

VIEW600

User's Manual

OTDR

Please read this user manual before using the device.
Please keep this manual together with the device.

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VIEW600

User's Manual

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Preface

Safety symbols

To prevent personal injury and property damage from the misuse of the device, **INNO Instrument** uses the following safety symbols to show relevant information. Before using the device, make sure that you understand the meaning of these symbols. All symbols may not be found on this device. There could be safety symbols not marked in this manual.

Safety symbols used in this manual:

Dangerous  this symbol shows that this is a very dangerous operation and improper operation can lead to serious injury, even death.

Warning  this symbol shows that this is a relative dangerous operation and improper operation can lead to serious injury, even death.

Caution  This symbol shows that this a relatively dangerous operation, or has a certain harm. Improper operation can result in mild or serious injury and property loss.

Safety signs used in the manual and machine:

The following safety signs are marked on the device, near the operation position, or in the manual to offer relevant safety. Before use, be sure that you have grasped all the meanings and take necessary precautionary measures.

 This sign shows a forbidden operation. This slash circle is labeled in the operation position or around it.

 This sign means that you must be careful when doing a certain operation. This circle sign is labeled in the operation position or around it.

 This sign means a warning and to be careful. Relevant content appears inside the triangle or near it.

 This sign shows an explanation. Relevant content is listed in the box.

 These signs mean the labeled items should be recycled.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MPE Reminding

To satisfy FCC / IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

L'antenne installée doit être située de façon à ce que la population ne puisse être exposée à une distance de moins de 20 cm. Installer l'antenne de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'antenne.

La FCC des états-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.

Electrical safety

In order to cut down the harmful effects to human and lower the damage to the device, we put forward the following warning tips:

- Please don't use it if the product or the charger is damaged or ruptured.
- Only the external adapter which is offered by our company can be used. For other adapters, we can't guarantee its safety and performance.
- Please don't use the power adapter outdoors or in moisture place.
- Please be sure that the external input voltage confine to a permissible range.

Precautions! Be careful

Replace internal storage battery: Lithium battery is used as power source for this product. If it exceeds the service life and needs to be replaced, please contact with technical person for replacement.

External storage: The USB and SD card are used as external storage to preserve data for this product.

INNO Instrument (China) Inc. is not responsible for the loss of data.

Introduction

High-performance hardware and wieldy software used in View600 can shorten the process of installation, debugging and fiber distance maintenance.

This chapter will describe the features and basic operations of VIEW600 OTDR test unit.



Basic function

View600 is mainly used for fiber fault diagnosis, especially in FTTH application. Besides the basic OTDR function, optical power meter and light source function for fiber discriminating are also internally installed. In addition, View600 also owns visual light source (VLS/VFL) option function. With visual light source, it can carry out the visualization inspection to find fiber bending and fiber rupture in dead zone.

OTDR test

Based on Rayleigh scattering and Fresnel Reflection principle, OTDR can realize the relevant measurement on optical fiber link. It can also carry out distance measurement to fiber connection loss and fault location, thus it can determine the any point loss on the optical fiber. OTDR auto analysis function can automatically analyze measured traces to find the events on fiber, such as the reflection loss or the splicing point over loss threshold limit. Besides, the detected data can be also displayed in the event table on OTDR.



VFL/LS module

Visual fault locator which adopts $650\pm 20\text{nm}$ light source or visual light source can offer visualization method for fiber fault location. The red light from visual light source can be captured by human eyes, being able to directly locate fault location in fiber test dead zone or make fiber core calibration in multi-fiber cable.



Light source

LS (Stable light source)

Light source with different wavelengths (i.e. 1310/1550/1625nm) and multiple signal modulation modes in-built in View600 are able to satisfy demands in actual applications, as shown in the following picture.



Fiber microscope (Fiber Inspection Probe) module

The grind quality and cleanliness of optical connector can be detected by being connected external fiber inspection device to USB port.



OPM module

The optical power meter is used to measure absolute optical power meter or relative optical power loss through a span of optical fiber. This module can measure optical power of multi-wavelength.



Basic configuration

- Color TFT LCD
- AC adapter / charger, power cord
- Chargeable lithium battery
- Basic menu operation
- Shoulder belt
- Operation manual

Power supply

- External DC power supply: 19V input voltage; input current $\geq 3.42\text{A}$;
- Lithium battery supply: 11.1V, 6.7Ah, about 3h of fully charging time

Size and weight

- Size: 218 x 159 x 70 mm
- Weight: 1.84Kg (without battery) / 0.36kg (with battery)

Environment condition

- Operating environment: Altitude: 0 to 5000m, Temperature: -20°C to 60°C, Relative humidity: 0% to 95%, Max. wind velocity: 15m/s
- Storage environment: temperature: -10°C to 50°C, Relative humidity: 0% to 95%, temperature of battery storage for a long time: -20°C to 30°C

Safety warning and precautionary measures

It is very important that VIEW600 is designed for fiber optical testing, not applied for any other purpose. Since OTDR is high precision machine, it should be seriously carried. Please strictly comply with the following safety rules and general specifications when you use and carry it. Any violation to the warnings and cautions in this manual will cause deviation from the standard requirement for OTDR design, manufacture and use. Consequences caused by users' violation to the requirements should be borne by the users themselves.

Operation warnings

- DO NOT operate OTDR in a flammable or explosive environment.
- DO NOT disassemble or modify any component of the OTDR without approval. Component replacement and internal adjustments must be implemented by its authorized technicians or engineers.
- Please be careful when connecting battery adapter cable. Do not pull the cable when you take it down from the socket, but just hold the plug. Please make sure the cables are in good condition to avoid risk of fire or electric shock accidents.
- Please not expose OTDR to fire, electric shock, rain, or rain and other humidity environment.
- When the following cases occurred, please turn off OTDR and pull out the adapter immediately, otherwise it will lead to serious consequences, such as abnormal operation or fault beyond repair.
 - Fumes, peculiar smell or abnormal sound.
 - Liquid or foreign matters fall into the inner of OTDR.
 - OTDR suffers from strong vibration or impact.

Note: Please contact with maintenance center once you encounter the above cases. If timely measures are not taken, it will result in electric shock, fire accident, body hurt, machine scrap, even death.
- Please only use exclusive VIEW600 AC adapter. Inappropriate alternating current

power supply will lead to fumes, electric shock or facility damage; even it will result in fire accident, body hurt and death.

- Please only use exclusive AC power cord. Weighty items should not be placed on the power line, please not let power line heated or change the power line. Inappropriate or damaged power line will lead to fumes, electric shock and facility damage; even it will result in fire accident, body hurt or death.

Transportation and storage

- When moving OTDR to warm place from cold environment, try to move it in a gradual warming way, otherwise condensation will be produced in the inner of the device, resulting in adverse effects to the device.
- Please pack it when you don't use it.
- Please keep OTDR clean and dry.
- OTDR has been precisely calibrated and adjusted, please place it in carrying case for fear it will be damaged or polluted. Proper buffer box shock should be needed during long-distance transportation.
- Please don't expose the device in direct sunlight or in overheated environment.
- Keep the minimum humidity when preservation. Relative humidity should be less than 95%.

Appearance overview



Front panel

Keys and definitions	
Power	Switch (on / off)
MENU	Home menu

The upper connect panel



Port description	
DC power connector	Connect the adapter.
SMF port(Testing port)	VIEW600 testing interface, applied in OTDR and light source modules of VIEW600.
VFL port	Visual light source port.
USB port	Connect USB storage device / fiber end probe.
OPM port	Optical power meter port
RJ45	Network Interface

Back panel



Charging method



Remaining electric capacity can be represented as the following battery status when View600 is power-on.



Test port

The test port lies on the upper panel of the main body. There are two or three test ports on view600. The type of the test port connected by optical fiber depends on the testing application, while the number of the test port depends on the measured wavelength.

Follows are some universal connectors (FC/SC) in use for VIEW600:



Procedures for cleaning universal connector:

- Open the lid of the measurement port which needs to be cleaned.
- Take off the universal connector.
- Blow compressed air toward the top of connecting bar.
- Use a special cleaning belt or dust-free belt dipped in alcohol to clean the top of

connecting bar.

- Use compressed air to blow-dry the top of the connecting bar.
- Options: Turn off VIEW600. Observe the top of connecting bar by fiber inspection scope.



Top of the contaminated connecting bar



Top of the cleaned connecting bar

Connection test

Connect the test fiber

Testing ports are used to connect the tested fiber of OTDR / OPM / LS.

The process to connect tested fiber to the testing ports:

- Clean the fiber jumper (fiber connector) and connect it to the testing port.
- Clean the fibers to be tested.
- Connect the fiber jumper with the tested fiber.

Connect VFL

2.5mm general adapter is configured to the visual light source (VFL) and it can be connected with fiber jumper.

Notice: Visual light source (VFL) is optional, so maybe it is not installed in some devices.

The process to turn on the visual light source:

- Open the cover of visual light source.



- Insert the fiber jumper to the connector of VFL port.



Connect fiber inspection probe (fiber microscope)

Connect with external fiber end inspection probe from USB interface. Follows are the process to connect the visual light source:

- Open the cover of USB port.
- Connect fiber jumper into the connector of USB port.



Power on/off

Starting up:

Press and hold the power key until the green indicator illuminates on and the logo of INNO Company appears on VIEW600 screen, and then you can access to the following main menu, as shown in the following picture.



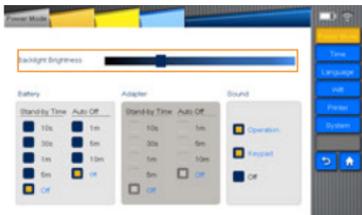
Power off:

Press and hold the power key until the screen of shutdown appears (grey logo).

Note: Under any circumstance can you press and hold the power key more than ten seconds to force shutdown.

Adjust the backlight brightness

Click the icon of Backlight Brightness to switch the background lightness. The lighter you select the color on the bar, the brighter the screen becomes. The OTDR of VIEW600 series supports brightness switch.

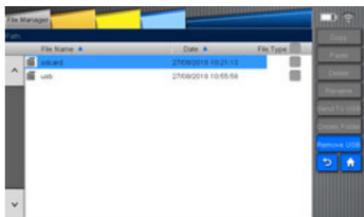


Software upgrading

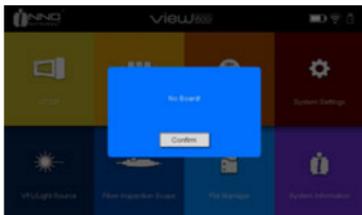
Please refer to 10.3.5 for detail information.

File copy

As the following picture shows, after inserting external storage device, you can check the path of external storage device it in file management interface, and then you can enable functions such as Copy, Paste and Delete.



The modules used in this device are interchangeable as needed. The OTDR module should be loaded at first before OTDR function is enabled. If not, a pop-up message will appear on the screen, as shown in the following picture:



After loading OTDR and turn on the device, please click OTDR icon on the home screen to enable OTDR function.

Introduction to the keys on OTDR screen (as shown in the following picture):



- | | |
|---|---------------------------|
| 1. Move cursor key | 12. Home key |
| 2. Move trace key | 13. Nextλ key |
| 3. Partial amplification key | 14. Save as key |
| 4. "1:1" trace recovery key | 15. Create report key |
| 5. Shortcut key for Trace amplification | 16. OTDR setting key |
| 6. Shortcut key for Trace shrink | 17. Save/Open key |
| 7. Full screen display key | 18. Start/stop key |
| 8. Boxes for selecting wavelength | 19. Trace information key |
| 9. Parameter setting key | 20. Measurement key |
| 10. Return key | 21. Event key |
| 11. Display screenshot key | 22. OTDR key |

Move cursor key

After Clicking the Move cursor key, you can change the position of the cursor on the screen by touching on the trace.

Move cursor key



Move trace key

Click the key for trace moving; you can move the amplified trace by touching on the screen.

Move trace key



Notice: Visual light source (VFL) is optional, so maybe it is not installed in some devices.

Partial amplification key

Click “partial amplification” key and then click the screen to select the area of trace displayed. This area will be amplified and displayed on “trace display small screen interface”.

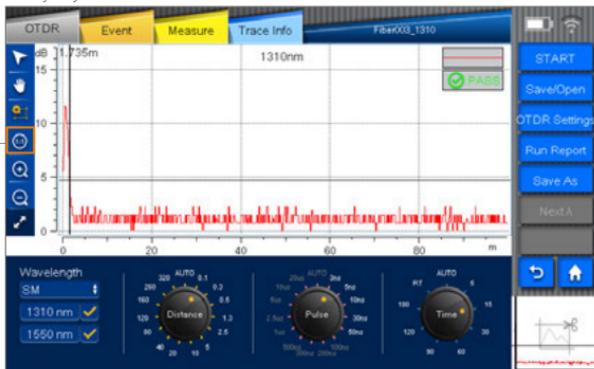
Partial amplification key



“1:1” trace recovery key

As shown in the following picture, after zooming in or out the trace, click “1:1” trace recovery key to reset the trace.

“1:1” trace recovery key



Shortcut key for trace amplification

Click the “Move cursor” key or “Move trace” key and then click the “Trace amplification” shortcut key to zoom in the trace horizontally. (Picture1) Click the “Partial amplification” key and then click the “Trace amplification” shortcut key to zoom in the trace vertically. (Picture2)



Picture 1



Picture 2

Shortcut key for trace shrink

Click the “Move cursor” key or “Move trace” key and then click the “Trace shrink” shortcut key to zoom out the trace horizontally. (Picture1) Click the “Partial amplification” key and then click the “Trace shrink” shortcut key to zoom out the trace vertically. (Picture2)



Picture 1



Picture 2

Full screen display key

Click the “Full screen display” key to display the trace in full screen, where the OTDR, event, measurement, and trace information are shown. Click this key again to revert the screen to the previous one.

The OTDR menu is shown as follows:



The Event menu is shown as follows:



The Measurement menu is shown as follows:



The Trace Info menu is shown as follows:



Parameter setting key

The wavelength, distance range, pulse width and average time can be set on the interface of measurement parameter setting.



OTDR key

As shown in the picture, click “OTDR” to enter into OTDR measurement setting interface.



Event key

As shown in the picture, enter into the event interface by clicking “Event” key. The information of events such as Type, Number, Location, Loss, Reflectance, Attenuation and cumulative loss (Sum) can be shown.

Please refer to Section 4.11.1 for “Loss”.

Please refer to Section 4.11.3 for “Reflectance”.

Please refer to Section 4.11.2 for “Attenuation”.

Cumulative Loss (Sum): It refers to the total loss from port of OTDR to a certain point.

Event loss+ fiber span loss= cumulative loss



In the “event” menu, there are some functions in it, such as “move the event point”, “change the event point”, “add”, “delete”, “maximize”, “set Ref”, “delete Ref” and so on.

1)The function of moving the event point is to move the mark line to a certain event point.

2)The purpose of changing the event point is to view the specified measured data in detail by taping the arrow keys left or right.

3)"Add" is used to insert event point in the selected position on the trace.

4)"Delete" is used to delete the inserted event point.

5)"Maximize" is used to amplify the event trace.

6)"Set Ref" is used to reset a starting point. All the data will be measured through the new set point. ("Reference starting point" can only be set between original point and event point. If there is no event point after original point, the starting point can't be set.)

7)"Delete Ref" is used to delete the starting point that had been set.

Note: Types of events are shown in the following table.

Types of event	Event icons	Descriptions
Start point of fiber cross segment		Start point of fiber span (regarded as the first event point)
End point of fiber cross segment		End point of fiber span (regarded as the last event point)
Short fiber		Used in measuring short fiber
Continuous fiber		Found fiber end continuous with sampling fiber end; insufficient sampling points
Analysis complete		Light is inadequate so that the analysis has to be stopped halfway
Non-reflective event		Events such as "loss"
Reflection event		Reflective event
Gain event		Gain event phenomenon; generally regarded as pseudo gaining.
Light emission level		Show the emitted light intensity.
Fiber span		Fiber without any event appearing.
Reflection events combination		Multiple reflection events appear together.
Echo		Echo or return wave phenomenon appear.
Reflection event (echo possible to occur)		Echo event possible to occur
Macro-bend event loss		Attenuation loss caused by fiber bend

Measurement key

As shown in the following picture, click “Measure” key to enter the measurement interface.

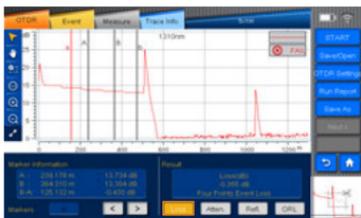


In the measurement interface, click on the letter to switch “Mark line”, which can be moved by pressing on “<”、“>”keys or touching manually. The loss and location of the Mark line will be displayed under the “Mark Line Information”, while the loss, attenuation, reflectance and ORL (Optical return loss) will be displayed under the “Result”.

Loss

Event loss (dB): OTDR can measure the degraded signal strength for RBS (Rayleigh backscattering) caused by certain event. Both reflective and non-reflective event can cause event loss.

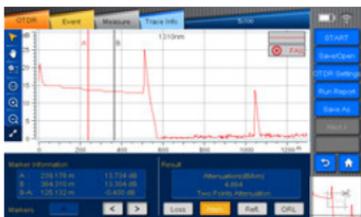
There are two algorithms on View600. Click “Loss” key to switch between the two algorithms.



1. Four points event loss: Event Loss can be computed by LSA. The loss displayed in event lists can be computed by 4 point method. Set the points as a,A,B and b, fitting 2 straight line from the areas of a point to A point and b point to B point, so as to produce event loss result from interception of the 2 lines.
2. Two points analysis method(TPA): Difference between these 2 lines on the Y-axis can produce the loss between these 2 lines. (Loss A-loss B)

Attenuation

Click “Measurement” key and then select “Attenuation” key.



The attenuation measured in two points refers to the RBS attenuation given by the distance function between 2 points (as per the fiber standard, it is labeled as dB/km). Only use these 2 points to calculate but there is no need to gain average value.

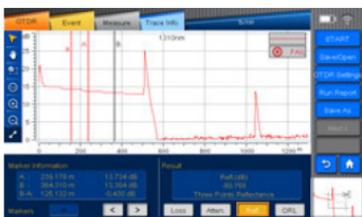
LSA: the attenuation between 2 points (distance loss) can be measured according to the backscattering data between the marker line A and marker line B by linear fitting. The LSA attenuation corresponds to the difference of power (dB) between 2 points on the fiber.

Compared with TPA (Two-point analysis method), the average measurement value can be gained by LSA. The higher the noise level is, the more reliable the LSA will be. But when events such as ORL happen between two marker lines, LSA should not be adopted.

Reflectance

Reflectance refers to the ratio between reflected light and incident light.

3- Point method for reflectance: 3 points refer to the points on the marker line a, marker line A and marker line B. The trace should be zoomed in and the marker line A should be located within the range of linearity before event to be tested; the marker line a should be located prior to the range of linearity before event to be tested; the marker line B should be located at the peak of wave of reflective event to be tested. All the reflectance of reflective events at the fault points on the fiber can be measured and merged.



Note: in real-time mode, the value of the reflectance may not be always accurate.

Optical Return Loss

ORL calculation:

- 1) ORL between marker line A and marker line B.
- 2) Total ORL between start point of fiber span and the end point of fiber span.



(Only the ORL of the single mode fiber can be calculated. In real-time mode, the value of the ORL may not be always accurate.)

Trace information key

As shown in the following pictures, enter the trace information interface by clicking “Trace info”. On page one display the measured data at a wavelength, while on page two display the measurement parameter setup at a wavelength.



Picture 1



Picture 2

The interface of trace information will show basic information about the measured trace, such as: file name, date, wavelength, pulse width, average time, refractive index, and backscattering and loss measurement method.

Start/Stop key

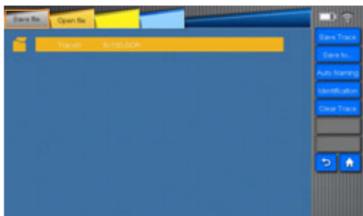
As shown in the picture, click “Start” key to begin measuring and click “Stop” to stop measuring.



Save/Open key

On “Save/open” interface, you can carry out the operation of loading/reading, saving, or clearing the measured trace.

Save file



There are functions such as “Save trace”, “Save to”, “Auto naming”, “Identification” and “Clear trace” in the “Save file” menu.

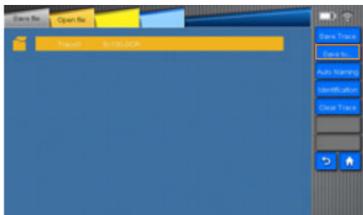
Save trace

As the following picture shows, the selected trace can be saved if “Save trace” icon is clicked.

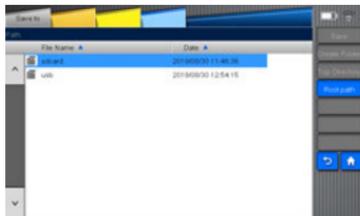


Save to

You can click “Save to” key to open the menu with saved directories, from which you can select one to save the file.



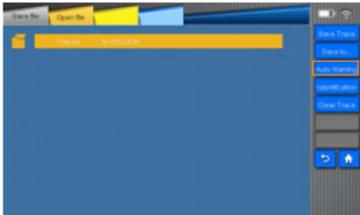
Picture 1



Picture 2

Auto naming

Enter the “Auto naming” menu from the “Save file” menu after selecting “Auto naming” key. And then you can set the file name, file format and the modes of sorting files.



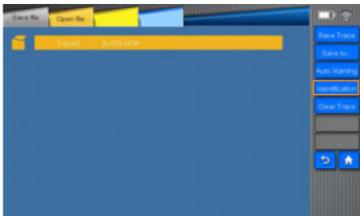
Picture 1



Picture 2

Identification

Enter the “Identification” menu from the “Save file” menu after selecting “Identification” key. And then you can set the items such as fiber ID, task ID and measurement ID.



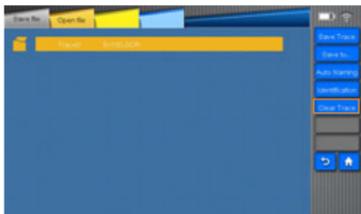
Picture 1



Picture 2

Clear trace

As shown in the following pictures, the trace can be cleared if “Clear trace” icon is clicked.



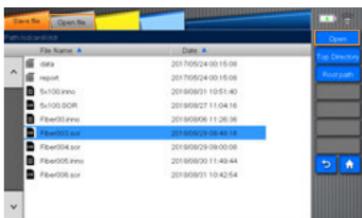
Picture 1



Picture 2

Open file

As shown in the picture, click “open file”, select the file and then click “Open” to open the file.



OTDR setting key

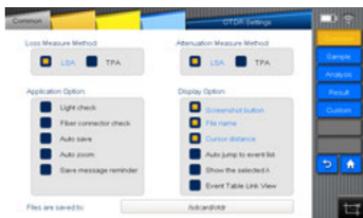
As shown in the picture, click “OTDR set” key to enter into OTDR setup interface.



There are “common setting”, “sample setting” and “analysis setting” “threshold setting” and “custom setting” options in OTDR settings.

Common Setting

“Common” is used to set “loss measure method”, “attenuation measure method”, “application option”, “display option” and “Path of the file to be saved”. Please refer to the following picture.



Introduction to the measuring methods:

TPA: Four points event loss: Event Loss can be computed by LSA. The loss displayed in event lists can be computed by 4 point method. Set the points as a,A,B and b: fitting 2 straight line from the areas of a point to A point and b point to B point: so as to produce event loss result from interception of the 2 lines.

LSA: TPA(Two-points Analysis method): Difference between these 2 lines on the Y-axis can produce the loss between these 2 lines. (Loss A-loss B)

Introduction about application option:

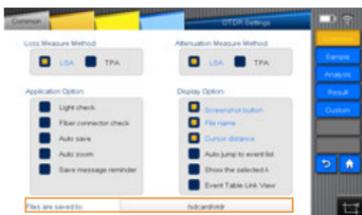
- Light check: Before setting the measurement, please check if there is communication light (other light except the test light source) in the fiber under test. If communication light exists, then error message will be shown and the testing will be terminated.
- Fiber connector check: Please check if the fibers under test are normally connected to the testing port. If connection problem exists, then error message will be shown on the screen.
- Auto save: It is used to automatically save the measuring information after checking is completed.
- Auto amplification: It is used to automatically amplify the point which has been selected as event point in measurement interface.
- Save message reminder: It is used to set whether to inform you to save the active measured file before next measurement started.

Introduction of the display option:

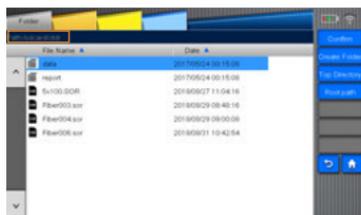
- 1) Screenshot button: Sets whether to display the screenshot button at the bottom right of the OTDR screen.
- 2) File name: Sets whether to display the file name for the active trace appearing on the OTDR menu.
- 3) Cursor distance: Sets whether to display the cursor locations at the upper left of the OTDR and Event menus where traces are displayed.
- 4) Auto jump to event list: Sets whether to switch to the Event menu after OTDR measurement and event analysis completed.
- 5) Show the selected λ : Sets whether to only display the active trace of the measured fiber at a selected wavelength.
- 6) Event on fiber span: Sets whether to display the measured data of a fiber span in the event table of the Event menu.

Save file by default:

Click the text box with directory name and then enter the default directory.



Picture 1



Picture 2

You can select other folder and then click confirmation key to change the default directory as needed. You can also click "Create folder" key and then click confirmation key to create a new default directory as needed.

Sample Setting

1. "Sample", including options of "Sample Set" and "Fiber Set", is used to set sample parameter and fiber parameter.

2. Sample Set: to set the Averaging time, Sampling rate and convert the Units.

1)Averaging Time: to set the measurement time by default.

2)Sampling rate: There are two setups of sampling rate, including normal and high resolution sampling rates. (Sampling frequency, i.e. sampling rate, refers to number of optical fibers required to collect and compose discrete signal from continuous signal per second, Hz as unit.)

Normal Sampling Rate (normal): it is a relatively common sampling rate. In this mode, fewer signals are collected, but sampling and analysis are faster in speed.

High Resolution Sampling Rate (HR): In this mode, more signals are collected, measurement distance is more accurate, but the sampling and analysis are slower in speed.

3)Unit Conversion: 3 types of unit are available on View600, i.e. m/km 、yd/ mile ft/kft

3.Fiber Set: To set the IOR, Backscattering (dB), Excess Length (%). Different numerical results can be obtained after analysis according to different settings.(Note: Excess Length (%): in the process of fiber laying, part of optical fiber should be reserved, so in fact the length of fiber is longer.)

1)IOR: It refers to the Index of Refraction of the trace, i.e. group index. The distance of the trace will vary depending on this parameter. You can input IOR directly on this device.

2)Backscattering (dB): it refers to the RBS of the trace. The reflectance and ORL of the trace will vary depending on this parameter.

3)Excess Length (%): To set the Excess Length of the trace. The distance of the trace will vary depending on this parameter.



Analysis Set

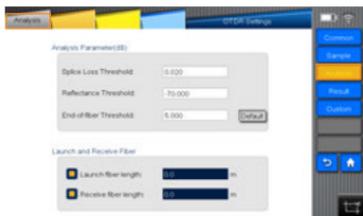
“Analysis set” is used to set the parameter of analysis trace.

- 1) Splice Loss Threshold (dB): To analyze the small non-reflective event on trace.
 - 2) Return Loss Threshold (dB): To analyze the small reflective event on trace.
 - 3) Fiber End Loss Threshold (dB): To analyze the important even loss on trace.
- All these types of loss will affect the signal transmission.

“Launch fiber and receive fiber”:

The beginning of the link under test will be moved back according to the distance setup when launch fiber length is set.

The end of the link under test will be moved forward according to the distance setup when receive fiber length is set.



Threshold Setting

The thresholds are set in order to judge the “event point” and the results of “pass/fail” regarding the “fiber span” are also displayed.

The results achieved after measurement are displayed with appropriate coloring based on the pass/fail status of each value.

The setup parameters will vary depending on different wavelengths.



Custom Setting

Custom range: You can set the measurement distance as needed. And the values of the distance you have defined can revert to the default values immediately when you click "Default" key.



Picture 1



User-definable range

Picture 2

Custom time: You can set the measurement time as needed. And the values of the time you have defined can revert to the default values immediately when you click "Default" key.



Picture 1



User-definable time

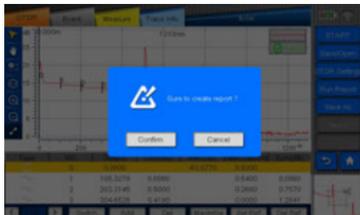
Picture 2

Create report key

As shown in the following picture, click “Create report” and then click the confirmation key in the popup message. Until message indicating file creating success pops up, you can find that a piece of PDF file has been created in the default directory.



Picture 1



Picture 2

Note: This function can only be enabled if the trace exists, otherwise this function can't be used.

Save as key

You can click the “Save as” key to enter the “Save as” menu, where you can edit the file name, file format, or select the file to the USB.



Picture 1



Picture 2

Note: This function can only be enabled if the trace exists, otherwise this function can't be used.

Next λ key

On the premise of obtaining two traces during dual-wavelength testing, as shown on the picture, you can click "Next λ " to switch the trace and its information. the file name, file format, or select the file to the USB.



Picture 1



Picture 2

Return key

If you want to exit from the current operating interface on different operation interfaces, click "return" key to fast return to the previous operation interface.



Main menu key (Home)

If you want to return to the main menu interface in different function modules, click main “Home” key to fast return to the main menu interface, then operate other modules.



Display screenshot key

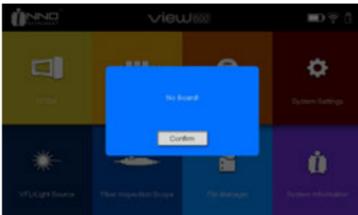
As shown on picture1, “Display screenshot” can be enabled to display the complete trace to facilitate customer’s macroscopic observation to the trace. Select “Display screenshot key” in OTDR settings, and then the screenshot key can be shown on “trace display screenshot interface”. Click it to operate screenshot.



SOLA is based on an application program of OTDR. The design purpose of SOLA is to simplify OTDR test process: you don't need set parameters or start any other program for analyzing multiple and complicated ODTR traces because with its advanced algorithm, SOLA can define dynamic measuring parameters and determine right numbers of traces acquired according to the tested network, furthermore, it can associate multiple pulse widths of wavelengths to locate and recognize the fault of the link with high resolution. All these functions described above can be realized only by pressing one key.

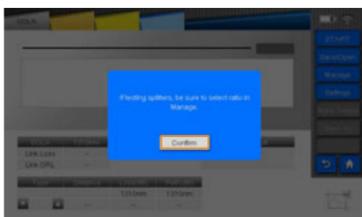
“SOLA” operation

In this device, the module is interchangeable as need. The corresponding SOLA module should be loaded at first before SOLA function is enabled. If not, a pop-up message will appear on the screen, as shown in the following picture:



After module is selected and loaded, turn on the device and then click “SOLA” icon on VIEW600 main interface to enable the SOLA function. (the SOLA performance will vary depending on the module changed)

Each time when you enter SOLA menu, pop-up message will appear: < Please specify SOLA Splitting Ratio before you use SOLA>. Then you can confirm to access to the SOLA menu.



SOLA menu



The Line loss and Return Loss for each measurement with each wavelength on the optical fiber link will be shown on the SOLA interface.

Line loss: It refers to the total loss of the fiber link measured.

Return Loss: it refers to the ORL on the whole fiber link.

Start/ Stop

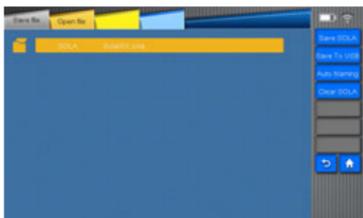
You can click "Start" to start measurement, or click "Stop" to stop measurement.



Save/Open

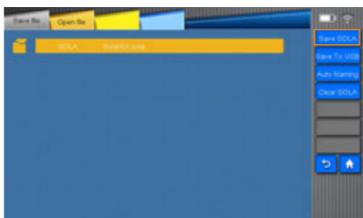
You can save and read the measured trace in the “Save/Open” menu.

Enter the “Save/Open” menu by clicking the “Save” key, as shown in the following picture.



Save SOLA

Save the trace of SOLA file format to the default directory.

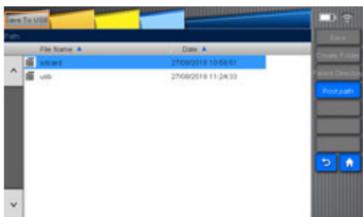


Save to USB

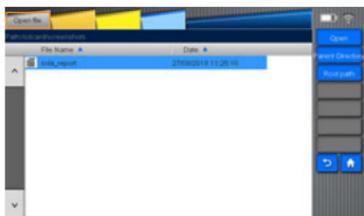
Save the file to the USB.

Click “Save” to save the file.

Click the Quit key to go back to the menu of file saved.



You can select the directory as needed by clicking “Top directory” or “Root path”.



Auto Naming

You can change name of the file and select PDF report and SOLA as a file format.



Clear SOLA

If you click the “Clear SOLA”, the file name and trace displayed will be cleared together.



Open File

You can open the saved SOLA file in the default directory or in the USB. Select “open” to open the selected file; Select the Quit key to go back to the menu of files.

Management

As shown in the picture, you can enable “management” function by tapping on “setup” key to set related measuring parameters such as “identification(identify)”, “link definition(line define)”, “link pass(line pass)”, “element pass(item pass)”.



Identification

If you enter the Identification menu by clicking “Manage”, the corresponding records of the files saved after SOLA measurement can be shown.



Picture 1



Picture 2

Line definition (Link info)

You can manually set fiber link definition, including selecting levels of splitting ratio, adjusting related measuring parameters.

IOR: It refers to the Index of Refraction of the trace, i.e. group index. The distance of the trace will vary depending on this parameter. You can input IOR directly on this device.

Backscattering (dB): it refers to the RBS of the trace. The reflectance and ORL of the trace will vary depending on this parameter.



Line Pass

You can modify related numeric, including adjusting the conditions of measurement link and the thresholds of pass/failed.



Element Pass

You can modify the related thresholds to judge whether the elements are passed or failed.

For example: When you want to modify max splice loss, directly click the value in intersection, and then you will see a pop-up box for value input on the screen (Relative message will be shown when the value entered exceeds the limit.)

When you select "apply to all wavelengths", the list of values will be applied in all wavelengths.



Picture 1



Picture 2

Settings

In the Settings menu of SOLA, you can select the wavelength, and set the lengths of Launch Fiber and Receive Fiber, as shown in the following picture.



Make report

Select the “make report” tab to save the current SOLA file in PDF format.



Save as

You can click the “Save as” key to enter the “Save as” menu, where you can edit the file name, file format, or select the file to the USB.



Screenshot

The displayed image can be captured via the screenshot key in the SOLA menu.



6

Optical Power Meter

Overview

The optical power meter of high accuracy is used to measure absolute optical power meter or relative optical power loss through a span of optical fiber. This module can measure optical power of multi-wavelength. It can be operated easily.

OPM Operation

- Connect the light source to OPM port with a fiber jumper connector.
- Click “OPM” in home menu to enter optical power meter interface, as picture shows.



Reference value (OPM onView600): you can set the reference value in the OPM interface. (You can set a value as a reference to calculate the current value of optical power which will be displayed at the first line in the circle.)

VFL and Light Source

7

Overview

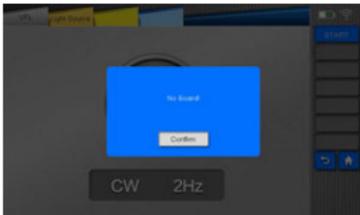
The types of source of VIEW600 include visual light source and light source.

Visual light source (VFL)

Visual light source equipped in View600 can offer visualization method for fiber fault location. The red light from visual light source can be captured by human eyes, being able to identify direct fault location in fiber test dead zone or make fiber core calibration in multi-fiber cable. The visual light source in View600 can launch two types of light source: continuous light source (CW light) and 2Hz blink light.

Stable Light source (LS):

In this device, the module is interchangeable as need. The corresponding module should be loaded at first before VFL and light source function are enabled. If not, a pop-up message will appear on the screen, as shown in the following picture:



After you have loaded the module, you can click "Light Source" to enable the light source function.



The light source module can provide invisible light source(the wavelength and power depend on the type of module selected) and the types of light include CW light, 1KHZ light, 2KHZ light , 1KHZ blink light , 2KHZ blink light.

Visual light source operation

- Connect the tested fiber to the port of optical source.
- Tap the light source icon from Home menu to enter into the visual light source interface, as the following picture shows.



- Click “CW” or “2Hz” to select and switch light source. The name that displayed on the message bar of the interface are the selected light source.(“CW” is the continuous light while “2Hz” is blink light)
- Click “turn off” to turn off the light source.

light source operation

- Connect the fiber to be tested to the light source port.
- Tap the light source icon on the main interface and then select “light source” to enter into the invisible light source interface; please refer to the following picture.



- Select wavelength of light source (1310/1550/1625 nm) by tapping on the upper left side of the screen; select emitting light source modes (CW/1KHZ/2KHZ/1KHZ+blink/2KHZ+blink) by tapping on the lower left side of the screen; after that, tap “open” key to open the invisible light source.
- Turn off “light source”: please tap on “close” key on the right side.

Warning: The eyes' focusing on VIEW600 light source or the fiber end connected to light source is forbidden, which may cause damage to eyes.

8

Fiber Microscope

Overview

The grind quality and cleanliness of the fiber connecting end face can be inspected with the aid of the magnified surface view displayed on the screen of VIEW600.

Start fiber end inspection

After connecting the fiber inspection probe, click “Fiber Microscope” on VIEW600 main interface to enter into the inspection interface. Please refer to picture 8-1.



Notice: If the fiber inspection probe has not been connected successfully to the View600, the message of “Please connect fiber inspection probe.” will appear. However, the GDM file can still be opened.



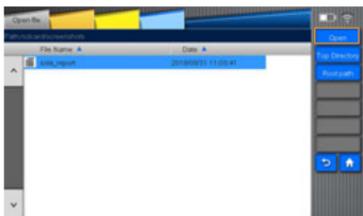
The function of fiber microscope

The functions of the fiber inspection probe (fiber microscope) include “screenshot/real time (video)”, “open”, “save”, “Align center”, “Zoom”, “save report”, “Result” and “identification”.

- “screenshot/real time (video)” function is a premise of “save”. After connecting successfully the device, you cannot enable “save” function until “screenshot/real time” soft key changes to “real time”.



- “Open” function is used to open the files already saved.



- “Align center” function is used to place the image in the middle of the screen.
- “Zoom” function is used to amplify the active displayed image.



- “Save report” function is used to save an analysis report of file.



- “Result” function is used to analyze the active image and show the results in the form of tables.

Layer (um)	Scratch			Default		
	Size (um)	Threshold	Total	Size (um)	Threshold	Total
A. Core (0.25)	0/0/0/0/0	0	0	0/0/0/0/0	0	0
B. Cladding (0.125)	0/0/0/0/0	Any	0	0/0/0/0/0	Any	0
C. Buffer (0.20-1.0)	--	--	--	--	--	--
D. Jacket (0.50-200)	0/0/0/0/0	Any	0	0/0/0/0/0	Any	0

- “Identify” function is used to set related information displayed, the contents of which are user-definable.

Identification	Value	File Name
Task ID		✓
Client		✓
Company		✓
Note		✓
Location A		✓
Location B		✓
Case ID		✓
Fiber ID		✓
Connector ID		✓

Check the preserved image

- Click the file management icon on the main interface.
- Select the image saved path (the saving path for VIEW600 is set to be: sdcard\Fiber_Microscope).

File Management

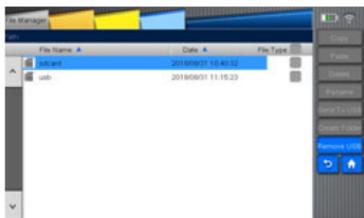
9

Overview

“File management” is used to view the saved data and carry out operations like “copy, delete, rename, create folder”. All the operations to the files should be carried out in directories of the internal storage and USB storage (The directories of VIEW600 are sdcar and usb).

Start file management

Click “File Manager” on main interface of VIEW600 to enter into the file menu.



File manager function

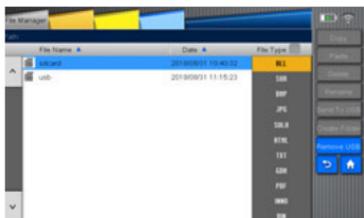
There are following items in this menu, such as File Name, Date, and Types of File.

File Name: Click the File Name to sort the files by name.

Date: Click the Date to sort the files by date.

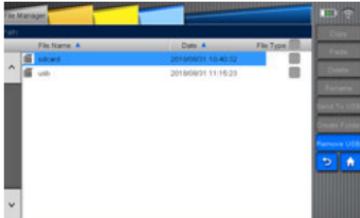
File Type: Click the File Type to sort the files by their types.

The types of the file include: SOR, BMP, JPG,SOLA,HTML,TXT,GDM,PDF,INNO, BIN



“Operate” Function

There are functions of “copy”, “paste”, “delete”, “rename”, “Send to USB”, and “create folder” and “remove USB” included in operation interface.

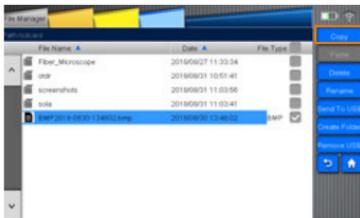


- **COPY/PASTE key**

Select one file and then click Copy to copy one file. Or, if users need to select all the files to copy all of them, just select the box after the File Type.

Operating Steps:

- a) Click FILE TYPE to select the file type needed to be copied
- b) Click and access to the root directory (sdcard /usb directory)
- c) Click PASTE after selecting subdirectory or file (PASTE cannot be executed if no subdirectory or file being selected)
- d) Select the target directory needed to be copied
- e) Click PASTE. However, PASTE cannot be executed under the same directory. The notice “You can’t copy file to the same directory!” will appears on the screen.

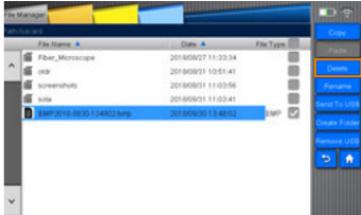


- **DELETE key**

It can delete the files or subdirectory in the directory.

Operation steps:

- a. Click FILE TYPE to select the file type needed to be deleted
- b. Click and access to the root directory (sdcard /usb)
- c. Select folder or files to execute DELETE

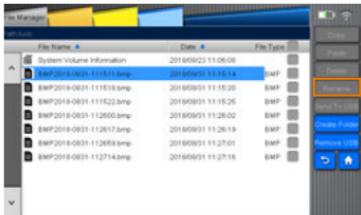


- **RENAME key**

It can rename folder, file and file format.

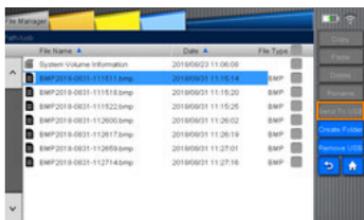
Operating steps:

- a. Click FILE TYPE to select the file type needed to be renamed.
- b. Click and access to the root directory (sdcard /usb)
- c. Select folder or file to click RENAME, access to the input interface to edit the name.
- d. Press "ENTER"



- **SEND TO USB key**

The key of Send To USB is used to send the files or folders selected to the USB.

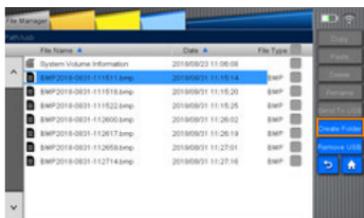


- **CREATE FOLDER key**

It can create a subfolder under the current folder.

Operation steps:

- a. click and access to the root directory (sdcard /USB directory)
- b. Click NEW FOLDER to enter into the input interface, and then input the folder name then press ENTER to create a folder successfully.

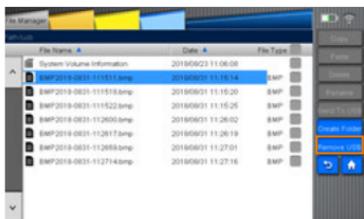


- **REMOVE DEVICE key**

Users can use this key to remove the USB.

Operating steps:

- a. Click Remove USB key.
- b. The function of the key of Remove USB is disabled.



Overview

The system setup function that VIEW600 has offered can let the user modify the system parameters as required.

System setting

Click “Setting” on the main interface of VIEW600 to enter into the “system setup” interface.



Functions of system settings

There are functions such as “standby and brightness”, “time”, “language”, “WIFI”, “printer”, and “system maintain” in VIEW600 system setting menu.

Standby and Brightness

- 1) Backlight brightness Set the background brightness for the screen.
- 2) Battery and adapter Set the stand-by time and auto power –off time when using battery or adapter.
- 3) sound Set the measurement warning sound and key warning sound.



Time

You can use “time” function to set the time that is displayed on the device.



Language

The “language” function is used to set the languages displayed on the screen.



You can select “Import Profile” to configure the multi-languages by the PC.



WI-FI

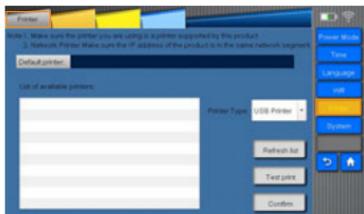
“Wi-Fi” function can be used to connect the device to local area network (LAN), realizing wireless internet.

Under this function, along with upper computer, wireless file transmission can be realized. (Please refer to the Wi-Fi Instruction for the usage in detail.)



Printer

You can enable the default printing function after you select the “Printer” key.



Picture 1



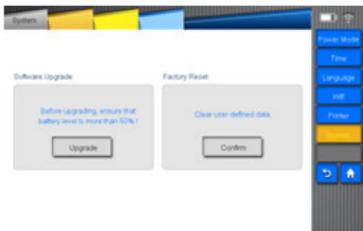
Picture 2

You can select from two printer modes, i.e. Network printer and USB printer.

Click “Refresh list” after the device connected with the printers, and the real-time refreshed connected printers are displayed in the menu of “List of available printers”, from which you can select a printer as needed, click conformation key and then you can see the printer name beside the “Default printer” . Finally, you can click “Test print” to print a piece of print test page.

System maintenance

There are two functions in “system maintenance”, which are “software upgrade” and “factory reset”. Please refer to picture.



- “Software upgrade” can be used for the software upgrade and degradation.
Operation steps:
 - Insert the USB with file to be updated and power adapter to VIEW600 port respectively.
 - Click “System maintain” on system setup interface.
 - Click “Upgrade”.then it will show upgrade notice; and then click “confirm” to carry out upgrade operation.

Note: Before upgrading, ensure that battery level is more than 50%!

- “Factory reset” is used to restore the system parameters to the original.

System information

As shown in picture, this interface displays the information about the products and manufacturer.



If you select to pay by installment, the corresponding information will appear on the screen and you can also access to the "Ultimate key" menu.



图 1



图 2

Appendix

Structure requirement

- Display screen: 7inch (800 x 480)
- Indicator light (2 pieces)

Indicator light	State	Function
Charge light (Red)	Long-time onlight	Full charged
	2Hz blink	Adapter power supply
	1Hz blink	Battery charge
	off	Take out the adapter, battery power supply.
Power light (Green)	Long-time on light	Starting up operation
	Blink	Low electric quantity
	off	Power off

- Keys (11)

Names of buttons	Quantity
POWER	1
HOME	1

- Operating time>8h, charging time<4h

Hardware interface requirement

- DC INPUT: Power port
- USB port (2 pieces): Save data and connect the fiber inspection probe
- Mini port B: Internally installed, programming
- Serial port: internally installed, software debugging
- Optical interface: interchangeable port (FC, SC)
- VFL port: 2.5mm universal interface
- OPM port:FC
- SD card slot: Internally installed, SD card start, program storage

Software interface requirement

- Interface mode: button input or touch screen input
- Operating platform: Linux 2.6

Operating environment requirement

- Temperature requirement:

Working temperature: -10°C ~ 50°C

Storage temperature: -20°C ~ 60°C

- Humidity requirement: (general standard)

Operating humidity: 0% ~ 45%, non -condensation

Storage humidity: 0% ~ 95%, non -condensation

Performance requirement

Module	Technical index	Value
OTDR	Please refer to the parameters of OTDR module purchased.	
Sola	Please refer to the parameters of OTDR module purchased.	
VFL module	Operating wavelength	650 ± 20nm
	Power	20MW
	Interface	2.5mm universal interface
	Operating mode	1) Turn off 2) Continuous light 3) Blink: 2 to 3s
Fiber Microscope	Interchangeable port	(FC,SC) / PC (FC,SC) / APC
OPM	Detector type	InGaAs / GeGeX
	Type of fiber interface	Support 2.5mm universal interface
	Wavelength calibration	850 / 1300 / 1310/ 1490 / 1550 / 1625 /1650 nm
	Measurement range	-70 to +6dbm
	Accuracy	0.01dB
	Units displayed	dB, dBm, nW, uW, mW

Term list

This term list gives explanations about fiber and related devices.

B

- Backscattering: The scattered light which opposes to the previous direction of propagation.
- Bandwidth: The function size transmitted by waveguide drop 3db below the zero frequency. The lowest frequency bandwidth is the function of waveguide length, but it is not in direct proportion to the length.

C

- Coating layer: A kind of material coated on the optical fiber in wire drawing process to prevent fiber damaged from environment or improper operation.
- Cladding: Insulating materials coated on the fiber cores.
- Cable pipelines: The pipeline for cable to pave or from it the pipe can be pull.
- Cable bending radius: Cable bending radius refers to the stress load that cable suffered, free bend refers to the admissible diameter for it lies under no burdened state.
- Cable module: The kind of cable installed by connectors on one end or both ends, this kind of cable often used as the interconnection by cable system and optoelectronic devices. If there is only one end installed by the connector, we call it "tail end fiber". If both ends installed, we call it "bridging cable or wire jumper".

D

- Decibel (dB): Standard unit used to describe the optical power gain or loss.
- Dielectric: It belongs to nonmetal type, so it is non-conducting, glass optical fiber is deemed as a kind of dielectric. Medium cable contains no metal parts.

F

- Fiber core: The central area where light propagates through it. Fiber core eccentricity ratio: The core center displacement measurement relative to the cladding center.

F

- Fiber core: The central area where light propagates through it. Fiber core eccentricity ratio: The core center displacement measurement relative to the cladding center.
- Fiber core ellipticity: The deflected measurement for aspheric fiber core and perfect circle.

I

- Insertion loss: Due to the insertion of optical module (the connector or coupler in optical transmission system) that result in attenuation.

M

- Material dispersion: The dispersion resulted from material refractive index or the correlation with light speed and wavelength in this material.
- Module (1): Used to describe the terms about the independent light path which penetrate the fibers, such as multimode and single mode.
- Module (2): Scattered light wave can transmitted in optical waveguide, it is the differential equation eigenvalue featured in waveguide. There is only one module which can transmit in single mode optical fiber called "basic mode". But there are hundreds of modules in multimode fibers; they are different in graph and propagation speed, the upper limit of module quantity determined by fiber core diameter and waveguide value.
- Monochrome: Composed by single wavelength, in fact radiation is not the ideal monochrome. The best situation is to display wavelength in narrow-band range.
- Multi optical fiber and cable: The cable contains two or more pieces of optical fiber.
- Multimode fiber: A kind of optical waveguide. Through it, light can be transmitted by multimode. Typical fiber core or covering size is measured in micrometers. (62.5 / 125).

N

- Nanometer: A kind of measurement unit, equal to nm, often used to describe wavelength, such as 1300nm.

O

- OTDR: OTDR transmit impulse to fiber to measure backscattering. Through analysis the track can determine the event.
- Optical Time Domain Reflectometer (OTDR): A kind of device used to measure the optical features in optical pulse transmission, and make measurement of the back scattering light and reflected light as the time function. This device can also be used as the function relationship to estimate damping coefficient and distance, determine the flaw and other part loss.
- Optical fiber: A kind of threadlet or fiber made by any derivative light dielectric.
- Optical fiber link: Optical fiber transmission channel designed to connect either terminals or tandem with other channels.
- Optical cable: The module constituted by the materials which can protect the optical fiber and resist to machine or environment damage.

P

- Plug-in board: Network devices in the bracket, such as OTDR or the switches.
- Photoelectric device: A kind of device can response to fiber power, send or adjust optical radiation, or used in internal work. It can also be used as any device in photoelectric conversion.
- Port: Located at the port of the plug-in device to connect the wire jumper or the fiber.
- Peak wavelength: The wavelength when the source optical power meter maximizing.

S

- Single mode optical fiber: The fiber with small size core diameter called "single mode optical fiber, usually it is 9 μ m. Among them only the single mode and basic mode can transmit this kind of fiber. This kind of optical fiber is particularly applied to long-distance bandwidth transmission, for the bandwidth is only restricted by dispersion.

T

- Transmitter: A kind of driver can switch electric signal to optical signal.
- Transmission loss: Total loss in system when transmission happens.
- Telecom cabinet (TC): It is an enclosure space placed by cross-linked fiber terminal and telecom settings. Equipment cabinet is regarded as cross-link by main wiring and horizontal wiring.

W

- WDM: Transmit several signals in optical waveguide with different wavelengths at the same time.

Maintain and technical support

Any operation, such as calibration, maintenance or repair of the device can only be carried out by qualified maintenance technicians. Please contact the engineers of [INNO Instrument](#). You can also consult any question through the following website.

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VIEW 600 OTDR Module

OTDR	VIEW610-1	VIEW610-2	VIEW610-3	VIEW620-1	VIEW620-2	VIEW620-3
Dynamic Range	1310/1550 nm	1310/1550/ 1625nm	1310/1550/ 1625nm live port	1310/1550 nm	1310/1550/ 1625nm live port	850/1300 nm
	30/28 dB	30/28/28 dB	30/28/28 dB	36/35 dB	36/35/35 dB	27/29 dB
Distance Range	1.3, 2.5, 5, 10, 20, 40, 80, 120, 160, 360 KM					
Pulse width	3ns, 5ns, 10ns, 30ns, 50ns, 100ns, 200ns, 300ns, 500ns, 1us, 2.5us, 5us, 10us, 20us					3ns, 10ns, 20ns, 50 ns, 100ns, 200ns, 50 0ns, 1us,
Event Dead zone	1M		0.7M		0.5M	
Attenuation Dead Zone	4M		3M		2.5M	
Distance Uncertainty	$\pm (1M + \text{distance} * 2.5 * 10^{-5} + \text{sampling resolution})$					
Loss Accuracy	$\pm 0.1\text{dB}$ or $\pm 0.05\text{dB/dB}$					
Sampling Points	256 000					
Resolution	0.04-10.24M					
Optical Source						
Wavelength	1310/1550 nm	1310/1550 /1625 nm		1310/1550 nm	1310/1550/1625 nm	850/1300 nm
Modulating Signal	CW/2/1KHz/2KHz/1KHz+blink/2KHz+blink					
Stable Source Output Power	$\pm 0.04@20^{\circ}\text{C}@15\text{min}$ (dBm)					

OTDR	VIEW620-4	VIEW630-1	VIEW630-2	VIEW630-3	VIEW630-4	VIEW630-5	VIEW630-6	
Dynamic Range	850/1300/1310/ 1550nm	1310/1550 nm	1310/1550/ 1625nm	1310/1550/ 1625nm live port	1310/1550/ 1650nm live port	1625nm live port	1650nm live port	
	27/29/36/35 dB	39/38 dB	39/38/39 dB	39/38/39 dB	39/38/39 dB	39 dB	39 dB	
Distance Range	SM: 1.3, 2.5, 5, 10, 20, 40, 80, 120, 160, 360KM MM: 1.3 2.5 5 10 20 40 80KM	1.3, 2.5, 5, 10, 20, 40, 80, 120, 160, 360 KM						
Pulse width	3ns, 5ns, 10ns, 30ns, 50ns, 100ns, 200ns, 300ns, 500ns, 1us, 2.5us, 5us, 10us, 20us							
Event Dead zone	SM: 0.7 MM: 0.5	0.5M						
Attenuation Dead Zone	SM: 3 MM: 2.5	2.5M						
Distance Uncertainty	$\pm (1M + \text{distance} * 2.5 * 10^{-5} + \text{sampling resolution})$							
Loss Accuracy	$\pm 0.1\text{dB}$ or $\pm 0.05\text{dB/dB}$							
Sampling Points	256 000							
Resolution	0.04-10.24M							
Optical Source								
Wavelength	850/1300/1310/ 1550 nm	1310/1550 nm	1310/1550/1625 nm		1310/1550/ 1650 nm	1625 nm	1650 nm	
Modulating Signal	CW/2/1KHz/2KHz/1KHz+blink/2KHz+blink							
Stable Source Output Power	$\pm 0.04@20^{\circ}\text{C}@15\text{min}$ (dBm)							

The End

Product specifications and models are subject
to change without notice.

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