

## 1502B/1503B Metallic TDR Cable Testers

### TYPICAL APPLICATIONS

- Telephony
- Computer/LAN
- CATV
- Power Company Field Testing
- Communications Providers
- Cable Manufacturing Tests
- Third Party Maintenance
- Airline Maintenance/Testing

### Time Domain Reflectometry (TDR)

The portable, rugged 1502B and 1503B TDR Cable Testers are portable maintenance tools that are simple to operate and will test most dual conductor metallic cable under virtually any condition. The 1500B Series uses TDR to identify and locate cable faults. When the tester is connected to the line to be tested it sends out electrical pulses that are reflected back to the tester by impedance changes in the cable. The 1500B Series TDRs display impedance changes in the cable as a function of distance. Moving the cursor to the displayed fault produces an on-screen readout of distance to the fault.

### FEATURES

- Easy to Use
- Information Screens
- High Contrast LCD
- Portable
- Waveform Storage
- PC Controllable
- Optional Chart Recorder
- Optional Battery Pack

### Typical Cable Measurements

- Distance to faults
- Cable propagation velocity
- Loss and load mismatch
- Quantification of damage from opens, shorts, frays, crimps and water
- Faulty taps and unterminated lines on LAN and CATV environments
- Stripline and cable impedance
- Characterizing LAN installations

### 1502B High Resolution MTDR

The 1502B transmits 200 ps rise time step pulses down the cable under test. The reflected energy is displayed on the LCD and the type of fault can then be determined by the user. When testing 50 ohm

cable with a velocity of propagation equal to 0.66, the 1502B Metallic TDR allows the determination of 0.5 ohm cable faults. Multiple faults as close together as 0.8 of an inch can be resolved.

The 1502B has a menu selectable on-mat-cursor function that allows direct readout of impedances. The 1502B is matched to 50 ohm cables, but may be used on others by adjusting the front panel vertical scale control or using optional impedance adapters.

The 1502B has a range of 2000 feet and is the best MTDR for high resolution fault location on short lengths of cable.

### 1503B General Purpose MTDR

The 1503B MTDR provides high-energy, 12-sine shaped pulses for testing long cable runs. The 1503B has 2, 10, 100 and 1000 nanosecond pulse widths. Use of the 2 ns pulse width results in determination of multiple faults as close together as one foot. Cable impedances of 50, 75, 93, and 125 ohms are selectable at the front panel. The 1503B is input protected to 300 volts.

The 1503B has a range of 50,000 feet and is the best metallic TDR for general purpose applications.

### 1503B Option 06 for Ethernet Testing

The 1503B with Option 06 allows TDR testing of an active Ethernet bus. Tests are provided for detecting transceivers that ignore the collision signal (babbling transceivers) and transceivers that ignore the carrier sense signal.

### Menu Selections

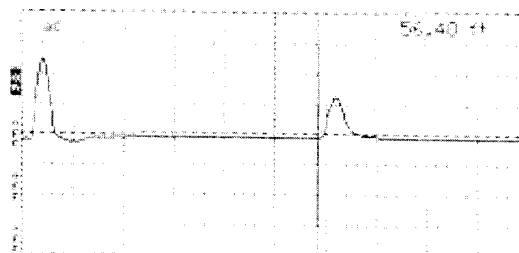
The 1502B and 1503B offer a variety of parameters and information that can be accessed using menus. The main menu allows you to access: Help Screens; Velocity of Propagation Values; Impedances of Different Cables; Instrument Front Panel Configurations; and Instrument Diagnostics.

### YT1 Chart Recorder

For permanent records of cable tests, the Option 04 (YT1) chart recorder is available for both the 1502B and 1503B.

Center ..... 56.40 ft  
 Dist/Div ..... 10 ft/div  
 Vertical Scale ..... 4.00 dB  
 Vt ..... 0.56  
 Noise Filter ..... 1 avc  
 Power ..... ac  
 Pulse Width ..... 10 ns  
 Impedance ..... 50 Ω

1503B YT1 Chart Recorder



Test Date: 1503B TDR  
 Date \_\_\_\_\_  
 Cable \_\_\_\_\_  
 Notes \_\_\_\_\_  
 Input Trace \_\_\_\_\_  
 Stored Trace \_\_\_\_\_  
 Difference Trace \_\_\_\_\_

**CHARACTERISTICS**

**1502B METALLIC  
TDR CABLE TESTER**

Test Signal—Step rise  $\square$   
Amplitude—300 mV nominal into 50  $\Omega$  load.  
System Risetime—200 ps (1.15 in./2.92 cm).  
Output Impedance—50 ohms  $\pm 1\%$ .  
Electrostatic Discharge Protection—  
1 kV/500 pF capacitor/1 k resistance.  
DC Input Protection— $\pm 1$  A.  
Maximum Range—2,000 ft/625 meters.  
Distance Readout Resolution—0.004 ft/0.001 m.  
Noise Filtering—1 to 128 averages.  
Vertical Scale—0.5 to 500 mV/div.  
Dist/Div—0.1 to 200 ft/div; 0.025 to 50 mV/div.  
Environmental—Meets capabilities of a Type III, Class 3, Style C instrument (except EMI where it meets FCC Part 15.3.A, and VDE: 0871, Class B) as prescribed by MIL-T-28800D.

**1503B METALLIC  
TDR CABLE TESTER**

Test Signal— $\sin$  wave.  
Amplitude—Terminated: -3.5 V. Unterminated: -5.0 V.  
Pulsewidths—2, 10, 100, 1000 nsec.  
Output Impedance—50, 75, 93, 125  $\Omega$ .  
Input Protection— $\pm 400$  V (dc + peak ac).  
Maximum Range—50,000 ft/15,360 meters.  
Distance Readout Resolution—0.04 ft/0.01 m.  
Noise Filtering—1 to 128 averages.  
Vertical Scale—0 to 63.75 dB Gain.  
Dist/Div—1 to 5000 ft/div; 0.25 to 1000 mV/div.  
Environmental—Meets capabilities of a Type III, Class 3, Style C instrument (except EMI where it meets FCC Part 15.3.A, and VDE: 0871, Class B) as prescribed by MIL-T-28800D.

**COMMON  
CHARACTERISTICS**

The following characteristics are common to both the 1502B and 1503B.

**POWER REQUIREMENTS**

AC Power—Line Voltage: 115 V ac (90 to 132 V ac) and 230 V ac (180 to 250 V ac). Line Frequency: 45 to 440 Hz.

DC Power—Battery Pack Operation (Option 03): At least 5 hours (15 to 25°C charge and discharge temperature), no chart recordings. At least four hours, including 20 chart recordings.

Full Charge Time—20 hours maximum.

**PHYSICAL CHARACTERISTICS**

Dimensions	mm	in.
Width (w/handle)	315	12.4
Width (w/o handle)	300	11.8
Height	127	5.0
Depth (handle extended)	475	18.7
Depth (handle not extended)	419	16.5
Weight =	kg	lb
Net (w/ front cover and accessories)	8.2	21
Net (w/o front cover or accessories)	7.3	16
Domestic Shipping (complete) =	11.1	27
Export Shipping (complete) =	16.3	42

**ORDERING INFORMATION**

**1502B Metallic TDR \$5,870**  
Includes: AC power cord, 50  $\Omega$  BNC terminator (011-0123-00); Precision 50  $\Omega$  cable (012-0482-00); Female-to-female BNC connector (103-0028-00); Spare fuse; operator's manual (070-6266-00).

**1503B Metallic TDR \$4,800**  
Includes: AC power cord, 50  $\Omega$  BNC terminator (011-0123-00); Precision 50  $\Omega$  cable (012-0482-00); Spare fuse; 9 ft BNC-to-clip lead cable (012-0671-02); Operator's manual (070-6268-00).

**OPTIONS**

Option 03—Battery Pack +\$175  
Option 04—YT1 Chart Recorder +\$950  
Option 05—Metric Version NC  
Option 06—Ethernet Testing  
(1503B only) +\$250

**INTERNATIONAL POWER PLUG OPTIONS**

Option A1—Universal Euro 220 V, 50 Hz  
Option A2—UK 240 V, 50 Hz  
Option A3—Australian 240 V, 50 Hz  
Option A4—North American 240 V, 60 Hz  
Option A5—Switzerland 220 V, 50 Hz.

**OPTIONAL ACCESSORIES  
(1502B/1503B)**

Battery Pack—Order 016-0813-00.\* \$300  
YT1 Chart Recorder— \$1,195  
Chart Paper—  
(1 roll) Order 006-7647-00. \$4  
(25 rolls) Order 006-7677-00. \$140  
(100 rolls) Order 006-7681-00. \$520  
Terminator—75  $\Omega$  BNC.  
Order 011-0102-00. \$19.25

**(1502B only)**

Service Manual—Order 070-6267-00  
Contact your local sales representative.  
Adapters—  
(Direct Current) Order 015-0327-00. \$280  
(50/125  $\Omega$ )\* Order 017-0090-00. \$210  
(50/75  $\Omega$ )\* Order 017-0091-00. \$210  
(50/93  $\Omega$ )\* Order 017-0092-00. \$210

**Connectors—**

BNC female-to-BNC male.  
Order 103-0045-00. \$8.50  
BNC female-to-clip leads.  
Order 013-0076-00. \$40  
BNC female-to-dual banana plug.  
Order 103-0090-00. \$10  
BNC female-to-F male.  
Order 103-0158-00. \$5  
BNC male-to-N female.  
Order 103-0058-00. \$9.25  
BNC male-to-UHF female.  
Order 103-0032-00. \$6.50  
BNC male-to-dual binding post.  
Order 103-0035-00. \$18.25  
(GR to BNC male)  
Order 017-0064-00. \$100  
(GR to BNC female)  
Order 017-0063-00. \$55

**(1503B only)**

Service Manual—Order 070-6269-00. \$100  
Isolation Network—Order 013-0169-00. \$275

**Connectors—**

BNC female-to-clip leads.  
Order 013-0076-00. \$40  
BNC male-to-female.  
Order 103-0058-00. \$9.25  
BNC female-to-dual banana plug.  
Order 103-0090-00. \$10  
BNC male-to-dual binding post.  
Order 103-0035-00. \$18.25  
BNC male-to-BNC male.  
Order 103-0029-00. \$10  
BNC female-to-UHF male.  
Order 103-0015-00. \$6  
BNC female-to-UHF female.  
Order 103-0032-00. \$6.50  
BNC female-to-type F male.  
Order 103-0158-00. \$5

\* Should be purchased with the following connectors: BNC female-to-GR 017-0063-00; BNC male-to-GR 017-0064-00.

