GRANDWAY

FHO5000 SERIES OTDR

Convenient multi-function fiber optic tester
Design for tough outdoor environment

CE

FC

ROHS

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

❶ Menu selection Button	❼ Power Switch	⓭ OTDR1 Port
❷ Navigation Button	❽ Charging Port	⓮ OTDR2 Port(Optional)
❸ AVG test Button	❾ USB(A Type) Port	⓯ PM Port(Optional)
❹ RT test Button	❿ RJ45 Port	⓰ Battery Compartment
❺ Test setup Button	⓫ USB(B Type) Port	⓱ Supporting Plate
❻ File management Button	⓬ VFL Port	⓲ Crash Pad
		⓳ Safety belt buckle

Humanized Test Interface

FHO5000 series OTDR could display Splice loss, Connector loss, Fiber attenuation, Reflection of points, Link opitcal 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.
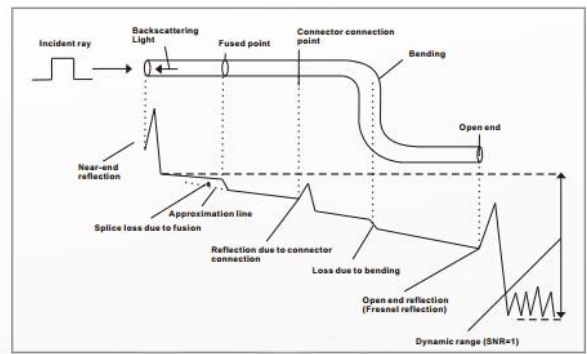
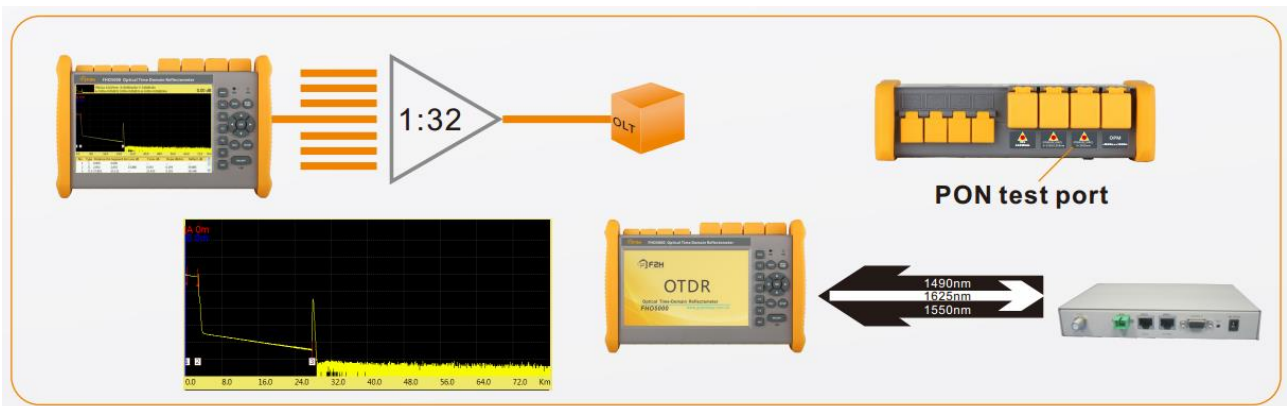## FTTH test within PON networks

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

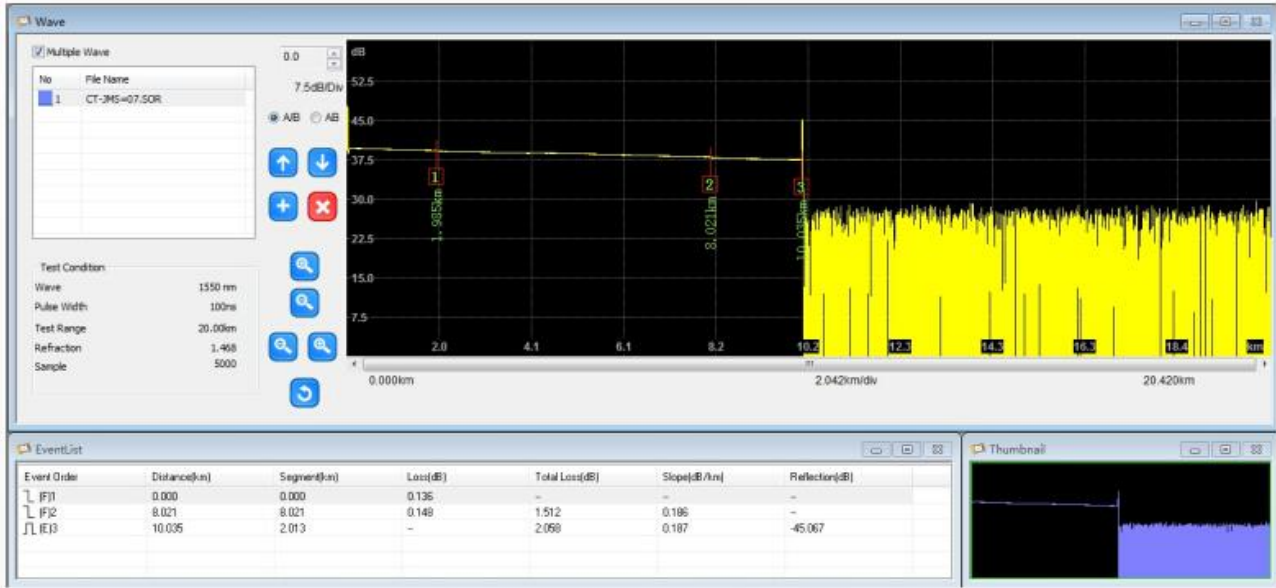**Data Manager**

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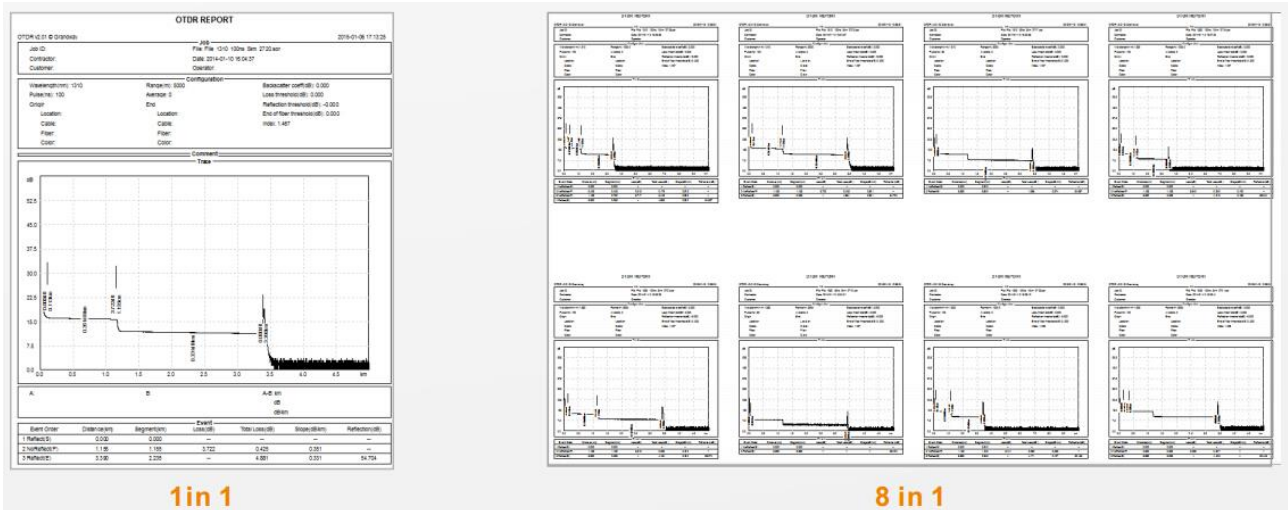
High Compatibility

◆ **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 hours① 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

Type②	Testing Wavelength (MM: ±20nm, SM: ±10nm)	Dynamic Range (dB)③	Event/Attenuation Dead-zone (m)④
FHO5000-M21	850/1300	19/21	1.5/8
FHO5000-MD21	850/1300	19/21	1.5/8
	1310/1550	35/33	1.5/8
FHO5000-MD22	850/1300	19/21	1.5/8
	1310/1550	40/38	1.75/11
FHO5000-D32	1310/1550	32/30	1.5/8
FHO5000-D35	1310/1550	35/33	1.5/8

FHO5000-D40	1310/1550	40/38	1.75/11
FHO5000-D43	1310/1550	43/41	2/14
FHO5000-D45	1310/1550	45/43	2/14
FHO5000-T40F	1310/1550/1625	40/38/38	1.75/11
FHO5000-T43F	1310/1550/1625	43/41/41	2/14
FHO5000-T45F	1310/1550/1625	45/43/43	2/14

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 (±20nm)	650nm
Power	10mw,CLASSIII B
Range	12km
Connector	FC/UPC
Launching Mode	CW/2Hz

PM Module (Power Meter, as optional function):

Wavelength Range (±20nm)	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	±0.35dB±1nW
Modulation Identification	270/1k/2kHz,P_{input}≥-40dBm
Connector	FC/UPC

LS Module (Laser Source, as optional function):

Working Wavelength (±20nm)	1310/1550/1625nm⑤
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
Adapter⑥	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:

①Typical, backlight off, sweeping halted at 25℃, 12 hours typical continuous testing.

②Model 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.

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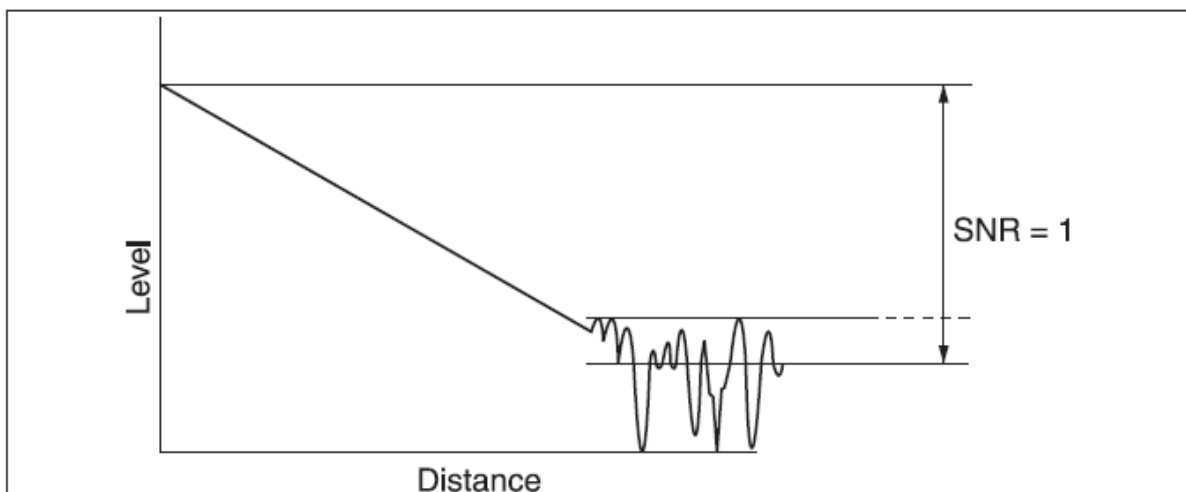
④Event dead zone is measured with pulse width of 3ns; attenuation dead zone is measured with pulse width of 5ns.

I1: Fresnel reflection
I2: Back-scattered light
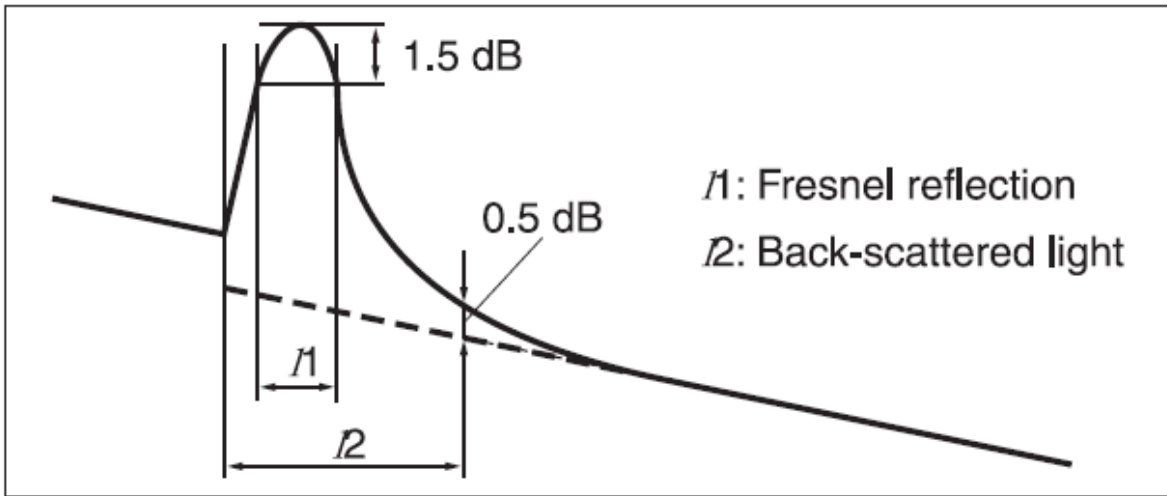
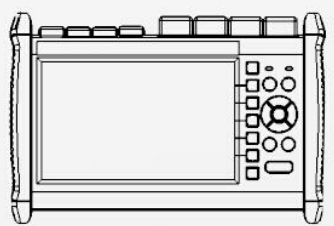⑤1310/1550nm laser source uses OTDR1 port, and 1625nm or 850/1300nm uses OTDR2 port.
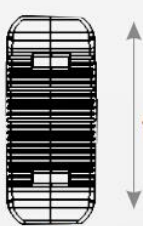
⑥For more adapters, please contact us.

CAUTION:

IEC 60825-1:2007 21 CFR 1040.10
INVISIBLE LASER RADIATION
DO NOT VIEW DIRECTLYWITH OPTICAL INSTRUMENTS
CLASS 1M LASER PRODUCT
λ: 1300~1400nm, PW≤20 μsec, Ppk≤260mW
λ: 1400~1700nm, PW≤20 μsec, Ppk≤600mW
LASER RADLATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT

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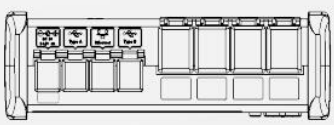

253

73.60

168

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

Dynamic Range
21 21dB for Model M and MD
22 22dB for Model MD
32 32dB for Model D
35 35dB for Model D
40 40dB for Model D
43 43dB for Model D
45 45dB for Model D
40F 40dB for Model T with filter
43F 43dB for Model T with filter
45F 45dB 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