

Optical Time Domain Reflectometer

User Manual

V1.0

PREFACE

Thank you very much for purchasing and using this series of handheld Optical Time Domain Reflectometers. This manual mainly contains commonly used operation and maintenance information for the instrument, as well as guidelines for troubleshooting common issues. To facilitate your use, please read this manual carefully before operating the instrument and follow the instructions in this manual correctly.

This manual is exclusively intended for use with this instrument. Without authorization from our company, no unit or individual is permitted to alter, duplicate, or disseminate the content covered in this manual for commercial purposes.

The content contained in this manual is subject to change without notice. If you have any questions, please call the supplier, and we will be happy to provide you with the best service!

Overview

This series of optical time domain reflectometer is a multifunctional optical measuring instrument that integrates OTDR, Event Map, Network cable (RJ45 Sequence/Length/Tracker), optical multimeter (VFL, OLS, Optical Loss), OPM, End Face Inspector (optional accessory) and other functions.

Warning

When using this instrument, please do not look directly at the laser output port or the end of the fiber, as it may cause eye damage or even blindness! Online testing is prohibited for wavelengths not within the specified range. Forced use may cause damage to internal components of the instrument! Making any changes or modifications not explicitly permitted in this manual will void your right to operate this equipment. To reduce the risk of fire or electric shock, do not expose this equipment to thunderstorms or humid environments. To prevent electric shock, do not open the casing. Repairs must be carried out by qualified personnel designated by the manufacturer

Attention

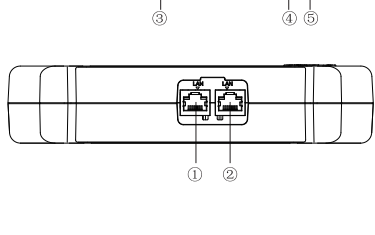
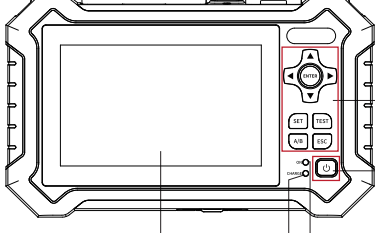
Battery and Adapter: The internal battery is a dedicated polymer lithium battery, with a charging voltage of 5V/2A and a charging temperature range of -5°C to +45°C. Charging will automatically terminate when the ambient temperature is too high. The instrument should be charged once every month to prevent the battery from becoming unusable due to self-discharge caused by prolonged storage. The temperature range for long-term storage of the battery is -20°C to 50°C.

Please use the dedicated adapter provided with this instrument and strictly follow the specifications when using external power supply, otherwise it may cause equipment damage. Fiber End-Face Cleaning: Before testing, please clean the end face of the tested fiber connector connected to the instrument with alcohol-soaked cotton. LCD Screen: The display of this series of instruments is a 5-inch TFT full-view color LCD. To maintain good viewing quality, please keep the LCD screen clean. When cleaning, you can use a soft cloth to wipe the screen.

Due to design and improvement requirements, the contents of this manual are subject to change without further notice!

Host

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Top

- ① OTDR port
- ② VFL port
- ③ OPM port
- ④ Flashlight
- ⑤ Type-C
- ⑥ TF (Mico SD) card
- ⑦ USB

Main view

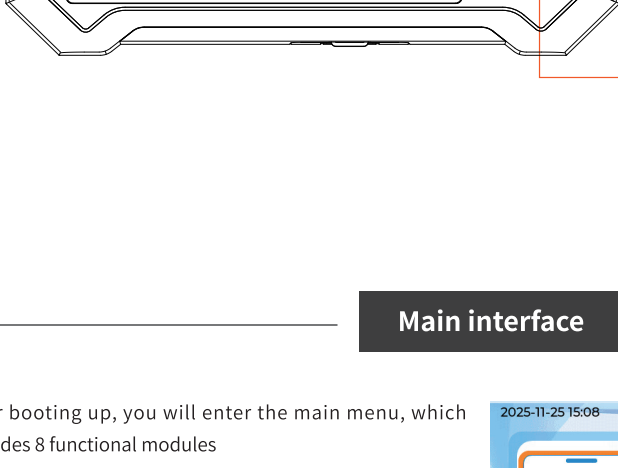
- ① Dust cover
- ② Function keys
- ③ 5-inch high-brightness screen
- ④ Charging indicator
- ⑤ Power on status indicator

Bottom

- ① Cable tracking port
- ② Cable line length and sequence test port

Function buttons

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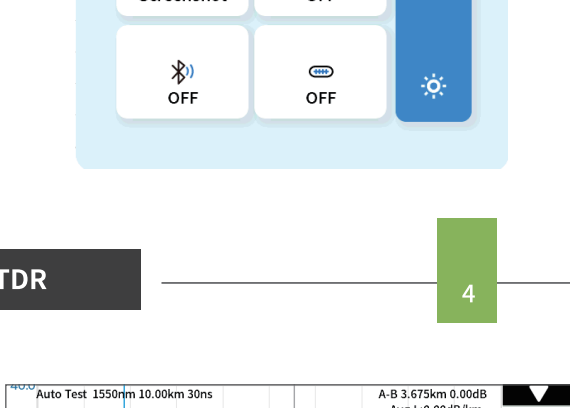
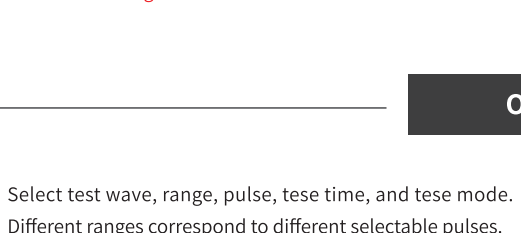


- Arrow keys** Make a selection by moving up, down, left, or right
- Measure/Stop key** In the OTDR interface, press to start or stop the test
- SETUP key** Enter the OTDR parameter setting interface
- ESC key** Exit the current function
- Zoom control/AB cursor toggle key** For OTDR waveform, operate with the arrow keys to switch between curve zooming and AB cursor movement functions
- Press-to-turn flashlight switch** Press for >2s to power on or a shutdown prompt box will pop up Long press > 8s to force shutdown

Main interface

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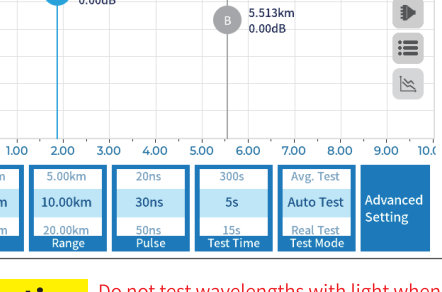
After booting up, you will enter the main menu, which includes 8 functional modules



Press "Shortcut Menu" or "Pull down the title bar" to enter the operation interface, and press different icons to achieve corresponding operational functions.

Button operation:Select the function menu up, down, left, or right, and press OK to enter the function item.

Screenshot:Capture the current interface, and the image will be automatically saved inside the instrument with a file name indicating the time when the screenshot was generated.



OTDR

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Select test wave, range, pulse, pulse time, and pulse mode. Different ranges correspond to different selectable pulses.

Advanced settings:analysis parameters, qualification criteria, and other parameter settings;

Setting:Quickly select range, pulse width, testing time, and mode;

Event Map **Event List** **Curve Switching**

Curve operation: **Curve scaling and dragging:** touch screen gesture operation

Restore initial curve:Click on the screen

Move cursor:Drag A or B

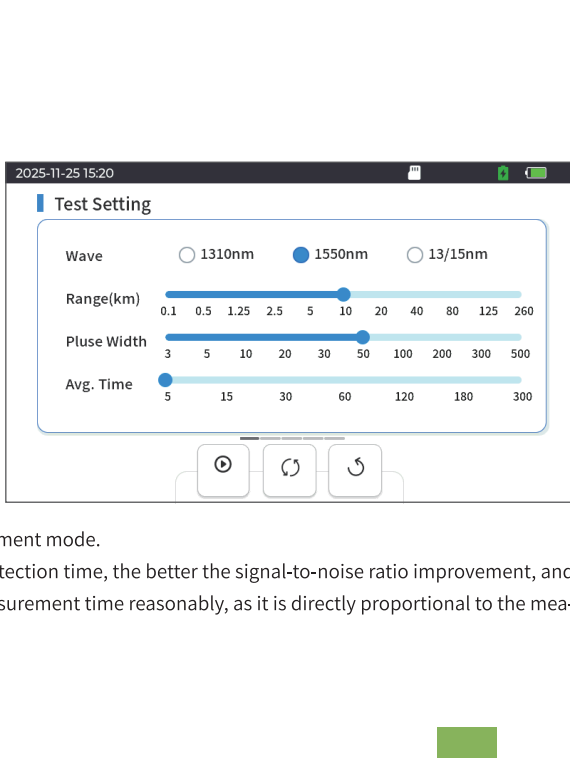
Physical button operation:

SET:Pop up setting test parameters

ESC:Return

TEST:Testing and Stopping

A/B:Cursor switching (move cursor position with left and right buttons), zoom in mode (zoom in with left and right buttons)



Attention Do not test wavelengths with light when not online!

Event Type:

Gain events — Fiber fusion points of different specifications

Down event — Melting point or bending loss

Reflective event — Connectors, square flange, SC, ST, LC connectors, etc

Fiber end — End of link

OTDR-Test setting

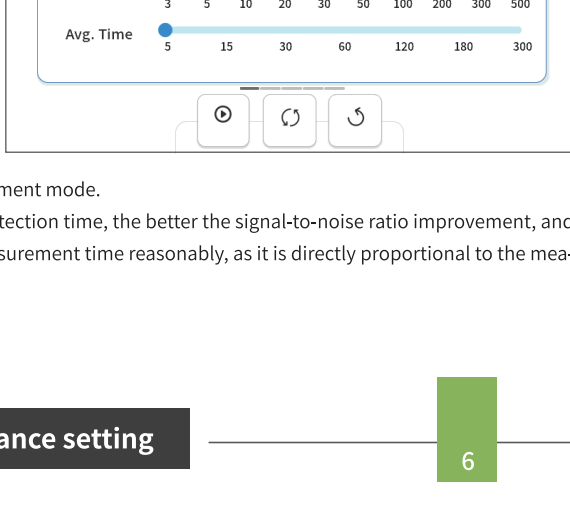
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Wave:The wavelength of the emitted light wave.

Range:Select the corresponding predefined range based on the actual length of the optical fiber, which must be greater than the length of the optical fiber under test. It is usually required to set it to about twice the length of the optical fiber under test.

Pulse width:It refers to the time width of the optical pulse signal emitted during measurement. The larger the pulse width, the stronger the optical power injected into the fiber, the stronger the backscatter signal of the fiber, and the farther the distance that can be effectively detected by an OTDR. However, a large pulse width may cause the initial reflection signal to saturate, resulting in a large dead zone. The selection of pulse width is related to the length of the measuring fiber. The longer the length, the larger the pulse width, which can only be modified in real-time/average measurement mode.

Avg. time:the average measurement mode, the longer the detection time, the better the signal-to-noise ratio improvement, and the more accurate the test results. Users should choose the measurement time reasonably, as it is directly proportional to the measurement dynamics.



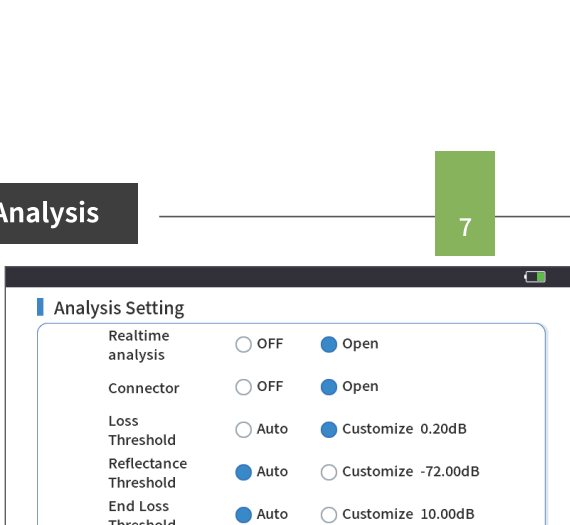
High resolution:After selection, the number of test points increases, and the testing time becomes longer.

Unit:Select the desired unit from three options: km, kft, and mi (miles).

Refractive index:Determined by the inherent characteristics of optical fibers and provided by cable or fiber optic manufacturers, refractive index is a key parameter for calculating distance and cannot be set arbitrarily. The range of refractive index is 1 to 2.

Start/End cable:Set the lengths of the guide fiber and the end fiber, and mark the corresponding positions on the curve.

Button:Press the "SET" button to enter parameter settings, use the up, down, left, and right buttons to select parameters, and press "OK" to confirm the parameters.



OTDR-Analysis

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Analysis parameters

Realtime analysis : in the enabled state, analyze the curve after the real-time test is completed.

Connector: Open state. Before each test, first assess the connection quality of the first connector

Loss Threshold:Set the loss threshold for connection points, fusion points, or macrobends in the link that can be tested, ranging from 0.01dB to 9.99dB, with a default value of 0.20dB. Events exceeding the set threshold will be listed in the event table, while those below the event threshold will be ignored.

Reflectance threshold: Set the echo loss threshold for testable link reflection events, ranging from -99.99dB to -1.00dB.

End loss threshold: Set the loss value at the end of the link that can be tested, between 1dB and 30dB, with a default value of 10dB.

Pass setting

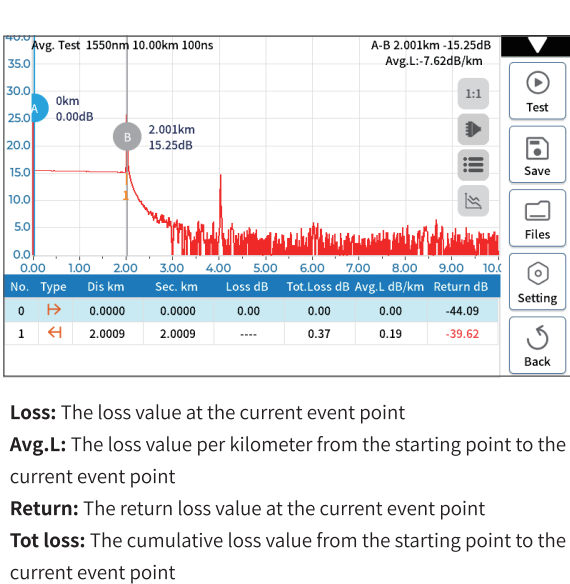
Connection loss: Reflection events, referring to flanges, SC, LC, and other connectors;

Splicing Loss: non-reflective event, often referring to the welding point;

Bend Loss: a non-reflective event caused by bending of optical fibers, requiring simultaneous testing at two wavelengths;

Link Loss: The total loss threshold value of the tested link.

Average loss: The loss value per kilometer of the tested link.



Loss: The loss value at the total event point

Avg.L: The loss value per kilometer from the starting point to the current event point

Return: The return loss value at the current event point

Tot loss: The cumulative loss value from the starting point to the current event point

OTDR-Save setting

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After the measurement is completed, press [Save] to save the file, enter the file name, and press "Enter" to save the file. The file will be saved in a folder named after the current date.

Auto save: Enable the auto-save function for opened files, with file names generated automatically according to rules.

Naming type:

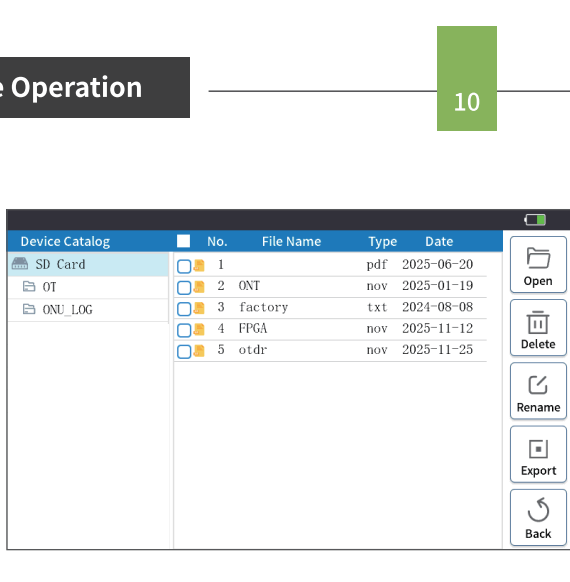
Naming with the file name + fiber number, with the fiber number incrementing sequentially.

Naming with the file name + range + fiber ID, with fiber numbers incrementing sequentially.

Naming with the file name + range + pulse + fiber ID, with fiber numbers incrementing sequentially.

File name: Enter the file name manually;

Fiber ID: Enter the fiber number manually.



OTDR-File Operation

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File Operation

All test curves are saved in the TF card that comes standard with the instrument. Pressing [F] enters the file operation interface, where you can perform operations such as opening, deleting, and renaming files.

Open to support viewing with up to 4 curve comparisons. The sor data from the internal test of the machine's TF card can be exported via a USB flash drive.

Physical button operation:

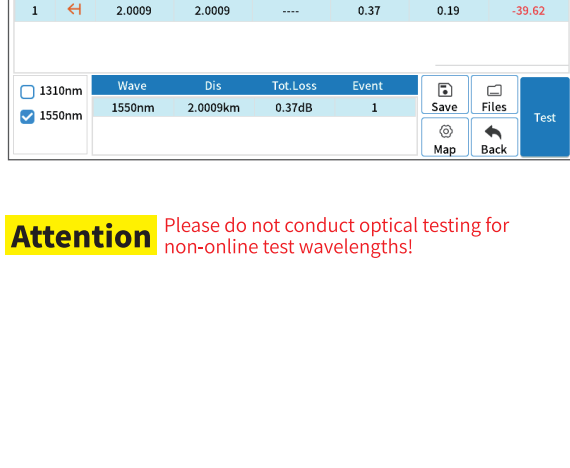
ESC:Return

SET:Delete

▲▼◀▶:Choice

A/B:Export

ENTER:Confirm



Attention Please do not conduct optical testing for non-online test wavelengths!

Event Map

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This feature allows for fully automated testing with a single click, displaying information such as the length, connector type, and breakpoint location of the tested fiber optic link in a graphical format, with clear and easy-to-understand results.

START — Link starting point

— The decline event is mostly due to the welding point

— Connectors, including square flange, SC, ST, LC connectors, etc

— Fiber macrobending, bending points with high loss

— End of the link

Physical button operation:

TEST:Test and stop **◀▶:** Switch event

ESC:Return

