges, but can measure beyond halfway, then the entire fiber length can be analyzed by measuring from both ends.

The OFL 100HR range is approximately 5 km in singlemode fiber (9/125 micron). The OFL 100MM range is approximately 3 km in multimode fiber (62.5/125 micron). The OFL 100LR range is approximately 30 km in singlemode fiber (9/125 micron).

3.4.2 DM and DS Models

Select 'LOCATE' to measure the distance to the end of the fiber. The display will indicate that the OFL 100 is searching for the fiber end.

The measurement is first done by coarse approximation (PASS 1),

LOCATING (DUAL)...
[PASS 1]

then more accurately by fine measurement (PASS 2).

LOCATING (DUAL)...
[PASS 2]

After several seconds, the display will read;

(DUAL) END: XXXX m R
SCAN PLOT/SAVE

XXXXm is the distance of the fiber end measured in meters (m) or feet (ft). The OFL 100 will indicate whether or not the end termination is reflective. The letter "R" indicates that the end is reflective, a 'N' indicates the end is non-reflective.

NOTE: After pressing LOCATE, the display may read;

OVERRANGE AT XXXX m
SCAN PLOT/SAVE

This means the OFL 100 was unable to locate the fiber end, however, the unit did identify fiber as far as XXXX meters. Note: When an over-range record is saved and later transferred to PCPLOT3 software an additional 20% of the tested fiber will be displayed on the trace view screen.

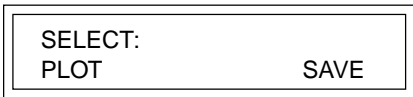
This over-range feature is useful when measuring a fiber that is longer than the maximum range of the OFL 100. If the unit over-ranges, but can measure beyond halfway, then the entire fiber length can be analyzed by measuring from both ends.

The OFL 100DM range is approximately 3 km in multimode fiber (62.5/125 micron). The OFL 100DS range is approximately 5 km in singlemode fiber (9/125 micron).

3.5 Plotting a Trace

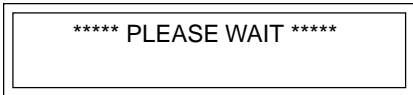
3.5.1 HR, MM, DM and DS Models

Selecting 'PLOT/SAVE' after locating the fiber will immediately offer the option to plot the trace to a thermal printer or to save the trace.

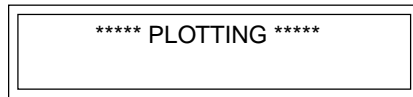


Remember to have the thermal printer turned on and connected to the OFL 100 Printer Port using the supplied cable.

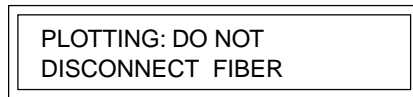
Selecting 'PLOT' will change the display to:



then:



or



The thermal printer will now begin plotting the trace. A normal trace will take approximately two minutes to plot. After plotting is complete the display will change to:



Selecting 'NEXT' will return you to the Main Menu. Selecting 'SAVE' immediately offers the save options. Refer to section 3.6 for more information about saving traces.

3.5.2 LR Models

After locating the fiber select between 'SCAN' and 'PLOT/SAVE'. Then selecting 'PLOT' will immediately offer the option to plot a full 40K scale or to auto-scale the distance to the fiber end.

PLOT FIBER
40 KM FBR END

The auto-scale feature is particularly useful in showing two views of the same trace. '40 KM' will display the trace as a full 40 km scale regardless of where the fiber end may have been (possibly showing ghost reflections) and 'FBR END' will automatically expand the horizontal scale to the fiber end for better resolution of events.

Remember to have the thermal printer turned on and connected to the OFL 100LR Printer Port using the supplied cable.

Selecting either print mode will change the display to:

PRINTING HEADER

The text header will print. Shortly thereafter the display will change to:

DO NOT REMOVE FIBER
XX% COMPLETE

When the measurement is 100% complete the display will change to:

---PLOTING---

The thermal printer will now begin plotting the trace. A normal trace will take approximately two minutes to plot. After plotting is complete the display will change to:

SAVE TRACE?	
YES	NO

Selecting 'NO' will return you to the Main Menu.

Selecting 'YES' will immediately offer the option to save the trace to internal memory or to a computer. Refer to section 3.6 for more information about saving traces.

SAVE TO	
OFL 100	COMPUTER

3.6 Saving a Trace in the OFL 100

The OFL 100MM, HR and LR models can save up to 99 backscatter traces in internal memory, depending on the length and complexity of the traces. The OFL 100 DM and DS models can save in its internal memory, up to 98 backscatter traces at a single wavelength or 49 backscatter traces at dual wavelengths. The OFL 100 can be shut down and the traces will remain in memory. These traces can later be transferred to a PC using the supplied PCPLOT3 software. Selecting 'SAVE' will immediately offer the option to save the trace to internal memory or to a computer.

3.6.1 MM and HR Models

Selecting 'OFL 100' will save the trace to internal memory. The display will change to;

STORING TRACE AT
LOCATION XX

and will flash the message:

DO NOT DISCONNECT
FIBER

The fiber cannot be removed during a save function because the OFL 100 actively measures the fiber while it is saving the trace.

When the measurement is complete the display will change to;

PERFORMING CHKSUM

then:

TRACE XX SAVED
NEXT 1% FILLED

The XX refers to a storage location from 01 to 99. The OFL 100 assigns this number automatically. The % FILLED value will change according to the amount of internal memory space currently being used by stored traces. Selecting 'NEXT' will return you to the Main Menu.

3.6.2 LR Models

Selecting 'OFL 100' will save the trace to internal memory. The display will change to:

SAVE TRACE
40 KM FBR END

Selecting '40 KM' will save the trace as a full 40 km scale. Selecting 'FBR END' will automatically expand the horizontal scale to the fiber end.

Selecting either save mode will change the display to:

DO NOT REMOVE FIBER
XX% COMPLETE

When the measurement is 100% complete the display will change to:

— TRACE XX SAVED —
NEXT 1% FILLED

The XX refers to a storage location from 01 to 99. The OFL 100LR assigns this number automatically. The % FILLED value will change according to the amount of internal memory space currently being used by stored traces. Selecting 'NEXT' will return you to the Main Menu.

3.6.3 DM and DS Models

Selecting 'OFL 100' will save the record to internal memory. The display will change to and will flash the following messages:

*** PLEASE WAIT ***

STORING RECORDS FOR
FIBER # XX

and

DO NOT DISCONNECT
FIBER

The fiber cannot be removed during a save function because the OFL 100 actively measures the fiber while it is saving the trace. When selecting save command after the plot function, the DO NOT DISCONNECT message will not appear.

When the measurement is complete the display will change to:

PERFORMING CHKSUM

then

FIBER #YY	TESTED
NEXT	XX% FILLED

The YY refers to a storage location from 01 to 98. The OFL 100 assigns this number automatically. The % FILLED value will change according to the amount of internal memory space currently being used by stored records. Selecting 'NEXT' will return you to the Main Menu.

If the OFL 100 memory is filled to maximum capacity, the following screen will be displayed should you attempt to save another record to internal memory.

STORAGE FULL, CLEAR
MEM or SEND TO PC

When this occurs, the user has two options. You can continue measuring fibers by saving the records direct a PC, refer to section 3.7 for more information. Otherwise, you must transfer the records already stored in the memory to a PC. Once the records have been successfully transferred to a PC, the units internal memory can be cleared. The unit will then be ready to measure and internally store more records.

3.7 Saving a Trace to a PC

3.7.1 HR and MM Models

Selecting 'COMPUTER' at the 'SAVE TO' prompt will transfer the trace to a computer using PCPLOT3 software. Please refer to section 3.0 in the PCPLOT3 user's guide for more information on how to setup the PC software to receive the trace. The screen will change to;



TRANSFERRING TRACE
TO COMPUTER

and will flash the message:



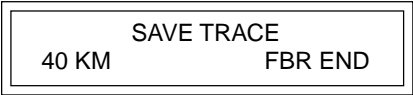
DO NOT DISCONNECT
FIBER

The OFL 100 actively measures the fiber while it is saving the trace so you cannot remove the fiber. When the measurement is complete the display will return to the Main Menu. Please refer to section 3.0 in the PCPLOT3 user's guide for more information on how to setup the PC software to receive the trace.

Note: PCPLOT3 must be set up to receive the trace before you transfer it.

3.7.2 LR Models

Selecting 'COMPUTER' at the 'SAVE TO' prompt will transfer the trace to a computer using PCPLOT3 software. See the PCPLOT3 User's Guide for more information. (Remember to have the computer connected to the OFL 100 Serial Output Port and on the correct Com Port.) The screen will change to;



SAVE TRACE
40 KM FBR END

The '40 KM' will save the trace as a full 40 km scale and 'FBR END' will automatically expand the horizontal scale to the fiber end. See the section on PLOT for more information. Selecting either save option the display will change to;

DO NOT REMOVE FIBER
XX% COMPLETE

When the measurement is 100% complete the display will change to;

---EXPORTING---

The OFL 100 will now return to the main menu. Refer to the PCPLOT3 user's guide for information on how to set up PCPLOT3 software for receiving this trace.

Note: PCPLOT3 must be set up to receive the trace before you transfer it.

3.7.3 DM and DS Models

Selecting COMPUTER at the SAVE TO prompt will transfer the trace to a computer using PCPLOT3 software. Please refer to section 3.0 in the PCPLOT3 user's guide for more information on how to setup the PC software to receive the trace. The screen will change to and will flash the message:

*** PLEASE WAIT ***

and

(DUAL) SENDING
TO COMPUTER

Again, the OFL 100 actively measures the fiber while it is saving the trace so you cannot disconnect the fiber.

When the measurement is complete, the display will return to the Main Menu.

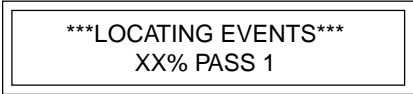
3.8 Scanning for Events

The 'SCAN' feature is provided as a troubleshooting mode to allow the user to quickly find potential trouble spots along the fiber.

SCAN searches only for events greater than the threshold value selected during SETUP. The threshold can be set to 0.25, 0.50, 1.00, 2.00, or 4.00 dB. If events are found, their location and value will be displayed.

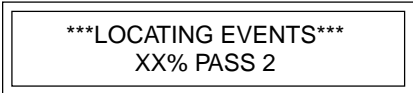
3.8.1 HR, MM, DM and DS Models

Select 'SCAN' and the following screens will appear;



LOCATING EVENTS
XX% PASS 1

then:

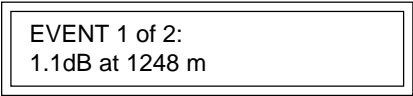


LOCATING EVENTS
XX% PASS 2

The event measurement sequence takes approximately 1-2 minutes depending on fiber length, and number of splices.

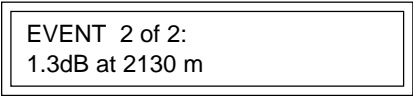
The minimum distance required between reflective events to obtain individual splice loss measurements is 30 meters. If the events are closer than 30 meters to each other then the splice values will be added together, and represented as a single event. At this point, the user may wish to print out the trace or transfer it to a computer for a more detailed look at this event using PCPLOT3 software.

Typical events above the threshold value will appear as follows:



EVENT 1 of 2:
1.1dB at 1248 m

To view the next event press the left arrow key.



EVENT 2 of 2:
1.3dB at 2130 m

NOTE: The OFL 100 will typically not measure events within 30 meters of the fiber start or 30 meters of the fiber end. If an event is located in this area, the OFL 100 will display the location but cannot determine a loss value. It will display the event as shown in the following example:

```
EVENT 1 of 1:  
-NA- at 20 m
```

Pressing the left arrow key again will display the fiber end measurement as follows:

```
FIBER END:      XXXXm  
NEXT           PLOT/SAVE
```

Selecting 'NEXT' will return you to the Main Menu. Please refer to sections 3.6 and 3.7 for the PLOT/SAVE option.

3.8.2 LR Models

Select 'SCAN' and the following screens will appear:

```
**NO EVENTS FOUND**  
NEXT
```

or

```
***LOCATING EVENTS***  
[[]] FINE
```

The event measurement takes approximately 1-2 minutes, depending on fiber length and number of events. The minimum distance required between reflective events to obtain individual splice loss measurements is 500 meters. If the events are closer than 500 meters to each other then the splice values will be added together and represented as a single event. At this point, the user may wish to print out the trace or transfer it to a computer for a more detailed look at this event using PCPLOT3 software.

Typical events above the threshold value will appear as follows:

```
EVENT 1 OF 2:  
1.1dB R at 4441 m
```

To view the next event press the left arrow key.

```
EVENT 2 OF 2:  
1.3dB N at 8902 m
```

NOTE: The OFL 100LR will may not measure events within 100 meters of the fiber start or 500 meters of the fiber end. If an event is located in this area, the OFL 100LR will display the location but cannot determine a loss value. It will display the event as shown in the following example:

```
EVENT 1 of 1:  
-NA- at 20 m
```

Pressing the left arrow key again will display the fiber end measurement as follows:

```
FIBER END:          XXXXm  
NEXT              PLOT/SAVE
```

Selecting 'NEXT' will return you to the main menu. Please refer to sections 3.6 and 3.7 for the PLOT/SAVE option.

4.0 Maintenance and Trouble Shooting

This chapter explains how to clean optical ports and how to charge the batteries in the OFL 100. Please use the sequence of steps outlined in section 4.4 if there is a problem and you wish to obtain technical support.

4.1 Repair And Calibration

Repair of this unit in the field is NOT recommended. If the unit is not operating, turn the unit on while connected to the AC supply. If the unit still will not operate, please contact the Technical Support Department at Noyes Fiber Systems.

Calibration of the OFL 100 is recommended every 12 months. Please contact Noyes Fiber Systems for proper calibration or repair. Refer to section 5.3 for information on returning equipment.

4.2 Battery Maintenance

The OFL 100 utilizes a sealed lead acid battery that is both leak proof and overcharge protected. Proper care should be exercised for maximum performance.

The OFL 100 is designed to be run continuously while connected to the Noyes AC Power Adapter. The OFL 100 may also be stored for long periods of time while connected to an AC power supply. This feature insures that a battery will not be taken into the field in a marginal charge state.

The OFL 100 will operate for approximately 4-6 hours from a fully charged battery before a 'LOW BATT' indicator will flash in the LCD. At this time, the AC adapter should be plugged back in to recharge the battery. Recommended recharge time is a minimum of 14 hours for HR, MM and LR models and 24 hours for the DM and DS models.

The OFL 100 should be stored in a fully charged state. For long term storage, recharging is recommended every 8 months. Storage at room temperature or slightly below is also recommended.

4.3 Optical Connector Maintenance

All optical connections should be kept thoroughly clean. Do not force, or grind connectors together. Scratches on optical surfaces will severely limit OFL 100 performance.

The following procedure should be used to clean the OFL 100 front panel connector:

1. Remove the 4 thumb screws securing the connector plate to the front panel to allow access to the optical bulkhead.
2. The plate, with optical fiber attached, may be gently pulled 5 - 6 inches from the front panel.
3. Carefully remove the internal connector from the bulkhead.
4. Clean the connector face with an optical grade tissue.
5. Clean out the bulkhead with compressed filtered air.
6. Reconnect to the bulkhead and carefully feed the assembly back into the unit. Care should be taken to avoid kinking the optical fiber. If this is done while connected to a fiber, the bar graph indicator can be used to ensure the fiber was properly

cleaned and reinstalled. The fiber must be longer than 50 meters for DM, DS, and MM models; 100 meters for HR models; and 1000 meters for LR models. See section 3.3 for additional information.

7. Replace the four thumb screws. Do not over tighten.

4.4 Getting Technical Support

Gather some basic information if you plan to call Noyes Fiber Systems for help. Be sure to have the following information readily available before you contact Technical Support.

- A. Product name and serial number (printed on the back of the unit).
- B. Firmware version (displayed during power up of the unit), and PC software version, if used. (displayed in the main menu).
- C. Description of the problem, including any error messages that were displayed.

Call the Technical Support Department at 603-528-7780 or 800-321-5298. You may also e-mail us at techsupp@noyes-fiber.com.

5.0 Warranty Information

All Noyes Fiber Systems' 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 Fiber Systems. In no case will Noyes Fiber Systems' liabilities exceed the original purchase price of the product.

5.1 Exclusions

The warranty on your OFL 100 shall not apply to defects resulting from the following:

1. Unauthorized repair or modification.
2. Misuse, negligence or accident.

5.2 Warranty Registration

A warranty registration card is included with the original shipment of equipment. Please take a few moments to fill out the card and mail or fax it to Noyes Fiber Systems to ensure proper initiation of your warranty term.

5.3 Returning Equipment

To return equipment under warranty or for repair/calibration, please contact Noyes Fiber Systems to obtain additional information and a Return Materials Authorization number (RMA#). To allow us to serve you more efficiently, please include a brief description of reason(s) for the return of the equipment and ship to:

NOYES FIBER SYSTEMS
EASTGATE PARK
ROUTE 106
BELMONT, NH 03220
TEL: 603-528-7780 or 800-321-5298
FAX: 603-528-2025

Appendix A: OFL 100 Specifications

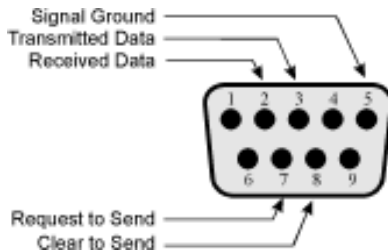
MODEL	OFL 100HR	OFL 100MM	OFL 100DM	OFL 100DS	OFL 100LR ¹
OPTICAL SPECIFICATIONS					
Emitter Type	Laser				
Emitter Classification	Class 1 (FDA CFR 21 and IEC 825)				
Center Wavelengths	850 nm	850 nm	850, 1310 nm	1310, 1550 nm	1310 nm
Emitter Fiber Type	Singlemode	Multimode	Multimode	Singlemode	Singlemode
Testing Applications	Multimode, Singlemode	Multimode	Multimode	Singlemode	Singlemode
Event Detect Range	12 dB	12 dB	10 dB ²	9 dB / 5 km	9 dB
End Measurement Accuracy	±10 m @ 5 km	±10 m @ 3 km	±10 m @ 3 km	±10 m @ 5 km	±40 m @ 30 km
Minimum Distance Measured	10 m (reflective)	10 m (reflective)	10 m (reflective)	25 m (reflective)	50 m (reflective)
Optical Connectors	FC or ST	ST	ST	SC	ST or FC
Auto Event Detection	.25 dB, 0.5 dB, 1.0 dB, 2.0 dB, 4.0 dB				1.0 dB (fixed)
Index of Refraction	1.400 - 1.699				

¹ Not CE compliant. ² With PCPLOT3 software. Specifications are subject to change without notice.

MODEL	OFL 100HR	OFL 100MM	OFL 100DM	OFL 100DS	OFL 100LR ¹
GENERAL SPECIFICATIONS					
Display	2 line by 20 character LCD display				
Distance Display Units	meters or feet				
Hard-copy Trace Output	RS-232 port				
Power	lead acid rechargeable or AC				
Battery Life	6 hrs.	6 hrs.	4 hrs.	4 hrs.	4 hrs.
Operating Temperature	0° to 40° C				
Storage Temperature	-20° to 60° C				
Weight	8 lbs. (3.58 kg)				
Size (H x W x D)	5.0 x 7.5 x 6.0 in (12.7 x 19.1 x 15.2 cm)				

Appendix B: RS-232 Pin Designations for PC Cable

DB9 Female Connector - Both Ends



**THANK YOU FOR CHOOSING
NOYES FIBER SYSTEMS**



**Eastgate Park · PO Box 398 · Laconia, NH 03247
E-Mail: techsupp@noyes-fiber.com · URL: www.noyes-fiber.com
Tel: 800-321-5298 or 603-528-7780 · Fax: 603-528-2025**

