FirstFiber

USER GUIDE

980RTC OTDR

Safety Warning

Power Adapter
Input: AC 100V ~ 240V, 50/60Hz; @0 .8A
Output: DC 5V, 1A , USB Type-C

Use the power adaptor in strict accordance with the specifications , or it may cause damage to the device .

Battery
The internal part of the instrument is a lithium battery. In order to give full play to the performance of the battery, when using the instrument for the first time , please use the internal battery to supply power. After the battery runs out , charge the battery then .
The first charging time should not be less than 5 hours . The charging temperature range of the battery in the instrument is -10°C~50°C . When temperature is too high , please stop charging for safety.
When the instrument is idle for more than 3 months , it should be charged in time to maintain the battery power. The temperature range of battery for long-term storage is - 20°C~45°C .
Do not take out the battery without permission . Please keep the battery away from the fire source and strong heat; Do not open or damage the battery.

Laser Safety Instruction
The laser safety level of this instrument is CLASS IIIB , which is harmful to human body. Please pay attention to safety during use .

Safety Warning

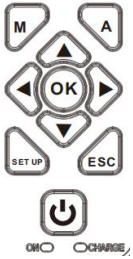
When using this instrument , please avoid looking directly at the laser output port , and do not look directly at the end of the optical fiber when testing; When the instrument is used , please cover the dust cap of the light output port . W hen the visible red light function of the instrument is turned on , please do not look directly at the output port of the red light source or the tail end of the optical fiber connected to the red light output port , so as to avoid eye injury.

Key Parts

No	Name	Description
1	VFL	Visual Fault Locator Interface
2	OTDR/ LS	OTDR & OLS Interface
3	OPM	Optical Power Meter Interface
4	Display	3 .5 inch screen . Touch Sensitive
5	USB Type-C	5V/ 1A Power Charging & Data Transmission
6	RJ45	RJ45 Cable Sequence & Tracking
7	Indicator Light	ON: Green ,power LED CHR: Power Charging Indicator - Red: on Power Charging - Flash: No Battery Installed POWER: Green W hen Turned on LS: Red When Light Source is working OTDR: Red When OTDR or RJ45 is Working VFL: Red When Visual Fault Locator is Working OPM: Red When Optical Power Meter is working
8	Physical Buttons	Power on/off Button - Long Press: Turn off/off the Instrument - Short Press: Turn on/of LED Light

Key Parts

No.	Name	Description
8	Physical Buttons	 Return Button . Used to Return to the Previous menu Direction Navigation &Confirmation Buttons . Used to switch Menu Focus and Adjust Input Content . 【M】Manual testing mode, using user set parameters for testing 【A】Automatic testing mode, where the instrument matches the most suitable parameters for testing based on the actual fiber loss situation
9	Screen Shot	On the drop-down menu in the upper right corner,Press ，can complete screenshot any interface.
10	System Update	SHIFT+ Power on/off . Put Upgrade File that You Got from Manufacturer Into SD Card or Instrument Memory through USB cable . Press and Hold SHIFT Button and then Press Power on Button after the Instrument is turned on . The upgrade will Automatically run in 2 seconds .



【M】+ → Upgrading system

【M】/【A】 → Press in short time: Auto Test
Press in long time: Average Test

Booting up your New Instrument

Turn on the instrument

Press **[POWER]** button to start the instrument . The instrument will go into welcome page . Then after around 2 seconds , it will arrive the main page with all functions .

Turn on or off LED light

After the instrument was turned on , press [Power] to turn on LED light or turn off LED light . LED Light is at back of the instrument .

Turn off the instrument

Long press [POWER] button to turn off the instrument .

Enter a particular function

Use **[Navigation]** Button to select the function you are going to enter. and press **[OK]** button to enter the selected button . When first function is selected , only **[RIGHT]** and **[DOWN]** navigation buttons are allowed to operating . **[LEFT]** and **[UP]** buttons are prohibited . When last function is selected , only **[LEFT]** and **[UP]** buttons are allowed to operating . **[RIGHT]** and **[DOWN]** buttons are prohibited .

Exit from a particular function

After you entered a particular function , press **[ESC]** to exit from the function and come back to main page .

Main Page

System Setting

By **[Navigation]** to select System , press **[OK]** button to enter the function .

Language Selection

Press **[UP]** or **[DOWN]** button to select Language , then press **[OK]** button to call out Languages Menu . Press **[UP]** or **[DOWN]** button to select target language .

Auto Power off

Press **[UP]** or **[DOWN]** button to select Auto Power off , then press **[OK]** button to call out Power off Menu . Press **[UP]** or **[DOWN]** button to select target auto- power-off time .

Beep

Press **[UP]** or **[DOWN]** button to select Beep , then press **[OK]** button to turn on or off beep sound .

USB Connection

Press **[UP]** or **[DOWN]** button to select Beep , then press **[OK]** button to turn on or off beep sound .

Touch Screen

Press **[UP]** or **[DOWN]** button to select Touch Screen , then press **[OK]** button to turn on or off touch screen .

Date & Time

Press **[UP]** or **[DOWN]** button to select Touch Screen , then press **[OK]** button to set date & time .

System

OTDR Setting

By **[Navigation]** to select OTDR , press **[OK]** button to enter the function . Before you start testing a fiber, please complete setting work . Press **[LEFT]** or **[RIGHT]** button to select setting menu , then press **[OK]** button to enter into setting .

Wavelength

Press **[UP]** or **[DOWN]** button to select Wavelength , then press **[OK]** button to call out Wavelength Menu . Press **[UP]** or **[DOWN]** button to select target 1310nm , 1550nm , 1610nm , 1625nm , 1650nm . Different model number is with different wavelengths available .

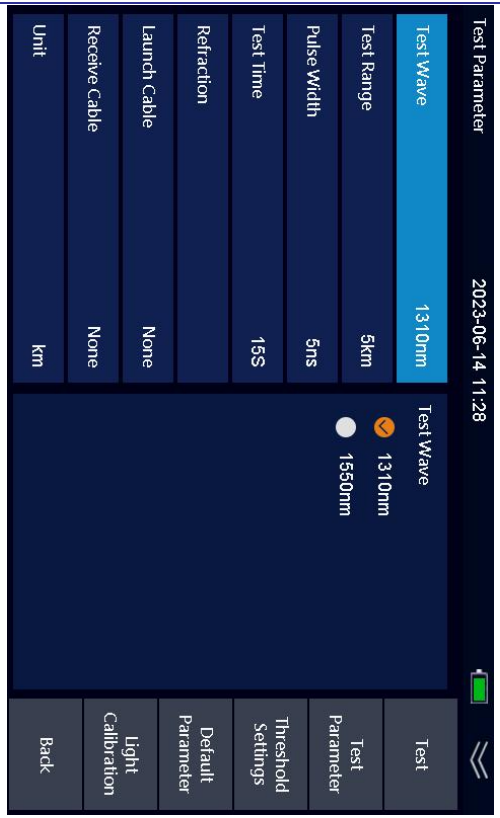
Test Mode

Press **[UP]** or **[DOWN]** button to select Test Mode , then press **[OK]** button to select Auto or Manual .

What is different between Auto and Manual mode?

Auto mode: The instrument will automatically set the most appropriate parameters for the current measurement , and the measurement range and pulse width selected values cannot be modified at this time .

Manual mode: The range and pulse width can be set manually.



OTDR Testing Parameter

OTDR Setting

Test Range

Press **[UP]** or **[DOWN]** button to select Test Range , then press **[OK]** button to select target Test Range . The optional test range is 100m/ 500m/ 2 km/ 5 km/ 10km/ 20km/ 40km/ 60km/ 90km .

Pulse Width

Press **[UP]** or **[DOWN]** button to select Pulse Width , then press **[OK]** button to call out Pulse Width Menu . Press **[UP]** or **[DOWN]** button to select target Pulse Width . The optional pulse width is 5ns/ 10ns/ 20ns/ 50ns/ 100ns/ 200ns/ 500ns/1 us/ 2 us/ 5 us/ 10us/ 20us .

Test Time

Press **[UP]** or **[DOWN]** button to select Test Range , then press **[OK]** button to select target Test Time .

Refraction

Press **[UP]** or **[DOWN]** button to select Refraction , then press **[OK]** button to enter Refraction Value setting . Input refraction value .

Event Threshold

Press **[UP]** or **[DOWN]** button to select Event Threshold , then press **[OK]** button to enter Event Threshold setting . Input event threshold value .

End Loss Threshold

Press **[UP]** or **[DOWN]** button to select Event Threshold , then press **[OK]** button to enter Event Threshold setting . Input event threshold value .

Default

Press **[SHIFT]** button to change operation area from top menu to bottom menu , then press **[OK]** button to confirm if you are going to change all settings above to be back to factory default setting .

OTDR Setting

Light Calibration

Press **[RIGHT]** button to select Light Cal menu , then press **[OK]** to confirm light calibration .

Back

Press **[ESC]** button to select Back Menu , then press **[OK]** to come back OTDR . You can also use **[ESC]** button to process the same operation .

Before OTDR Testing

Fiber preparation

The Smart OTDR works on any single mode fibers , but it does not work for multi mode fibers . The single mode fiber means it is with 9 um core . The multi mode fiber means it is with 62 .5 um or 50um core . And because of OTDR testing theory, please be sure the fiber is not very short , at least 3 meters , and not greater than 90km.

Fiber Connector

There are two kinds of fiber connector, one is APC with 8° angle , the other is UPC (PC) horizontal angle .Users are not allowed to change between them . The OTDR port is installed with SC connector in factory default .If users want to change SC connector to FC connector, it is allowed . Unscrew SC connector and pull it out in vertical direction .Then screw FC connector into OTDR port . Please check if the key on FC connector locked into slot exactly in OTDR port .

Connector Cleaning

Please use connector cleaner to clean OTDR port and fiber connector. Please take off entire dusty cap on the tip of cleaner when you clean OTDR port . W hen you clean fiber connector, just take off top half dusty cap on cleaner tip .

Start your First OTDR Testing

Start OTDR Testing

After the cleaning work done , you can plug fiber connector into OTDR port . Press **[TEST]** button in short time to begin Auto Test . Press and hold **[TEST]** button over 2 seconds to process Average Test with the value in setting . In the OTDR testing page , top part is current testing parameters for quick view,

Name	Description
WL	Wavelength . It is for current test only
PW	Pulse width . It is for current test only
Y	Vertical axis scale in dB .
A	The position of cursor A in distance & loss at current position
B	The position of cursor B in distance & loss at current position
A-B	Distance between A and B . Loss Value between A and B

Middle part is curve that OTDR created . Press **[LEFT]** or **[RIGHT]** button to move position of Cursor A and Cursor B for curve analysis .

Bottom part is Event List . All events are listed on a table .

Start your First OTDR Testing

Event List

If you can not select event table , press **[SHIFT]** button . Then you can select event column by **[UP]** or **[DOWN]** button .

Name	Description
No	Event number from near end to far end
Type	Attenuation event or reflect event
Distance	The distance from first event to current event . Km in unit
Loss	The loss value at current event . dB in unit
Avg.Loss	The average loss/ km from first event to current event
T. Loss	The total loss from first event to current event . dB in unit
Reflect	The reflect signal value . dB in unit

Move Curve

You can move entire curve to left , right , up or down by **[SHIFT]** button , **[LEFT]** , **[RIGHT]** , **[UP]** or **[DOWN]** button . If you can not move curve , press **[SHIFT]** button repeatly until you can see icon which indicates operation method at top of screen .

Zoom in or out

You can zoom in or out curve by **[SHIFT]** button , **[LEFT]** , **[RIGHT]** , **[UP]** or **[DOWN]** button . If you can not zoom in or out curve , press **[SHIFT]** button repeatly until you can see icon which indicates method at top of screen .

To Operate OTDR Testing Results

To save OTDR Testing Results

After testing done , press **[SHIFT]** button to select setting , then press **[RIGHT]** button to select save menu , and press **[OK]** button . Input a name for the current curve by operating **[LEFT]** or **[RIGHT]** button .

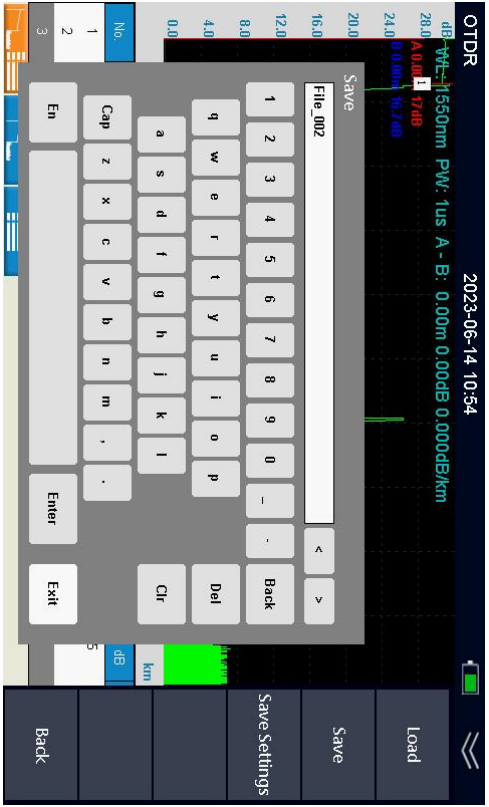
Name	Description
Cap	Change upper and lower letter
Clr	Clear what already input
Back	Delete one letter from right side to left side
<	Move cursor from right to left and then insert a letter
>	Move cursor from left to right and then insert a letter
Quit	Back to OTDR testing and do not save current curve
\ OTDR	To save current curve to the instrument memory
\SD	To save current curve to external SD card

Rename File

Using **[SHIFT]** and **[RIGHT]** button to select File menu , then press **[OK]** button to enter file management . Press **[SHIFT]** button and **[DOWN]** button to select a file that you are going to change name . Press **[OK]** to change its name .

Delete File

Using **[UP]** button and **[DOWN]** button to select a file , then by **[SHIFT]** button and **[RIGHT]** button to select Delete menu , press **[OK]** .



To save testing result

Start your First Event map Testing

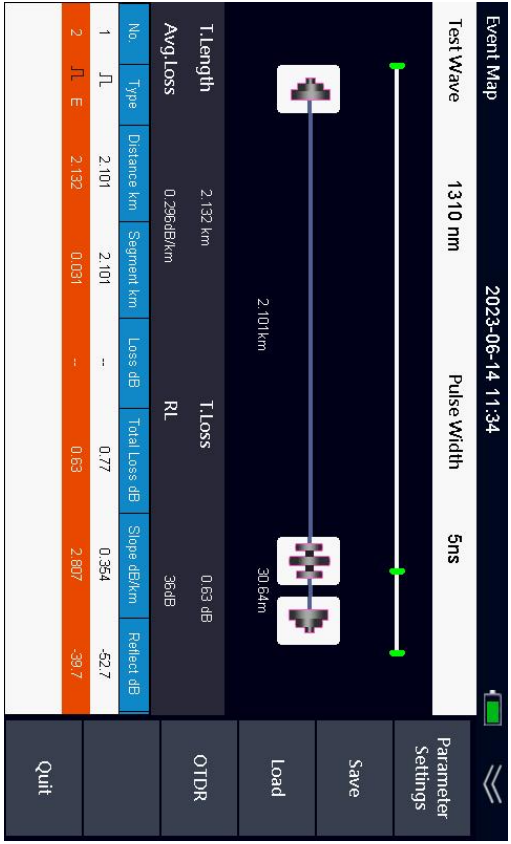
Event List

If you can not select event table , press **[SHIFT]** button . Then you can select event column by **[UP]** or **[DOWN]** button .

Name	Description
No	Event number from near end to far end
Type	Attenuation event or reflect event
Distance	The distance from first event to current event . Km in unit
Loss	The loss value at current event . dB in unit
Avg.Loss	The average loss/ km from first event to current event
T. Loss	The total loss from first event to current event . dB in unit
Reflect	The reflect signal value . dB in unit

View OTDR curve

. If you want to view the OTDR curve, you can press the **[OTDR]** button to enter the OTDR curve display.



Optical Light Source

Turn on Light Source

After enter the light source function , select start menu by **[LEFT]** button and **[RIGHT]** button . Press **[OK]** to turn on the light source . Once turned on , laser icon at middle of screen will be changed in red . Once laser source is turned off , the color will be back in gray.

Change Wavelength

Press **[RIGHT]** button to select wave menu and press **[OK]** button to change wavelength . Wavelength is according to model# of the Smart OTDR.

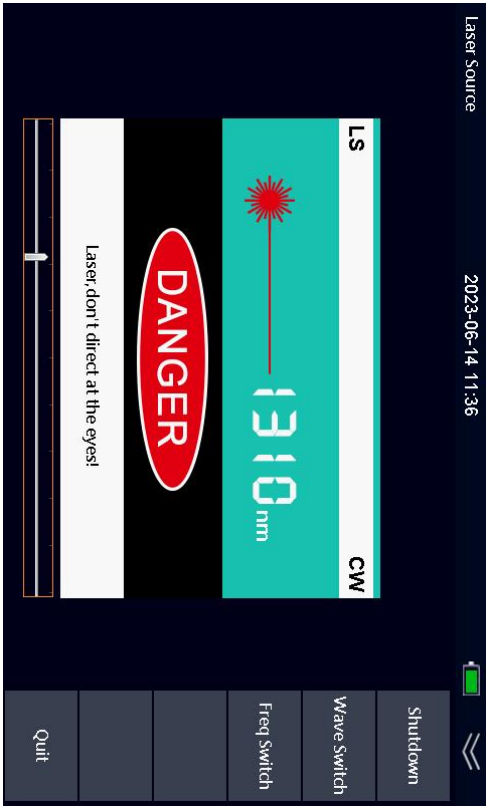
Change Frequency

Press **[RIGHT]** button to select Frequency menu and press **[OK]** button to change frequency. The optional frequency is CW, 270Hz , 330Hz , 1 k Hz , 2kHz.

Quit

Press **[RIGHT]** button to select Quit menu and press **[OK]** button to come back main page .

Warning:
Do not look at light source port .
Laser is not visible , but it is dangerous for human .



Optical Light Source

Optical Power Meter

Turn on optical power meter

Once you enter the function , optical power meter is turned on .

Change Wavelength

By **[RIGHT]** button to select wave menu , press **[OK]** button to change wavelength . The optional wavelength is 850nm , 1300nm , 1310nm , 1490nm , 1550nm and 1625nm .

Set REF

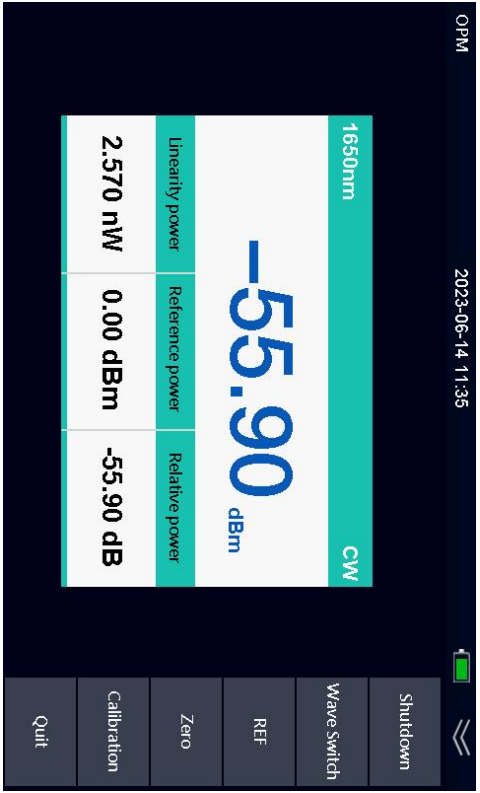
By **[RIGHT]** button to select REF menu , press **[OK]** button to set current optical power value to a reference .

Set Zero

By **[RIGHT]** button to select Zero menu , press **[OK]** button to set current optical power value to zero .

Quit

Press **[RIGHT]** button to select Quit menu and press **[OK]** button to come back main page .



Optical Power Meter

Visual Fault Locator

VFL Mode

The Visual Fault Locator supports 2 modes . One is CW, the other is 2Hz Flash . Press **[RIGHT]** button to select CW, then press **[OK]** to turn on CW mode . Press **[RIGHT]** button to select 2Hz menu , then press **[OK]** to turn on flash mode at 2Hz frequency.

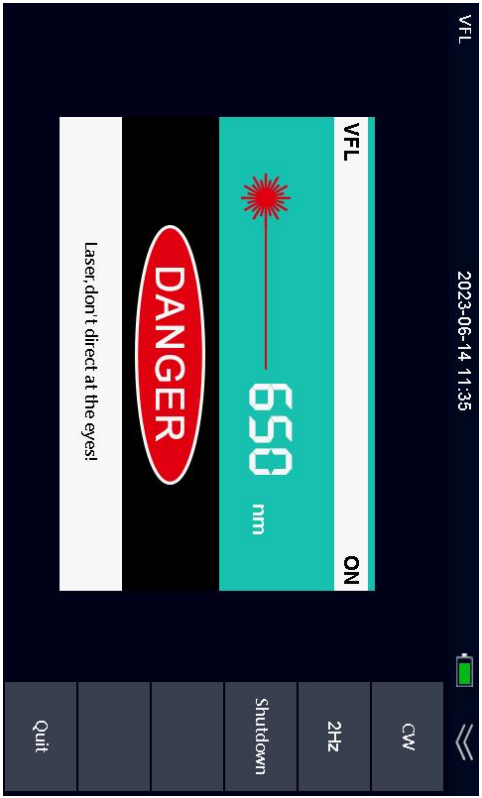
Turn off Visual Fault Locator

W hen you are going to turn off the Visual Fault Locator function , select start menu by **[RIGHT]** button . Press **[OK]** to turn off the visual fault locator. Once turned off , laser icon at middle of screen will be changed in gray. Once laser source is turned on , the color will be back in red .

Quit

Press **[RIGHT]** button to select Quit menu and press **[OK]** button to come back main page .

Warning:
Do not look at light source port .
Laser is not visible , but it is dangerous for human .



Visual Fault Locator

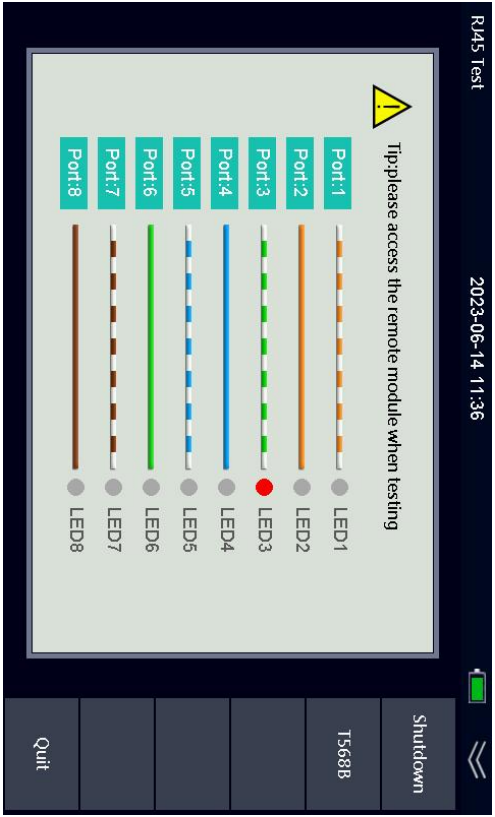
RJ45 Cable Testing

Turn on RJ45 cable Testing

After enter the RJ45 testing function , select start menu by **[LEFT]** button and **[RIGHT]** button . Press **[OK]** to turn on the RJ45 testing function .

RJ45 Cable Sequence Testing

Connect RJ45 cable into the instrument . At bottom of the instrument , there is a block . Take it out from the instrument and plug RJ45 cable into the block . You can see the cable sequence by check port number and LED number. Press **[RIGHT]** button to select T568B menu and press **[OK]** button to change T568B and T568A standard .



RJ45 Cable Testing

RJ45 Cable Tracking

Press **[RIGHT]** button to select Tracker menu , then press **[OK]** button . The instrument will send signal to RJ45 cable . You can search for RJ45 cable by signal receiver.

Quit

Press **[RIGHT]** button to select Quit menu and press **[OK]** button to come back main page .