TFN F7 Series High-Performance Optical Time Domain Reflectometer (OTDR)

Product Overview

This high-performance, multi-functional fiber optic testing instrument integrates multiple capabilities including OTDR, light source, optical power meter, visual fault location, fiber end-face inspection, and optical loss testing. Equipped with an 8-inch high-definition capacitive touchscreen and full-function keys, it offers user-friendly operation suitable for diverse scenarios such as fiber optic network construction, maintenance, and fault diagnosis.

Key Selling Points (Addressing Customer Pain Points)

1. High Precision and Dynamic Range

- Initial dynamic range reaches 35/33dB, expandable to 45dB, ensuring precise testing of long-distance fiber links.
- Distance measurement resolution as high as 0.05m with a minimum event blind zone of 0.8m, enabling effective detection of short-distance events and minute losses.

2. Multi-functional integrated design

- Supports single-mode, multi-mode, and combined single/multi-mode configurations with optional dual-, triple-, or quad-wavelength modules.
- Integrated functions include light source, optical power meter, VFL, end-face inspection, and network testing—one device for multiple tasks, reducing equipment investment.

3. Intelligent Diagnostics and User-Friendly Operation

- Features self-diagnostic capabilities for test results, enhancing reliability and validity.
- Supports customizable Pass/Fail thresholds, multi-curve comparisons, and one-click PDF report generation for rapid on-site evaluation and documentation.

4. Remote and Online Testing Capabilities

- Supports Ethernet remote control for OTDR testing, ideal for unattended or remote maintenance scenarios.
- Optional online testing modules enable non-destructive testing of live optical links without disrupting service operations.

5. Robust Expandability and Compatibility

- Offers multiple interfaces (USB-A, USB-C, Ethernet, Bluetooth, etc.) for connecting external devices like USB drives, end-face scanners, and computers.
- File formats comply with SOR standards for seamless data sharing and analysis.

Product Specifications Overview

Model	Optical Time Domain Reflectometer								
	S1	S2	S3	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 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]	±(0.75m + sampling interval + 0.0025% × test distance)
Loss resolution	±0.001 dB
Attenuation threshold	0.01 dB
Linearity	±0.03 dB/dB
Maximum Number of Sampling Points	≥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: ≥12GB

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	±5%
Calibration Wavelengths	850nm/1300nm/1310nm/1490nm/1550nm/1625nm/1650nm
Laser Source	
Laser Type	FP-LD
Output Wavelength	Matches OTDR output wavelength
Output Power[a]	≥-5 dBm (single-mode)
Operating Mode	CW/270Hz/1kHz/2kHz
Stability	CW, ±0.5dB/15min (tested after 15-minute warm-up)
Optical Connector	FC/UPC (interchangeable with SC, ST)
Visual Fault Locator	
Operating Wavelength	650nm ±20nm
Output Power	≥10mW
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 Temperature	-40°C to 70°C
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.

Key Features

OTDR Testing

- Supports up to four wavelengths
- Features event mapping, macro-bend analysis, and four-point/LSA curve analysis
- Configurable start/end fibers with customizable threshold detection

Optical Laser Source (OLS) and Optical Power Meter (OPM)

- Light source supports CW, 270 Hz, 1kHz, 2kHz modulation
- Wide optical power meter measurement range (+70dBm to +26dBm), supports multi-wavelength identification

Visual Fault Locator (VFL)

- Supports continuous/1Hz/2Hz visible red light for rapid fiber fault location

Optical Loss Testing

- Supports synchronized operation between light source and optical power meter for precise insertion loss measurement

Fiber Microscope

- Visually inspect fiber end-face quality to ensure connection reliability
- Note: Fiber microscope probe is optional

Network and Link Testing

- Supports PING, IP scanning, network cable sequence/length testing, and link speed measurement

Bluetooth and Remote Control

- Control the device via Bluetooth using a mobile app for remote testing and file transfer

Applicable Scenarios

- Fiber-to-the-Home (FTTH) deployment and acceptance testing
- Data center fiber cabling testing
- Maintenance and fault location for long-haul trunk cables
- Installation and commissioning of optical communication equipment
- Fiber Optic Network Instruction and Training

Summary

With its high precision, multifunctionality, and intelligent design, this OTDR stands as an ideal tool in the field of fiber optic testing. Whether deployed for fiber network installation, maintenance, or troubleshooting, it delivers reliable and efficient testing solutions, helping users enhance operational efficiency while reducing operational costs.