



TFN F7 Series Optical Time Domain Reflectometer (OTDR)



Product Introduction

The F7 High-Performance Optical Time Domain Reflectometer (OTDR) is an all-in-one fiber optic testing solution designed for comprehensive network diagnostics and maintenance. Featuring an 8-inch capacitive touchscreen and integrated multi-functional modules, the F7 delivers precise measurements with a dynamic range of up to 45dB and a dead zone as low as 0.8m. It supports a wide range of testing capabilities including OTDR, VFL, OPM, optical loss testing, end-face inspection, Ethernet testing, and remote operation. Ideal for telecom operators, network installers, and maintenance teams, the F7 combines high accuracy, user-friendly operation, and rugged portability to ensure reliable fiber network performance in various field conditions.

Product Key Selling Points

High Dynamic Range & Low Dead Zone

The F7 OTDR offers an exceptional dynamic range of up to 45dB with a blind zone as low as 1m, enabling precise detection of events and faults even in long-haul and high-loss fiber links. This ensures accurate fault location and detailed link analysis for reliable network diagnostics.

Multi-Function Integrated Testing

Integrating OTDR, VFL, OPM, OLS, optical loss test, end-face inspection, and Ethernet testing in one device, the F7 eliminates the need for multiple instruments. This streamlines fieldwork, reduces equipment costs, and enhances testing efficiency for comprehensive fiber network validation.

Live PON Testing & Single/Multi-Mode Support

Selected models (F7-T1, T2, T3) support live PON network testing without service interruption. The F7-SM1 model offers single-mode and multi-mode integrated testing, making it versatile for diverse fiber types and network architectures.

Self-Diagnosis & Professional Reporting



The F7 features built-in test result self-diagnosis to ensure reliability and validity. It generates detailed test reports in SOR and PDF formats, facilitating professional documentation and compliance with industry standards.

Cost-Effective & High Performance

Designed to deliver professional-grade accuracy and functionality at a competitive price, the F7 provides exceptional value for both enterprise and field technicians. It reduces training time and operational costs while meeting rigorous testing demands.

Product Specifications

Model	Optical Time Domain Reflectometer								
	S1	S3	S4	T1	T2	T3	F1	M1	SM1
Fiber Type	Single-mode							Multimode	Single/Multi-mode
Wavelength	1310/1550nm			1310nm /1550nm /1490nm	1310nm /1550nm /1625nm	1310nm /1550nm /1650nm	1310nm /1490nm /1550nm /1625nm	850nm/1300nm	850nm /1300nm /1310nm /1550nm
Maximum Dynamic Range (dB)	35/33	42/40	45/43	38/36/36	38/36/36	38/36/36	37/35/35/35	26/28	26/28/35/33
Event Blind Spot	1m	0.8m		0.8m	0.8m	0.8m	1m	1m	
Attenuation Blind Spot	5m	4m		4m	4m	4m	5m	5m	
Test Range	100m/500m/1.25km/2.5km/5km/10km/20km/40km/80km/125km/260km/420km								
Test pulse width	3ns/5ns/10ns/20ns/30ns/50ns/80ns/100ns/200ns/300ns/500ns/800ns/1us/2us/3us/5us/8us/10us/20us								
Distance Measurement Accuracy ^d	$\pm(0.75m + \text{sampling interval} + 0.0025\% \times \text{test distance})$								
Loss resolution	± 0.001 dB								
Attenuation threshold	0.01 dB								
Linearity	± 0.03 dB/dB								
Maximum Number of Sampling Points	$\geq 256k$								
Sampling Resolution	0.03m to 4m								
File Format	SOR standard file format								



Loss measurement mode	4-Point Method
Laser Safety Class	Class II
Data Storage	Standard: ≥ 12 GB
Optical Connector	FC/UPC (interchangeable with SC, ST)
Optical Power Meter	
Wavelength Range	800nm–1700nm
Connector	Universal Connector FC/SC/ST
Measurement Range	-50dBm to +26dBm (Standard)
Uncertainty	$\pm 5\%$
Calibration Wavelengths	850nm/1300nm/1310nm/1490nm/1550nm/1625nm/1650nm
Laser Source	
Laser Type	FP-LD
Output Wavelength	Matches OTDR output wavelength
Output Power ^e	≥ -5 dBm (single-mode)
Operating Mode	CW/270Hz/1kHz/2kHz
Stability	CW, ± 0.5 dB/15min (tested after 15-minute warm-up)
Optical Connector	FC/UPC (interchangeable with SC, ST)
Visual Fault Locator	
Operating Wavelength	650nm ± 20 nm
Output Power	≥ 10 mW
Operating Mode	CW/1Hz/2Hz
Optical Connector	FC/UPC (interchangeable with SC, ST)
Optical Loss Test Specifications Refer to the specifications of the above light source and optical power meter	
Overall Specifications	
Display	8-inch color touchscreen 1024X600
Power Supply	Power adapter: Input 100V–240V 50/60Hz, Output 12V – 19V; Built-in lithium-ion battery: 3.7V, 15600mAh
Data Interfaces	USB-A, Type-C ports, RJ45 LAN 100/1000Mbit/s
Operating Temperature	-10°C to 50°C
Storage	-40°C to 70°C



Temperature	
Relative Humidity	0% to 95% RH, non-condensing
Unit Weight	
Dimensions	

- Note:**
- a. Using a 3ns pulse, typical reflection coefficient ranges from -35dB to -55dB.
 - b. Using a 3ns pulse, typical reflection coefficient is -55dB (1310nm).
 - c. Typical value for non-reflective FUT fiber under test, non-reflective splitter, 13 dB loss, 50 ns pulse.
 - d. Excludes uncertainty due to refractive index variations.
 - e. Multimode 850/1300nm light source output power approximately -24dBm; special 1650nm (38dB) light source output power approximately -24dBm.

Product Features

Feature 1: High Dynamic Range & Ultra-Low Dead Zone for Accurate Fault Detection

The F7 delivers a maximum dynamic range of 45dB with a dead zone as low as 1m, enabling clear identification of events close to the test point. This is critical for detecting splice losses, connectors, and micro-bends in long-distance and high-density fiber networks. With enhanced sensitivity and precision, the F7 ensures reliable fault location and performance validation, reducing network downtime and maintenance costs.

Feature 2: All-in-One Multi-Function Testing Platform

Beyond OTDR, the F7 integrates Visual Fault Locator (VFL), Optical Power Meter (OPM), Optical Light Source (OLS), optical loss testing, end-face inspection, and Ethernet diagnostics. This consolidation simplifies field operations, reduces the number of devices to carry, and accelerates troubleshooting. Whether you're testing insertion loss, verifying connector cleanliness, or diagnosing network connectivity, the F7 provides a complete toolkit in one rugged instrument.

Feature 3: Live PON Testing & Single/Multi-Mode Versatility

Select F7 models support non-destructive live testing on PON networks, allowing technicians to diagnose faults without disrupting active services. The F7-SM1 model further extends versatility by supporting both single-mode and multi-mode fibers in one unit. This flexibility makes the F7 ideal for ISPs, enterprise networks, and hybrid fiber deployments.

Feature 4: Self-Diagnosis & Professional Report Generation

The F7 includes intelligent self-diagnosis to verify test result accuracy and instrument health. It automatically generates detailed test reports in industry-standard SOR and PDF formats, complete with event lists, curves, and pass/fail indicators. This feature enhances data integrity, simplifies audit compliance, and supports professional reporting for clients and regulators.

Feature 5: Exceptional Value: Professional Performance, Affordable Price

The F7 is engineered to offer enterprise-grade performance at a mid-range price point. It combines high accuracy, robust build quality, and versatile functionality to meet the needs of



telecom operators, contractors, and network engineers. By reducing the need for multiple specialized tools, the F7 lowers capital expenditure and training overhead while delivering reliable, repeatable test results.

Applications & Pain Points Solved

- **Telecom Operators & Optical Cable Manufacturers**

Scenario: Daily fiber link acceptance, quality inspection, and fault troubleshooting in long-haul and metro networks.

Pain Point Solved: Traditional OTDRs may miss subtle faults or events near connectors due to large dead zones, leading to undetected future failures. The F7's 1m event dead zone and up to 45dB dynamic range ensure precise detection of splices, bends, and breaks, even in complex or high-loss spans, improving network reliability and reducing post-deployment repair costs.

- **Electric Power, Railway & Private Network Construction**

Scenario: Deploying and maintaining dedicated fiber networks in harsh or remote environments, such as rail tracks, power substations, and industrial campuses.

Pain Point Solved: Field technicians often carry multiple devices for different tests, increasing setup time and equipment burden. The F7's integrated multi-function design (OPM, VFL, OLS, Ethernet test) consolidates all essential fiber and network tests into one rugged, portable unit, streamlining operations and enhancing field efficiency.

- **ISP & PON Network Maintenance Teams**

Scenario: Performing live testing on operating PON networks without disrupting subscriber services.

Pain Point Solved: Testing active PON networks typically requires service interruption or costly dedicated equipment. Selected F7 models (T1, T2, T3) support non-destructive live PON testing, allowing technicians to diagnose faults, measure splitter loss, and verify signal quality while keeping the network online, minimizing downtime and customer complaints.

- **Enterprise & Data Center Fiber Management**

Scenario: Managing mixed single-mode and multi-mode fiber infrastructures within campuses, data centers, and LAN environments.

Pain Point Solved: Maintaining separate testers for single-mode and multi-mode fibers increases cost and complexity. The F7-SM1 model offers single-mode and multi-mode integrated testing in one device, enabling unified inventory management, easier certification, and faster troubleshooting across diverse fiber types.

- **Network Contractors & Service Teams with Budget Constraints**

Scenario: Delivering professional-grade fiber testing and reporting without the high cost of specialized, single-function instruments.

Pain Point Solved: Many teams struggle to balance performance needs with budget limits, often compromising on features or accuracy. The F7 provides enterprise-level accuracy, self-diagnosis, and comprehensive reporting (SOR/PDF) at a mid-range price, offering an optimal



cost-to-performance ratio that meets professional standards while controlling capital expenditure.

Q&A

Q1: What is the typical battery life of the F7 OTDR?

A: The F7 is equipped with a 7.4V 6700mAh lithium-ion battery providing up to 12 hours of continuous operation under typical OTDR testing conditions (real-time refresh, 50% backlight).

Q2: Can the F7 test both single-mode and multi-mode fibers?

A: Yes, the F7-SM1 model supports integrated single-mode and multi-mode testing. Other models are configurable with optional modules to cover various fiber types.

Q3: Does the F7 support remote testing?

A: Yes, via Ethernet (LAN2 port) or Bluetooth (with optional APP), enabling remote control, file transfer, and real-time monitoring from a PC or mobile device.

Q4: What file formats does the F7 support for test reports?

A: The F7 saves test curves in SOR format and can generate comprehensive PDF reports, which include event lists, graphs, and test parameters.

Q5: Is the F7 suitable for live network testing?

A: Yes, models F7-T1, T2, and T3 support live PON testing, allowing non-intrusive diagnostics on active fiber networks without service interruption.

Package Contents

F7 Main Unit × 1

Power Adapter (AC 100V – 240V) × 1

Type-C Data Cable × 1

Portable Case × 1

Quick Start Guide × 1

FC/PC Test Jumper (Optional SC/ST Adapter) × 1

Wrist Strap × 1

U-disk (Include user manual, analysis software and remote test software) × 1