

FHO1000 OTDR User Manual



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1.1 Foreward

Thank you for purchasing FHO1000 OTDR (Optical Time Domain Reflectometer). This user's manual contains useful information about the instrument's functions and operating procedures. To ensure correct use, please read this manual thoroughly before beginning operation. After reading the manual, keep it in a convenient location for quick reference whenever a question arises during operation.

1.2 Note

• The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions. The figures given in this manual may differ from those that actually appear on your screen.

• Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest Grandway dealer.

• Copying or reproducing all or any part of the contents of this manual without Grandway's permission is strictly prohibited.

1.3 Version

Version 1.0 2020



2.1 Product function

FHO1000 optical time domain reflectometer (OTDR) is a new generation of intelligent optical fiber communication measuring instrument. It is carefully developed and produced by our company, and has undergone strict mechanical, electronic and optical inspection and other standard quality control processes before leaving the factory. It can measure the length of optical fiber and optical cable, the distance between two points, and determine the position of connection point, fault point and breakpoint of optical fiber and optical cable.

The main features of the instrument are: integrated design, novel appearance, strong and durable; small volume, light weight, easy to carry; easy to test the loss, length and fault location of optical fiber link; with visual fault location system, it is convenient to detect the fault location in the optical fiber line; the battery in the machine has a long working time, which is suitable for long-term field operation.

The instrument is widely used in engineering construction and maintenance to detect fiber loss and fiber fault location. Main functions of the instrument are as follows:

- Measure the fiber length
- Measure the distance between any two points on the optical fiber curve
- Measure and display the loss between any two points on the curve (dB) and fiber attenuation constant (dB / km)
- Measure and display the connection loss of connection points on the curve (dB)
- Measure the connector reflectance value
- Auto fiber connection points searching function
- Real time test function to test the fiber condition quickly
- Test files can be saved automatically in the OTDR
- Test files can be copy to the PC to make OTDR report
- Support Chinese/English input
- VFL(10mw)
- OLS(>-8dBm)
- OPM(-70dBm~+10dBm)









No	Name	Function
1	F1-F4	Enter the corresponding menu
2	Arrow button	Move the cursor and confirm
3	AUTO	Cursor focus centering
4	ON/OFF	Power on and power off
5	TEST	Quick start OTDR testing
6 <	ESC	Exit current menu

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NO	Name	Function
1	OTDR optical port	OTDR 1310/1550nm testing
2	VFL optical port	650nm VFL testing
3	OPM optical port	Optical power meter value testing
4	SD card port	Inserting SD card to store test files
5	Ethernet port	Software upgrade

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2.5 Boot interface



NO	Name	Function
1	OTDR module	Enter OTDR testing menu
2	OLS module	Entering optical laser source testing menu
3	VFL module	Entering VFL testing menu
4	OPM module	Entering optical power meter testing menu
5	RJ45 module	Entering Ethernet RJ45 cable testing menu
6	SET UP	Entering OTDR system set up menu

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NO	Name	Function
1	Date and time	Show the date and time
2	Bluetooth	Show the bluetooth status
3	Battery	Show the battery level
4	Result summary	Show the OTDR test result summary
5	Cursor A/B data	Show the cursor A and B position(km and dB)
6	Curve thumbnail	Show the OTDR test curve thumbnail
7	OTDR curve	Show the OTDR test curve



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8	Curve info	Show the current test setting and data between A and B
9	Event table	Show the OTDR test events
10	Function button	Enter different functions(SET/CURSOR/EASY/FILE)

3.2 Test setup

Enter "SET" function to setup the OTDR test parameter.

			7	-
2000-01-09 01	:35		* 🔳)
	TDR SET	TIN		
Wavelength		< 155	Onm >	
Test Distanc	:e			
Pulse Width				
Test Mode		< Aver	age >	
Test Time		< 5:	s >	
IOR		1. 4	65	
End Threshol	d	< 38	B >	
Auto Mode		< 01	N >	
SET	REC		BACK	

NO	Name	Description
1	Wavelength	Set the test wavelength (1310nm/1550nm)
2	Test Distance	Set the test distance (1km/2km/5km/10km/20km/40km/80km/120km) Unable to set when auto mode is on
3	Pulse Width	Set the test pulse width(3ns/5ns/10ns/30ns/50ns/ 100ns/275ns/500ns/1us/2us/5us/10us/20us) Unable to set when auto mode is on
4	Test Mode	Set the test mode (Average time/Real time)
5	Test Time	Set the test time (5s/10s/15s/30s/60s/120s)



6	IOR	Set the test IOR (1.465/1.467/1.468/1.469/1.470)
7	End Threshold	Set the fiber end threshold (3dB/4dB/5dB/6dB)
8	Auto mode	ON: Auto mode is ON OFF: Auto mode is OFF
9	REC	1
10	BACK	Back to the OTDR test interface

3.3 Start to test

Choose the "Auto mode" to test , connect the tested fiber to the OTDR optical port.Press "TEST" button to start the OTDR test. Test curve and event table will display on the screen.







3.4 Curve operation

Enter "CURSOR" to check the curve clearly . In this menu, you can zoom the OTDR curve to check an specific event. Locate cursor A and cursor B to check the fiber loss and attenuation between A anb B. Move the curve to check segment fiber.



Zoom the curve

In this menu, you can zoom the OTDR curve by press "RIGTH" arrow is to zoom horizontally and "UP" arrow is to zoom vertically.



2000-01-09 01:46 25.135km Loss 6.49dB 4.30 8.59 12.89 17.19 21.49 A-B 7.604km Los 1.50dB Att 0.197 Rag 5km 1310nm 100ns 0.102 1.27 8.15 0.08 15.749 22.107 0.24 0.214 ZOOM EASY FILE SET

[°] After ZOOM

Move the cursor A and cursor B

10	an lana			Contraction of the		
	A: 13	.807km	250001	B	4	
(a)			I			A
10						
5	1	1	Ę			
0			-			
5			-			
0			-			
5			- habit			
0 5 i7 9	15.14	22.	71 MA	e.ksi 1.1831.	his with	
5 5 7 8 A-B	15.14 4.5	22. 43km	71 MA	e.kei	hel Jiledi Att	uti ul selt 0. 204
0 5 7 9 A-B Wav	15.14 4.5 155	22. 43km i0nm	Z1 MA	9. k 9i 1. uzřl 0. 93dB Okm	Att Wid	0. 204 500ns
0 5 7 A-B Vav	15.14 4.5 155 Type	22. 43km iOnm Dis	Los Rag	9. koj 1. urđi 0. 93dB Okm Attitu	Att Vid	0. 204 500ns
9 5 77 9 A-B Vav 10,	15.14 4.5 155 Type s	43km iOrim Dis e.ee	71 WA Los Rag Los (als 9.0	9. asi 1. 1971 0. 93dB Okm 5 Att 2. (45./164 9	Att Wid Cafe -66.63	0. 204 500ns T L 2 (32) e. ee
0 5 7 A-B Vav Vo. 1	15.14 4.5 155 Type s	22. 43km iOnm Dis (Com 0.000 0.000	ZI WA	e.ari .ugđ. 0.93dB 0km 5 Atta 6 Atta 6 7	Att Vid -66.63	0. 204 500ns T.L. 9. 00 9. 15
9 5 7 9 4-B ¥av 10, 1 2 3	15. 14 4. 5 155 Type s F F	22. 43km 07mm Dis (1cm) 0.000 0.100 15.74	71 Ma Los Rag Los (aB a e.a 2 1.2 9 0.0	9. asi 1. 197. 0. 93dB Okm 5 Att (dB/km 9 7 8 0.222	Att Vid -66.63	0. 204 500ns T L 3 6. 66 9. 15 4. 36

Cursor A and B location and dynamic range



Data between cursor A and B Test setting parameter

In this menu, you can move cursor A and cursor B to check the loss and attenuation between A and B.



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Move the cursor

In this menu, you can move the curve by press "LEFT" Marrow and

RIGHT"		arrow.
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200	0-01-	-09 01	:45	Sector Constants		*
Ler	a 25.	. 135km	Los	s 6.49c	IB Ev	ent 4
40	Atl	8.666kn	18.10c 8:17.49	18) 90km116.380	n e	
-25		1	1			
15 10						
5 A-B	7.88	15.76 24km	23. Los	64 1 20 51 1. 72dB	Att	0. 195
5 A-B Way	7.88 8.8 131	15.76 24km Orim	23. Los Rag	64 1 2 2 2 5 km	Att Vid	0. 195 100ns
s A-B Vav No.	7.88 8.8 131 Type	15.76 24km .0nm Dis (km)	23. Los Rag Loss (dB)	1.72dB 5km tt (dB/km)	Att Wid Ref	0. 195 100ns T L = (dB)
s A-B Vav No.	7.88 8.81 131 Type F	15.76 24km Orm Dis (km) 15.749	23. Los Rag Loss (dB) 0.08	64 1.72dB 1.72dB 5km 6.4tt (dB/km) 0.222	Att Vid Ref (dB)	0. 195 100ns T L - (dB) 4.36
5 A-B ¥av No. 3 4	7.88 8.8 131 Type F F	15.76 24km Orm Dis (km) 15.749 22.107	23. Los Rag Loss (dB) 0.08 0.24	6444 / and sh 1. 72dB 5km 5 Att (dB/km) 0.222 0.214	Att Vid Ref (dB)	0. 195 100ns T L * (dB) 4.36 5.63
5 A-B Vav No. 3 4 5	7.88 8.8 131 Type F F	15.76 24km Orm Dis (km) 15.749 22.107 25.135	23. Los Rag Loss (dB) 0.08 0.24 0.00	644 / Andrew 1. 72dB 5km Att (dB/km) 0.222 0.214 0.222	Att Vid Ref (dB) 	0. 195 100ns T L * (dB) 4.36 5.63 6.49
5 A-B ¥av No. 3 4 5	7.89 8.8 131 Type F F E	15.76 24km Orm Dis (km) 15.749 22.107 25.135	23. Los Rag Loss (dB) 0.08 0.24 0.00	644 / autor 1. 72dB 5km 2. Att (dB/km) 0.222 0.214 0.222	Att Vid Ref (dB) 	0. 195 100ns T L (- (dB) 4.36 5.63 6.49

Recovery the curve

Press "ATUO" to recovery the curve. And cursor A and cursor B will back to the zero position.



3.5 Real time test

2000-01-09 01:39	* 📼		
TDR SI	TTIN		
Wavelength	< 1310nm >		
Test Distance	< 120km >		
Pulse Width	< 20us >		
Test Mode	< Real Time >		
Test Time	< 30s >		
IOR	1. 465		
End Threshold	< 3dB >		
Auto Mode	< OFF >		
SET REC	BACK		

Enter the "SET" to set the OTDR test mode "Real Time" test. Connect the tested fiber to the optical port, Press "TEST" button to start the OTDR real time test. OTDR will continue to test. Press "TEST" button again, Test will stop ,then test curve and event table will display on the screen. When OTDR is under the Real time testing, no button is available except "TEST"



3.6 Easy mode

Enter "Easy" mode to enter the OTDR easy mode.

In this "Easy" mode, the test curve will not display, only display the test fiber distance and total loss. This "Easy" mode is suitable for those user without



						1	
		2	5 1	35 kn			
		-	6.4	9 dB			
L							
A-B	0.0	00km	Los	0.00dB	Att		
Wav	131	Onm	Rag	5km	Wid	100ns	
¥av No.	131 Type	Onm Dis (km)	Rag Loss (dB)	5km Att (dB/km)	Wid Ref (dB)	100ns TL (dB)	
¥av No. 3	131 Туре F	Ornm Dis (km) 15.749	Rag Loss (dB) 0.08	5km 5 Att (dB/km) 9.222	₩id Ref (dB)	100ns T L (dB) 4.36	
Vav No. 3 4	131 Type F	Oram Dis (km) 15.749 22.107	Rag Loss (dB) 9 0.08	5km 5 Att (dB/km) 5 0.222 0.214	Wid Ref (dB)	100ns T L (dB) 4.36 5.63	
Vav No. 3 4 5	131 Type F F	Oram Dis (km) 15.749 22.107 25.139	Rag Loss (dB) 0.08 7 0.24 5 0.00	5km Att (dB/km) 0.222 0.214 0.222	Wid Ref (dB) 	100ns T L (* (dB) 4.36 5.63 6.49	

3.7 OTDR FILE

Enter "FILE" to enter the OTDR FILE. All the test sor files are saved in the file. In this menu, you can check your test sor files, delete and rename. The sor Files can be transferred to the PC to make OTDR test report.



4 OLS module

DEL

OPEN

Grandway

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/OTDRDATA/

FILE

File_1550_3ns_1km_279. sor File_1550_5ns_500km_280. sor File_1310_5ns_500km_281. sor File_1310_5ns_500km_281. sor File_1310_5ns_500km_282. sor File_1550_50ns_500km_283. sor File_1310_100ns_500km_285. sor File_1310_100ns_500km_286. sor File_1550_50ns_500km_287. sor File_1550_500ns_500km_288. sor File_1310_500ns_500km_289. sor File_1310_500ns_500km_289. sor

Enter "OLS" module, In this menu, OLS function can be switched by 1310nm and 1550nm. The output mode can be switched by CW/1k/2kHz. The output is >-8dBm when the output mode is CW mode.

BACK

REN





5 VFL module

Enter "VFL" module, In this menu, 650nm VFL output mode can be switched

by CW/1Hz/2Hz. The output power is 10mw.



VFL interface



6 OPM module

Enter "OPM" module, In this menu, 6 calibrated wavelength can be switched

to test the optical power value.

Press "WL" to switch the calibrated wavelength among the below wavelength.

(850nm/1300nm/1310nm/1490nm/1550nm/1625nm)

Press "REF" to set the current power value as reference value.

Press "ZERO" to clean the reference value.

Press "CLB" to calibrate the test optical power.



OPM interface



7 RJ45 Ethernet cable test module

RJ45 Ethernet cable test is not available currently.



8 System Setup

Press" SETUP" to enter the OTDR system setup.

In this menu, "AUTO OFF" can be activated. "Brightness"," Voice", "Date",

"Time", "Language", "OTDR auto save" can be adjust.

In this menu, press" UPGRD" to do the OTDR system upgrade.

Press "Version Information" to check the current OTDR system information.





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