MTDR1
Single Phase Time Domain Reflectometer

- **Multiple fault locating methods**
- **Auto-ranging and auto-fault distance modes**
- **Single-phase, two-channel transceiver**
- **Compatible with various surge generators/filters combo on the market**
- **User configurable velocity tables and adjustable display cursors**
- **Rugged, sturdy powered unit with simple pushbutton direction**
- **Weather and rain resistant to IP54 with top cover closed**

DESCRIPTION

The MTDR1 is used for prelocating cable faults utilizing the following methods: pulse echo, arc reflection, differential arc reflection or transient analysis, both voltage and current. The unit is available as a stand-alone, or can be integrated into the Megger PFL Auto series line of products. Using the MTDR for prelocation significantly decreases fault locate times by reducing the number of surges required to prelocate. Consequently this reduces the number of surges required to pinpoint. The major benefit is the reduction of the number of surges required to pinpoint on service aged cables. The MTDR is your prime tool in the battle to quickly find your faults. It eliminates the time consuming and damaging process of repeatedly surging your cable in an effort to find faults.

The MTDR shown mounted in the Megger PFL40A cable fault finding system

The MTDR performs the following wave capturing methods:

- TDR (pulse echo)
- Arc reflection
- Burn arc reflection (arc stabilization)
- Surge pulse reflection (impulse current)*
- Voltage decay (voltage transient)*

**When integrated into the PFL40 Auto series with the appropriate couplers.*

When the arc reflection mode is selected, the MTDR features autoranging and auto fault distance. The MTDR offers features that are unique to the market. The flexible interface allows the operator to access any parameter; the large VGA screen provides easily viewed traces, espeically in bright or direct sunlight. The built-in USB port allows for transferring traces between the MTDR and a remote computer. COMLink communication software is also included to interface with older PCs. The integrated QWERTY keyboard allows you to input and label trace data for archival purposes.

The MTDR can be used as a stand alone unit or integrated into the PFL Auto Series for a full cable fault finding system. The unit is also fully compatible with nearly any surge generator/filter combo on the market.

The unit allows the operator to select the best prelocation technique based on the characteristics of the fault. It also allows the user to save and create files, and save cursor offsets. The MTDR also allows recall of previously stored traces and superimposition of a stored trace on an active trace. In this mode, the unit will display as many as three traces simultaneously.

Primary customers are:

- Electrical utilities (investor-owned utilities, electric coops/PUD, municipalities)
- Service companies
- Cable manufacturers

FEATURES AND BENEFITS

- **Operating software** — the MTDR features Windows® XP Embedded operating software for ease of use, flexibility, and to simplify future firmware upgrades and maintenance releases. COMLink communications software is also included.
- **Intuitive control interface** — a bright VGA screen offers indoor or outdoor operations in all lighting conditions and operating modes.
- **Auto-ranging** — the MTDR software recognizes the cable termination and automatically selects the optimum range.
- **Auto fault distance** — in arc reflection modes, the right cursor immediately moves to highlight the fault location. Distance to the fault is displayed.
- **Trace color selection** — traces are easily identified by a user-selected color and preset to the operator's preference.
- **Site data input and trace included** — cable type/number, operator identification and comments may be added to the trace itself.
- **User configurable velocity tables** — select from a built-in table of known cable values and known cable types, or create your own tables based on your cable type.
- **Cursors** — display cursors snap to the fault, but can be adjusted if desired.

SPECIFICATIONS

Operating Modes
Arc Reflection, Surge, Voltage Decay, TDR

Ranges
210, 540, 1060, 2130, 4260, 8800, 17,600, 35,000, 70,400 ft
64, 165, 323, 649, 1298, 2682, 5364, 10,668, 21,458 m

TDR Pulse Widths
40, 80, 160, 320, 640 ns
1, 2, 5, 10 µs

Sampling Rate
50 megasamples/second

Cursors
Selectable format: feet, meters
Dual, independent cursors with both positions displayed
Differential cursor position displayed

Resolution
5 ft (1.50 m), depending on range and mode

Horizontal Zoom
Selectable via front panel controls

Velocity Selectable
30 to 100%
295.1 to 983.5 ft/µs
90 to 299.7 m/µs
147.6 to 491.7 ft/µs (Vp/2)

Inputs
Input 1: channel one acquisition (TDR and ARC)
Input 2: channel two acquisition (SURGE and Voltage Decay)

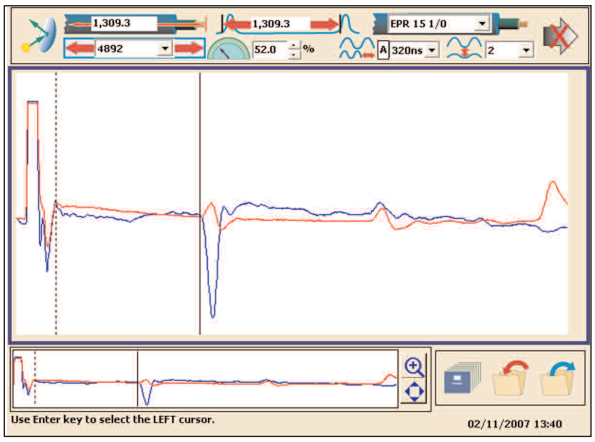
TDR Pulse Amplitude
10 V nominal, into 50 Ω

Gain
1, 2, 3, 4, 5, 10, 20, 50, 100

Input Impedance
50 Ω, all inputs

Max. Signal Input
250 V peak for transients

Display
Transflective color LCD



Actual TDR traces of 110-kV XLPE cable; fault distance 1309 meters. (Low voltage trace shown in red. High voltage trace indicated in blue.)

Operating System
Windows® XP Embedded

External Interfaces
USB port, Serial port

Printer Support (USB Printer)
Hewlett Packard or others supporting standard HP-PCL (Printer Control Language)

Memory
Stores up to 200 waveforms internally

Power
100 to 240 V ac 50/60 Hz self configuring for stand-alone unit
For integrated unit, power is supplied by PFL series

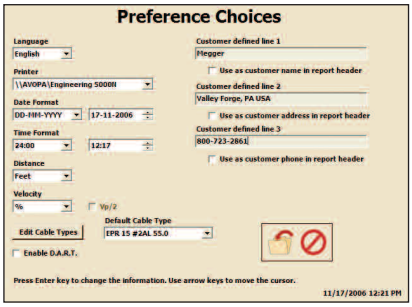
Temperature Range
Operating: -4 to +122º F (-20 to +50º C)
Storage: -22 to +158º F (-30 to +70º C)

Humidity
<95 percent non-condensing

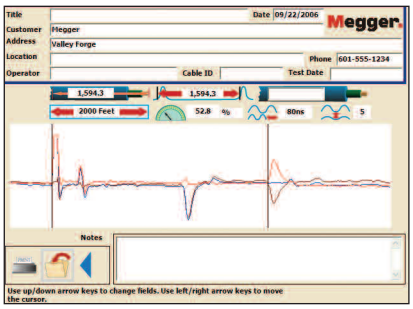
Dimensions
12 in. x 7.6 in. x 14.2 in.
(305 mm x 194 mm x 360 mm)

Weight
13 lbs (6 kg)

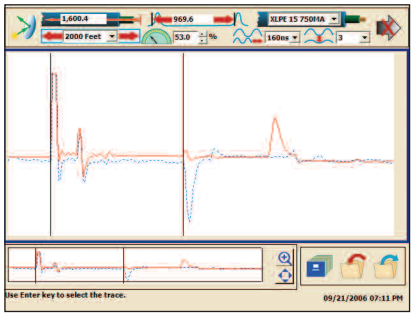
Accessories Supplied
Software to download and upload traces to and from a PC and to emulate MTDR operation on a PC for trace analysis and viewing



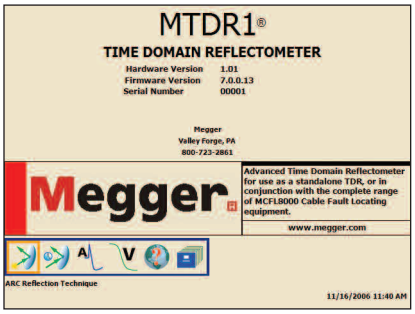
The Preferences Screen highlights the ease of configuration when using the instrument. Customer desired preferences can be set and displayed.



The Report Screen shows the capability of creating a printable report with specific customer required data.



Arc Screen shows the graphical display of the MTDR and arc reflection data.



Home Screen contains a high resolution color display with icons for control.

ORDERING INFORMATION

Item (Qty)	Cat. No.
Single Phase MTDR	MTDR1
Included Accessories	
Power supply cord	
North American (1 ea)	17032-4
European (1 ea)	17032-9
Coaxial cable, 10 ft [3 m] (2 ea)	19907-11
ComLink software (1 ea)	35794-2
BNC (F) to alligator clip adapter (2 ea)	36828
Ground cable (1 ea)	4702-7
RS232 cable (1 ea)	CA-RS232
User guide (1 ea)	AVTMMTDR1

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