OTDR700C

Optical Time Domain Reflectometer

User Guide _ Version 1.0

Ascentac
www.ascentac.com

T +886-7-398-1000

F +886-7-398-3965

Copyright

Disclaimer

Ascentac shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this user guide.

The material in this document is subject to change without notice. For the latest information regarding this product, please visit our website at http://www.ascentac.com.

Warranty

Ascentac warrants the product against defects in material and workmanship within (1) year from the date of delivery. Under normal use and service, the product will be free from physical defects in material and workmanship during the warranty period, or the product will be repaired or replaced as determined solely by Ascentac.

During the warranty period, you and Ascentac will pay the shipping costs for repairing products for one time respectively. Products returned without proof of purchase or with warranty expired will be repaired or replaced by Ascentac's decision. You shall pay the charges, including maintenance cost, shipping, insurance, duties, taxes, import fees or others which may be caused.

This warranty provides you with specific legal rights. You may have additional rights which may vary from state to state and country to country. Because of individual state and country regulations, some of the above limitations and exclusions may not apply to you.

If any of the following conditions take place, the warranty shall be null and void.

- Defects or malfunction caused by human factors, accident, improper use not conforming to product manual instructions, abuse or unauthorized alteration, modification or repair of the product.
- The label with S/N has been altered or damaged.

Notice: Ascentac makes no warranty of any kind with regard to the content in this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Service & Support

If you have any questions or need any assistance, please contact our service center.

TEL: +886-7-398-1000
FAX: +886-7-398-3965
Address: 9F.-6, No. 12, Fuxing 4th Rd., Qianzhen Dist., Kaohsiung City 806611, Taiwan (R.O.C.)

Please prepare the following information before you contact us and describe the problems.

- Product model and S/N
- Warranty information

Content

1. Safety Information

Read all safety information carefully before using this product to ensure personal safety and proper use.

- Assure the power supply conforming to the specification of this product and qualified for the country of use.
- Use batteries that meet the specifications of this product
- Do not use damaged power cords, accessories, or other peripheral equipment.
- Make sure the product is operated on the permitted ambient conditions.
- Never directly look into the optical outputs interface.
- Dangerous laser radiation: 

2. Introduction

Ascentac OTDR700C series is an Optical Time Domain Reflectometer (OTDR) that utilizes Rayleigh backscattering technology to measure the status of fiber optic lines. It presents analysis results through trace graphs, event tables, and event maps, which identify reflective events (such as connectors), non-reflective events (such as fiber bends), and fiber breaks. It also provides accurate calculations for fiber length and loss values.

Ascentac OTDR700C series features iOLA Optical Link Analysis, which scans the fiber link using multiple pulse widths. By integrating the results from these various pulse widths, it simplifies complex optical links and presents them to the user in a clear and concise manner.

Ascentac OTDR700C series offers a 3-in-1 functionality, integrating a Stabilized Optical Light Source (OLS), Optical Power Meter (OPM), and Visual Fault Locator (VFL). Users can also utilize the light source and power meter simultaneously for optical loss measurements.

Ascentac OTDR700C series includes RJ45 Tracker and RJ45 Mapper functions. These features allow users to efficiently locate target ethernet cables and verify if the cable wiring is functioning normally.

2.1 Features

- iOLA
- Online testing
- Multi-function in one
- Ethernet cable testing
- USB Type-C charging

2.2 Application

- Telecom maintenance
- CATV maintenance
- Optical fiber testing
- Other fiber optic maintenance

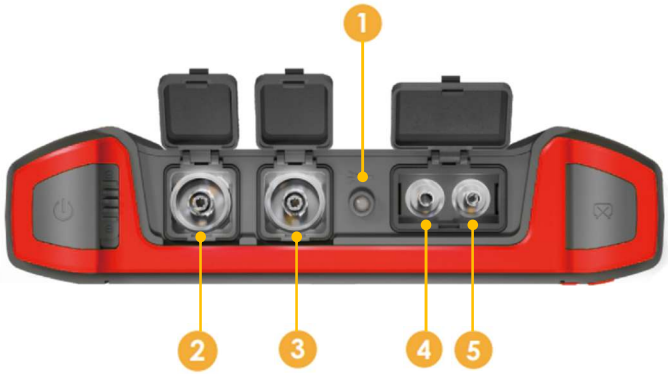
3. Product Description

3.1 Appearance

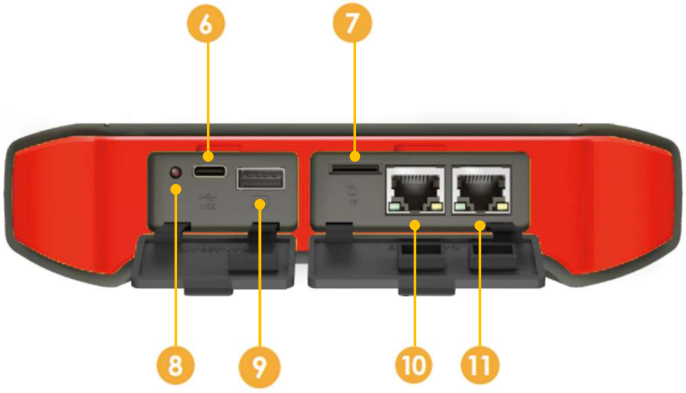
- Front View

- Rear View

- Top View



- Bottom View



3.2 Interface

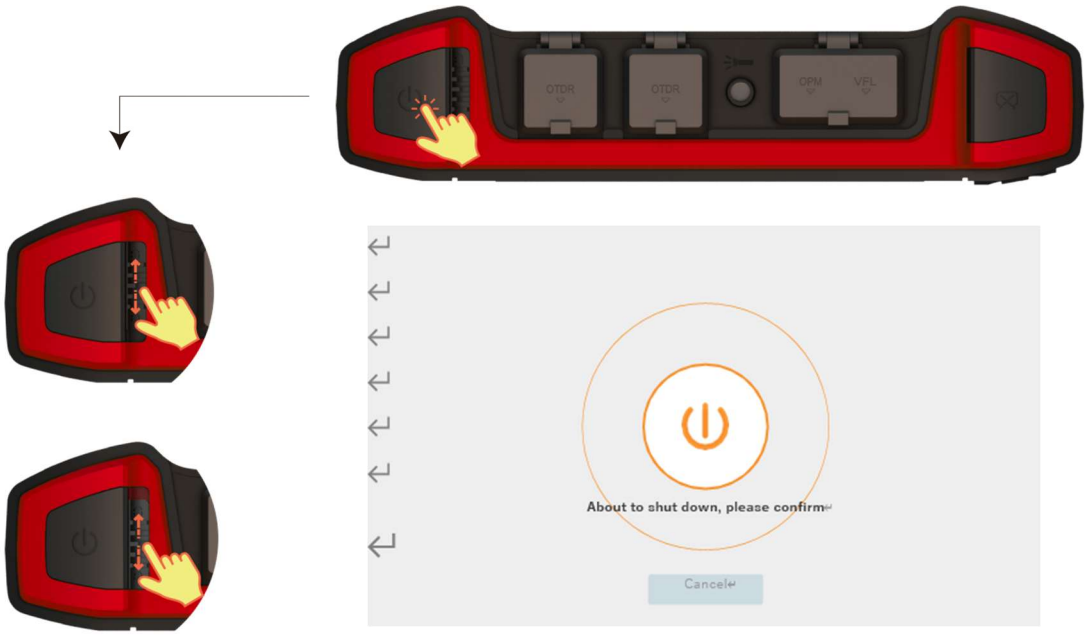
Button	Function	Button	Function
	Anti-mistouch power switch		Direction button
	Screenshot		Enter
F1 to F5	Function buttons		ESC
			Home

Item	Function	Item	Function
1	LED flashlight	7	TF card
2	OTDR connector	8	Charging indicator
3	OTDR connector (Live)	9	USB-A connector
4	OPM connector	10	RJ45 sequence connector
5	VFL connector	11	LAN connector
6	Type-C charging		

4. Operating Instructions

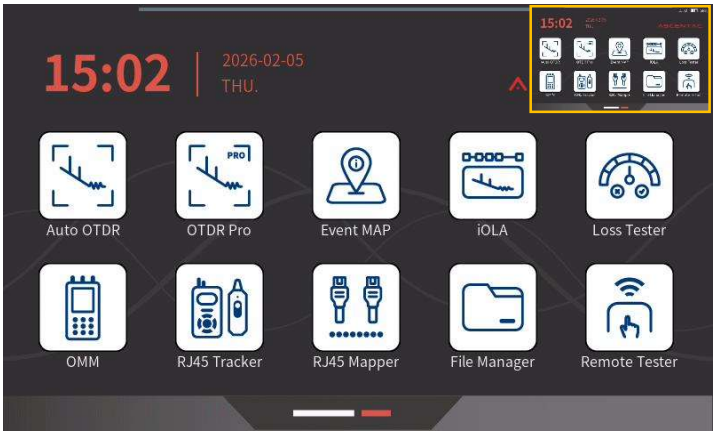
4.1 Power On / Off

Long press“  ” button for 2 seconds to turn on the device and enter into the main menu. When the anti-mistouch button is turned off, long press “  ”button for 2 seconds, and the shutdown confirmation interface will pop up. Click “  ” on the screen to confirm the shutdown.



4.2 Screenshot Button

Long press “  ”button for 2 seconds to quickly screenshot the screen and display the screenshot thumbnail in the upper right corner. Screenshot files can be viewed in the "File Management-Screenshot" folder.



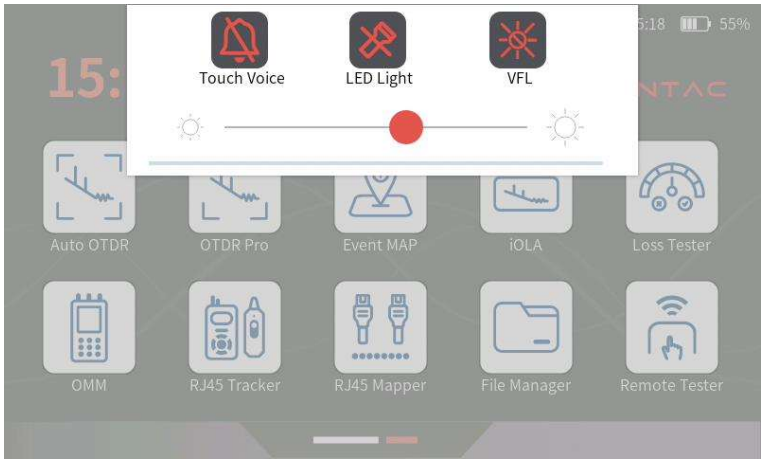
4.3 Main Menu

4.3.1 Function buttons

Click the function button to enter the main interface of the function, or use the " " direction keys to select the corresponding function. The selected function will be highlighted with a blue border, then press " " confirm key to enter the main interface of the corresponding function.

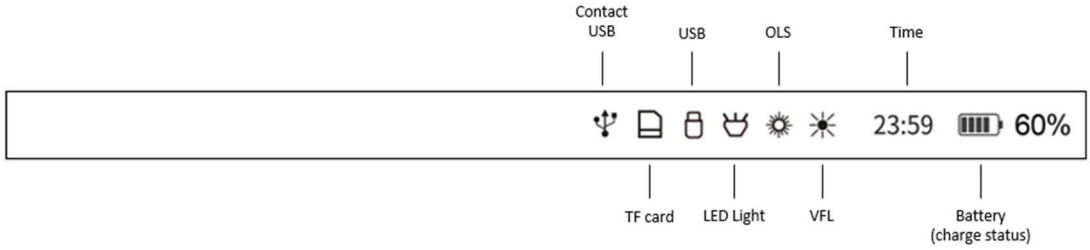
4.3.2 Multifunctional Window

Multifunctional Window is at the top of the screen. Slide inward from the outer frame to pull out the window for quick operations, and slide upward to return to the main interface. The multifunctional window includes touch voice, LED flashlight, VFL, and screen brightness shortcut buttons. The VFL button can cycle through the functions of On/Off, CW and glint.



4.3.3 Icon Description

The title bar icon will light up when the corresponding function is enabled. When charging, the battery icon displays dynamically and increases, and the charging indicator light flashes. When fully charged, the charging indicator light is always on.



4.4 Auto OTDR

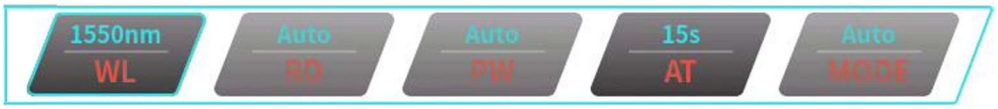
The auto OTDR function is designed to simplify user operations and complete measurements with one click. Each functional area in the interface is marked in the figure below. There are five functional interfaces: start measurement / advanced settings / marker operation / open files / quick settings. You can click to view the three functional pages of "Test Curve", "Event List" and "Event Map".

4.4.1 Quick Settings

(a) Click " Quick set. " or short press the " F5 " button to enter the quick setting interface. Wavelength and time can be set by clicking the required icon.

(b) In the auto OTDR mode, the user only needs to select the wavelength and time, and the instrument will automatically complete the measurement.

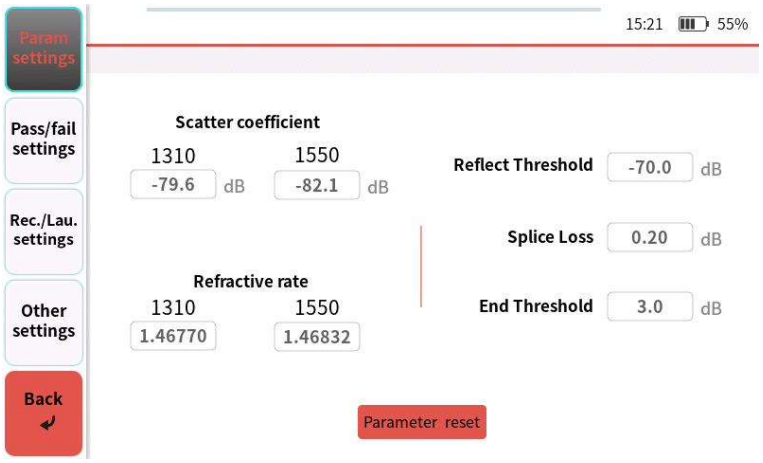
- Wavelength: The instrument supports multi-wavelength testing for the optical fiber type. You can select single or multiple wavelengths for testing.
- Range: In auto OTDR mode, the range is automatically adjusted according to the measurement conditions.
- Pulse Width: In auto OTDR mode, the pulse width is automatically selected according to the measurement conditions.
- Time: Set measurement time from 5s to 180s. Accuracy improves with longer measurement durations.
- Measurement Mode: In auto OTDR function, the measurement mode defaults to "Auto." In expert OTDR function, you can select from "Auto," "Average," or "Real-time" modes."



4.4.2 Advanced Settings- Parameter Settings

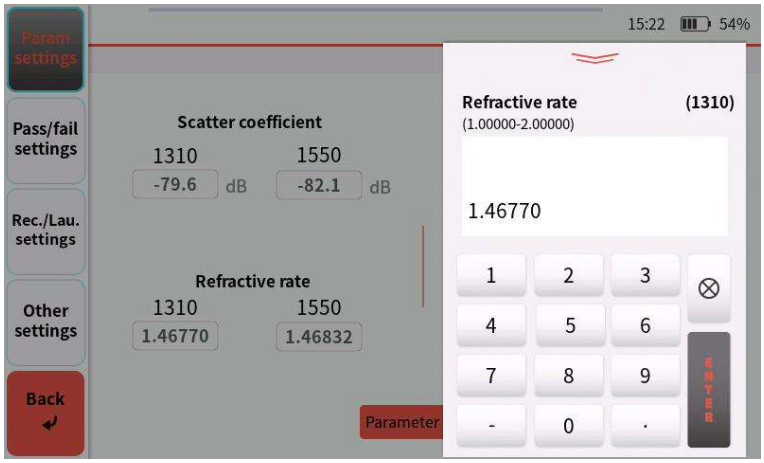
(a) Click " Adv set. " or short press the " F2 " button on the auto OTDR interface to enter the advanced setting interface. It includes four modules: "Parameter Settings", "Pass/Fail Settings", "Receive/Launch Settings", and "Other Settings". "Parameter Settings" allows you to set the refractive rate and backscatter coefficient of the fiber group. These two parameters are the physical parameters of the fiber. If there is a large deviation, it will lead to measurement errors in distance and attenuation rate. It is recommended to use the default parameters when these two parameters cannot be specified. Click the " Parameter reset " icon to restore the default values.

- Reflect Threshold: When the reflectivity is greater than the set value, it is determined as a reflection event.
- Splice Loss: When the splicing loss is higher than the set value, it is determined as a loss event.
- End Threshold: When the loss is greater than the set value, it is determined as an end event.



(b) All parameters of the "Parameter Settings" module can be set individually. Click on the parameter setting box, and the numeric soft keyboard will be displayed on the right (click on the blank space or short press the“ ”button to exit the numeric soft keyboard), click on the settings as required and press the "ENTER" button to save the parameters. After the setting is completed, click “ Back ” or short press the “ F5 ” button to exit the setting interface.

Click“ Parameter reset ” to restore to system default values (all four setting pages will be restored to default values).



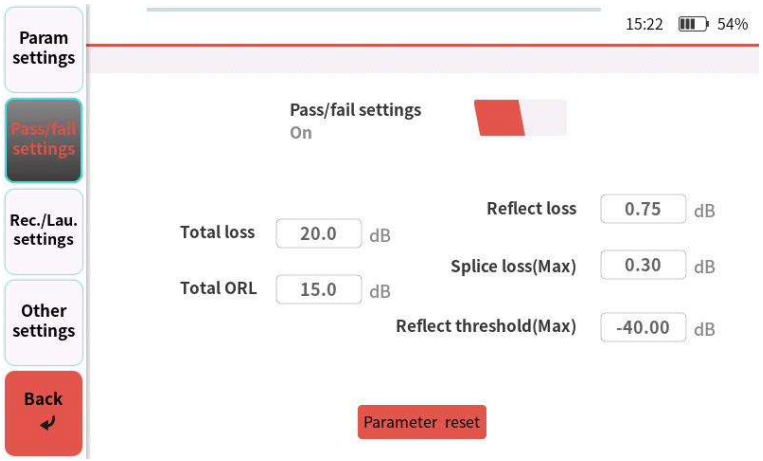
4.4.3 Advanced Settings-Pass/Fail Settings

Click“ Pass/fail settings ” or short press the “ F2 ”button or slide the screen to enter the "Pass/Fail Settings" module. Click “ ” to turn on or off the "Pass/Fail" function. These settings are used to quickly determine whether the line condition is qualified. If the set value is exceeded, a red prompt will be displayed in the event list.

- Total loss: Maximum threshold for total link loss. The settable range is 0 to 99.9 dB.
- Total ORL: Maximum threshold for total optical return loss of the link. The settable range is 0 to 70 dB.
- Reflect loss: Loss threshold for reflection events. The settable range

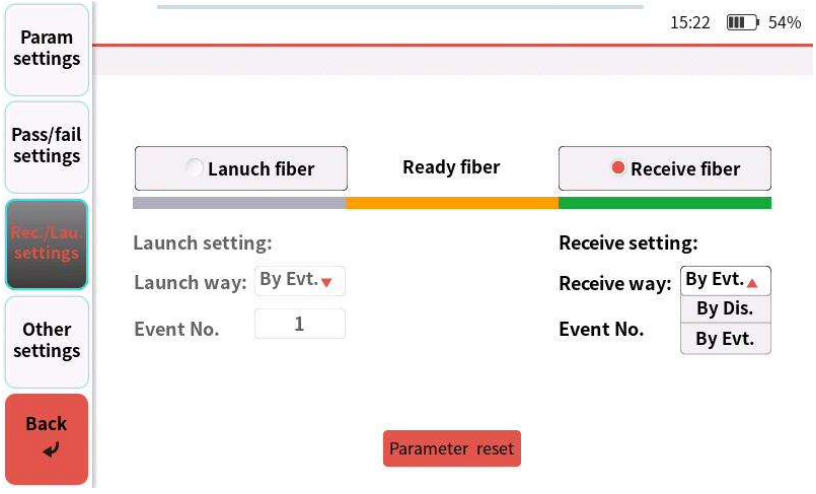
is 0.01 to 5 dB.

- Splice loss: Loss threshold for non-reflective events. The settable range is 0.01 to 5 dB.
- Reflect threshold: Reflectivity threshold for reflection events. The settable range is -65 to 0 dB.



4.4.4 Advanced Settings-Receive/Launch Settings

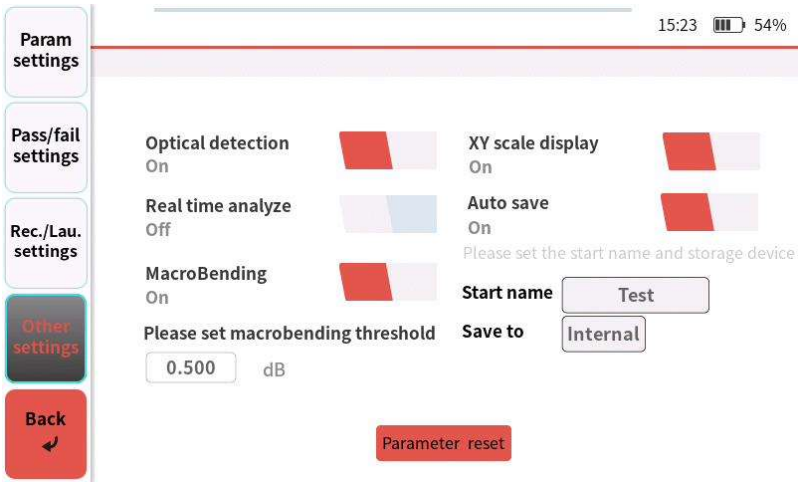
Click“ Rec./Lau. settings ” or short press the “ F3 ”button or slide the screen to enter the "Receive/Launch Settings" module. Make good use of this function to avoid OTDR test blind zone and achieve accurate measurements. You can click the "Launch Fiber" and "Receive Fiber" buttons to turn on or off the Launch and reception setting functions as needed. Click the “ By Evt. ” to choose to test the patch cord by event/distance settings.



4.4.5 Advanced Settings-Other Settings

Click“ Other settings ” or short press the “ F4 ”button or slide the screen to enter the "Other Settings" module. You can click the “ ” to turn on or off the required setting function as needed. The macro bending threshold, starting name, and position can be changed according to needs by clicking the parameter setting box.

- Real-time analysis: After opening, average measurement will measure the fiber again after stop of real-time measurement test every time, and event analysis result will be given.
- Auto save: used to automatically store data after each measurement.
- Optical detection: When turned on, the device will detect whether there is light in the optical fiber line before measurement, thereby protecting the device and central office equipment from damage.



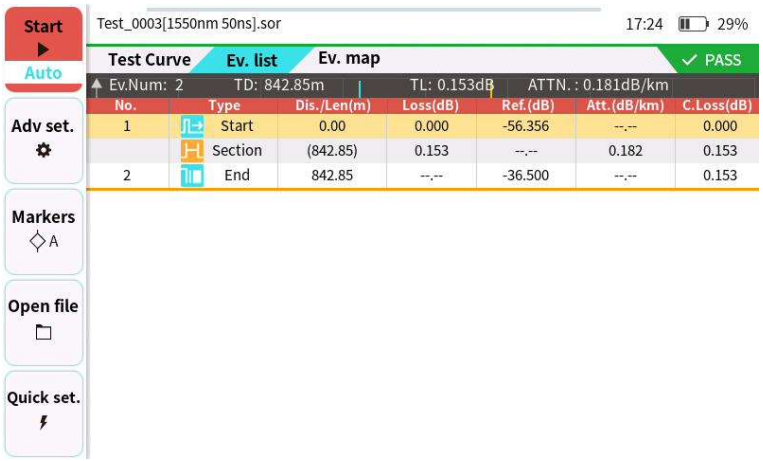
4.4.6 Start Measuring

Click“ Start Auto ” or short press the “ F1 ” button on the auto OTDR interface to start/stop measurement according to the current measurement conditions. The waveform can be zoomed in/out through the waveform control window. Click “ Markers ” to switch the cursor, select the

cursor and slide the screen or short press the direction button to operate the active cursor. After the test is completed, the "Open File" button will change to "Save File" button to save the measurement results.

4.4.7 Event List

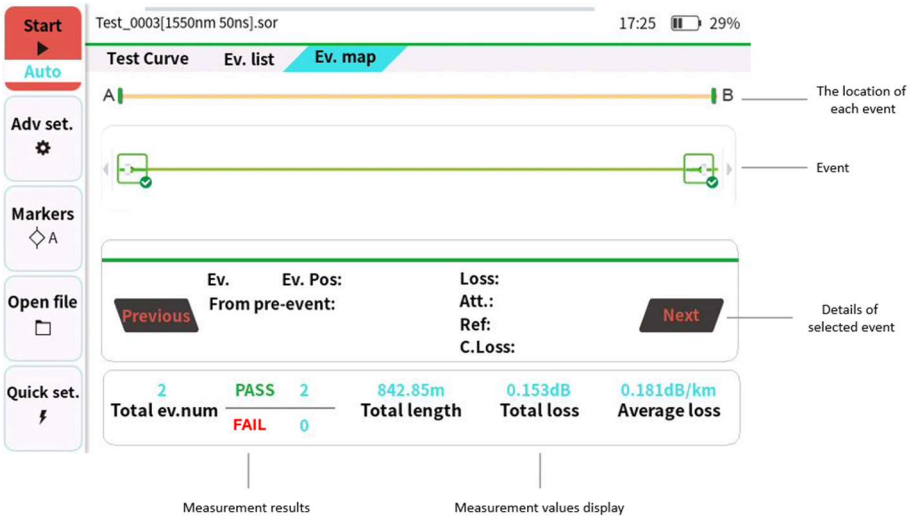
After completing the measurement, click "Event List" button to enter the interface. The event list interface can display all events in the current measurement or open saved file and the specific information of each event. Click the screen or short press the direction button to operate the event list.



4.4.8 Event Map

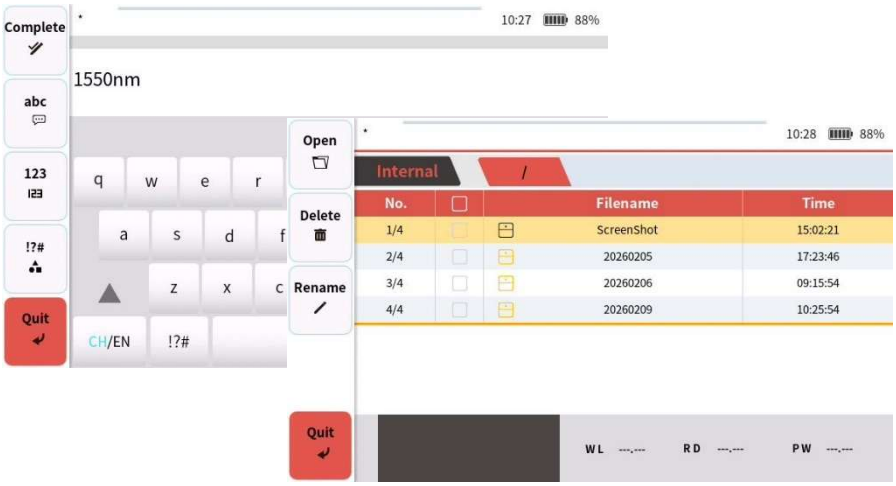
Click "Event Map" or click "  " on the main menu to enter the event map interface. Click the event icon to display the event details, or click "Previous Event/Next Event" to switch to view event details. The event map can be accessed through both Auto OTDR and OTDR Pro, and

the interface display is consistent. The event map interface can start measurement, and the advanced settings/markers operations/open files/quick settings are used in the same way as the auto OTDR.



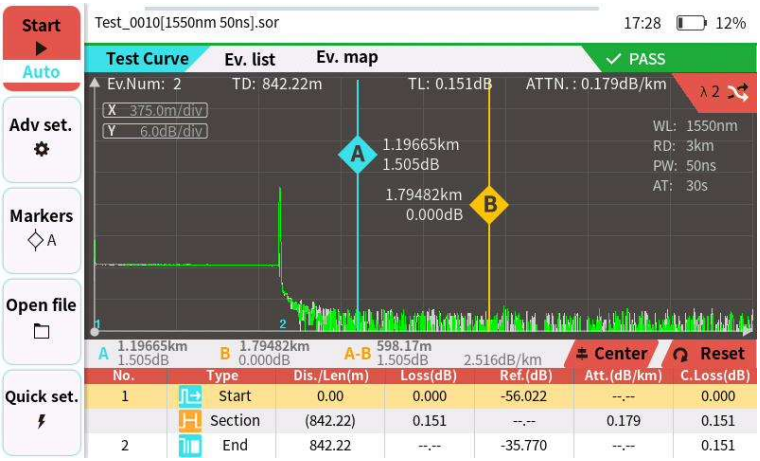
4.4.9 Open/Save File

After the measurement is completed, click " Save file " or short press the " F4 " button to save the file, and the file name editing keyboard will pop up. If the auto-save function is turned on in "Advanced Settings", after the measurement is completed, the file will be saved to the designated device according to the preset file name. When you need to view the files that have been measured, click " Open file " or short press the " F4 " button to enter the file management interface.



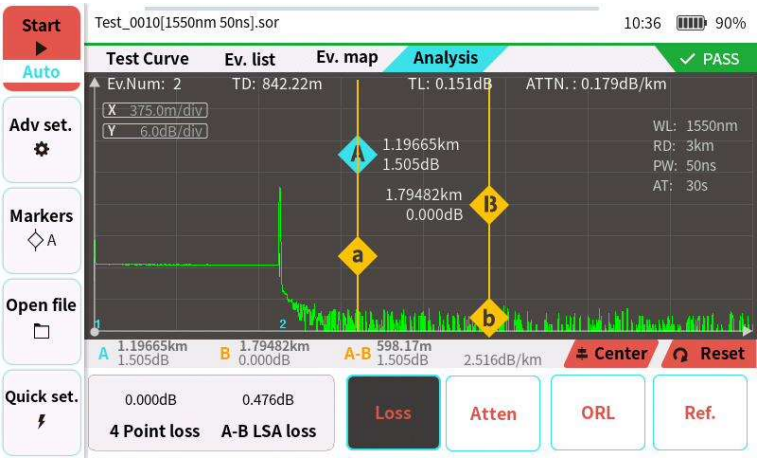
4.4.10 Switch Waveforms

The device supports opening two waveforms at the same time for comparison. You can click the check boxes of the two waveforms and then press to open. Click " λ1 " to switch waveforms. The file opening interface can start measurement, and the advanced settings/markers operations/open files/quick settings are used in the same way as automatic OTDR.



4.5 OTDR Pro

OTDR Pro is suitable for experienced users and opens more functions for users to use. You can click to view the four functional pages of "Test Curve", "Event List", "Event Map" and "Advanced Analysis". Advanced analysis is used to calculate loss, attenuation, reflectivity and return loss for user-defined zones.



4.5.1 Advanced Analysis

(a) Click“ 

” to switch the controlled cursor, or select the cursor by touching the cursor on the screen. All cursors can be dragged directly on the screen. Advanced settings/markers operations/open files/quick settings are used the same as auto OTDR.

(b) The "Advanced Analysis" information window displays the measurement results of different types of parameters.

--.--dB	--.--dB
4 Point loss	**A-B LSA loss**

Loss Measurement: The four-point method displays four cursors (a, A, b, and B). By moving the cursors appropriately, the difference between the LSA values within "a, A" and "b, B" can provide a more accurate loss determination. LSA loss utilizes the "Least Squares Approximation" method to calculate the loss between points A and B.

--.--dB	--.--dB
A-B ORL	**TORL**

A-B ORL: the ORL value between marker A and B. Total ORL: the ORL value in the entire circuit.

--.--dB/km	--.--dB/km
2 Point atten	**A-B LSA atten**

Attenuation Measurement: The two-point section attenuation represents the loss per kilometer between data points A and B, which is more susceptible to noise interference. The A-B LSA attenuation represents the LSA loss per kilometer between points A and B, which is less affected by

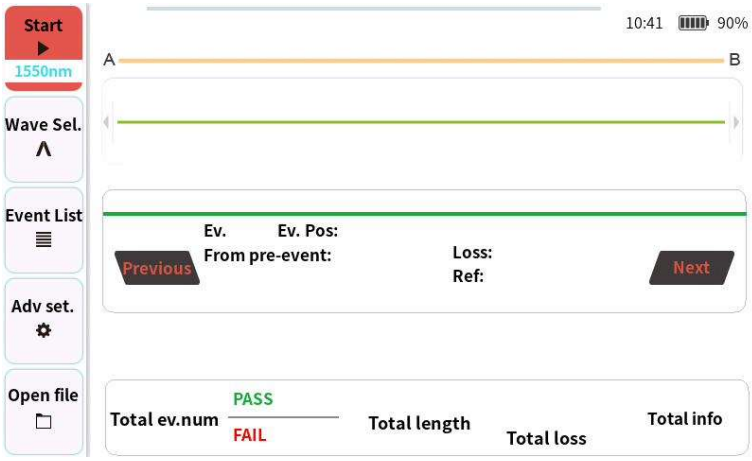
--.--dB
3 Point reflect

Reflectance: The three-point method displays three cursors: "a, A, and B." Position "a and A" on the flat section before the reflection, and set "B" at the peak of the reflection to display the reflectance value.

4.6 iOLA

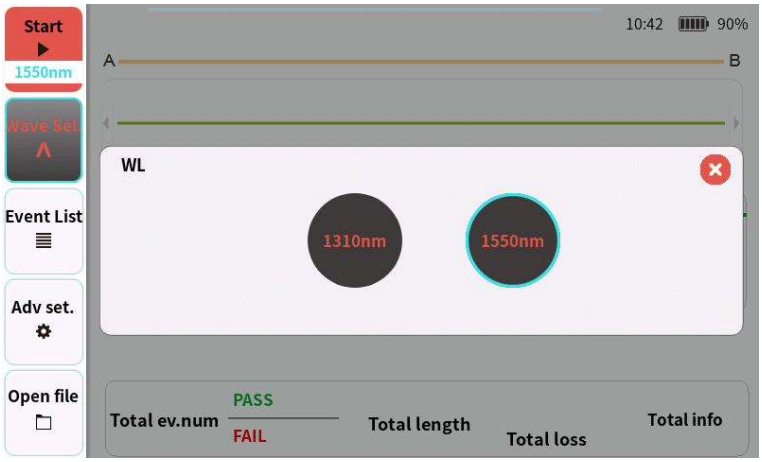
4.6.1 Main Interface

iOLA function can use multiple pulse widths to scan and test optical fiber links, and comprehensively combine the test results of multiple pulse widths to present complex optical links to users in a concise and clear manner. There are five function pages: start measurement/wavelength selection/event list/advanced settings/open file.



4.6.2 Wavelength Selection

Click “  ” to enter the wavelength selection interface, then select single wavelength or multiple wavelengths.

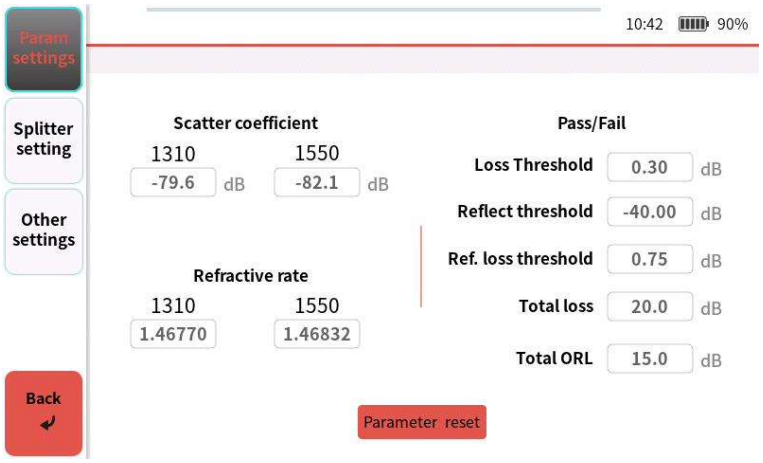


4.6.3 Advanced Settings

(a) Click“ 

” to enter the advanced settings interface. There are three modules: parameter setting/splitter setting/other settings. Backscatter coefficient and group Index are inherent properties of the fiber under test. Users must set these manually based on actual conditions (these parameter settings are shared with the OTDR function).

- Backscatter coefficient: Affects the reflectance calculation of reflective events. The setting range is -99.9 to -70.0 dB.
- Group Index (IOR): Affects the determination of event distance. The setting range is 1.00000 to 2.00000.

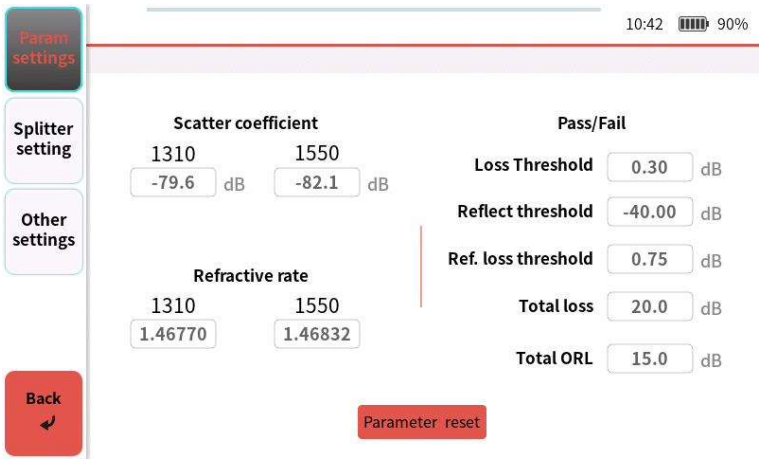


(b) Click on each item will pop up an editing window. These settings are used to quickly determine whether the line status is qualified.

- Loss threshold: Loss threshold for non-reflective events. The settable range is 0.01 to 5 dB. If the loss exceeds the set value, the event will be judged as failed.
- Reflect threshold: The reflectivity threshold for reflection events. The settable range is -65 to 0 dB. If the loss exceeds the set value, the reflection event will be judged as failed.
- Reflect loss threshold: The loss threshold for reflection events. The

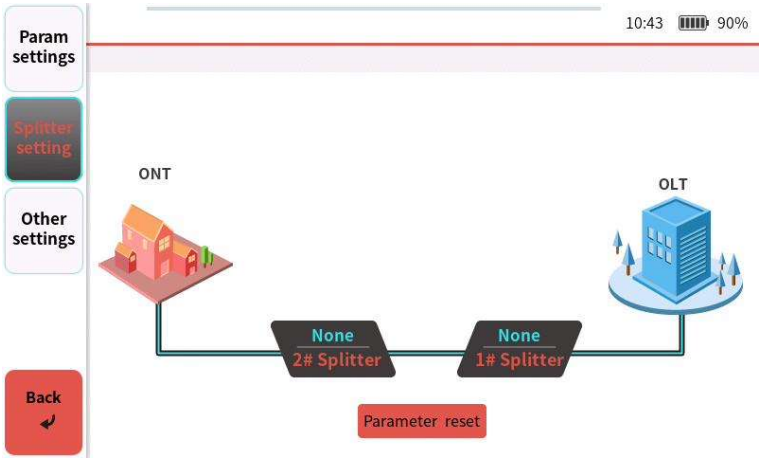
settable range is 0.01 to 5 dB. If the loss exceeds the set value, the reflection event will be judged as failed.

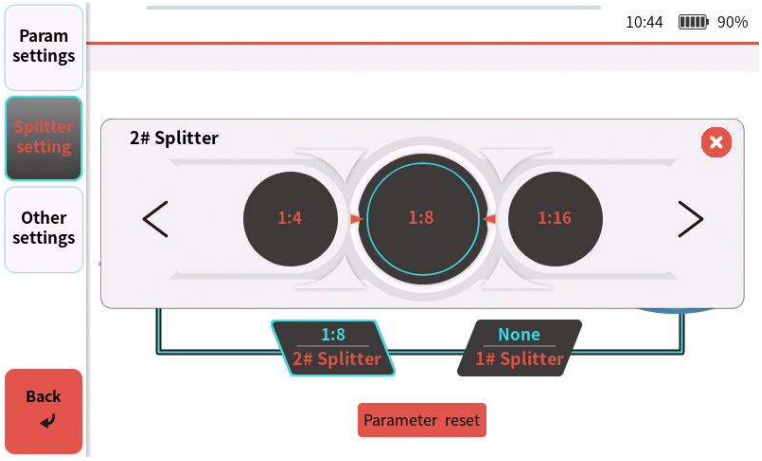
- Total loss: The maximum threshold for total link loss. The settable range is 0 to 99.9 dB. If the loss exceeds the set value, the item will be judged as failed.
- Total ORL: The maximum threshold for the total optical return loss of the link. The settable range is 0 to 70 dB. If the loss exceeds the set value, the reflection event will be judged as failed.



4.6.4 Splitter Setting

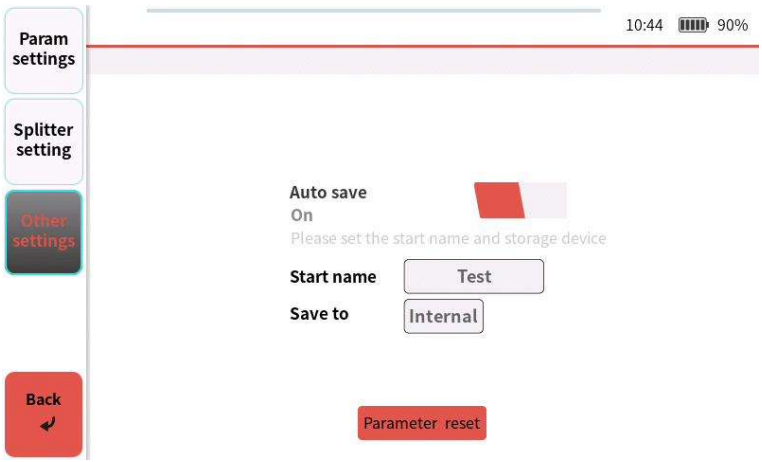
Click“ Splitter setting ” or short press the “ F2 ”button or slide the screen to enter the "Splitter Settings" module. Click the "1# Splitter" and "2# Splitter" windows to set them respectively. If splitters are detected during the test, this algorithm will be used first for calculation and analysis.





4.6.5 Other Settings

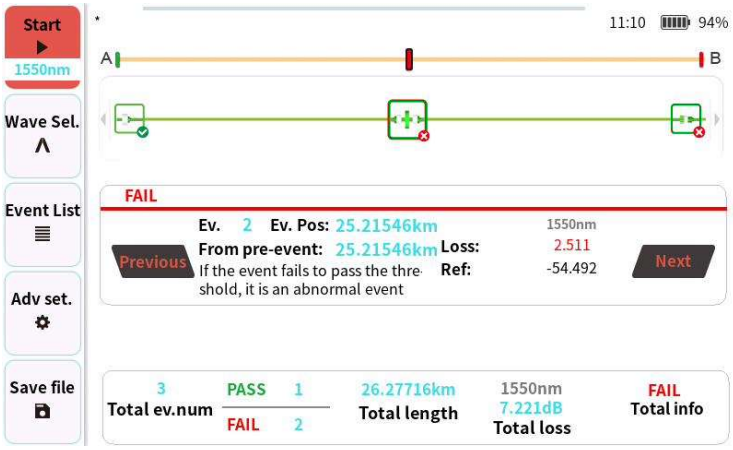
Enable "Auto save" and the file will be stored in the default folder, which is named after the current date. The "Start Name" function allows user customization.



4.6.6 Start Measuring

Click“  ” or short press the “ F1 ” button to start/stop measurement according to the current measurement conditions. A green progress bar will is displayed at the bottom of the screen. After the measurement is completed, the measurement results and measured values are displayed at the bottom of the screen, and the fiber link status is displayed in a detailed event map. Click “  ” to display the save interface, and the file will be stored in the default folder, which is

named after the current date.

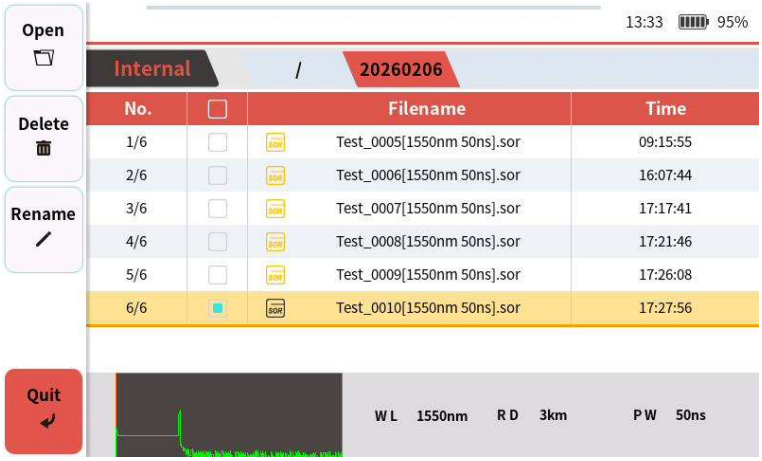


4.6.7 Event List

After the measurement is completed, the information can be viewed in the "Event List" interface. The event list data of the entire optical link will be displayed on the screen.

4.6.8 Open File

When you need to view the measured files or edit the saved files, click " Open " or short press the " F4 " button to enter the file management interface. Select a folder or file and click "Open File" to display the event map of the selected link. Click " Rename " to rename a folder or file, or click " Delete " to delete it.

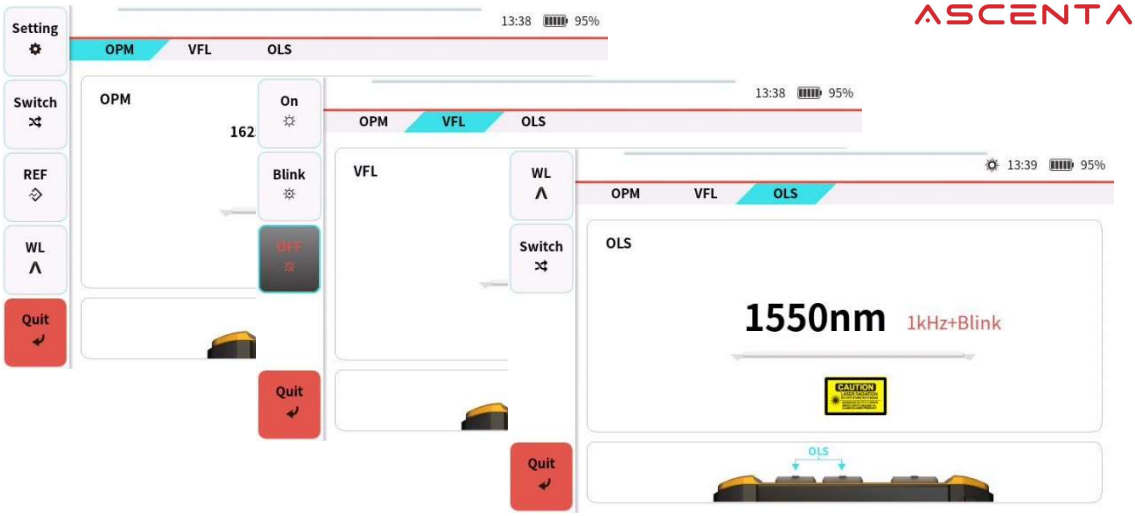


4.7 Loss Tester

Click“  ” button to enter the loss test interface. First, turn on the Stabilized Light Source (SLS), the icon will appear in the upper-right corner. Then, set the wavelength and click "REF" to set the reference relative power to 0.00 dB. After connecting the device under test (DUT), the displayed relative power value will be the loss value.

4.8 OMM

Click “  ” in the menu to enter the optical multimeter (OMM) interface. The "optical multimeter" is a 3-in-1 tool combining OPM, VFL, and OLS for ease of use. It can be used by combining the OPM's REF function with the OLS's stabilized laser source.



4.8.1 OPM

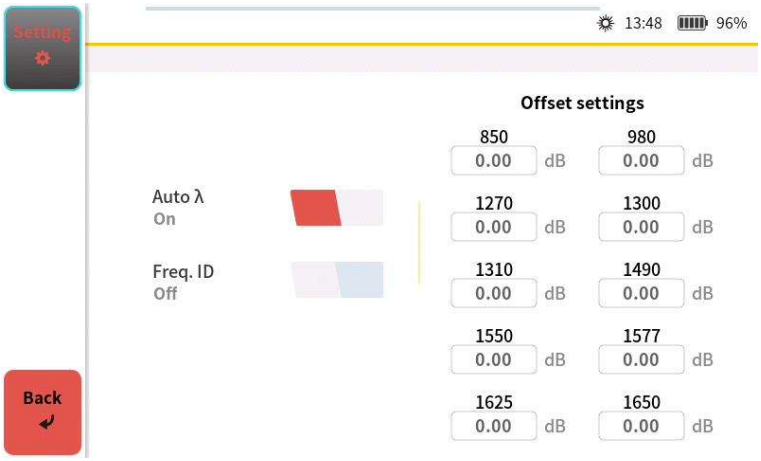
- Switch: dBm/dB switching display unit. After setting REF, switch to dB display mode to monitor the change in optical power relative to the reference value.
- REF: When light is detected, click to set the REF value for the current wavelength. By using the OLS and dB display mode, you can measure the insertion loss of a certain environment or test the stability of the light source. Each wavelength has an independent REF setting value.
- Wavelength: 10 calibrated wavelengths (850nm, 980nm, 1270nm, 1300nm, 1310nm, 1490nm, 1550nm, 1577nm, 1625nm). Use the

  " WL Λ " button to cycle through them.

- Offset settings: Manual calibration settings for each calibration wavelength. The settable range is -5.00 to 5.00 dB.
- Auto λ : Cooperating with our company's light source equipment,

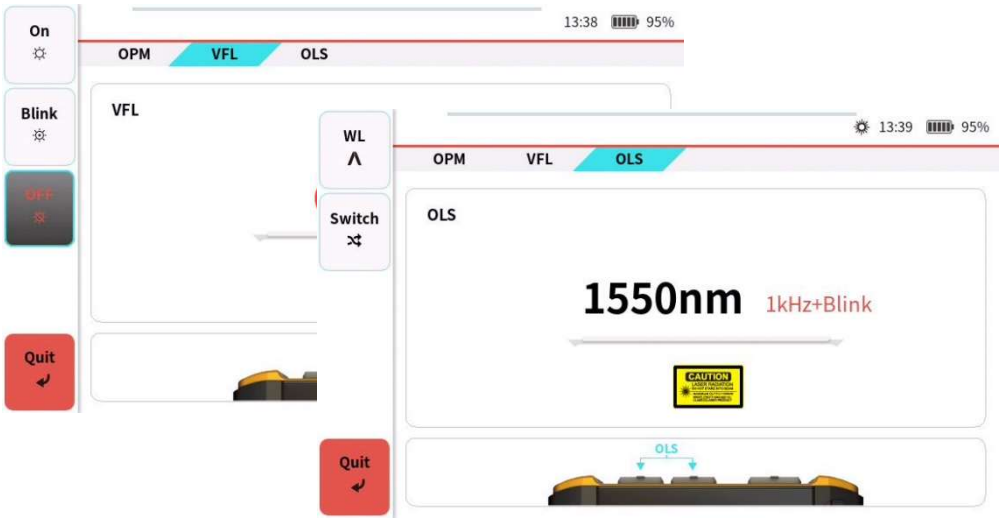
the device can automatically identify the current wavelength of the light source and automatically switch to that wavelength value.

- Frequency identification: Cooperating with the carrier modulation signal from our company's light source equipment, the device can automatically identify the frequency value.



4.8.2 VFL/OLS

- VFL: Three switchable states: CW, flashing and off.
- OLS: Support 1310nm, 1550nm wavelength (Specific configuration according to model).
  Modulation signal: CW, 270Hz, 1kHz, 2kHz, 1kHz+Blick, 2kHz+ Blick, Off.



4.9 RJ45 Tracker

Click "  " in the menu to enter RJ45 Tracker interface. This module must be used with a network line finder. After connecting one end of the test network cable to the host, turn on the network line finder. Click "  " or short press the " F1 " button to start line hunting. When the detector gradually approaches the test network cable, the network line finder will issue a regular beep reminder. Click "  " or short press the " F1 " button to stop hunting.

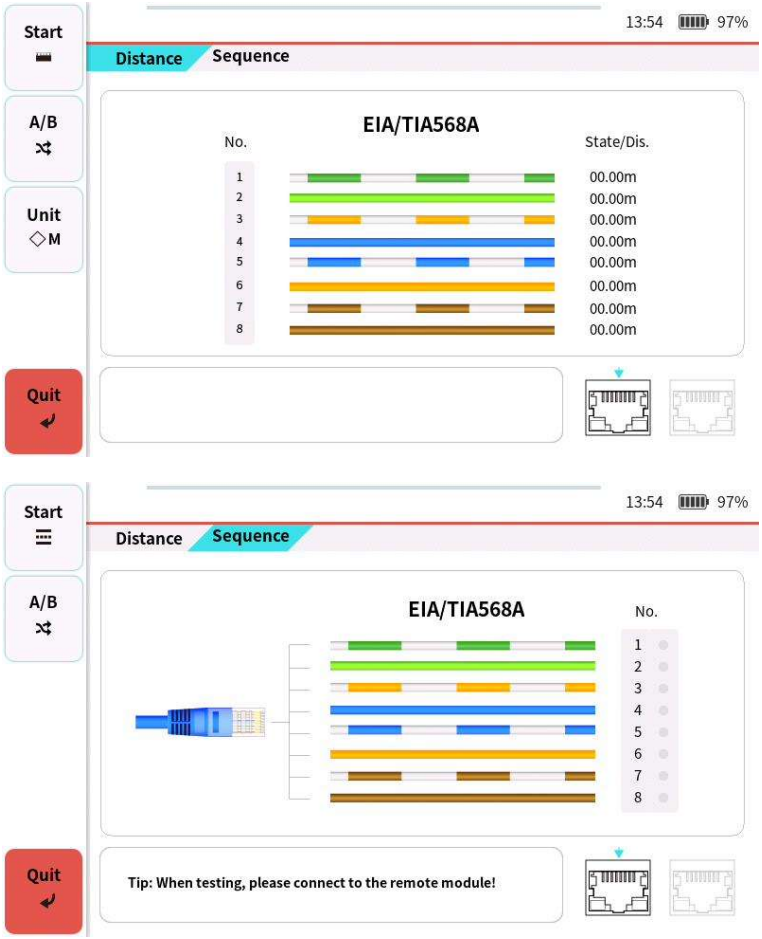
4.10RJ45 Mapper

Click "  " in the menu to enter the RJ45 Mapper interface. Connect both ends of the network cable to the host and remote network module, and perform the corresponding measurement operations according to the diagram.

RJ45 distance testing: Supports length measurement for commonly used Category 5/6 network cables.

RJ45 sequence testing: Check whether the network cable sequence is correct and whether there are any errors such as wrong wiring or disconnection. The other end of the network cable must be connected to a remote module.

- A/B switching: switching of wiring standards
- Unit switching: switch m/ft



4.11 File Manager

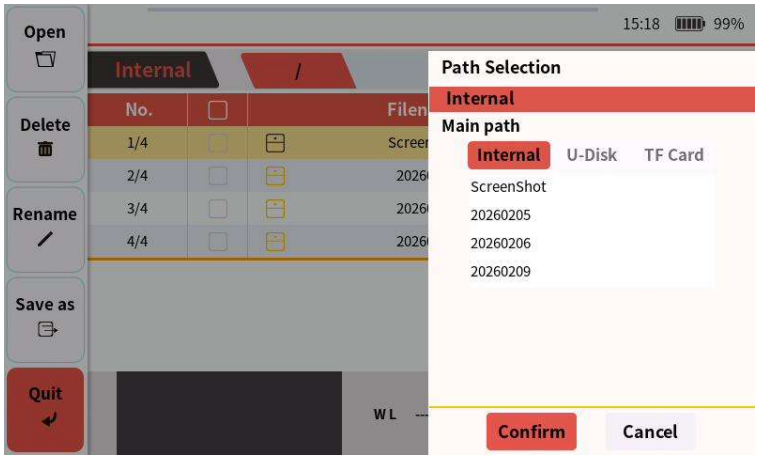
Click“  ” in the menu to enter the file manager interface. You can select a device in the top navigation bar, and click the corresponding button to return to the corresponding folder level. The selected file can be viewed as a waveform thumbnail at the bottom of the screen. For a folder or file, click “ 

” to rename it, click “ 

” to delete it (multi-selection is supported).

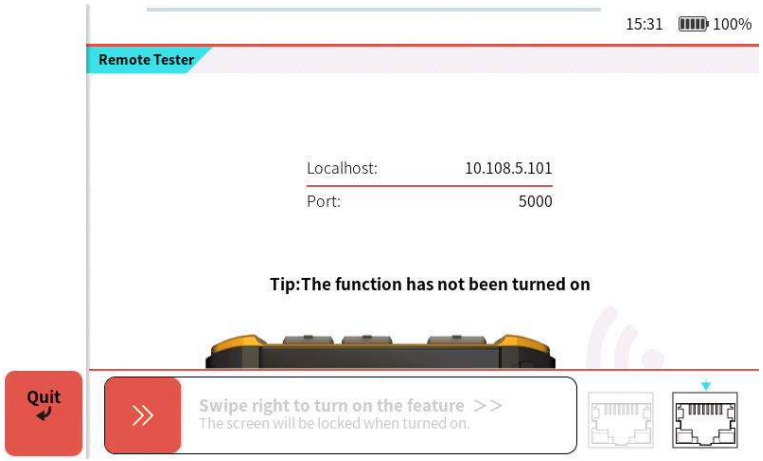
Click “ 

” (multi-selection is supported), a path selection pops up, and the selected files can be copied to other devices as required.



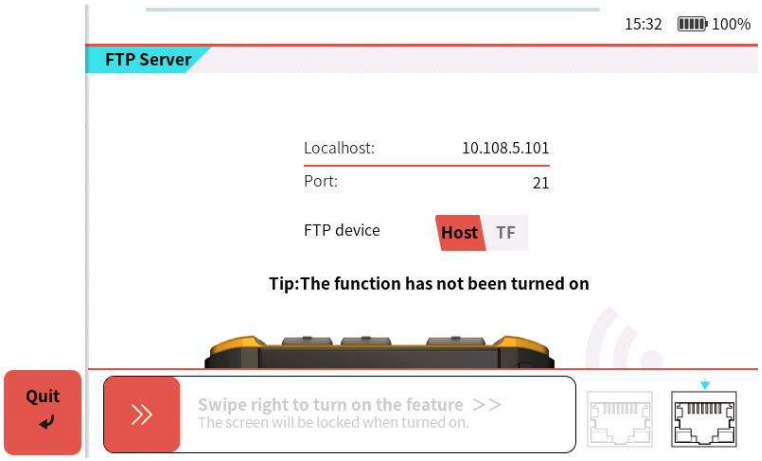
4.12Remote Tester

Click " " in the menu to enter the remote tester interface. Press and hold " " and slide to the right to enable the function. You need to install the "OTDR Module Client" software on the remote device, then enter the local IP address and port on the remote side to control the machine remotely. Click" " or short press " F5 "or" " button to return to the main menu.



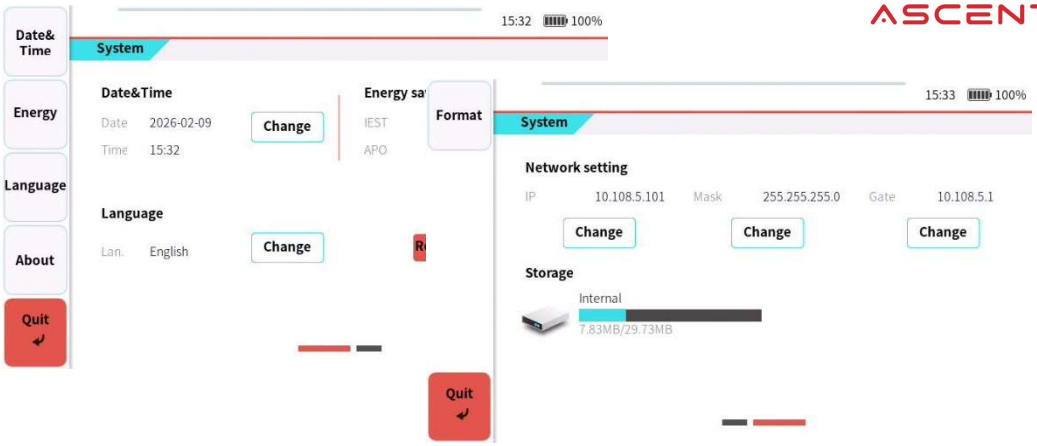
4.13FTP Server

Click "  " in the menu to enter the FTP service interface. Press and hold "  " and slide to the right to enable the function. You need to install the "filezilla" software on the remote device, then enter the local IP address and port on the remote side to remotely view, copy and save files. Click "  " or short press " F5 "or"  " button to return to the main menu.

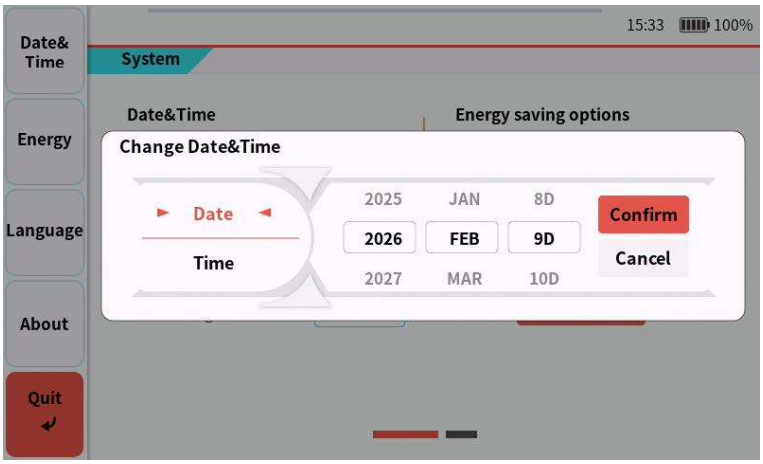


4.14System

(a) Click "  " in the menu to enter the system interface. There are four setting interfaces: Date & Time/Energy/Language/About. Swipe left on the screen to view network setting and storage space. Click "Change" to customize the network address. Click " Restore Factory " to format the storage space. Swipe right on the screen to return to the main system settings interface.



(b) Click the desired setting icon, or click "Change" to open the settings pop-up window for customization. The settings pop-up window can be closed by clicking "cancel" or short pressing " " button. Ckick" " or short press " F5 "或" "button to return to the main menu.



5. Troubleshooting and Maintenance

Problem	Cause	Solution
The online testing function isn't working normally.	1、The selected model does not support online testing. 2、The set wavelength does not match the wavelength of optical fiber system.	1、Confirm whether the device model supports the online testing function. 2、Select the correct test wavelength (1625nm).
The OTDR dead zone is too large, affecting analysis of short-distance events.	1、Improper pulse width settings result in an enlarged dead zone. 2、The test distance does not match the actual fiber length for optimal performance. 3、Dirty connector or poor connections result in increased event reflectance.	1、Select a narrower pulse width (e.g., 5ns to 100ns) for short-distance testing. 2、Use "Auto OTDR" or " OTDR Pro" adjust the distance range to 1.5 to 2 times the actual fiber length. 3、Clean the fiber end-faces to ensure proper connector mating and alignment.
Abnormal data or test interruption during iOLA testing.	1、Incorrect configuration of Launch or Receive fiber lengths, leading to mismatched event mapping. 2、Manually stopping the test during acquisition resulted in incomplete wavelength data. 3、The splitter ratio setting does not match the actual link, affecting loss characterization.	1、Correctly configure the Launch and Receive fiber lengths in the iOLA settings. 2、Do not stop the test manually to ensure full data acquisition for all wavelengths. 3、Select the correct splitter ratio in the "Splitter setting" based on the actual link topology.
RJ45 Tracker or RJ45 Mapper function failed.	1、The network cable testing accessory is not connected to the host device. 2、The sequencing test was aborted or interrupted by selecting a different function during the process.	1、Keep the accessory connected to the host device while using the cable tracking function. 2、Keep the feature enabled and wait for the test to complete before clicking the "X" icon in the

	3、Application data anomaly.	top-right corner to exit. 3、Try restart the device.
System software update failure resulting in a startup error.	1、USB drive format is incompatible, or the update file is corrupted. 2、The update file version is incompatible with the device hardware. 3、Power failure or USB disconnection occurred during the update process.	1、Use a FAT32-formatted USB drive and contact Technical Support to obtain a complete update package. 2、Confirm the file version compatibility with your hardware. Contact Technical Support if you are unsure. 3、Ensure the device has sufficient power during the update (connecting a charger is recommended). Do not touch the USB drive or the device.
The saved test files cannot be opened or analyzed using the PC analysis software.	1、File Compatibility Issue: The .sor file version generated by the device may be incompatible with the PC analysis software version. 2、Data Corruption: The file may have been corrupted during the saving process.	1、Verify file format compatibility with your PC software and upgrade the device firmware to the latest version if needed. 2、Try re-exporting the test files, or re-running the test to save the data again. 3、Verify that the test files can be opened correctly on the device, then use a different USB drive to re-save them.