

# Optical Time Domain Reflectometer

USER'S MANUAL

## Warning

When using this instrument, please do not look directly at the optical interface or the end of the optical fiber with your eyes, avoid eye damage! Any change or modification not explicitly permitted in this manual will deprive you of the right to operate the equipment. To reduce the risk of fire or electric shock, do not expose the equipment to thunderstorm or humid environment. In order to prevent 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.

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

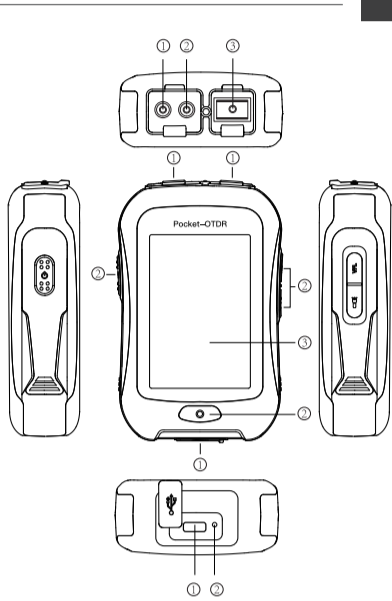
**LCD screen:** The display of this series of instruments is 3.5 inch color LCD. In order to maintain good viewing effect, please keep the LCD screen clean and clean. When cleaning, the LCD screen can be cleaned by wiping with soft fabric.

**Guarantee description:** The whole machine is guaranteed for 18 months. The battery, charging adapter and optical interface consumables are guaranteed for 6 months. The warranty date shall be postponed one month from the date of manufacture.

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

## Brief

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### Top view

- ① OPM port
- ② VFL port
- ③ OTDR/LS port

### Back view

- ① Type C USB
- ② LED Charging indicator

### Main view

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

## Functional Keys

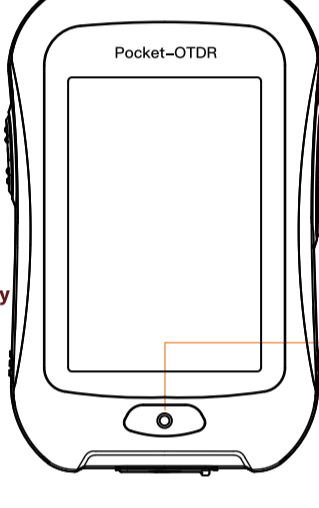
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### ON/OFF key

Short press to start, long press to shut down

### Screenshot Combination key

Press the ON/OFF button and the red light button at the same time



### VFL key

Short press (always bright/1Hz/2Hz/off) to switch to red light

### Flashlight key

Short press to turn the flashlight on/off

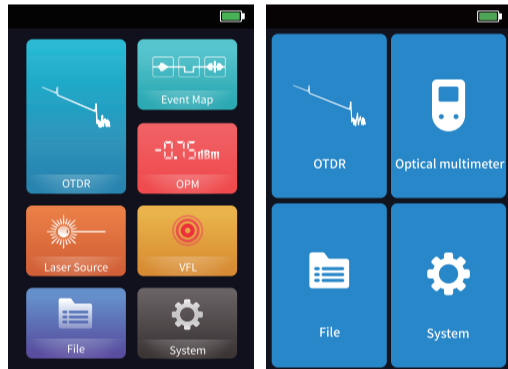
### Home key

Short press to return to the main interface

## Main Interface

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Enter the main menu after power on, there are 7 (4) function modules. Press the function icon to enter the corresponding function interface.



## OTDR Curve

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**Setting parameters :** Select the test wavelength, range, pulse width and time

**Mode switching:** Real time test, average test and auto test mode switching

**Wavelength:** Select the test wavelength of OTDR

**Test range:** Usually required to be set about twice the length of the measured optical fiber

**Test pulse width:** 5ns~1000ns optional, different measuring ranges, different pulse widths are available

: AB cursor on/off switch

: View, open and delete SOR files

: After the test, manually save the SOR file

### Curve Operation

**Curve Zoom, drag:** Touch screen gesture operation

**Restore initial curve:** Double click the screen

**Move Cursor:** Drag A or B



## OTDR List

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**List:** The tested results are displayed in the form of a list.

**A-B Total length:** the total length of the link under test.

**A-B Total loss:** the total loss of the link under test.

**A-B Slope:** the loss per kilometer of the link under test.

**In the event list:**

**NO.:** the order of the current event.

**Type:** the type of the current event.

**Distance:** the location of the current event.

**Loss:** the loss of the current event.

**Decay:** the loss from the starting point to the current event.

**Reflection:** the return loss of the current event.

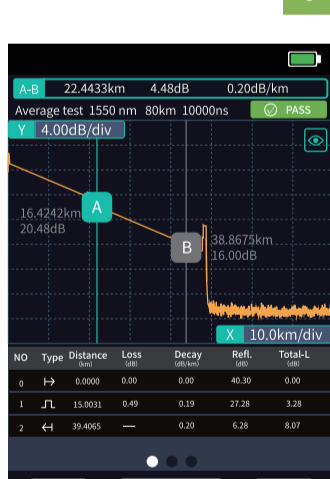
**Total loss:** the loss from the starting point to the current event.

### There are five types of events:

Reflective event Fiber end

Non-reflective event

Rise event



## OTDR Setting

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### Setting parameters

Set the refractive index of the test wavelength, select the test unit and sampling mode

Test units include km, mi and kft

There are three measurement modes: fast, conventional and high-precision

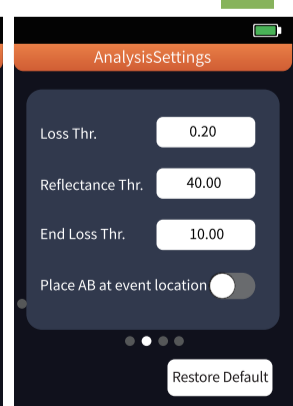
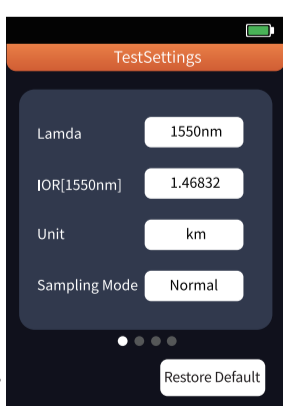
### Analysis parameter/threshold setting

Set the reflection threshold, non reflection threshold and end threshold required for event analysis

**Event loss threshold:** set the loss threshold of connection point, fusion point or macro bend in the link that can be tested, between 0.2~30dB, and the default value is 0.2dB. Events larger than the set threshold will be listed in the event table, or those will be ignored.

**Reflection threshold:** set the return loss threshold of the link reflection events that can be tested, ranging from 10dB to 60dB, and 40dB by default.

**End threshold:** set end loss at the end of the link that can be tested, ranging from 1~30dB, 10dB by default.



## OTDR Setting

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### Acceptability criterion

Set the judgment value for the average loss of connection/fusion/bending/link. If it is less than the value, it is judged as "PASS", otherwise it is "FAIL"

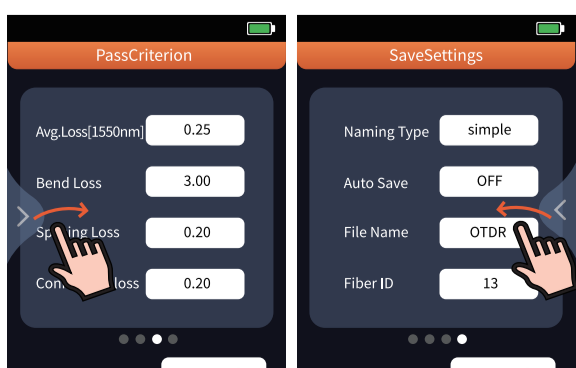
**Average loss:** the loss value per kilometer of the link under test

**Bending loss:** non reflective events caused by fiber bending, need to be tested at two wavelengths at once

**Welding loss:** non reflective event, refers to fusion

**Connection loss:** reflection event, refers to flange, SC, LC and other joints

Set return: the gesture slides from the right or left



**Save Settings**

**Simple:** File name is "file name prefix (default "otdr" ) - serial number", and the serial number increases in sequence.

**Detailed:** File name is "file name prefix - range - pulse width - serial number", and the serial number increases in sequence.

**Auto Save:** Automatic saving of test curve after opening

**File name:** File name prefix

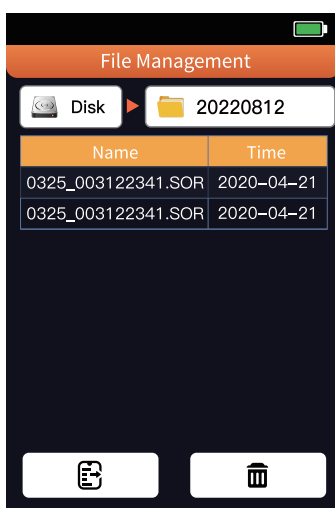
**Fiber ID:** the serial number of the current optical fiber

**File operation**

All test curves are saved in the internal disk of the instrument. Press [File] to enter the file operation interface, where you can open and delete files.

Open the selected file

Delete the selected file



Event Map(Optional)

The function is fully one key automatic test, and the information such as the length of the optical fiber link to be measured, the type of the joint and the position of the breakpoint are displayed graphically, and the results are clear and easy to understand.

- The starting point of the link, after the guiding fiber is added to the front
- Drop event, representing fusion point
- Connector, square flange, SC, LC etc
- Optical fiber macro bending
- End of link



OPM

It is used for signal power test and insertion loss test of various equipment and photoelectric components. It can identify and measure the power of 270/330/1k/2kHz frequency laser.

**λ** :Switching the operating wavelength of the power meter, wavelength switching 850, 980, 1300, 1310, 1490, 1550, 1625, 1650 nm

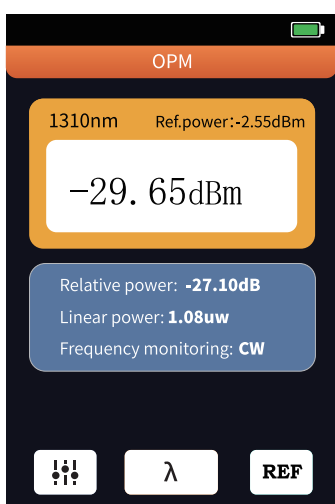
**REF** :Set the current power as the reference power

:Enter the user calibration mode, coordinate with the standard light source to calibrate the power

The conversion relations of absolute power, relative power and linear power are as follows:

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

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



VFL(Optional)

Inject the visible red light (650nm) into the optical fiber, and observe the light leakage position on the measured fiber, which can easily and accurately determine the position of the optical fiber fault point. It is applicable to the detection of the near end failure point of bare optical fiber, optical fiber jumper and other optical fiber and optical cable that can pool red light and the high loss section caused by micro bending.

:Turn on the red light source and work continuously

**1Hz**:Red light source flashes once a second

**2Hz**:Red light source flashes twice in one second

:Turn off the red light source

**Warning**

Avoid looking directly at the laser output port, because the laser will cause damage to the human retina!



Laser Source

The output laser with the same wavelength as OTDR function, which can be used to test the parameters of telecommunication, CATV and LAN optical cables, test the insertion loss, isolation and return loss of optical passive components, and test the wavelength responsivity of detector.

There are five working modes : CW, 270Hz, 330Hz, 1kHz and 2kHz.

: turns on the laser source

**λ** : Switching light source wavelength in case of dual or multi wavelength

: switch laser source frequency, CW, 270Hz, 330Hz, 1kHz and 2kHz

**Warning**

Avoid looking directly at the laser output port, because the laser will cause damage to the human retina!



System setting

SET AUTOMATIC SHUTDOWN, BACKLIGHT BRIGHTNESS, TIME,LANGUAGE AND OTHER INFORMATION

**USB connection:**Connect the computer through Type-C, and make the device into a virtual USB flash disk, which can export files inside the device

**Bluetooth (optional):**After being turned on, the device is controlled through the mobile phone APP to realize the device test operation and data transmission

**Automatic shutdown:**5/10/20/45/90 minutes

**voice:**Turn touch tone on or off

**Backlight brightness:**0%~100% brightness

**Power saving settings:**20/30/60/120s automatic screen out

**time:**Set instrument time

**date:**Set instrument date

**Language Settings:**Set native language type

**Restore factory settings:**Restore default parameter values

**SD card format:**Delete all files on this computer

**upgrade:**Native software updates

**Version information:**View local information and alarm records

