TDR2000/3, TDR2010 and TDR2050
Advanced Dual Channel TDR

- **600 V CAT IV Input Protection filter built in**
- **Step and Pulse TDR selections**
- **Distance Dependant Gain**
- **Test straight from the box**
- **Trace Tagging**
- **2ns pulse width**
- **Designed for use on all metallic paired cables**

DESCRIPTION

The Megger® TDR2000/3, TDR2010 and TDR2050 are state of the art, dual channel, high resolution, compact Time Domain Reflectometers with a colour screen for locating faults on paired metallic cables.

All TDRs in this series have a minimum resolution of 0.1 m / 0.3 ft and a 20 km / 65 kft maximum range depending on the velocity factor selected and the cable type.

Various output impedances are available (TDR2000/3 and 2010: 25, 50, 75, 100, 125 ohm + AUTO. TDR2050: 25, 50, 75, 100, 140 ohm + AUTO) and an auto impedance matching feature. The velocity factor can be set between 0.2 and 0.99 to meet any cable test requirements.

FEATURES AND BENEFITS

The TDR2000 series have a large, high resolution, colour, WVGA display with easy set up features. Directional control buttons, together with soft keys, provide intuitive and easy operation for the user.

An AUTO selection option ensures that the most effective parameters are selected depending on the range required, aiding rapid diagnosis of the TDR trace. The ability to manually override the auto function allows fine tuning to enable identification of hard to determine faults.

Dual trace and dual cursor capabilities allow full flexibility, giving the operator full control and instant indication of distance between two points.

A trace comparison feature also allows close examination between trace conditions. Extra high resolution together with a white-light backlight, user definable colour schemes give the graphical display a vibrance, aiding the user in identifying key events on the trace.

600 V CAT IV input protection

TDR2050 is the first TDR in this class to include a built-in 600 V input protection filter. The ability to connect to potentially live circuits means a more flexible instrument suited for a wider range of applications.

Trace Storage

100 internal trace memories provide for the storage and recall of test results. The traces can be recalled to the display for analysis or compared with an active display to aid in fault location.

Alternatively the stored results can be downloaded to a computer, via the USB port, using the TraceXpert software and USB lead provided.

Step TDR function

The Dead Zone effect of a standard pulse TDR can mask near end faults and make them undetectable. The addition of a step function on the TDR2050 eliminates this problem.

Step TDR technology means that the signal is injected at full strength and stays there until a disturbance is detected. This makes step TDR technology perfect for detecting near end faults that standard pulse TDRs can miss.

Distance dependant gain

This feature, built into the TDR2050, eliminates the drop off of signal attenuation on longer lines by gradually increasing the gain along the returned signal, enabling a more even representation of the relative attenuation at all points along the trace.

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Fault identification

Megger's own built-in AutoFind mode allows for speedy identification of faults. One press of the AutoFind key automatically adjusts the range and gain, and positions the cursor to the first major event on the cable. Press the AutoFind key again and the cursor will jump to the next detected disturbance.

FindEnd function

TDR2050 also incorporates a FindEnd function, which allows the user to automatically search the trace to identify the end of the cable under test. This is useful in situations where a fast cable length measurement is required.

For those who wish to maintain manual control, manual operation allows full override access to refine the response for easy fault identification.

Colour schemes

The very different light conditions that could be present when using the TDR2050, combined with the limitations of eye conditions such as colour blindness, makes the addition of set colour schemes in the instrument extremely important.

TDR2010 and TDR2050 have 6 additional set colour schemes on top of the Default and Outdoor schemes included on other Megger TDRs. There are also 2 custom slots where the user can specify their own scheme by setting up to 7 screen elements to their own choice of colour.

Trace Tagging

TDR2010 and TDR2050 also incorporate a Trace Tagging feature which allows the user to add a name to saved traces. This could be the circuit ID, building name or any other identifying text the user wishes to save with the trace.

A text string of up to 32 alphanumeric characters can be stored against each trace and this can consist of upper case letters including accents.

TraceXpert PC software

The TDR2000/3, TDR2010 and TDR2050 come complete with the Megger TraceXpert software which gives full control over downloading, reporting and uploading of saved trace results. Designed around a database and programmed for ease of use and simplicity, TraceXpert offers the ideal application for all your data processing requirements.

Models

The TDR2000 series is available in 4 models.

TDR2000/3

A fully featured high resolution TDR with backlit colour display and powered by Li-ion rechargeable battery batteries. This model comes complete with 2 pairs of mini-clip Test Leads.

TDR2000/3P

The same as the TDR2000/3 but with Dual fused test leads replacing the mini-clip leads

TDR2010

The same as the TDR2000/3 but with Trace Tagging and additional Colour Scheme selection.

TDR2050

The same as TDR2010 but with the addition of 600 V CAT IV rating, Step, DDG and FindEnd functions.

BENEFITS

- Backlit graphics colour LCD (800x480)
- Adjustable display contrast
- Resolution to 0.1 m
- AutoFind guide to potential fault location
- 100 trace on board memory
- USB connection to PC allowing upload and download of traces
- "TraceXpert" PC software analysis tool
- For use on Telecom TNV-3 circuit, or 150 V CAT IV power circuits (TDR2000/3 and TDR2010 only)
- For use on power circuits to 600 V CAT IV (TDR2050 only)
- Power blocking filter built-in
- Environmental protection to IP54
- Selectable output impedance
  TDR2000/3 and 2010: 25, 50, 75, 100, 125 ohm + AUTO.
  TDR2050: 25, 50, 75, 100, 140 ohm + AUTO.
- 2ns pulse for near end fault location
- AUTO option selecting gain and pulse for each range
- AUTO option matches output impedance to cable
- Display distance in metres or feet
- Li-ion rechargeable battery (12 hours typical life)

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SPECIFICATIONS
Except where otherwise stated, this specification applies at an ambient temperature of 20°C

GENERAL
Range

Up to 20000 m with a minimum resolution of 0.1 m
(Maximum range dependent on cable type)

m	ft	ns
10	30	125
25	80	250
50	160	500
100	320	100
250	800	2500
500	1600	5000
1000	3200	10000
2500	8000	25000
5000	16000	50000
10000	32500	100000
20000	65000	200000

Accuracy ±1% of range ±1 pixel at 0.67 VF
[Note - The measurement accuracy is for the indicated cursor position only and is conditional on the velocity factor being correct.

Resolution 1% of range

Input protection This instrument complies with IEC61010-1 to protect the user in the event of connection to live systems. TDR2050 is rated at 600 V CAT IV whilst all other models are rated at 150 V CAT IV. TDR2050 is specifically designed to allow use on energised systems up to the rated voltage.
All models are designed for use on de-energised systems and Megger fused leads must be used on power cables and fused leads must be used if the potential voltage between terminals could exceed 300 V or when connected to CATIV systems.

Output pulse Up to 20 volts peak to peak into open circuit. Pulse widths determined by range, cable and model used.

Gain Set for each range with user selectable steps (in Manual operating mode).

Velocity factor Variable from 0.2 to 0.99 in steps of 0.01.

TX null Automatic
Trace Tagging - 32 characters chosen from upper case letters including accents
Colour schemes - Default, Outdoor, Custom
Step TDR - Eliminates the Dead Zone effect.
DDG - Available in ranges 1000 m and above in 0.5 dB steps
Cable Impedance
TDR2000/3 and 2010: 25, 50, 75, 100, 125 ohm + AUTO.
TDR2050: 25, 50, 75, 100, 140 ohm + AUTO.

Power down User programmable auto power off timer 1, 5, 10 mins or never.

Battery Li-ion rechargeable battery

Battery charge time 6 hours at 0 °C to 40 °C

Battery life 12 hours typical

Safety These instruments comply with IEC61010-1 for connections to live systems up to 150 V CAT IV or 300 V CAT III (TDR2000/3 and 2010 only).

TDR2050 is rated at 600 V CAT IV. Fused leads must be used if the voltage between terminals exceeds 300 V.

Compliant with EN60950-1, EN61010-1, UN38.3 and EN62133

EMC Complies with Electromagnetic Compatibility Specifications (Light industrial) BS EN 61326-1, with a minimum performance of 'B' for all immunity tests.

MECHANICAL
IP rating The instrument is designed for use indoors or outdoors and is rated to IP54.

Case ABS

Dimensions 290 mm (11.4 in) x 190 mm (7.5 inches) x 55 mm (2.2 inches)

Weight 1.7kg (3.8lbs)

Connectors Four 4mm-safety terminals and two F connectors. Other standard push on adapters will fit. F connectors not available on TDR2050.

Test lead **TDR2000/3 and TDR2010** - 2 pairs 2 meters long consisting of 2 x 4 mm shrouded connector to miniature crocodile clips

TDR2000/3P and TDR2050 - 2 pairs 1.5 meters long retractable sheath leads

Display 800 x 480 pixel colour graphics LCD, viewable in external environments.

Colour Schemes
Selectable
TDR2000/3 x2
TDR2010, TDR2050 x8

Custom
TDR2000/3 x1
TDR2010, TDR2050 x2

Backlight Permanent backlight with all colour schemes (adjustable brightness)

ENVIRONMENTAL
Operating temperature range and humidity -15 °C to +50 °C (5 °F to 122 °F)

Storage temperature range and humidity -20 °C to 70 °C (-4 °F to 158 °F)

ORDERING INFORMATION

Description	Order Code
TDR2050 UK Power TDR	1005-021
TDR2050 EU Power TDR	1005-022
TDR2050 US Power TDR	1005-023
TDR2050 INT Power TDR	1005-024
TDR2010 UK Dual Channel Comms	1007-077
TDR2010 EU Dual Channel Comms	1007-079
TDR2010 US Dual Channel Comms	1007-078
TDR2010 INT Dual Channel Comms	1007-080
TDR2000/3 UK Time Domain Reflectometer	1007-061
TDR2000/3 US Time Domain Reflectometer	1007-062
TDR2000/3 EU Time Domain Reflectometer	1007-063
TDR2000/3 INT Time Domain Reflectometer	1007-064
CLF535G Dual channel US	1007-069
TDR2000/3P UK Time Domain Reflectometer	1007-065
TDR2000/3P US Time Domain Reflectometer	1007-066
TDR2000/3P EU Time Domain Reflectometer	1007-067
TDR2000/3P INT Time Domain Reflectometer	1007-068

Description	Order Code
Included accessories	
TDR2000/3P and TDR2050 Lead sets Retractable sheath fused test lead (2 pairs)	1006-511
Download kit	1003-353
Carry case	1003-217
AC-DC charger	1003-352
User guide CD	
Optional accessories	
Miniature clip test lead set (1 pair)	6231-652
Split conductor fused test lead set (1 pair)	1002-015
Replacement battery	1002-552
Terminal adaptor kit	1003-218
AC power lead - UK	25970-028
AC power lead - EU	6180-334
AC power lead - US	25970-002
Red and black probes and clips - for use with all Megger TDR Fused Test Leads.	1002-491
Retractable sheath fused test lead (1 pair)	1006-511

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ISO 9001
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