

# Mini Optical Time Domain Reflectometer

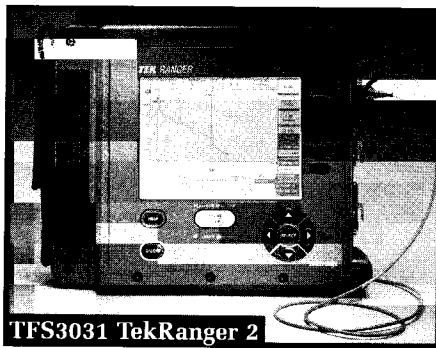
TFS3031 TekRanger®2



## Features

### TFS3031 TekRanger 2

- Improved! IntelliTrace™ – One-button Automatic Fiber Analysis
- New! Singlemode Distance and Loss Measurements Traceable to NIST
- Large, Backlit, High-resolution Display
- “Real Time” Testing
- Easy-to-change Wavelengths
- 5 Meter Singlemode Event Dead Zone
- 3.5 Meter Multimode Event Dead Zone
- 0.02 dB Loss Threshold
- Singlemode Dynamic Range 35 dB (Opt.10)
- Multimode Dynamic Range 31 dB
- 15 to 60 dB Selectable Reflectance Threshold
- Shock, Water, and Dust Resistant
- Echo Detection
- Compatible with FiberMaster®, FMTAP™, PC Spreadsheets
- Internal Memory for 100 Waveforms
- Software Upgradeable in the Field
- 4 Hour Battery Charge Time
- RS-232, Parallel and Keyboard Ports
- 3.5 Inch Internal Floppy-disk Drive (Optional)
- Mini-keyboard (optional)
- Multimode/Singlemode in One Unit (Optional)



### TFS3031 TekRanger 2

Tektronix Communications Test Business Unit provides a broad range of products in cable tests, transmission tests, and RF and wireless applications.

If your job is to install or maintain optical fiber, the TFS3031 TekRanger 2 with IntelliTrace Automated Fiber Analysis System is a rugged, easy-to-use, mini-optical time domain reflectometer (OTDR) that's built for you. It's designed to stand the rigors of field work, while providing precise measurements on single-mode or multimode optical fiber systems.

#### THE IntelliTrace ADVANTAGE

IntelliTrace technology automatically adjusts and optimizes acquisition parameters so you don't have to. Just press the Start/Stop button and it will provide you with the best possible resolution, while maximizing dynamic range to give you the most accurate measurements available in a mini-OTDR today. Unlike our competitors, one IntelliTrace acquisition provides consistent, repeatable, and accurate results. The location, reflectance, and loss of every splice appears quickly and clearly on the large, high contrast display.

The TFS3031 is the only mini-OTDR that can locate a splice 10 meters away while also finding an end at 175 km away (on singlemode fiber) with the push of a single button. No need for multiple acquisitions to get a complete picture of your fiber, either with a displayed trace or event table. You get greater productivity.

#### TRACEABLE MEASUREMENTS

IntelliTrace technology has been improved. We can now offer traceability on singlemode distance and loss measurement. This means that we include both the hardware and the software in our accuracy specifications. What this means to you is that you can count on TekRanger 2 to provide the most reliable and repeatable measurements of any OTDR in the world. No other OTDR vendor can claim that!

#### SUPERIOR PERFORMANCE

TekRanger 2 sets a new industry standard for the combination of dynamic range and dead zone performance in a mini-OTDR. We've made it easier to resolve faults that are close together and we've given TekRanger 2 enough horsepower to locate a fiber end at over 175 km.

#### DATA STORAGE

Test results can be stored in the TekRanger 2's ample internal memory or collected on the optional floppy disk drive. Our new Windows™ based FMTAP software package gives you virtually unlimited flexibility when analyzing your optical fibers. The data can also be used in the Tektronix FiberMaster OTDR.

#### SYSTEM SOFTWARE UPDATES

TekRanger 2's disk drive and/or RS-232 port also permits updating of the unit's firmware in the field, so you can keep up with the latest technology.

## Characteristics

#### OPTICAL\*1

850 nm MM optical output:  $850 \pm 30$  nm.  
1300 nm MM optical output:  $1300 \pm 30$  nm.  
1310 nm SM optical output:  $1310 \pm 20$  nm.  
1550 nm SM optical output:  $1550 \pm 20$  nm.  
Loss threshold: 0.02 dB minimum.  
Loss resolution: 0.001 dB.

#### DYNAMIC AND MEASUREMENT RANGE\*1 –

	Dynamic Range	Measurement Range
850 nm (Opt. 01)	31 dB	25 dB
850/1300 nm (Opt. 03)	31/28 dB	25/22 dB
1310 nm (Opt. 04)	30 dB	24 dB
1310/1550 nm (Opt. 06)	30/28 dB	24/22 dB
1310/1550 nm (Opt. 10)	35/35 dB	28/28 dB

\* Typical performance @ 25° C

**Readout Resolution** – 25 cm minimum.

#### OTDR Distance Range Settings –

Singlemode: 1 to 240 km.  
Multimode: 1 to 40 km.

#### Distance Resolution (IntelliTrace) –

25 cm to 40 m.

#### Measurement Time IntelliTrace

**Technology** – Less than 3 minutes (20 dB accumulated loss).

**Field Usage** – Shock, water and dust resistant. Tested to Bellcore Mini-OTDR GR-196 CORE Environmental Specifications (i.e., 30-inch drop, shock, etc.).

For your local Tektronix representative see the list in the back of this catalog or outside the U.S. call: 1-503-627-1933, inside the U.S. call: 1-800-426-2200.



See Tektronix on the World Wide Web:  
<http://www.tek.com>



ISO 9001 Tektronix measurement products are manufactured in ISO registered facilities.

# Mini Optical Time Domain Reflectometer

## TFS3031 TekRanger®2

**Readout Resolution** – 25 cm minimum.  
**Distance Measurements** – Meters, Feet, Miles.  
**OTDF Distance Range Settings :**  
**Singlemode** – 1 to 240 km.  
**Multimode** – 1 to 40 km.  
**System Measurement Accuracy\*2:**  
**Distance** – ±4 m.  
**Loss** – ±0.01 dB.  
**Distance Resolution** (IntelliTrace Technology) - 25 cm to 40 m  
**Distance Accuracy\*3:**  
**Singlemode** – ±1.25 m ± 10<sup>-5</sup> x Distance  
**Multimode** – ±0.25 m ± 10<sup>-5</sup> x Distance  
**Linearity** – 0.002 dB/dB  
<sup>2</sup>Verified on NIST traceable calibration system.  
<sup>3</sup>Excludes uncertainty caused by fiber IR.

**ENVIRONMENTAL**  
 (Without internal disk drive)  
**Operation Temperature Range** – -10°C to +40°C.  
**Storage Temperature** – -20°C to +60°C.  
**Relative Humidity** – 5% to 95% (non-condensing).

### PHYSICAL CHARACTERISTICS

Dimensions	cm	in.
Width	29.2	11.5
Height	11.4	4.5
Depth	24.1	9.5
Weight	kg	lb.
Net	4.2	9.2

### DEAD ZONE (OPTIONS 01, 03, 04, 06, 10) –

Event	Loss	Measurement
Singlemode	5 m	15 m
Multimode	3.5 m	8 m

**Display** – High resolution 640 x 480; 7.2 inch, high contrast; Operator switchable backlight.

**Selectable Pulse Widths** – (dependent on option)

**Multimode:** 850 nm: 1 m, 5 m, 10 m. 1300 nm: 1 m, 5 m, 10 m, 20 m, 50 m, 100 m.

**Singlemode:** 1 m, 5 m, 10 m, 20 m, 50 m, 100 m, 200 m, 500 m, 1000 m, 2000 m, 3200 m (w/Opt. 10 only).

**Memory Capacity** – 100 traces in internal memory (typical). 3.5 in. floppy disk drive (optional).

**Output Ports** – RS-232 Serial; Centronix parallel printer, mini-DIN (keyboard).

**Power Options** – AC (100 to 240 V, 50 to 60 Hz). 9 to 16 V DC. Internal NiCad rechargeable battery (5 hours of operation depending on operating mode).

**Safety** – UL 3111-1 Listed. Certified to CSA C22.2 No. 1010.1-92. Class 1 Laser device.

## ORDERING INFORMATION

For price information: Outside the U.S. contact your local Tektronix representative, inside the U.S. see the price list in the back of this catalog.

### TFS3031

TekRanger2 Base Unit.

**Includes:** Operator Manual (070-9027-05); Quick Reference Card (063-2096-01); NiCad Battery Pack (146-0112-00); Power/Charger Adapter (119-4545-01); Power Cord (161-0228-00); Soft Carrying Case (016-1215-02).

### OUTPUT PORT OPTIONS

#### MULTIMODE OPTIONS

**Opt. 01** – Single wavelength 850 nm.  
**Opt. 03** – Dual wavelength 850/1300 nm.

#### SINGLEMODE OPTIONS

**Opt. 04** – Single wavelength 1310 nm.  
**Opt. 06** – Dual wavelength 1310/1550 nm.  
**Opt. 10** – Dual wavelength 1310/1550 nm extended range.

### CONNECTOR OPTIONS

Multimode Options	Singlemode Option	Connector Type	Part Number
20	30	Biconic	119-4515-00
21	31	FCPC	119-4516-00
22	32	D4PC	119-4514-00
24	34	STPC	119-4513-00
25	35	DINPC	119-4546-00
		47256	
26	36	DIAMOND	119-4558-00
		3.5	
28	38	SCPC	119-4518-00
-	41	FC/APC	119-5115-00
-	42	SC/APC	119-5116-00

### INTERNATIONAL POWER PLUG OPTIONS

**Opt. A1** – Universal Euro 220 V. Order 161-0066-09.  
**Opt. A2** – United Kingdom 240 V. Order 161-0066-10.  
**Opt. A3** – Australia 240 V. Order 161-0066-11.  
**Opt. A4** – N. American 240V, 60 Hz.  
**Opt. A5** – Switzerland 220 V. Order 161-0154-00.  
**Opt. A6** – Japan 110 V. Order 161-0288-00.

See Customer Information Section for additional description.

### LANGUAGE OPTIONS

**Opt. L1** – French.  
**Opt. L2** – Italian.  
**Opt. L3** – German.  
**Opt. L4** – Spanish.  
**Opt. L5** – Japanese.  
**Opt. L6** – Portuguese.  
**Opt. L7** – Simple Chinese.  
**Opt. L8** – Standard Chinese.  
**Opt. L9** – Finnish.

### MEASUREMENT SERVICE OPTIONS

**Opt. R3** – Repair warranty extended to cover three years.  
**Opt. R5** – Repair warranty extended to cover five years.

### OPTIONAL ACCESSORIES

**Opt. 11** – Disk drive.  
**Opt. 19** – Mini-keyboard.  
**Opt. D1** – Test Data Sheet (Traceable info).  
**Opt. 1S** – FMTAP™ Software.  
**Opt. 1T** – Hard Transit Case (016-1210-00).

**Opt. 2T** – Optical LED Source, 850/1300 nm (TOP130).

**Opt. 3T** – Optical Laser Source, 1310 nm (TOP140).

**Opt. 4T** – Optical Laser Source, 1550 nm (TOP150).

**Opt. 5T** – Optical Power Meter, 850/1310/1550 nm (TOP200).

**Opt. 6T** – Visual Fault Finder, 635 nm (TOP300).

**Opt. 7T** – Optical Laser Source 1310/1550 nm (TOP160).

**Opt. 8T** – High Performance Optical Power Meter (TOP220).

**Opt. 9T** – Optical Attenuator (TOP400).

**HARD TRAVEL CASE** – Order 016-1210-00.

**RS-232 PC INTERFACE CABLE** – Order 012-1379-00.

**FMTAP TRACE ANALYSIS PACKAGE** – Order FMTAP.

**CIGARETTE LIGHTER POWER ADAPTER** – 198-5810-00.

**CENTRONIX PARALLEL PRINTER CABLE** – Order 012-1214-00.

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