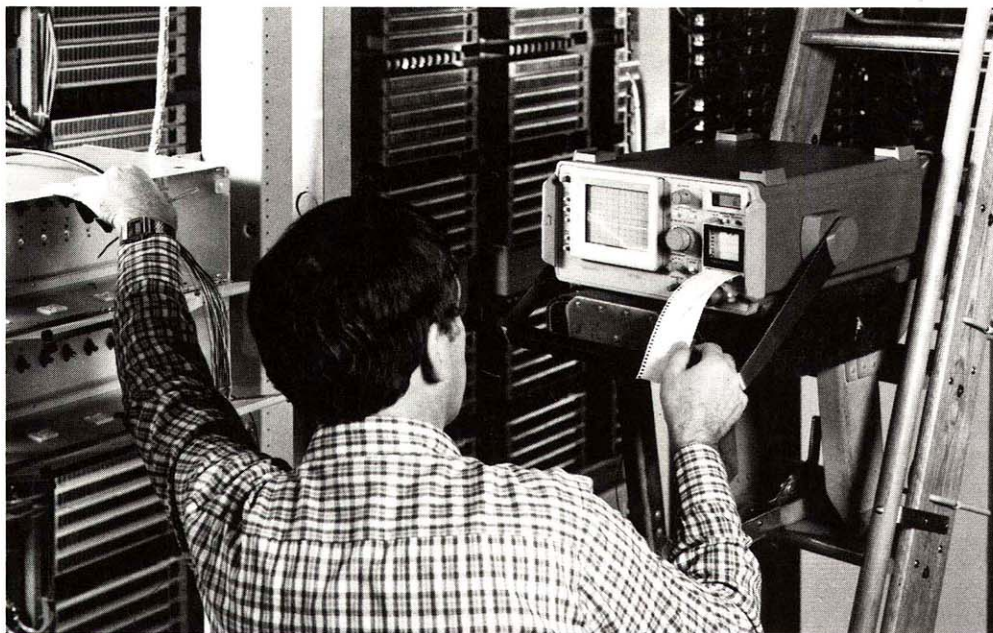


FIBER OPTIC TDR CABLE TESTERS



OF150 820 nm Fiber Optic TDR

LCD Readout Resolution to 0.1 dB/1.0 Meter

Accurate, Repeatable Measurements

Built-In Chart Recorder, Optional Recorder Output

Digital Storage Provides Easy to View Waveform and Noise Reduction

Two Selectable Pulse Widths

Portable — Operates from 12 Volt Vehicle System or Battery Pack

Unmatched Range

The OF150 is a high performance, easy to use, portable instrument that can perform repeatable, accurate distance and loss measurements on multimode optical fibers.

Typical applications include: splice measurement through a one-way cable loss of up to 21.5 dB to within ± 0.1 dB; detection of fiber ends, (four percent Fresnel reflection) through a one-way cable loss of up to 42.5 dB; and measuring distance to discontinuities (such as splices, Fiber faults and ends) to 19.9 km, with one meter resolution.

Direct Readout Saves Time and Errors

The OF150 gives you direct LCD readout of results, eliminating voltage-to-power and time-to-distance computations and risk of operator errors. Direct readout assures accurate, repeatable measurements every time. A built-in chart recorder provides a permanent record of the waveform for reference and comparison.

Get an Accurate Picture of Splice Loss

Digital storage produces a consistently sharp, easy-to-view trace. Signal averaging and selectable filters help maintain waveform resolution, so that measurements are made as accurately at long distances as closer in.

Two filters provide signal averaging and incremental decreases in the RMS noise floor. Compared to Fast filter operation (fast sweep), the Medium filter (medium sweep) provides a 7.5 dB reduction and the Slow filter (slow sweep) a 15 dB reduction. By using the Fast-Medium-Slow selection, you can pick the optimum signal acquisition speed/noise reduction combination.

The OF150 also offers two selectable pulse widths. The short pulse increases resolution for close-in measurements, while the long pulse extends distance/loss measurement range.

Easy to Use

The OF150 combines high performance with ease of use. With Tektronix supplied manuals, craftspeople or technicians can learn to use this instrument in two hours or less.

Portability and Convenience

Its compact size, light weight and rugged design, plus the ability to operate easily from a 12 volt vehicle system or external battery pack, enables the OF150 to offer exceptional portability in a high performance instrument.

CHARACTERISTICS

OPTICAL TEST SIGNAL

Wavelength — 820 nm (nominal).

Displayed Pulse Width — Long Pulse: 5.5 m, ± 1 m. Short Pulse: 1.5 m, ± 0.3 m.

System Pulse Rate — 4.762 kHz ± 5 Hz.

Optical Output Amplitude — $\geq 25 \mu\text{W}$ Time-average power coupled into test fiber (50 μm core, 0.20 NA) (Long Pulse mode).

Absolute Maximum Optical Output Amplitude — 200 μW time averaged power.

Displayed Pulse Risettime — < 0.7 m from -20 dB point to -6 dB point.

MEASUREMENT RANGE

Decrease in RMS Noise Floor through Filtering — With Medium Filter: 0.75 div (7.5 dB). With Slow Filter: 1.5 div (15.0 dB).

Optical Input Sensitivity — $\leq 0.40 \mu\text{W}$ input for 30 dB above displayed RMS noise floor.

Dynamic Range — 105 dB (typical) between peak optical output pulse and RMS noise floor (Slow Filter).

Maximum Round Trip Fiber Loss for Fiber End Detection — 85 dB typical (assuming 4% Fresnel reflection).

Maximum Round Trip Fiber Loss for ± 0.1 dB Scattering Signal Measurements — 43 dB typical (dependent on fiber characteristics).

CRT VERTICAL DISPLAY

Vertical Scales — 10 dB/div and 2 dB/div (10 div).

dB Scale Accuracy — ± 0.5 dB over any 10 dB increment from $+20$ dB to $+70$ dB, relative to bottom of display range.

CRT HORIZONTAL DISPLAY

Distance Scales — 1 m/div to 1000 m/div.

Display Limits — -5 m to 19.9 km from front-panel connector.

Sweep Time — Fast: 0.15 s. Med: 3.15 s. Slow: 55 s.

On-screen Distance Calibration — 5.00 ns/m.

"Zero" Distance Reference Accuracy — ± 0.5 m on screen.

LCD NUMERIC READOUT

Distance — Readout Range: 0 km to 19.9 km.

Distance Readout Resolution — 1 m.

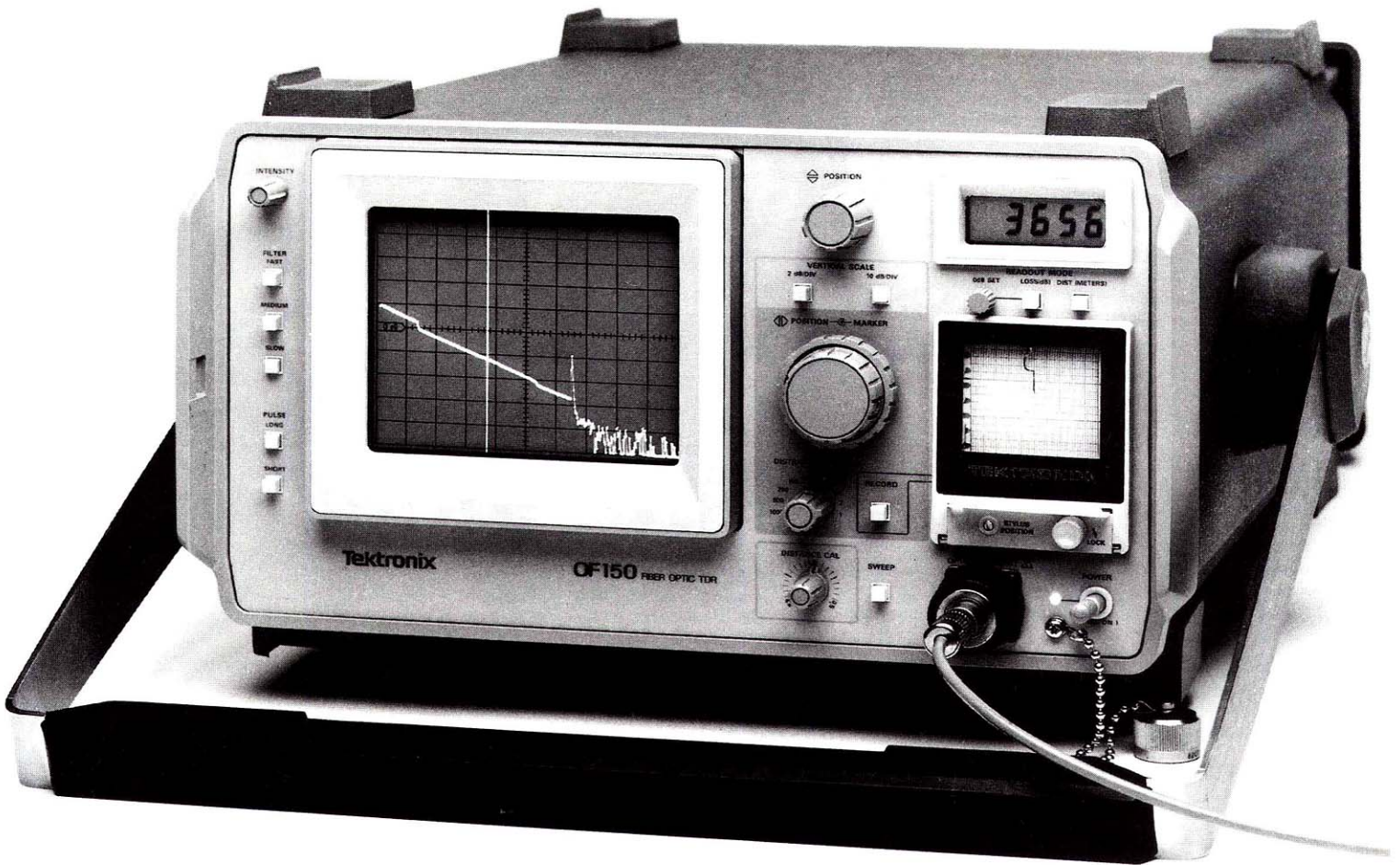
Distance Cal Factor Range — 4.9 ns/m to 5.1 ns/m.

Distance Cal Factor Accuracy — Within 0.01 ns/m of panel indication at center of scale (5,000); within 0.02 ns/m of panel indication at scale end points.

Loss Measurements — Readout Range: -25 dB to $+25$ dB (one way fiber loss) from center reference point. Readout Resolution: 2 dB/div scale: 0.1 dB; 10 dB/div scale: 0.5 dB.

Distance Measurement Accuracy — $\pm 0.3\%$ * \pm uncertainty in Fiber Cal Factor.

* Instrument timing in accuracy plus distance cal factor indication error.



SAFETY

Meets Class I Laser product safety classification under Radiation Control for Health and Safety Act of 1968. Optical output connector interlock prevents optical output when interlock is open.

ENVIRONMENTAL CHARACTERISTICS

The OF150 meets the specifications of MIL-T-28800B, Type III, Class 3, Style C except for Radiated Emission specification RE-01.

Altitude — Operating: 4600 m (15,500 ft). Nonoperating: 12 000 m (40,000 ft).

Temperature — Operating: -15°C to $+55^{\circ}\text{C}$. Nonoperating: -62°C to $+85^{\circ}\text{C}$.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width (Without front cover, handle or feet)	327	13.1
Height	175	7.0
Depth	499	20.0
Weight	kg	lb
Net (Includes accessories except manual)	16.6	37.0

POWER REQUIREMENTS

Ac Operation — 90 V ac to 132 V ac, 45 Hz to 440 Hz, 180 V ac to 250 V ac, 45 Hz to 440 Hz 24 W nominal (55 W maximum).

Dc Operation — 10 V dc to 16 V dc 20 W nominal (33 W maximum).

The above specifications are for the standard instrument. Specifications may vary for Option 20.

INCLUDED ACCESSORIES

Optical fiber interface cable, battery power cord (161-0149-00); ac power cord (161-0118-00); interlock contact ring replacement lens assembly (131-2741-02); protective cover for fiber optic interface cable, cable retainer (343-0170-00); ac power cord (161-0149-00); operator's manual.

XY1 OUTPUT MODULE (OPTION 01)

The XY1 provides signals which correspond to the trace on the CRT and can be used to drive an external analog plotter or chart recorder.

ELECTRICAL SPECIFICATIONS XY1 OUTPUT MODULE

X (Horizontal) Scale — $0.1 \pm 5\%$ per major division on CRT.

X Gain — Sets X-axis full scale between 0.5 V to 1.2 V.

Y (Vertical) Scale — $0.1 \text{ V} \pm 5\%$ of signal per major division on CRT.

Y Offset — Sets Y-axis mid-scale between 0.1 V and 0.9 V.

Z Output (Pen Lift) — TTL compatible, nominal +5 V. Logic output internally selectable.

Sweep Time — $14 \text{ s} \pm 1 \text{ s}$.

CHART RECORDER (OPTION 04)

Chart Dimensions — 40 mm x 125 mm (corresponding to the full CRT graticule area).

Chart Distance Scale Linearity — ± 0.2 major division match at any point.

Chart Vertical Scale Linearity — $\pm 5\%$ of deflection from center, ± 0.3 major division.

Chart Running Time — 16 s.

ORDERING INFORMATION

OF150 Fiber Optic Time Domain Reflectometer

.....	\$17,500
Option 01 — XY1 Output Module	+\$300
Option 04 — Chart Recorder	+\$1,050
Option 05 — 850 nm Wavelength (nominal)	NC
Option 20 — Western Electric Connector	NC

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 — Universal Euro 220 V/16 A, 50 Hz
Option A2 — UK 240 V/13 A, 50 Hz
Option A3 — Australian 240 V/10 A, 50 Hz
Option A4 — North American 240 V/15 A, 60 Hz
Option A5 — Switzerland 220 V/10 A, 50 Hz

OPTIONAL ACCESSORIES

Camera — C-5C	\$495
Hard Case — Transit. Order 016-0658-00	\$625
Soft Case — Order 016-0659-00	\$125
Receptacle Connector Optical — Ten each. Order 013-0207-02	\$375
Chart Paper — One Roll. Order 006-3618-00	\$9.25
Chart Paper — 25 Rolls. Order 006-3618-01	\$210
Chart Paper — 100 rolls. Order 006-3618-02	\$695
Accessory Kit — Deutsch Tools and Plugs. Order 015-0474-00	\$695
Sun Visor — Order 016-0653-00	\$30
XY1 Output Module	\$350
Chart Recorder — Order 016-0506-05	\$1,100
Service Manual.	