GRANDWAY FHO5000 SERIES OTDR PRO

Convenient multi-function fiber optic tester

Design for tough outdoor environment

Comprehensive performance improvement, more accurate and stable test performance

Description:

FHO5000 series Optical Time Domain Reflectometer (OTDR) is an intelligent meter for the detection of fiber communications systems. The new generation FHO5000 series has higher test performance and product stability. Larger dynamics and optimized deadzone can provide more accurate fiber testing.

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

◆ 7 inch anti-reflection LCD touch screen
◆ Dynamic range from 26dB to 45dB, small deadzone 0.8m/3.5m
◆ Excellent FLM(Fiber Link Map)performance make fiber testing simpler and more efficient
◆ PON online test module (1625nm/1650nm) is optional
◆ MMF test module (850/1300nm) is optional
◆ Optimized PON test capability to pass through 1x128 splitter
◆ Multi function Integrated design, smart and rugged
◆ Support remote control on PC software via RJ45 cable
◆ Built-in OTDR trace PDF report and FLM testing PDF report
◆ Multi-language display and input(more than 14 languages)

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. Humanized menu, Light-weight, easy operation, low-reflection 7-inch touch screen LCD and more than 6 hours working period make it perfect in field testing.

What you need is all-in-one!

FHO5000 series OTDR is a highly integrated platform that features with four optical module slots, with a large 7-inch color touch screen, a high-capacity lithium battery, an optional microscope (through universal USB port), and built-in optical test functions, such as PON test module, Fiber link map(FLM), visual fault locator (VFL), optional power meter (OPM) and laser source(OLS), making it qualified in the installation,activation, and maintenance of FTTx/Access/Metropolitan area network/backbone network.

FHO5000 Main Menu Screenshot

Main functions

PON Network Online Test

Optimized PON Test Capability

With improved hardware and advanced algorithm, FHO5000 PON series(T40F/T43F/T45F) can easily pass through 1x64 splitter even 1x128 splitter and accurately describe the overall structure of PON network.


In particular, with FLM mode, users can automatically test without complicated settings to obtain the most accurate and intuitively test results. In addition, FLM provides the Pass/Fail function of the PON network, which can intuitively display the failure event in PON network
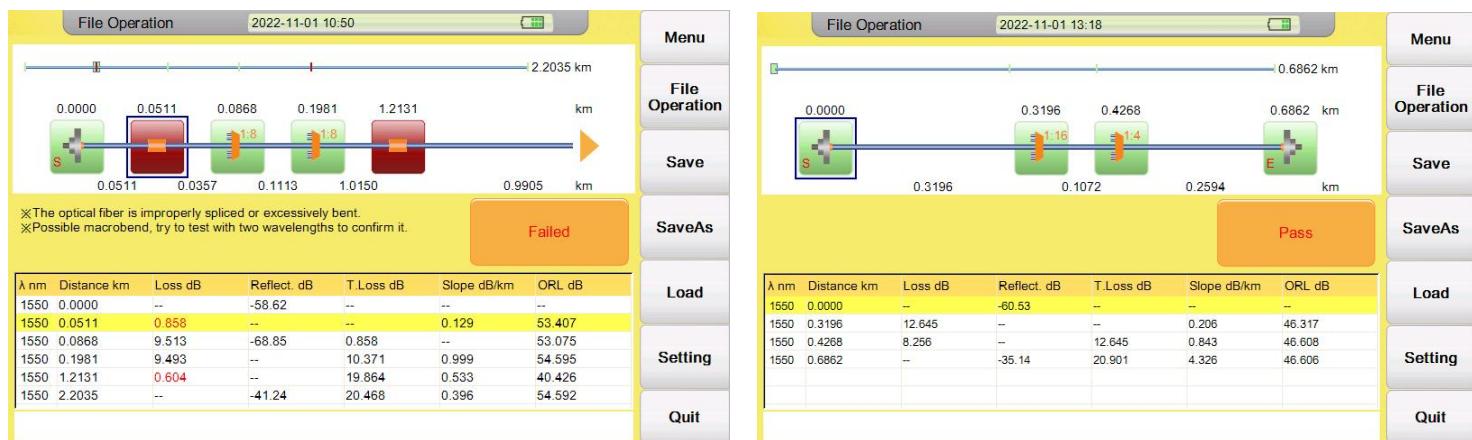

Pass through 1x8+1x8 splitter network

Pass through 1x16+1x4 splitter network

Through the built-in optical cut-off filter, the FHO5000 can realize the testing for PON network activation, online measurement and maintenance via 1625nm testing wavelength.

Smaller test dead zone and accuracy
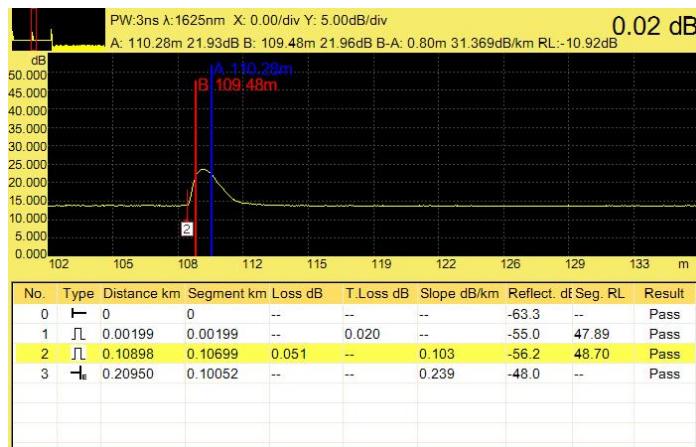
Event deadzone:0.8m
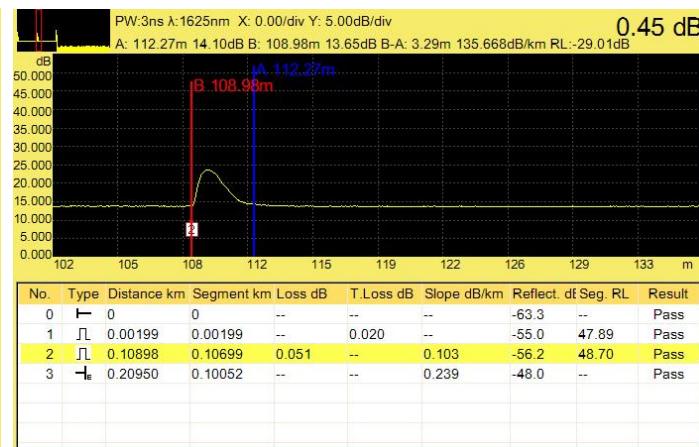
Attenuation deadzone: 3.29m

Multiple Dynamic Range (26dB~45dB)

Long Distance Test Capability (over 200km@FHO5000-D45)

The FHO5000 includes various dynamic test modules from a short-distance access network to a long-distance backbone network, support 45dB dynamic range which can test up to 200km. Even the FHO5000-D35 can perform beyond 120km optical fiber test.
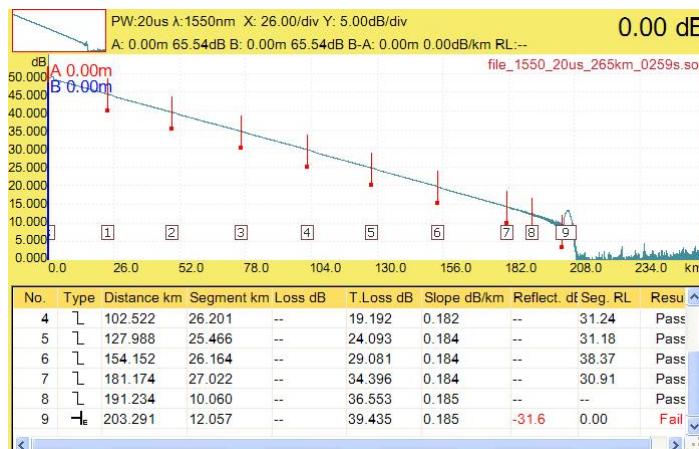
FHO5000-D45 screenshot


FHO5000-D35 screenshot

VFL (visual fault locator)

The 10mw VFL, available as a standard module in FHO5000, offers built-in 650nm visual red light can test up to 10km.

OPM (optical power meter)

FHO5000 series OTDR comes with optional built-in power meter that let technicians easily verify the presence and the power of a signal. Two types of power meter are optional(TypeA: -60~+5dBm and TypeB: -40~+23dBm).
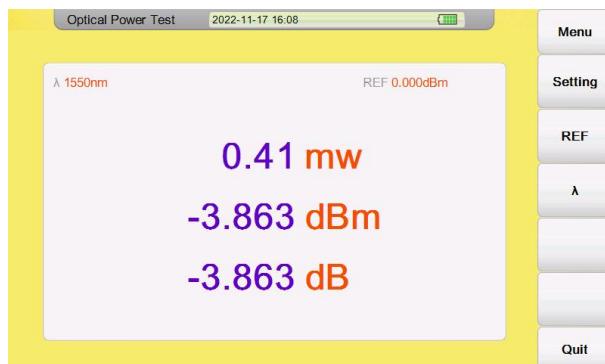
OLS (optical laser source)

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. The functions of laser source and power meter can work at the same time to verify the link loss performance. The output power >-8dBm and support CW/270Hz/1kHz/2kHz output mode.
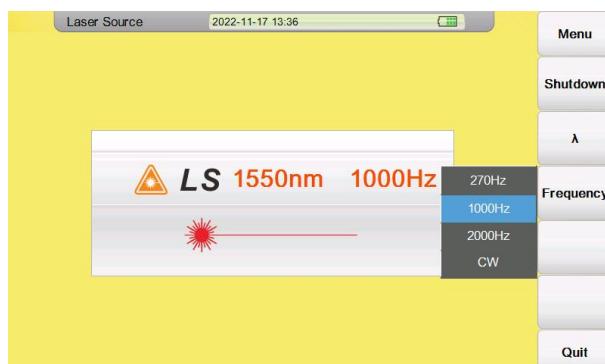
EFD (Endface Fiber Detector)

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. There are two fiber microscope models can work with FHO5000 OTDR.

Model	Picture	Standard tips
FIM-4		SC-PC-F(for SC/PC female bulkhead) FC-PC-F(for FC/PC female bulkhead) LC-PC-F(for LC/PC female bulkhead) 2.5PC-M(for 2.5mm/PC male connector)
FIM-18		25-U-M (for 2.5mm/PC male connector) 125-U-M(for 1.25mm/PC male connector) FC-U-F(for FC/PC female bulkhead) SC-U-F(for SC/PC female bulkhead) LC-U-F(for LC/PC female bulkhead)

Bulit-in Generate PDF Report

Multi language OTDR trace PDF report and FLM testing PDF report can be generated directly in the machine.

OTDR Test Report — *Fail*

Task

JobID : 123	File Name: file_1625_500ns_10km_0294.sor
Contractor:	Test Date : 2022-10-29 11:07:12
Customer :	Operator : 1

Machine Information

Module : FHO5000	Supplier : 00
Serial No.: E5FHA09298	Cal. date:

Overview

Total Length(km) : 2.516	Average Loss(dB/km): 8.303
Cumulation Loss(db): 20.891	ORL(dB) : -54.404

Configuration

Test Wave(nm) : 1625	Attenuation Threshold(dB): 0	Start Location	End Location
PW(ns) : 500	Reflection Threshold(dB) : 0	Location:	Location:
Distance(km) : 10.0	End Threshold(dB) : 0	Cable ID:	Cable ID:
Test Time(s) : 15	Refraction : 1.468	Fiber ID :	Fiber ID :
Scattering Coefficient(db): 0	Sampling Resolution(m) : 2.042	Color :	Color :

Note

olkjfs

Trace

(1.013km , 9.940dB)
(1.521km , 10.216dB)
(0.000km , 0.00dB)
(2.516km , 0.000dB)

Marker

A: 2569.07m	B: 0.00m	A-B: 2569.066m
12.19dB	14.12dB	1.93dB I 0.750dB/km

Threshold

Splice loss(dB) : 0.200	Reflection(dB): -40.0	Span loss(dB): 10.000
Connector loss(db): 0.800	Slope dB/km : 0.400	

Event

Type	Distance	Segment	Loss dB	T.Loss dB	Slope dB/km	Reflect. dB
1Reflect(S)	0.000	0.000	0.000	--	0.000	-63.836
2NonReflect(F)	1.013	1.013	9.940	0.224	0.202	--
3NonReflect(F)	1.521	0.509	10.216	10.261	0.169	--
4Reflect(E)	2.516	0.995	0.000	20.891	0.530	-54.404

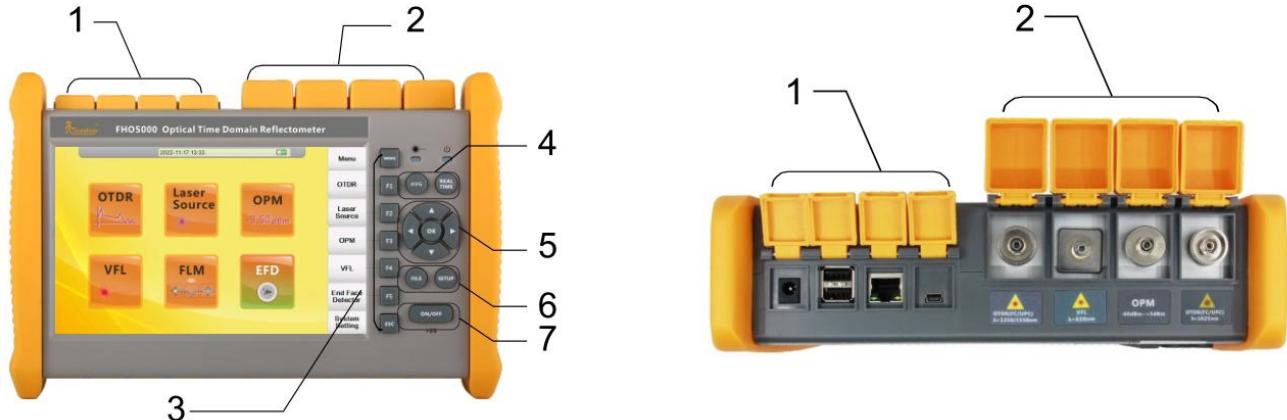Prepared By:_____   Verified By:_____   Approved By:_____

Multi-language Display and Input

FHO5000 supports multiple overseas languages and is applicable to customers in different countries.

Interface Definition

No	Name	Description
1	Electric ports (From left to right)	Charging port: DC input 10V/4A USB 2.0 port: Insert USB disk to upgrade RJ45 Ethernet port: remote control port Mini USB port: Transfer file to PC via USB cable
2	Optical ports (From left to right)	OTDR port1: for 1310nm/1550nm testing VFL port: 2.5mm universal port OPM port: for optical power testing OTDR port2(optional): for 1625nm testing
3	Function key	Menu: Enter the Main menu interface F1-F5:Enter the corresponding menu option ESC: Enter the system setting or back to main menu You can check "System info/language/date/power saving/bright light/IP setting, etc"in system setting
4	Test key	AVG: Perform OTDR average test ; REAL TIME: Perform OTDR realtime test
5	Direction key	Move cursor and confirm
6	File and Setup	File: To enter the saved file storage ; Setup: To enter the OTDR testing setting
7	ON/OFF key	Long press>2s to power on/off the OTDR

Note: Product appearance and parameters are subject to change without notice.

Specification

General

Dimension	253×168×73.5mm/1.5kg (battery included)
Display	7 inch touch screen TFT-LCD with LED backlight
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: 6 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: 16GB
Language	User selectable (English, traditional Chinese, French, Korean, Russian, Spanish, Portuguese, Turkish, Italian, German, Thai, Hungarian, Czech, Vietnamese, Polish-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)
Accessories	Standard: Main unit, power adapter, Lithium battery, FC adapter, USB cord, User guide, carrying case
	Optional: SC/ST/LC adapter, Bare fiber adapter, Fiber microscope, Launch cable box

Technical parameter

Type②	Testing Wavelength (MM: ±20nm, SM: ±20nm)	Dynamic Range (dB)③	Event/Attenuation Dead-zone (m)④
FHO5000-M21	850/1300	19/21	1.2/8
FHO5000-MD21	850/1300	19/21	1.2/8
	1310/1550	35/33	1/4
FHO5000-MD22	850/1300	19/21	1.2/8
	1310/1550	40/38	1/4
FHO5000-D26	1310/1550	26/24	1/4
FHO5000-D35	1310/1550	35/33	1/4
FHO5000-D40	1310/1550	40/38	0.8/3.5
FHO5000-D43	1310/1550	43/41	0.8/3.5
FHO5000-D45	1310/1550	45/43	0.8/3.5
FHO5000-T26F	1310/1550/1625	26/24/24	1/4
FHO5000-T35F	1310/1550/1625	35/33/33	1/4
FHO5000-T40F	1310/1550/1625	40/38/38	0.8/3.5

FHO5000-T43F	1310/1550/1625	43/41/41	0.8/3.5
FHO5000-T45F	1310/1550/1625	45/43/43	0.8/3.5
FHO5000-TC35F	1310/1550/1650	35/33/31	1/4
FHO5000-TP35	1310/1490/1550	35/33/33	1/4

Test parameter

Pulse Width	Single mode: 3ns, 5ns, 10ns, 30ns, 50ns, 100ns, 275ns, 500ns, 1µs, 2µs, 5µs, 10µs, 20µs Multi-mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1µs, 2µs
Testing Distance	Single mode: 500m, 2km, 5km, 10km, 20km, 33km, 40km, 80km, 120km, 160km, 265km Multi-mode: 500m, 2km, 5km, 10km, 20km, 40km
Sampling Resolution	Minimum 5cm
Sampling Point	Maximum 256,000 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	1.2000~1.7000, 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
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	Built in multi-language PDF report generation Live Fiber detect: Verifies presence communication light in optical fiber Dual wavelength(1310nm/1550nm) analysis-Macro bending detection Trace overlay and comparison (most 8 traces)

	Define the Pass/Fail result of each event through threshold settings

VFL Module

| Wavelength	650nm(±20nm)
Power	10mw,CLASSIII B
Range	12km
Connector	Universal 2.5mm
Launching Mode	CW/2Hz

OPM Module

Wavelength Range	800~1700nm
Calibrated Wavelength	850/1300/1310/1490/1550/1625/1650nm
Test Range	Type A: -60~+5dBm (standard); Type B: -40~+23dBm (optional)
Resolution	0.01dB
Accuracy	±0.35dB±1nW
Connector	FC/UPC

LS Module (Laser Source)

Working Wavelength (±20nm)	1310/1550/1625nm⑤
Output Power	≥-8dBm
Output Mode	CW/270Hz/1kHz/2kHz
Accuracy	±0.5dB
Connector	FC/UPC

Notes:

①Typical, backlight off, sweeping halted at 25℃, 6 hours typical continuous testing.

② Model T26F/T35F/T40F/T43F/T45F/TC35F are integrated with optical filter, which allow them to test PON network online (by using 1625nm/1650nm 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.
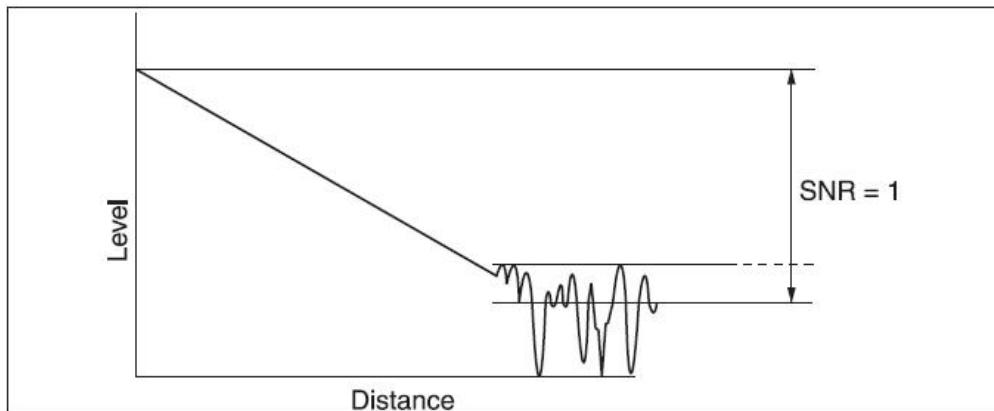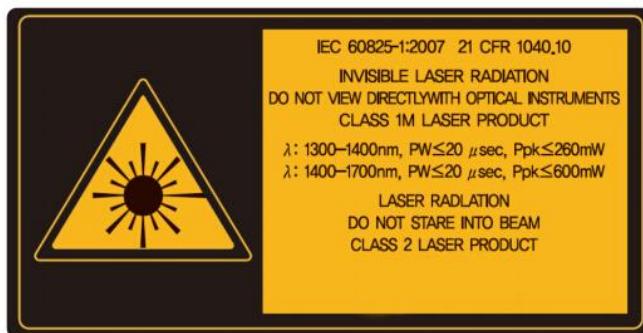
④Dead zone is measured with pulse width of 3ns and return loss under -55dB.
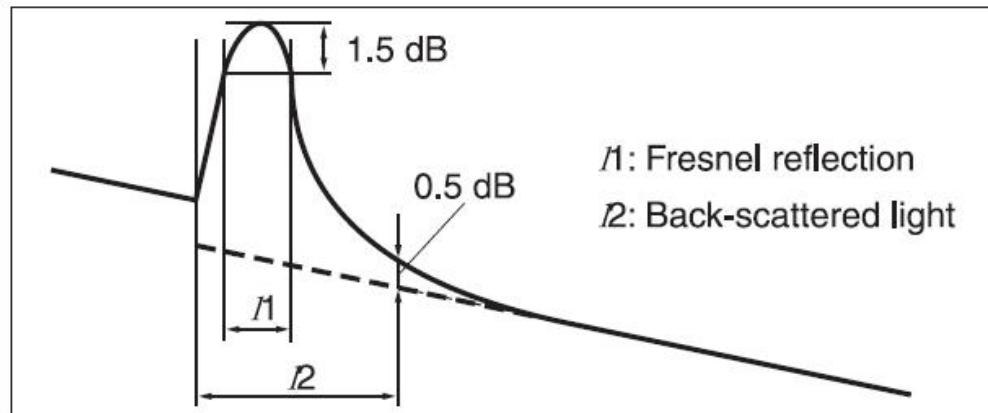
⑤1310/1550nm laser source uses OTDR1 port, and 1625nm or 850/1300nm uses OTDR2 port.

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.
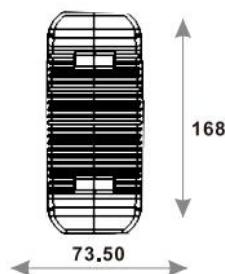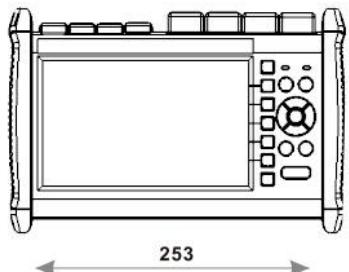
Unit:mm
Except where noted, tolerance
default as:±3%
(if size<10mm, tolerance:±0.3mm)
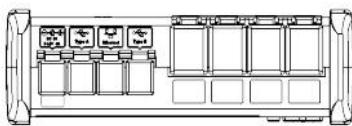
*Specifications are subject to change without notice.