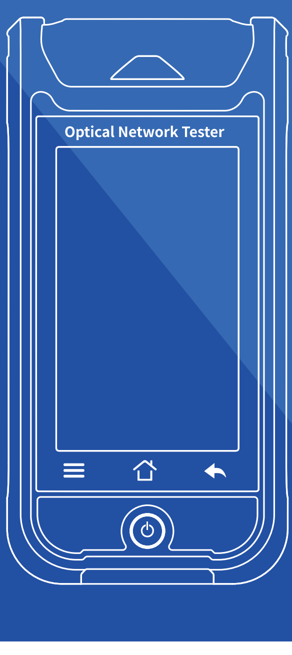
DIREKTRONIK

Item 20110795



Optical Network Tester

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! Except for 1625nm/1650nm, all the others are non-on-line test wavelength, it will cause damage to the internal devices of the instrument if it is used forcibly! 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℃~50℃. 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℃~45℃.
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.

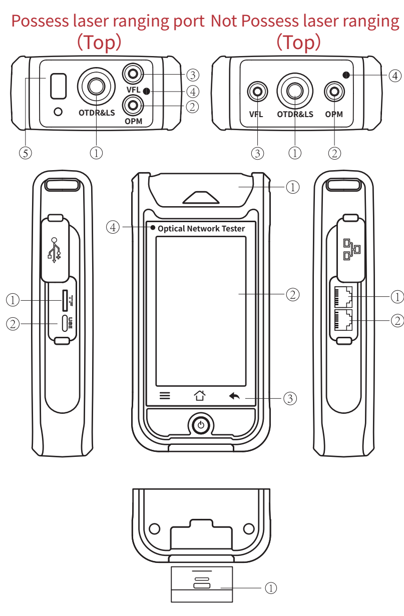
Fiber End Face Cleaning: Before testing, clean the end face of the tested optical fiber joint with alcohol cotton.

LCD screen: The display of this series of instruments is **4.3** inch color LCD. In order to maintain good viewing effect, please keep the LCD clean. The LCD can be cleaned by soft fabric.

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

Brief

1.



Top view

① OTDR/LS port
② OPM port
③ VFL port
④ LED flashlight
⑤ Laser ranging port(Optional)

Main view

① Dust Cover
② 4.3 inch Color LCD
③ Function Keys
④ LED Charging indicator

Left side

① TF Card Port
② Type C USB

Right side

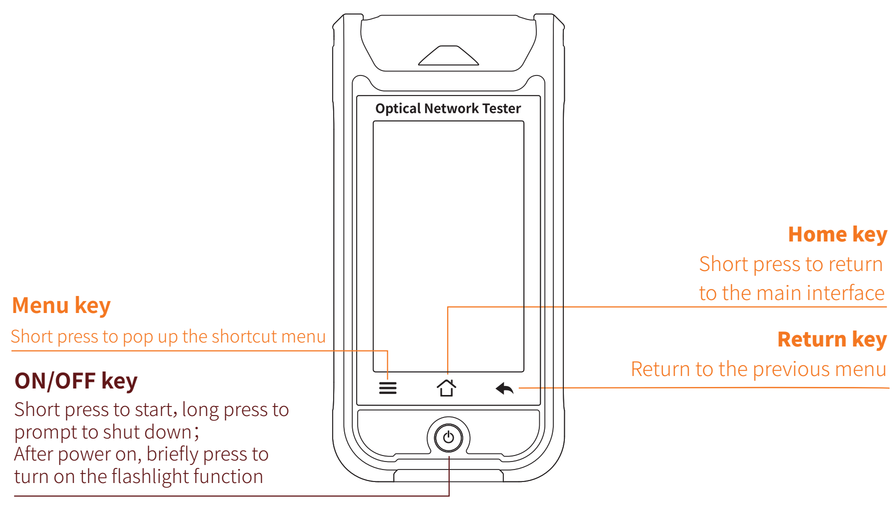
① RJ45 Tracker port
② RJ45 Sequence port

Bottom view

① RJ45 Remote tester

Functional Keys

2.



Home key
Short press to return to the main interface

Return key
Return to the previous menu

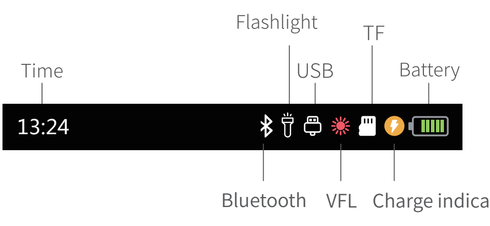
Menu key
Short press to pop up the shortcut menu

ON/OFF key
Short press to start, long press to prompt to shut down;
After power on, briefly press to turn on the flashlight function

Main Interface

3.

Turn on the instrument, enter the main menu, there are 11 function modules, touch the icon to enter the corresponding function interface.



Shortcut Menu

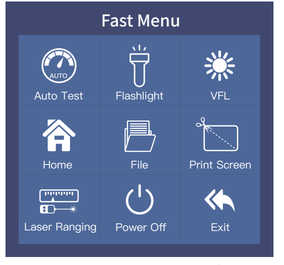
4.

Press the "≡" icon at the bottom of the screen to enter the quick operation menu, and press different function icons to enter the corresponding function interface or realize the corresponding operation functions.

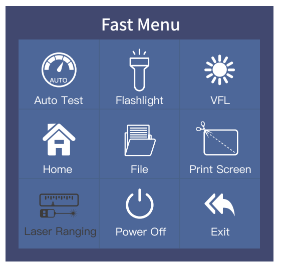
Screen capture: Capture the current interface, the picture will be automatically saved in the instrument, and the file name is the time when the screenshot is generated.

Note: The laser ranging function is optional, and the standard configuration does not have the laser ranging function.
Under the shortcut menu, the laser ranging is grayed out and cannot be operated.

Possess laser ranging function



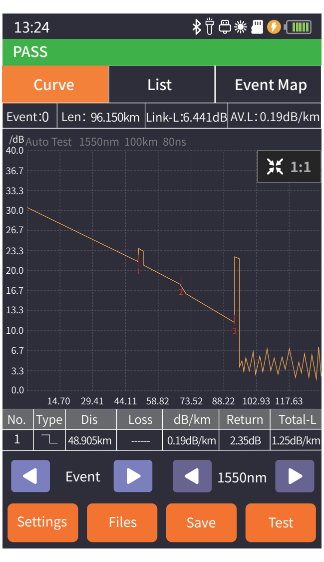
Not possess laser ranging function



Auto OTDR

5.

Auto OTDR: only need to set the wavelength, other parameters are automatically selected.
Settings: enter "Test Setting" / "Pass/Fail" setting interface
Test settings: set the wavelength, IOR and test time
Pass / Fail settings:
Avg. Loss Thre. : set the threshold of the average link loss
Event Loss Thre. : set the loss threshold of events in the link. If it is greater than this threshold, it will be judged as fail, otherwise it will be pass.
Files: open the saved curve data
Save: the file is saved in the folder with the name of the same day
Test: start OTDR automatic test



Event:0 | Len: 96.150km | Link-L:6.441dB | AV.L:0.19dB/km

Auto Test 1550nm 100km 80ns

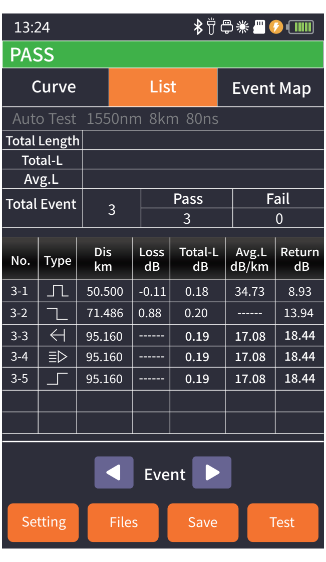
No.	Type	Dis	Loss	dB/km	Return	Total-L
1	⏌	48.905km	------	0.19dB/km	2.35dB	1.25dB/km

Attention Besides 1625/1650nm, pls don' t test online !

Auto OTDR List

6.

List: the test results are displayed in the form of a list.
Total length: the total length of the link
Total-L: the total loss of the link
Avg.L: the average loss of the link
Total Event: the total number of events, passed numbers, failed numbers
In the event list:
NO.: the order of the current event
Type: the type of the current event
Dis: the distance of the current event
Loss: the loss value of the current event
Total-L: the total loss from the start to the current event point
Avg.L: the average loss value from the start to the current event
Return: the return loss value of the current event point



Auto Test 1550nm 8km 80ns

Total Length			
Total-L			
Avg.L			
Total Event	3	Pass 3	Fail 0

No.	Type	Dis km	Loss dB	Total-L dB	Avg.L dB/km	Return dB
3-1	⎍	50.500	-0.11	0.18	34.73	8.93
3-2	⏌	71.486	0.88	0.20	------	13.94
3-3	⇤	95.160	------	0.19	17.08	18.44
3-4	⇛	95.160	------	0.19	17.08	18.44
3-5	⌐	95.160	------	0.19	17.08	18.44

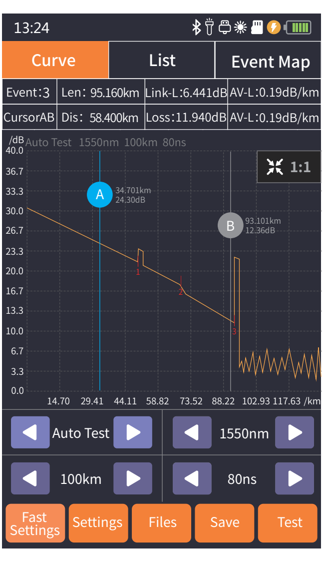
Expert OTDR

7.

Expert OTDR: set parameters such as wavelength, range and pulse width.
FastSetting: quickly set the test parameters of OTDR
Measurement mode: OTDR scanning event mode, AutoTest/RealTest/Avg.Test
Wavelength: select the test wavelength of OTDR
Test range: usually choose about 2 times of the length of the optical fiber to be tested
Test pulse width: 3ns~20000ns optional, different range, the optional pulse width is different

There are five types of events:

Reflective event ⎍
Non-reflective event ⏌
Rising event ⌐
Fiber splitter ⇛
Fiber end ⇤



Event:3 | Len: 95.160km | Link-L:6.441dB | AV-L:0.19dB/km
CursorAB | Dis: 58.400km | Loss:11.940dB | AV-L:0.19dB/km

Auto Test 1550nm 100km 80ns

OTDR Setting

8.

Test Setting: Avg.Time, Wave and Refractice Index are the same as those in Auto OTDR.
Refractive Indexx: provided by optical cable or fiber manufacturer.It is the key parameter for calculating the distance, and can not be set arbitrarily.
Unit:select the required unit, there are 3 options for mi/km/kft.
Real Time Test Analyse: Open/Cancel the real Time Test Analyse function at the end of real-time test
Event Loss Threshold: set the loss threshold of connection point, fusion point in the link that can be tested, between 0.2dB~30dB, and the default value is 0.2dB. Loss value larger than the setting value will be listed in the event list, or it will be ignored.
Reflectance Threshold: set the return loss threshold of the link reflection events that can be tested, ranging from 10dB to 60dB, the default value is 40dB.
End Loss Threshold: set the loss threshold after link that can be tested, ranging from 1dB to 30dB, the default value is 10dB.
Auto Save: Open/Cancel the Auto Save file function at the end of real-time test.
OK: save the set parameters
Default: restore factory settings

Avg.Time 5s
Wave 1550nm
Refractive Index (1550nm) 1.468000
Unit km
Real Time Test Analyse Open
Event Loss Threshold 0.20dB
Reflectance Threshold 40.00dB
End Loss Threshold 10.00dB
Auto Save Open

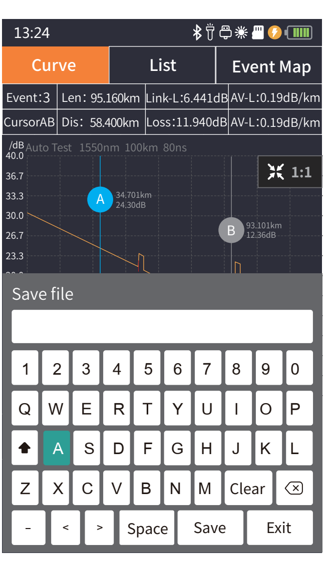
OTDR-File Save

OTDR-File Save

Press the【Save】key to save file after the test is complete, pop up the keyboard, enter the name of the file, and press Enter to save the file. If the automatic save (otdr) function is turned on"System Settings", it will be saved automatically after the test is complete without manual operation.

Auto-save function

Enter the system settings, open the auto-saving function, the instrument will automatically save the test files after the average or auto-test.

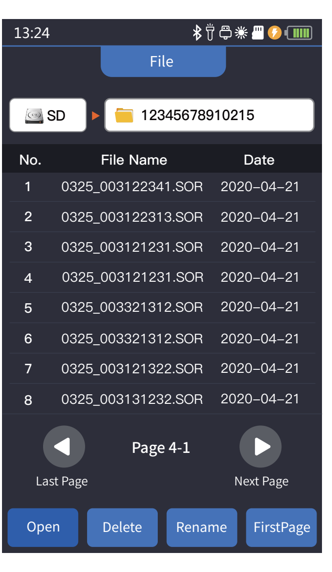


OTDR-File Operation

OTDR-File Operation

Press【Files】to enter the file list.

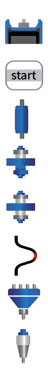
Head: back to the first page
Delete: delete the current file or folder
Rename: change the name of the current file or folder
Open: open the selected file or folder



No.	File Name	Date
1	0325_003122341.SOR	2020–04–21
2	0325_003122313.SOR	2020–04–21
3	0325_003121231.SOR	2020–04–21
4	0325_003121231.SOR	2020–04–21
5	0325_003321312.SOR	2020–04–21
6	0325_003321312.SOR	2020–04–21
7	0325_003121322.SOR	2020–04–21
8	0325_003131232.SOR	2020–04–21

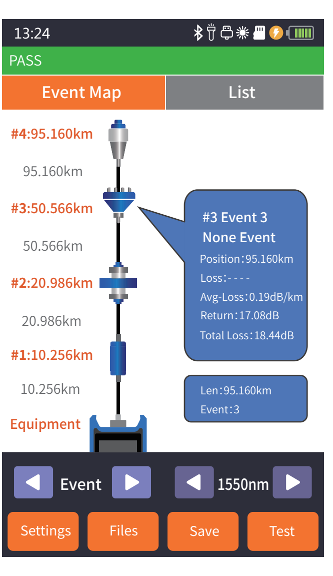
iLOM(Event Map)

The function can be operated 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.



- —— The starting point
- —— The starting point of the link added leading optical fiber in the front
- —— Descending events, mostly melting points
- —— Rising event, caused by the inconsistency of refractive index of fiber at both ends
- —— Connector, such FC/SC/LC connectors
- —— Optical fiber macro bending
- —— Optical splitter
- —— End of the link

Attention Besides 1625/1650nm, pls don' t test online !



OPM

The function is used to test the power of optical signal and insertion loss of various devices and optoelectronic components. It can identify and measure the frequency of 270/330/1000/2000Hz optical signal.

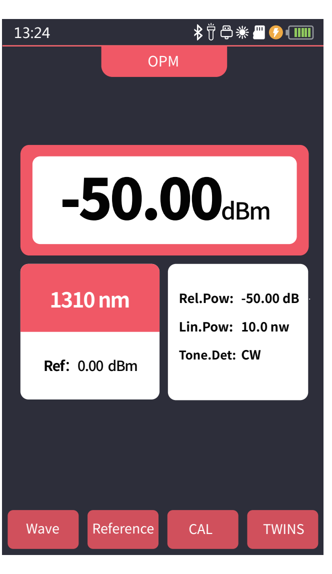
Wave: switch the working wavelength
Reference: set current power as reference power
CAL: enter the user calibration mode and calibrate with the standard light source

TWINS: identify the wavelength and frequency of the tested laser source. This function is used with the twins function of the laser source
-50~+26dBm: received power＞-10dBm
-70~+6dBm: received power＞-30dBm

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

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

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



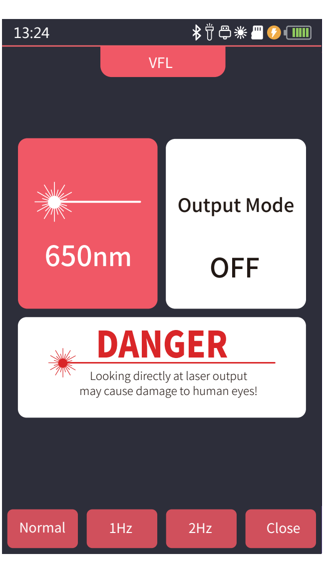
VFL

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.

Normal: turn on red light, continuous light
1Hz: red light flashes once in 1 second
2Hz: red light flashes twice in 1 second
Close: turn off red light

Warning

Looking directly at laser output may cause damage to human eyes!



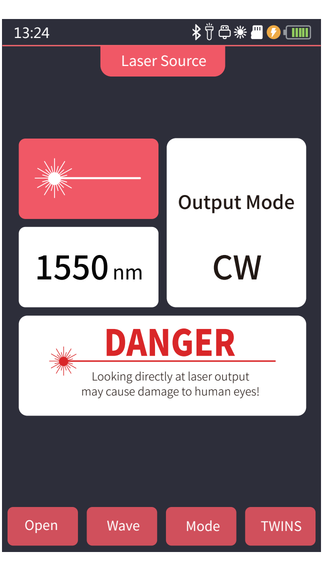
Laser Source

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.

Open: turn on the laser source
Wave: switch the wavelength, the output wavelength is consistent with OTDR
Mode: switch the modulation frequency of light source, CW/270/330/1000/2000Hz optional
TWINS: enter the paired output mode. This function is used with the twins function of optical power meter

Warning

Looking directly at laser output may cause damage to human eyes!



Optical Loss Test

Used to test the insertion loss of optical passive components.

The loss test steps are as follows:
1) First connect the LS and opm optical interfaces with standard jumpers, Press【Open】and press【Reference】after the power is stable.
2) Then connect the tested part to LS and opm optical interfaces with standard jumper, Press【Open】, and "relative power" is the insertion loss of the tested part.

RJ45 Tracker

Rj45 Tracker

Used for Rj45 tracker. After the line-finding function is activated, the cable being searched is touched by the distal end of the line-searching, and the sound of continuous "ticking and ticking" heard.

The equipment can withstand voltage and prevent burning, and can be directly charged for line finding. Ethernet switch, router and other weak current equipment with DC voltage less than 60V.

Start: open the RJ45 cable tracking function
Analog Mode/Digital Mode: different route tracking methods
Standard : Digital cable tracker

Attention

The cable tracker port is designated as the upper interface displayed in yellow. Incorrect connection will cause damage!

RJ45 Sequence

RJ45 line sequence measurement.

Measure the sequence of 8-core wires inside the network cable. Please connect to the remote module when measuring.

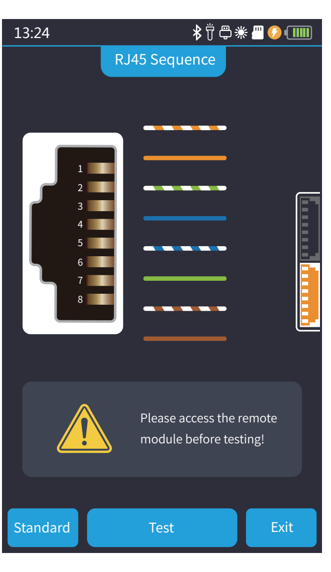
Standard: select different network cable standards
Test: start cable sequence test
Exit: exit the cable sequence test and return to the main interface

Warning

Please do not test online!

Attention

The cable sequence port is designated as the lower interface displayed in yellow. Incorrect connection will cause damage!



RJ45 Length

RJ45 Length test:Test the length of the network cable.

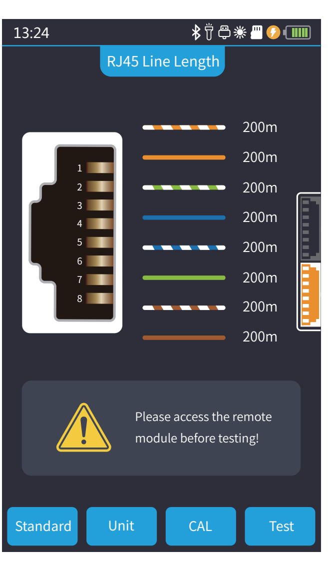
Standard: select different cable standards
Unit: switch different units
CAL: adjust the test result according to the actual length, and display length = last test result × correction
Test: start cable length test

Warning

Please do not test online!

Attention

The cable length port is designated as the lower interface displayed in yellow. Incorrect connection will cause damage!



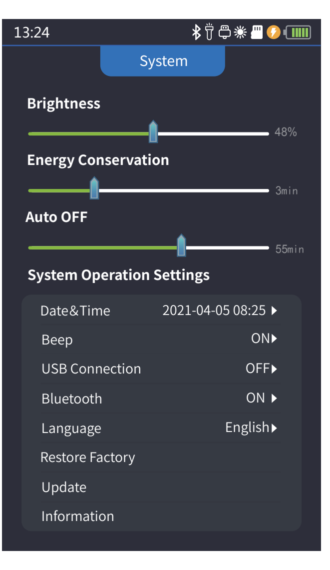
Laser Ranging(Optional)

Laser Range: the maximum test distance is 40 meters
Mode: Single/Continuous
Reference plane: select a different reference plane
— Starting from the bottom of the instrument, the test length includes the length of the instrument;
— Starting from the laser emission port of the instrument, the test length does not include the length of the instrument;

Unit: switch units, with m and ft options
Test: start length test

System

Brightness: slide the progress bar to adjust the backlight brightness
Energy conservation: slide the progress bar to set automatic screen power off without operation for 1-10 minutes
Auto OFF:slide the progress bar to set the automatic shutdown time without operation
Date & Time: set the instrument date and time
Sound: turn the touch tone on or off
Flashlight: turn the flashlight on or off
USB connection: connect to the computer after opening and transfer data
Bluetooth: turn Bluetooth on or off
Language: displays the native language type
Auto Save: automatically save the curve file after opening
Restore factory settings: restore default parameter values
Upgrade: software upgrade
Version information: view local information and alarm records



Date&Time 2021-04-05 08:25
Beep ON
USB Connection OFF
Bluetooth ON
Language English
Restore Factory
Update
Information

Faults and Solutions

The description in the right table is for reference only. Please refer to the new instruction for detailed usage. In the process of using the instrument, if you have any questions, you can contact the instrument supplier.

Fault description	Cause of failure	Solutions
OTDR cannot start normally.	The battery is dead.	Charge the battery and observe the charging indicator. If the red light is displayed, continue charging. Otherwise, contact the supplier.
OTDR cannot be charged normally.	Charging conditions are not met.	Charge the instrument at 0℃~ 50℃.
	Battery or internal circuit problem.	Contact the supplier to replace the battery.
Normal curve cannot be measured.	OTDR parameters are not set correctly.	Reset the correct test parameters.
	Fiber output end face is polluted.	Clean OTDR output end face.
	Output connector of OTDR is damaged.	Replace OTDR output connector.
	Optical output connector mismatch.	Replace the matched connector.
The noise of test curve is big and the waveform is not smooth.	The connector is not connected properly.	Re connect the appropriate output interface.
	The pulse width setting is too small.	Increase the test pulse width.
Saturation (flat top) appeared in the front of the test curve.	The pulse width is too large.	Decrease test pulse width parameter.
The reflection peak at the beginning of the test curve decreased slowly. There is a tailing phenomenon.	Fiber output end face is polluted.	Clean OTDR output end face.
	Output connector of OTDR is damaged	Replace OTDR output connector.
	Optical output connector mismatch.	Replace the matched connector.
The reflection peak at the end of the fiber cannot be measured.	The setting for test range is too small.	Increase test range value.
	The setting for pulse width is too small.	Increase test pulse width parameter.
False positive in curve analysis.	Test curve with poor quality. Event threshold setting is too small.	Increase test pulse width parameter, increase the event threshold value.
The tested fiber length is not accurate.	OTDR parameters are not set correctly.	Reset the appropriate parameters.
	The refractive index is not set accurately.	Reset fiber index.
The average loss value of optical fiber is not accurate.	The test curve front end with too long tail.	Clean OTDR output end face.
	Improper setting of cursor position.	Reset cursor point position.

Maintenance

Cleaning of connectors

The optical output interface of this series OTDR is a replaceable universal interface, and the end face must be kept clean during use. When the instrument fails to test the normal curve or the test result is not accurate, first consider cleaning the connector.

When cleaning, be sure to turn off OTDR and visible red light fault location function. Screw off the output port and wipe the connection end face with a special dust-free paper towel or cotton swab wetted with alcohol.

At the same time, please cover the dust cap after using the instrument, and keep the dust-proof clean at the same time.

Instrument screen cleaning

The display of this series of optical time domain reflectors is 4.3 inch TFT full view color LCD with capacitive touch screen. When using, do not click on the LCD with sharp objects, or the LCD screen may be damaged. When cleaning, clean the LCD screen with soft paper. Do not wipe the LCD screen with organic solvent, otherwise it may damage the LCD screen.