



Data Communication



Optical Fiber



Tele Communication



IT Product & Services



## FES-OTDR-6000 Series *Multi-function Fiber Optics Tester*

### Product Overview

FES-OTDR-6000 series Optical Time Domain Reflectometer (OTDR) is the new generation of intelligent meter for the detection of fiber communications systems. With the popularize of optical network construction in cities and country sides, the measurement of optical network became short and disperse, FES-OTDR-6000 is specially designed for that kind of application, its economic and also have outstanding performance.

FES-OTDR-6000 is manufactured with patience and carefulness, following the national standards to combine the rich experience and modern technology, subject to stringent technical, electronic and optical testing, quality assurance, in the other way, new design makes FES-OTDR-6000 more smart and compact and multi-purpose, also it has various functions. Whether you want to detect link layer in the construction and installation of optical network or proceed efficient maintenance and troubleshooting, FES-OTDR-6000 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

FES-OTDR-6000 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 be perfect in filed testing. Meanwhile, optional PCB board with water-proof coating helps FES-OTDR-6000 series OTDR get better protection performance.

## What you need is all-in-one!

FES-OTDR-6000 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), FES-OTDR-6000 series OTDR supports multi-mode (850/1300nm) test mode for option to analyze the multi-mode fiber network.

### VFL (visual fault locator)

The VFL, available as a standard module in FES-OTDR-6000 series OTDR, offers built-in 650nm visual fault location on a FC/UPC connector.

### PON ONLINE TEST

FES-OTDR-6000 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)

FES-OTDR-6000 series OTDR comes with optional built-in power meters that let technicians easily verify the presence of a signal.

### LS (Laser source)

FES-OTDR-6000 series OTDR comes with optional built-in laser source through OTDR 1 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 Inspect Before the connection. FES-OTDR-6000 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.



## Specifications:

### General:

|                                 |  |
|---------------------------------|--|
| <b>Dimension</b>                | <b>253 x 168 x 73.6mm (1.5KG Battery Included)</b>   |
| <b>Display</b>                  | 7 inch TFT-LCD with LED backlight (touch screen function is optional)  |
| <b>Interface</b>                | 1×RJ45 port, 3×USB port (USB2.0, Type A USB×2, Type B USB×1)   |
| <b>Power Supply</b>             | 10V (dc), 100V (ac) to 240V(ac), 50~60Hz   |
| <b>Battery</b>                  | 7.4V (dc)/4.4Ah lithium battery (with air traffic certification)<br>Operating Time: 12 hours <sup>①</sup> , Telcordia GR- 196-CORE Charging time: <4 hours (power off)                     |
| <b>Power Saving</b>             | Backlight off: Disable/1 to 99minutes<br>Auto shutdown: Disable/1 to 99minutes   |
| <b>Data Storage</b>             | Internal memory: 8GB (about 40,000 groups of curves)   |
| <b>Language</b>                 | User selectable (English, Simplified Chinese, French, Korean,Russian, Spanish and Portuguese -contact us for availability of others)   |
| <b>Environmental Conditions</b> | Operating temperature and humidity: -10°C ~+ 50 °C,≤ 95% (non-condensation)<br>Storage temperature and humidity: -40°C~+ 75°C,≤ 95% (non-condensation)                                     |
| <b>Assoseries</b>               | Proof: IP65 (IEC 60529)<br>Standard: Main unit, power adapter, Lithium battery, FC adapter, USB cord, User guide, CD disk, carrying case<br>Optional: SC/ST/LC adapter, Bare fiber adapter |

### Technical Parameter

| Type          | Testing Wavelength (MM: ±20nm, SM: ±10nm) | Dynamic Range(dB) | Event/Attenuation dead-Zone (m) |
|---------------|---|-------------------|---------------------------------|
| FES 6000-M21  | 850/1300                                  | 19/21             | 0.8/4                           |
| FES 6000-MD21 | 850/1300                                  | 19/21             | 0.8/4                           |
|               | 1310/1550                                 | 35/33             | 1/ 4                            |
| FES 6000-MD22 | 850/1300                                  | 22/20             | 0.8/4                           |
|               | 1310/1550                                 | 40/38             | 1/4                             |
| FES 6000-D32  | 1310/1550                                 | 32/30             | 0.8/4                           |
| FES 6000-D35  | 1310/1550                                 | 35/33             | 0.8/4                           |
| FES 6000-D40  | 1310/1550                                 | 40/38             | 1/4                             |
| FES 6000-D43  | 1310/1550                                 | 43/41             | 1/5                             |
| FES 6000-D45  | 1310/1550                                 | 45/43             | 1/5                             |
| FES 6000-T35F | 1310/1550/1625                            | 35/33/33          | 1/4                             |
| FES 6000-T40F | 1310/1550/1625                            | 40/38/38          | 1/4                             |
| FES 6000-T43F | 1310/1550/1625                            | 43/41/41          | 1/5                             |
| FES 6000-T45F | 1310/1550/1625                            | 45/43/43          | 1/5                             |



|   |   |
|---|---|
| <b>Pulse Width</b>                      | Single mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs<br>Multi-mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs  |
| <b>Distance Range</b>                   | Single mode: 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 240km, 300km, 400km, .<br>Multi-mode: 500m, 2km, 5km, 10km, 20km, 40km  |
| <b>Sampling Resolution</b>              | Minimum 5cm up to 5(m)  |
| <b>Event dead zone</b>                  | ≤ 1m  |
| <b>Measurement Time</b>                 | User-defined (60 min maximum)   |
| <b>Loss Measurement</b>                 | Display one-way losses in steps of 0.001 Db to a maximum of 5 digits. display the relative one-way loss, loss per unit length, and splice loss between any two given points in two ranges on the waveform.  |
| <b>Automatic Measurement Function</b>   | Automatic measurement function with single-button operation in 10 Seconds.  |
| <b>Return-Loss Measurement function</b> | Return loss measurement function inside. (Return loss: calculated as the difference between the back scattered and reflected light levels).   |
| <b>Typical Real</b>                     | 2-time refresh (Hz)   |
| <b>Sampling Point</b>                   | Maximum 256,000 points  |
| <b>Linearity</b>                        | ≤ 0.05dB/dB   |
| <b>Scale Indication</b>                 | X axis: 4m~70m/div, Y axis: Minimum 0.09dB/div  |
| <b>Distance Resolution</b>              | 0.01m   |
| <b>Distance Accuracy</b>                | ± (1m+measuring distance×3×10 <sup>-5</sup> +sampling resolution ) ( excluding IOR uncertainty)   |
| <b>Reflectance Accuracy</b>             | Single mode: ±2dB, multi-mode: ±4dB   |
| <b>IOR Setting</b>                      | 1.30000~1.70000, 0.00001 step   |
| <b>Units</b>                            | km, miles, meter  |
| <b>Attenuation dead</b>                 | 4/5 zone  |
| <b>OTDR Trace Format</b>                | Telcordia universal, SOR, issue 2(SR-4731)<br>OTDR: User selectable automatic or manual set-up  |
| <b>Testing Modes</b>                    | Visual fault locator: Visible red light for fiber identification and troubleshooting<br>Light source: Stabilized Light Source (CW, 270Hz, 1kHz, 2kHz output)<br>Field microscope probe<br>Auto or manual operation, displayed in table format<br>User defined PASS/FAIL thresholds: |
| <b>Fiber Event Analysis</b>             | -Reflective and non-reflective events: 0.01 to 1.99dB (0.01dB steps)<br>-Reflective: 0.01 to 32dB (0.01dB steps)<br>-Fiber end/break: 3 to 20dB (1dB steps) C32<br>Real time sweep: 1Hz   |
| <b>Other Functions</b>                  | Averaging modes: Timed (1 to 3600 sec.)<br>Trace overlay and comparison<br>Live Fiber detect: Verifies presence communication light in optical fiber  |



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

|                          |              |
|--------------------------|--------------|
| <b>Wavelength(±20nm)</b> | <b>650nm</b> |
| <b>Power</b>             | 10mW,CLASS-1 |
| <b>Range</b>             | 12km         |
| <b>Connector</b>         | FC/UPC       |
| <b>Launching Mode</b>    | CW/2Hz       |

## OTDR Launch Cable Box (Optional)

Forever provides high performance Launch Cable Box with interchangeable SC/FC/ST adapters in UPC or APC polishing end face. It is used to aid in the testing of fiber optic cable when using an OTDR. The OTDR Launch Cable Box is used with Optical Time Domain Reflectometers (OTDRs) to help minimize the effects of the OTDR's launch pulse on measurement uncertainty. Specially designed for Forever FES-OTDR-6000 Series OTDR, Launch Cable Box can be fixed on the rear of FES-OTDR-6000 Series OTDR by screws as standard accessories in the package.

### Features:

1. Compact, easy to carry
2. Case can house up to 1,000 meters of fiber
3. Attachable with FES-OTDR-6000 Series OTDR

### Applications:

1. Training and calibration
2. Installation and testing by OTDR

|                              |   |
|------------------------------|---|
| <b>Fiber Type</b>            | <b>SM G.652D</b>  |
| <b>Adapter Type</b>          | Interchangeable FC/SC/ST adapter  |
| <b>Polishing Type</b>        | APC/UPC Selectable  |
| <b>Color</b>                 | Black   |
| <b>Dimension</b>             | 20.6(L)x 12.2(W)x2.3(H)cm   |
| <b>Weight</b>                | 1Kg   |
| <b>Operating Temperature</b> | -40~+55°C   |
| <b>Adapter 2</b>             | SC=SC/UPC; AS=SC/APC;<br>FC=FC/UPC; AF=FC/APC;<br>ST=ST/UPC; AT=ST/APC; |
| <b>Fiber Type</b>            | 7A1=SM G.657.A1; 2D=SM G.652.D;<br>OM1=MM 62.5/125um; OM2=MM 50/125um   |



## PM Module(Power Meter , as Optional Function)

|                              |   |
|------------------------------|---|
| Wavelength Range             | 800~1700nm  |
| Calibrated Wavelength(±10nm) | 850/1300/1310/1490/1550/1625/1650nm                           |
| Test Range                   | Type A: -65~+5dBm (Standard)<br>Type B: -70~+10dBm (Optional) |
| Resolution                   | 0.01dB  |
| Accuracy                     | ±0.35dB±1nW   |
| Modulation Identification    | 270/1k/2k Hz,P input ≥-40dBm                                  |
| Connector                    | FC/UPC  |

## LS Module (Laser Source, as Optional Function)

|                            |                     |
|----------------------------|---------------------|
| Working Wavelength (±10nm) | 1310/1550/1625nm    |
| 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             | 0.40x0.31mm   |
| Storage/Working Condition | -18°C ~ 35°C  |
| Dimension                 | 235x95x30mm   |
| Sensor                    | 1/3 inch 2 million of pixel   |
| Weight                    | 150g  |
| USB                       | 1.1/2.0   |
| Adapter                   | Standard: SC-PC-F (For SC/PC adapter)<br>FC-PC-F (For FC/PC adapter)<br>LC-PC-F (For LC/PC adapter)<br>2.5PC-M (For 2.5mm Connector, SC/PC, FC/PC, ST/PC) |

