

Your excellent helper in cable test!

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NF-981



OTDR Optical Time Domain Reflectometer User Manual



VER:V1

Warning

When using this instrument, please do not look directly at the optical interface or the end of the optical fiber with your eyes to avoid eye damage!

Do not use the device with live fiber, Otherwise it will damage the components inside the device.

To avoid electric shock, do not open the shell, it must be repaired by the qualified personnel designated by the manufacturer.

Attention

Battery: The battery in the machine is a special lithium-ion polymer battery. The charging voltage is 5V, and the charging temperature ranges from 0°C-50°C. When the ambient temperature is too high, the charging will automatically terminate. The instrument battery should be charged every one month to avoid battery failure due to self-discharge after long time storage. The temperature range of the battery during long-term storage is -20°C~45°C.

Please use the special AC adapter attached to this instrument and use the external power supply strictly according to the specifications, otherwise the equipment may be damaged.

Fiber End Face Cleaning: Before testing, clean the end face of the tested optical fiber joint with alcohol cotton.

LCD screen: The display of this series of instruments is 3.5 inch color LCD. In order to maintain good viewing effect, please keep the LCD screen clean and clean. When cleaning, the LCD screen can be cleaned by wiping with soft fabric.

Due to the need of design improvement, the contents are subject to change without notice.

Brief

Top view

- ① OTDR/LS Port
- ② OPM Port
- ③ VFL Port
- ④ Flashlight

Left side

- ① Micro USB
- ② TF Card Port

Right side

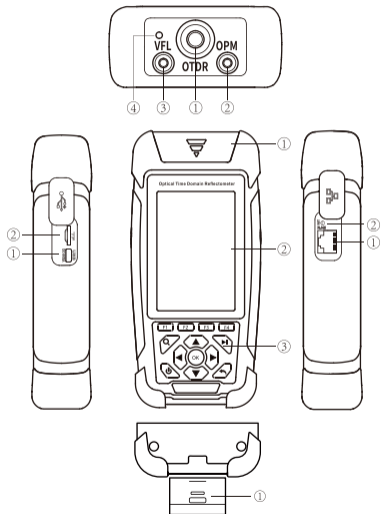
- ① RJ45 Interface
- ② Reset button

Bottom view

- ① RJ45 tester

Main view

- ① Dust Cover
- ② 3.5 inch Color LCD
- ③ Function Keys



Functional Keys

Functional keys

Correspond to the operation menu below the screen



Zoom key

Zoom function key, combined with direction keys to operate

ON/OFF key

Short press to turn on, long press to turn off; after turning on, short press to turn on or off the flashlight.

OK key

Enter the next level of interface, Enter function

Measure key

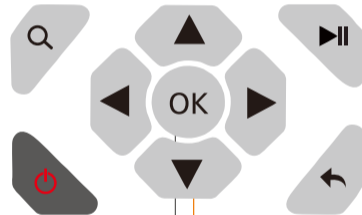
Press to start or stop the test under the OTDR interface

Exit key

Return to the previous menu

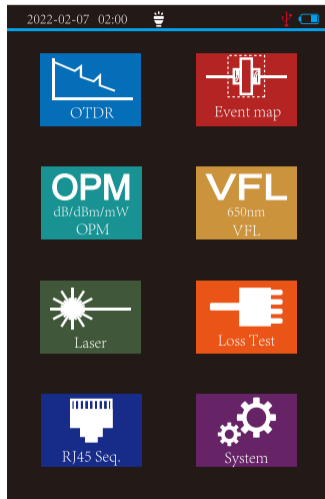
Directional keys

Up and down choice, right and left choice



Main Interface

Turn on and enter the main menu. There are eight functional modules. Select the module by pressing the direction keys, and then press the "OK" key to enter the corresponding functional interface.

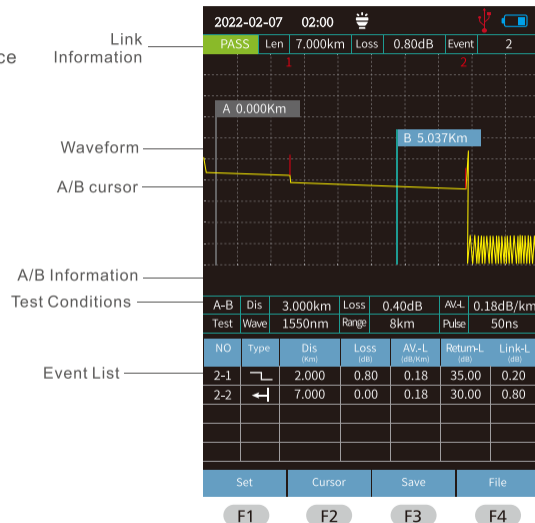


OTDR

- F1: Enter the parameter setting interface
- F2: Switching A/B cursor
- F3: Enter the save interface
- F4: File or Folder operation

Attention

Do not use this function with live fiber, Otherwise it will damage the components inside the device



OTDR Setting Interface

In the pop-up box for multi-digit settings, use the up and down keys to position the cursor and left or right to select.

- ▲▼ Switch setting items or edit corresponding measurement parameters.
- ◀▶ Switch the positioning cursor or edit the corresponding measurement parameters.

Press the "OK" button to confirm or edit the corresponding measurement parameters.

Event Loss Thre.

0.22dB

- F1: Start to test
- F2: Confirm the parameter
- F3: Reset
- F4: Cancel

2022-02-07 02:00	
Wavelength	1550nm
Mode	Auto-Test ▾
Range	20Km ▾
Pulse	50ns ▾
Avg. Time	5s
Event Loss Thre.	0.2dB ▾
Return Loss Thre.	40dB ▾
End Loss Thre.	10dB ▾
Ior	1.46825 ▾
Test OK Recover Cancel	

F1

F2





F3

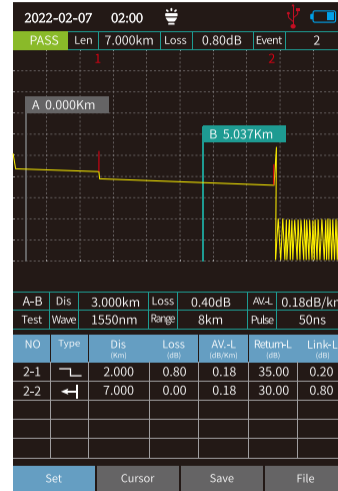
F4

Test Results

Link quality and information can be viewed from the top after the test is completed, Link information includes length, total loss and number of events. Detailed event information can be viewed from the event list.

There are Four types of events:

- Reflective event 
- Reduce Event 
- Fiber splitter 
- Fiber end 



F1

F2





F3

F4

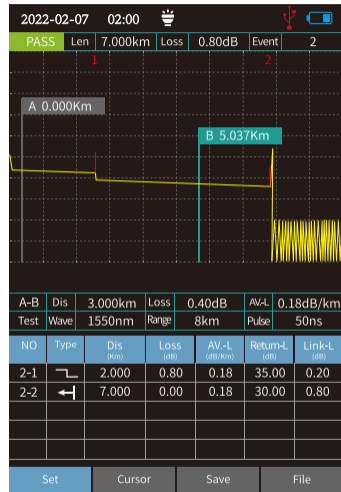
OTDR-Zoom mode

Press  to enter zoom mode



- X-axis direction zoom in 
- X-axis direction zoom out 
- Y-axis direction zoom in 
- Y-axis direction zoom out 

Press  to exit zoom mode

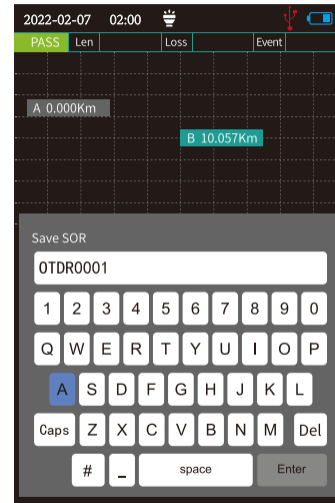


F1 F2 F3 F4

OTDR-File Save

OTDR-File Save

Press **F3** (Save) key to save file after test complete, pop up the keyboard, enter the name of the file, and press Enter to save the file.



OTDR-File Operation

OTDR-File Operation

Press **F4** to enter the file list.

Press the **OK** key to open a folder or File.

F1: Open file

F2: Delete file

F3: Previous page

F4: Next page



The function can be tested automatically by one key, and the information of the length of the link, the type of event point and the position of breakpoint can be displayed in a graphical form. The result is clear and easy to understand.

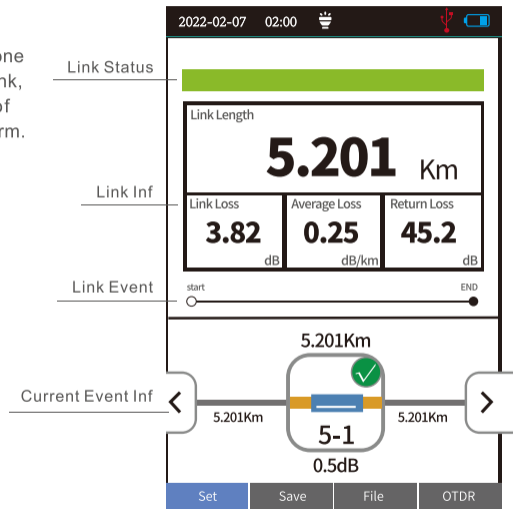


Left/Right key:
Switching events.

Attention

Do not use this function with live fiber, Otherwise it will damage the components inside the device.

Event Map



OPM

This function is used to test the power of optical signal and insertion loss of various devices and optoelectronic components

F1: Switching wavelength

F2: Setting Reference Power

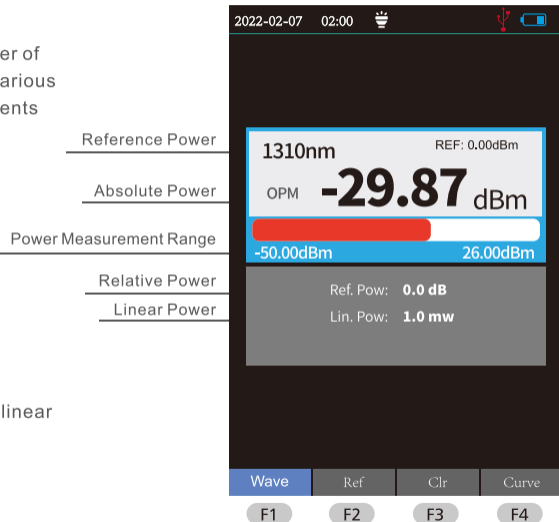
F3: Zero Reference Power

F4: Enter the Oscilloscope Mode

Absolute power, relative power and linear power are converted as follows:

$$P_{Abs.} = 10 \lg P_{Lin.} / 1 \text{ mW}$$

$$P_{Rel.} = P_{Abs.} - P_{Ref.}$$



VFL

Visible red light (650 nm) is injected into the optical fiber, and the position of the optical fiber fault point can be judged conveniently and accurately by observing the leakage position on the measured fiber. It is suitable for the detection of bare optical fibers, jumpers and other high loss sections caused by near-end faults and micro-bending of optical fibers and cables which can leak red light.

F1: Open VFL

F2: VFL flash at 1 Hz

F3: VFL flash at 2 Hz

F4: Turn off VFL

Warning

Avoid looking directly at the laser output port. Laser can cause damage to human retina.



LS-Laser Source

The wavelength of stabilized laser source is the same as OTDR wavelength. It is used to measure the parameters of telecommunication, CATV LAN cable, insertion loss, isolation loss and echo loss of optical passive devices, and wavelength responsiveness of detectors.

There are five modes of light source: CW, 270 Hz, 1 kHz and 2 kHz

F1: Open / Turn off LS
F3: Switch LS Mode
F4: Switch LS Wavelength

Warning

Avoid looking directly at the laser output port. Laser can cause damage to human retina.

LS Information

Mode

Warning Information



Loss Test

1310nm/1550nm light source and power meter display at the same time, convenient measurement

F1: Switch LS Wavelength
F2: Setting Reference Power
F3: Zero Reference Power
F4: Enter the Oscilloscope Mode

Warning

Avoid looking directly at the laser output port. Laser can cause damage to human retina.

LS Information

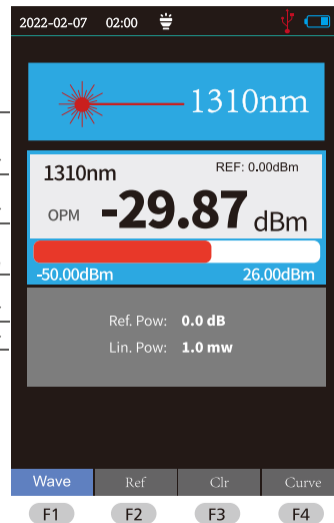
Reference Power

Absolute Power

Power Measurement Range

Relative Power

Linear Power



RJ45 Sequence

RJ45 line sequence measurement,
Pls use the function with remote terminal.

F1: Start Test

F3: Switch Line Sequence Test Standard

F4: Return to the main menu

Attention

Do not use this function with live fiber,
Otherwise it will damage the components
inside the device.

Test Standard

Test Results

Tips

System settings

Set up automatic shutdown, backlight
brightness, time, language, upgrade
and other information.



Switch settings entry ▲▼

Switch options of current entry ▶◀

Technical Specifications I

OTDR	
Model	NF-981
Wavelength	1310/1550nm
Fiber Type	G.652 SM Fiber
Dynamic Range	24dB/22dB
Event Blind Zone	10m
ATT Blind Zone	15m
Test Range	10m~60km
Pulse Width	5ns~10us
Ranging Accuracy	$\pm(1m+\text{Sampling Interval}+0.005\% \times \text{Test Distance})$
Loss Accuracy	$\pm 0.2\text{dB/dB}$
Sampling Points	16k~128k
Sampling Resolution	0.05~8m
Reflection Accuracy	$\pm 3\text{dB}$
Data Storage	Internal: ≥ 600 ; External: TF Card
Laser Safety Level	Class II level
File Format	SOR Standard File Format
Connector	FC/PC (Interchangeable SC, ST) or FC/APC (Interchangeable SC, ST)

Technical Specifications II

OPM	
Wave Range	800nm~1700nm
Interface Type	Universal Joint FC/SC/ST
Test Range	-50dBm~+26dBm
Uncertainty	$\pm 5\%$
Frequency Identification	CW/270/330/1k/2kHz
Calibration Wavelength	850/1270/1300/1310/1490/1550/1577/1625nm
LS	
LD Type	FP-LD
Output Wavelength	1310/1550nm
Output Power	$\geq -5\text{dBm}$
Modulation Frequency	270/330/1k/2kHz
Stability	CW, $\pm 0.5\text{dB/15min}$ (Test after 15mins of preheating)
Connector	FC/PC (Interchangeable SC, ST) or FC/APC (Interchangeable SC, ST)
Functions: OTDR/Event map/OPM/LS/VFL/IL/RJ45 Sequence/Lighting	

VFL	
Work Wavelength	650nm ± 20nm
Output Power	≥ 10mW
Mode	CW/1Hz/2Hz
Connector	FC/SC/ST
Other Parameters	
Display	3.5 inch Color LCD
Data Interface	Micro USB
External Storage	TF Card
Power Supply	Polymer Li-battery: 3.7V, 4000mAh Power Adapter: 5VDC, 2A
Battery Life	Standby > 20h; Measuring Time > 12h
Operating Temperature	-10°C ~ +50°C
Storage Temperature	-40°C ~ +70°C
Relative Humidity	0 ~ 95% Non Condensing
Weight	≤ 350g
Dimension	173mm × 82mm × 37mm

设计	品名	样式	印刷要求
CZG	OTDR-981说明书骑马订英文-V1 20231202	骑马订	彩色
日期	品号	页码	
2023.12.02		24P	
样品	单页尺寸	材质	
	142×90mm	128g铜版纸	
变更记录			