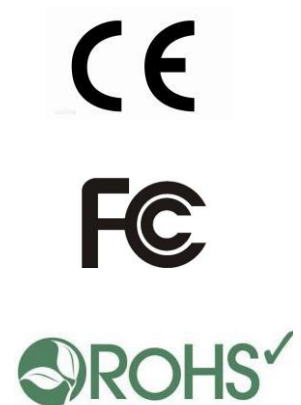


GRANDWAY

FHO5000 SERIES OTDR

Convenient multi-function fiber optic tester

Design for tough outdoor environment



Description:

FHO5000 series Optical Time Domain Reflectometer (OTDR) is an intelligent meter of a new generation for the detection of fiber communications systems. With the popularization of optical network construction in cities and countrysides, the measurement of optical network becomes short and disperse; FHO5000 is specially designed for that kind of application. It's economic, having outstanding performance.

FHO5000 is manufactured with patience and carefulness, following the national standards to combine the rich experience and modern technology, subject to stringent mechanical, electronic and optical testing and quality assurance; in the other way, the new design makes FHO5000 more smart and compact and multi-purpose.

Whether you want to detect link layer in the construction and installation of optical network or proceed efficient maintenance and trouble shooting, FHO5000 can be your best assistant.

FEATURES

- ◆ Integrated design, smart and rugged
- ◆ IP65 protection level, outdoor enhanced
- ◆ 7-inch anti-reflection LCD screen

- ◆ PON online test module (1625nm) is optional
- ◆ MMF test module (850/1300nm) is optional
- ◆ Support multi-language display and input

APPLICATIONS

- ◆ FTTX test with PON networks
- ◆ CATV network testing
- ◆ Access network testing
- ◆ LAN network testing
- ◆ Metro network testing
- ◆ Lab and Factory testing
- ◆ Live fiber troubleshooting

Ready for all kinds of environment.

FHO5000 series OTDR is specially designed for tough outdoor jobs. IP65 protection level, lightweight, easy operation, low-reflection LCD and more than 12 hours working period make it perfect in field testing. Meanwhile, optional PCB board with water-proof coating helps FHO5000 series OTDR get better protection performance.

What you need is all-in-one!

FHO5000 series OTDR is a highly integrated platform that features with four module slots, with a large 7-inch color screen (with a touchscreen option), a high-capacity Lithium-Ion battery, an optional microscope (through universal serial bus [USB] port), and built-in optical test functions, such as PON test module, visual fault locator (VFL), optional power meter and laser source, making it qualified in the installation, turn-up, and maintenance of FTTx/Access optical networks.

Main functions

Multi-mode OTDR

Besides standard single mode (1310/1550nm), FHO5000 series OTDR supports multi-mode (850/1300m) test mode for option to analyze multi-mode fiber network.

VFL (visual fault locator)

The VFL, available as a standard module in FHO5000 series OTDR, offers built-in 650nm visual fault location on a FC/UPC connector.

PON ONLINE TEST

FHO5000 series OTDR uses 1625nm wavelength to scan and analyze the access point and proceed online testing with optical filter, and will not disturb the service.

PM (power meter)

FHO5000 series OTDR comes with optional built-in power meter that let technicians easily verify the presence of a signal.

LS (laser source)

FHO5000 series OTDR comes with optional built-in laser source through OTDR1 Port that let technicians easily verify the total loss of the local network with a power meter.

FM (fiber microscope)

The optional fiber inspection probe facilitates the inspection before the connection. FHO5000 series OTDR offers this capability through a USB port connection, which allows quick and easy inspection of connector end faces for contamination and also enables it capture and store the image.

Structure



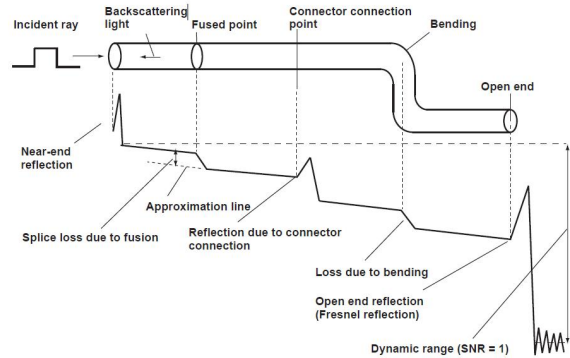
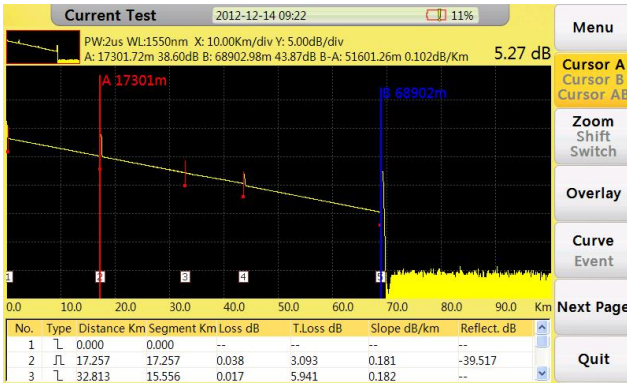
- | | | |
|--|--|---|
| <ul style="list-style-type: none"> ① Menu selection Button ② Navigation Button ③ AVG test Button ④ RT test Button ⑤ Test setup Button ⑥ File management Button | <ul style="list-style-type: none"> ⑦ Power Switch ⑧ Charging Port ⑨ USB(A Type) Port ⑩ RJ45 Port ⑪ USB(B Type) Port ⑫ VFL Port | <ul style="list-style-type: none"> ⑬ OTDR1 Port ⑭ OTDR2 Port(Optional) ⑮ PM Port(Optional) ⑯ Battery Compartment ⑰ Supporting Plate ⑱ Crash Pad ⑲ Safety belt buckle |
|--|--|---|

Humanized Test Interface

FHO5000 series OTDR could display Splice loss, Connector loss, Fiber attenuation, Reflection of points, Link optical return loss and distance to fiber events etc. With test information in a smart way, user could get detailed information immediately.

Quick fit in short time

Simplified display style and structured menus help effective in reducing the time of study.

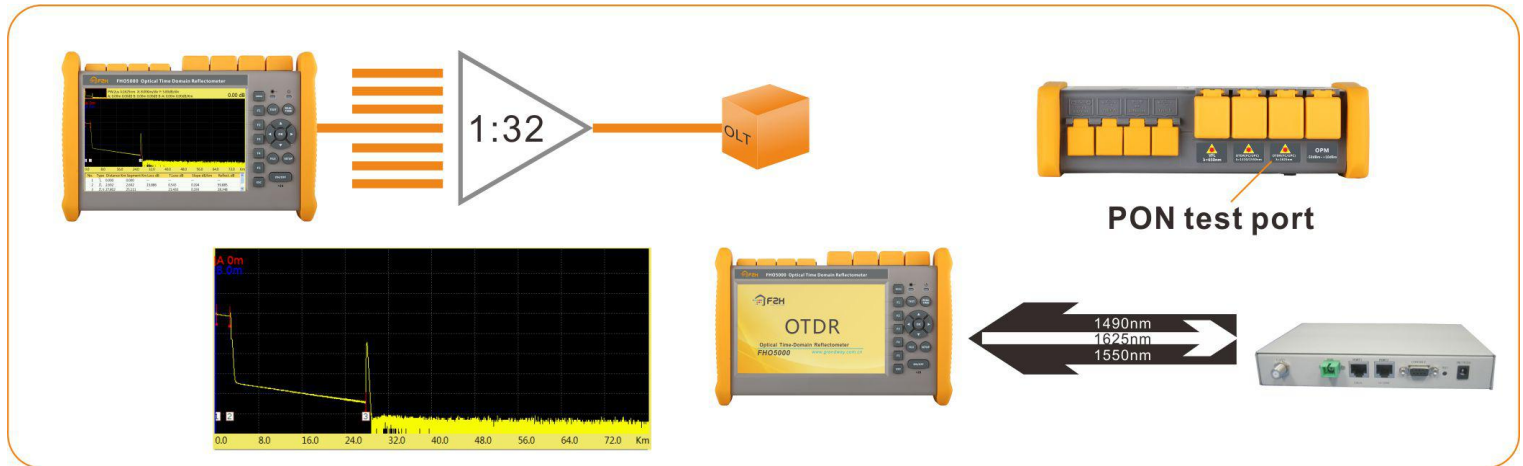


FTTH test within PON networks

FHO5000 series OTDR's models, like T40F and T43F, are dedicated to the testing of PON network maintenance and troubleshooting without service disruption.

Last mile master

FHO5000 series OTDR could easily test through 1*32 PLC splitter in PON test (Model: FHO5000-T43F).

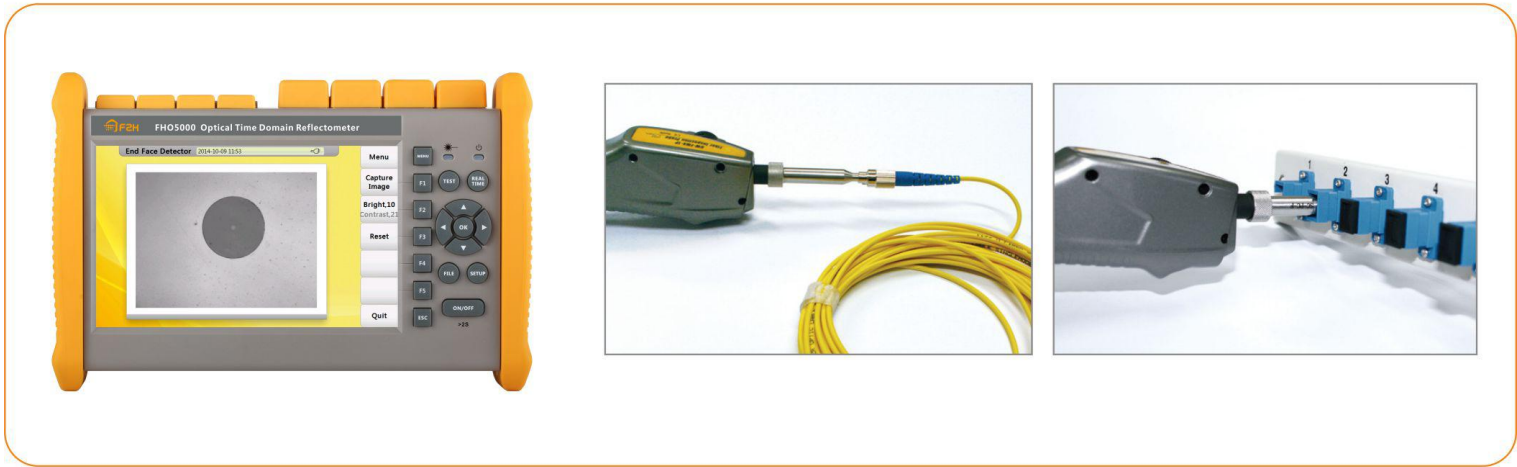


Fiber Microscope

Microscope is optional for FHO5000 series OTDR. 400X amplification and variety of accessories ensure perfect terminal condition before test.

The essential first step

Taking time to properly inspect connector end faces can prevent a slew of problems down the lines, saving you time, money and headaches.



Result transfer

Check test results on PC or PDA through USB; 4GB large internal memory space could store more than 40,000 groups of results.

Link in line

- ◆ Download reference traces and settings from database
- ◆ Send measurement results via email
- ◆ Ask for remote help

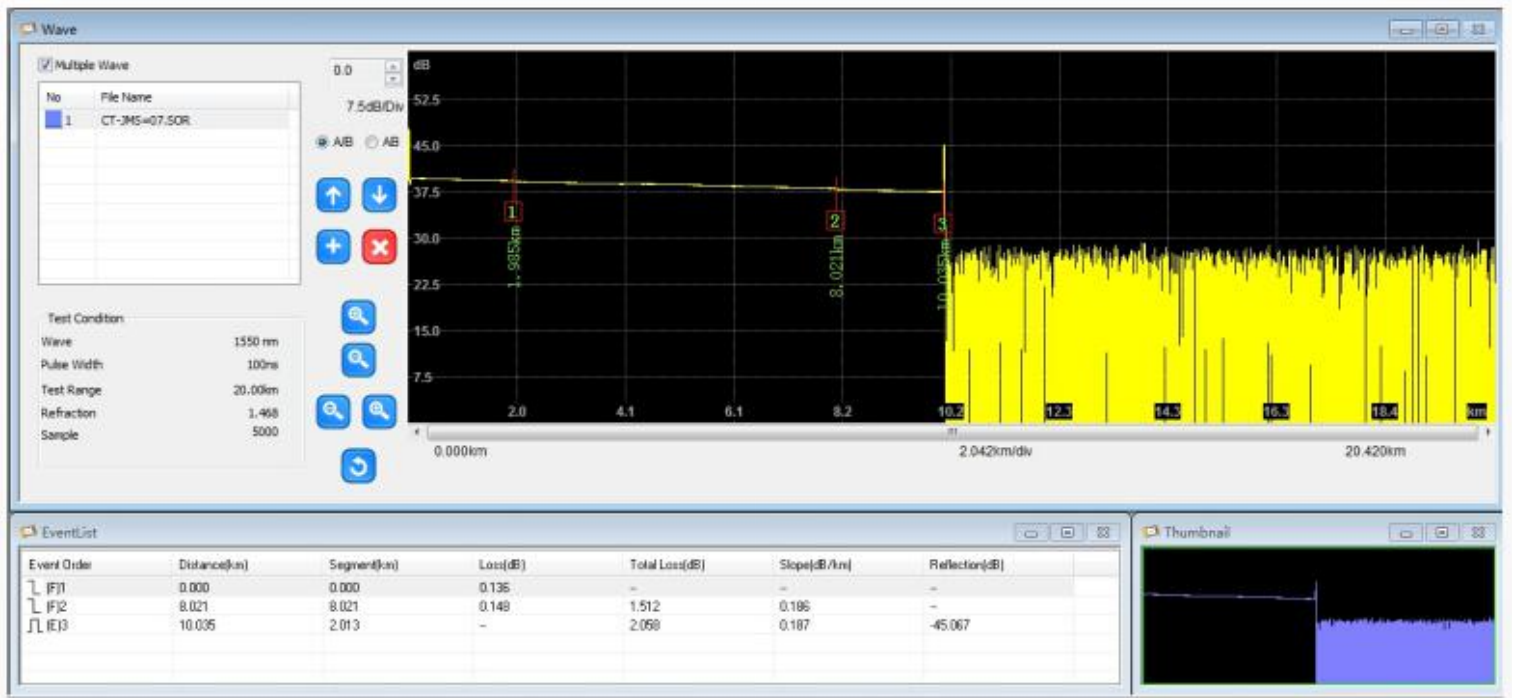


Data Manager

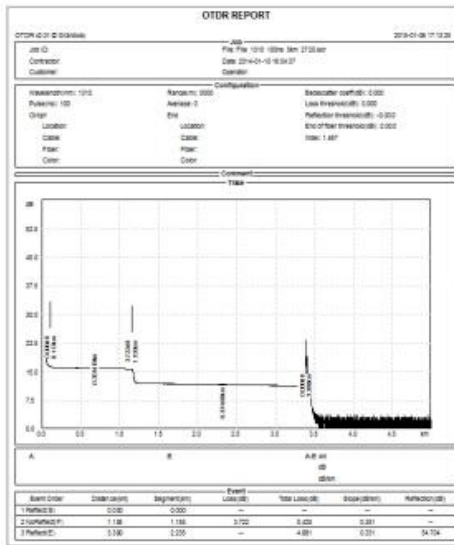
Use Data Manager to elaborate and print out result files on upper computer within a few steps.

High Compatibility

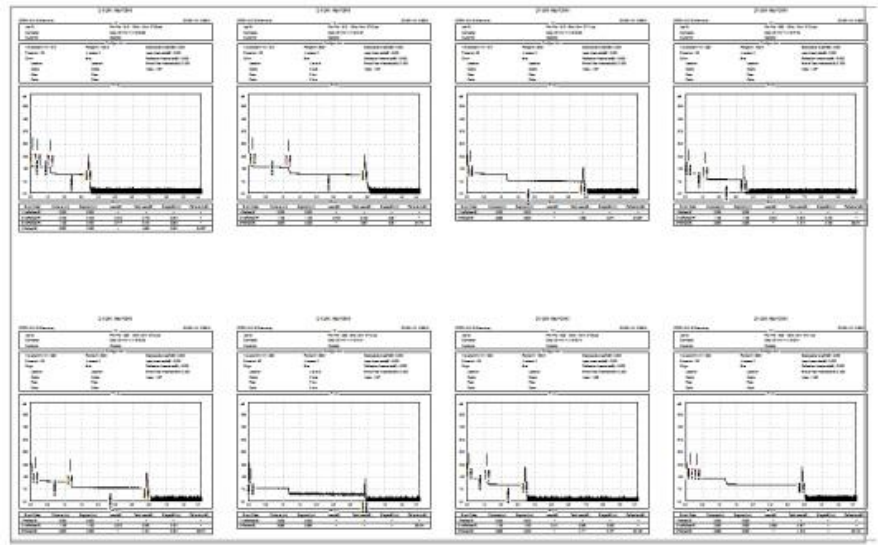
- ◆ **Support:**
 - Windows Vista (32/64 bit system)
 - Windows 7 (32/64 bit system)
 - Windows 8 (32/64 bit system)
 - Microsoft Office Excel 2007
 - Microsoft Office Excel 2010
 - Microsoft Office Excel 2013



- ◆ **Delicate Report**
-Simplified display style easy to read, support multi-result printing.



1 in 1



8 in 1

Specification

General

Dimension	253×168×73.6mm 1.5kg (battery included)
Display	7 inch TFT-LCD with LED backlight (touch screen function is optional)

Interface	1×RJ45 port, 3×USB port (USB 2.0, Type A USB×2, Type B USB×1)
Power Supply	10V(dc), 100V(ac) to 240V(ac), 50~60Hz
Battery	7.4V(dc)/4.4Ah lithium battery (with air traffic certification) Operating time: 12 hours ^① , Telcordia GR-196-CORE Charging time: <4 hours (power off)
Power Saving	Backlight off: Disable/1 to 99 minutes Auto shutdown: Disable/1 to 99 minutes
Data Storage	Internal memory: 4GB (about 40,000 groups of curves)
Language	User selectable (English, Simplified Chinese, traditional Chinese, French, Korean, Russian, Spanish and Portuguese-contact us for availability of others)
Environmental Conditions	Operating temperature and humidity: -10℃~+50℃, ≤95% (non-condensation) Storage temperature and humidity: -20℃~+75℃, ≤95% (non-condensation) Proof: IP65 (IEC60529)
Accessories	Standard: Main unit, power adapter, Lithium battery, FC adapter, USB cord, User guide, CD disk, carrying case Optional: SC/ST/LC adapter, Bare fiber adapter

Technical parameter

Type^②	Testing Wavelength (MM: ±20nm, SM: ±10nm)	Dynamic Range (dB)^③	Event/Attenuation Dead-zone (m)^④
FHO5000-M21	850/1300	19/21	1.5/6
FHO5000-MD21	850/1300	19/21	1.5/6
	1310/1550	35/33	1.5/6
FHO5000-MD22	850/1300	19/21	1.5/6
	1310/1550	40/38	1/5
FHO5000-D26	1310/1550	26/24	1.5/6
FHO5000-D32	1310/1550	32/30	1.5/6
FHO5000-D35	1310/1550	35/33	1.5/6

FHO5000-D40	1310/1550	40/38	1/5
FHO5000-D43	1310/1550	43/41	1/5
FHO5000-D45	1310/1550	45/43	0.8/4
FHO5000-T40F	1310/1550/1625	40/38/38	1/5
FHO5000-T43F	1310/1550/1625	43/41/41	1/5
FHO5000-T45F	1310/1550/1625	45/43/43	0.8/4
FHO5000-TC35F	1310/1550/1650	35/33/31	1/5
FHO5000-TP35	1310/1490/1550	35/33/33	1/5
FHO5000-Q37F	1310/1490/1550/1625	37dB	1/5

Test parameter

Pulse Width	Single mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs Multi-mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs
Testing Distance	Single mode: 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 160km, 240km Multi-mode: 500m, 2km, 5km, 10km, 20km, 40km
Sampling Resolution	Minimum 5cm
Sampling Point	Maximum 128,000 points
Linearity	≤0.05dB/dB
scale Indication	X axis: 4m~70m/div, Y axis: Minimum 0.09dB/div
Distance Resolution	0.01m
Distance Accuracy	±(1m+measuring distance×3×10 ⁻⁵ +sampling resolution) (excluding IOR uncertainty)
Reflectance Accuracy	Single mode: ±2dB, multi-mode: ±4dB
IOR Setting	1.4000~1.7000, 0.0001 step
Units	Km, miles, feet
OTDR Trace Format	Telcordia universal, SOR, issue 2 (SR-4731) OTDR: User selectable automatic or manual set-up
Testing Modes	Visual fault locator: Visible red light for fiber identification and troubleshooting Light source: Stabilized Light Source (CW, 270Hz, 1kHz, 2kHz output)

	Field microscope probe
Fiber Event Analysis	-Reflective and non-reflective events: 0.01 to 1.99dB (0.01dB steps) -Reflective: 0.01 to 32dB (0.01dB steps) -Fiber end/break: 3 to 20dB (1dB steps)
Other Functions	Real time sweep: 1Hz Averaging modes: Timed (1 to 3600 sec.) Live Fiber detect: Verifies presence communication light in optical fiber Trace overlay and comparison

VFL Module (Visual Fault Locator, as standard function):

Wavelength ($\pm 20\text{nm}$)	650nm
Power	10mw, CLASS III B
Range	12km
Connector	FC/UPC
Launching Mode	CW/2Hz

PM Module (Power Meter, as optional function):

Wavelength Range ($\pm 20\text{nm}$)	800~1700nm
Calibrated Wavelength	850/1300/1310/1490/1550/1625/1650nm
Test Range	Type A: -65~+5dBm (standard); Type B: -40~+23dBm (optional)
Resolution	0.01dB
Accuracy	$\pm 0.35\text{dB} \pm 1\text{nW}$
Modulation Identification	270/1k/2kHz, $P_{\text{input}} \geq -40\text{dBm}$
Connector	FC/UPC

LS Module (Laser Source, as optional function):

Working Wavelength ($\pm 20\text{nm}$)	1310/1550/1625nm ^⑤
Output Power	Adjustable -25~0dBm

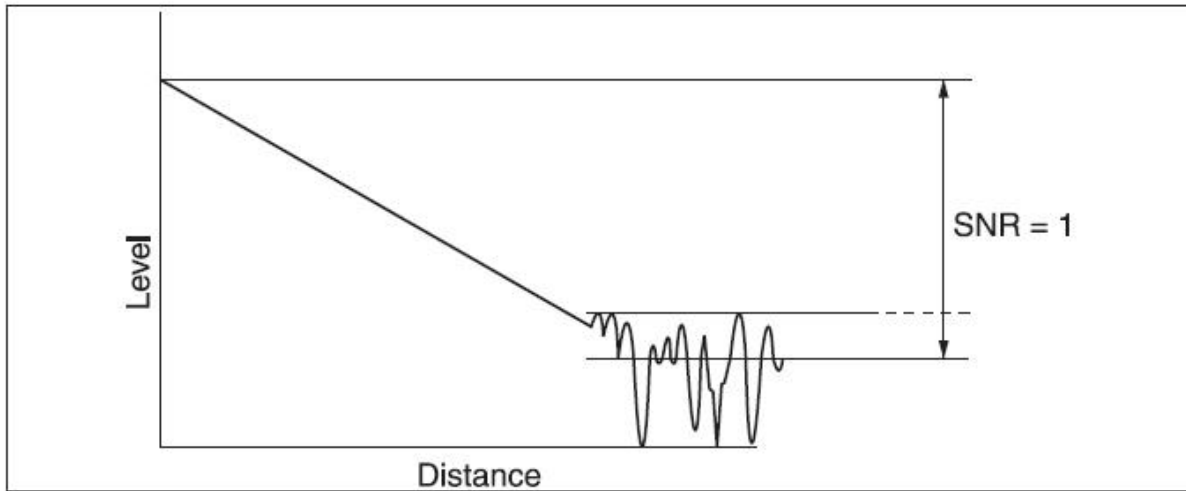
Accuracy	±0.5dB
Connector	FC/UPC

FM Module (Fiber Microscope, as optional function):

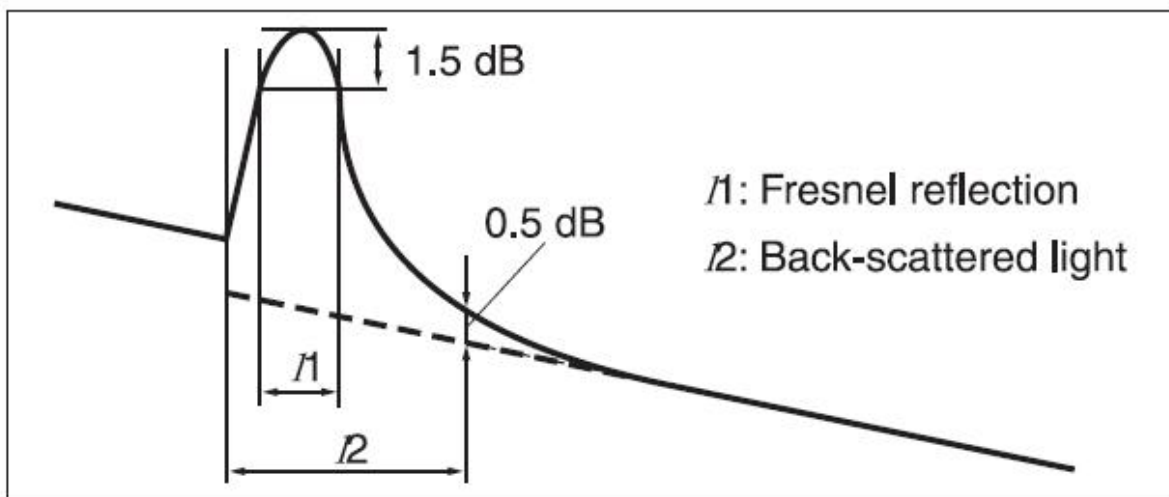
Magnification	400X
Resolution	1.0μm
View of Field	0.40×0.31mm
Storage/working Condition	-18℃~35℃
Dimension	235×95×30mm
Sensor	1/3 inch 2 million of pixel
Weight	150g
USB	1.1/2.0
Adapter^⑥	SC-PC-F (For SC/PC adapter) FC-PC-F (For FC/PC adapter) LC-PC-F (For LC/PC adapter) 2.5PC-M (For 2.5mm connector, SC/PC, FC/PC, ST/PC)

Notes:

- ① Typical, backlight off, sweeping halted at 25℃, 12 hours typical continuous testing.
- ② Model T40F/T43F/T45F are integrated with optical filter, which allow them to test PON network online (by using 1625nm wavelength) and will not interrupt the fiber signal.
- ③ Dynamic range is measured with maximum pulse width, averaging time is 3 minutes, SNR=1; The level difference between the RMS noise level and the level where near end back-scattering occurs.



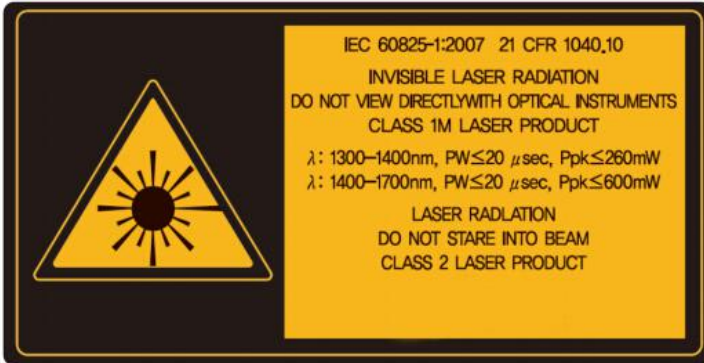
④ Event dead zone is measured with pulse width of 3ns; attenuation dead zone is measured with pulse width of 5ns.



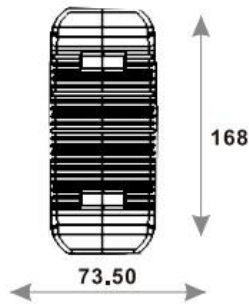
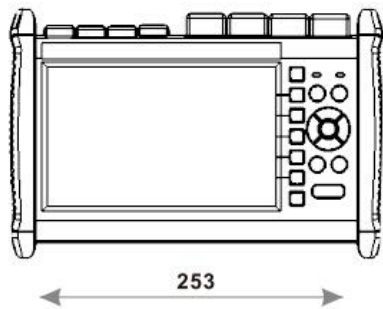
⑤ 1310/1550nm laser source uses OTDR1 port, and 1625nm or 850/1300nm uses OTDR2 port.

⑥ For more adapters, please contact us.

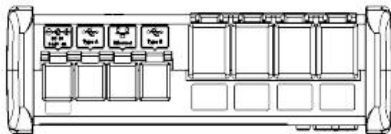
CAUTION:



VIEWING THE LASER OUTPUT WITH CERTAIN OPTICAL INSTRUMENTS (FOR EXAMPLE: EYE LOUPES, MAGNIFIERS AND MICROSCOPES) WITHIN A DISTANCE OF 100 MM MAY POSE AN EYE HAZARD.



Unit:mm
 Except where noted, tolerance default as: ±3%
 (if size < 10mm, tolerance: ±0.3mm)



Ordering Information

FHO5000-XX-XX-XX-XX-XX-XX-XX-XX

Model

- M** 850/1300nm
- MD** 850/1300/1310/1550nm
- D** 1310/1550nm
- T** 1310/1550/1625nm
- TC** 1310/1550/1650nm
- TP** 1310/1490/1550nm

Dynamic Range

- 21** 19/21dB for Model M or
19/21/35/33dB for Model MD
- 22** 19/21/40/38dB for Model MD
- 26** 26/24dB for Model D
- 32** 32/30 dB for Model D
- 35** 35/33dB for Model D or
35/33/33 for Model TP
- 40** 40/38dB for Model D
- 43** 43/41dB for Model D
- 45** 45/43dB for Model D
- 35F** 35/33/31dB for Model TC with filter
- 40F** 40/38/38dB for Model T with filter
- 43F** 43/41/41dB for Model T with filter
- 45F** 45/43/43dB for Model T with filter

Laser Source

- /** Without laser source
- LS** With laser source

Connector

- /** FC/UPC(default)
- SC** SC/UPC
- ST** ST/UPC

Water Proof

- /** Without water proof
- WP** With water proof

Fiber Microscope

- /** Without fiber microscope
- FM** With fiber microscope

Touch Screen

- /** Without touchscreen
- TS** With touchscreen

Power Meter

- /** Without power meter
- PMA** With power meter TYPE A
- PMB** With power meter TYPE B