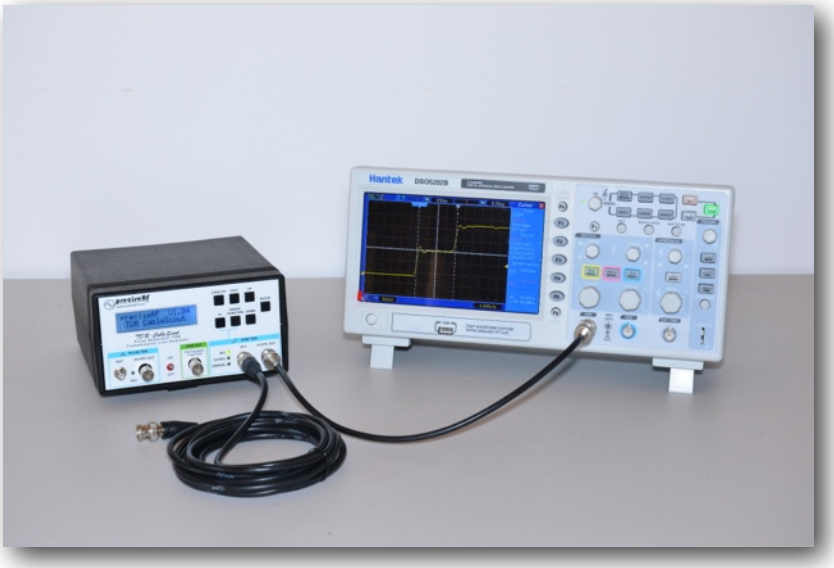
TDR for Ham Radio

The TDR-CableScout ® is an affordable precision TDR pulse generator with laboratory level accuracy and utility for transmission line measurements in ham radio installations.

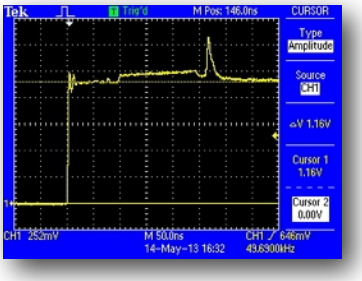
- ✦ Cable Faults & Distance to Faults
- ✦ Fast ≤150 ps Rise Time *
- ✦ Impedance
- ✦ Velocity Factor
- ✦ Reflections Coefficient
- ✦ Return Loss
- ✦ VSWR
- ✦ dB Cable Loss 100' @ 100MHz

The TDR-CableScout ® takes advantage of the fact that low cost, high performance oscilloscopes are available from many sources. When used with an oscilloscope of sufficient bandwidth, measurements can be made rivaling those of commercial TDR systems at a fraction of the cost.

The TDR-CableScout ® includes a TDR computer because these scopes, while high enough in bandwidth (about 200MHz), do not have a TDR computer. This requires the user to make all the calculations manually. While not difficult to do, they are nevertheless tedious. Conventional pulse generators do not have the very fast rise time, selectable Zs and duration rates best suited for TDR work.



The TDR-CableScout ® gives hams the means to analyze transmission lines and circuit board strip lines. Line impedance from 50 Ω to 600 Ω can be measured with 25 ps resolution. It features isolated high speed samplers and separate device under test (DUT) outputs. This design allows a direct, fast Tr 50 Ω connection to the oscilloscope for accurate TDR measurements without the inconvenience and lower performance that the "T" connector solution offers.



Find faults, Bad Connectors, Defective Cables and More

A transmission line library is included. It contains data for velocity factor (Vf), line impedance (Zo) and line loss data. The integrated TDR measurement computer takes the work out of TDR measurements, such as time to fault (TTF), reflection coefficient (p), cable length, velocity factor (VF), line impedance (Zo), return loss (RL), SWR and cable loss.

The TDR-CableScout ® features both pulse and step TDR. The step TDR has a maximum range of 15 KM and time resolution of better than 1 ns. The pulse TDR features a ≤ 400 ps pulse width and ≤ 150 ps rise time*.

The resolution is under 5mm, which is well suited for analyzing circuit board strip lines. A dedicated trigger output features a 100 ns pre-trigger to allow viewing of the TDR pulse leading edge when using sampling scopes without a delay line such as the 7S11 and 7T11 installed in legacy Tektronix 7000 scopes.

* see specifications

preciseRF™
www.preciserf.com

Precision Ham Radio Measurements

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Specifications	TDR-CableScout ®	TDR-CableScout ® Pro	TDR-CableScout ® Pro + Scope package
Internal Samplers	Yes	Yes	Yes
Selectable Step Output Zs 50, 75, 300 Ω	Yes	Yes	Yes
Cable Line Library	Yes	Yes	Yes
Pre-Trig Delay 100 ns	Yes	Yes	Yes
Step TDR DUT Rise Time (50 Ω)	≤ 1.75 ns (20-80%)	≤ 1.75 ns (20-80%)	≤ 1.75 ns (20-80%)
Step TDR Out Into 50 Ω	≥ 2.4 V p-p	≥ 2.4 V p-p	≥ 2.4 V p-p
Resolution Step TDR	≤ 4.5 cm (400 ps)	≤ 4.5 cm (400 ps)	≤ 4.5 cm (400 ps)
Pulse TDR DUT Rise Time, Pulse Width (50 Ω)	≤ 300 ps (20-80%) Width: ≤500 ps	≤ 150 ps (20-80%) Width: ≤350 ps	≤ 150 ps (20-80%) Width: ≤350 ps
Pulse TDR Out Into 50 Ω	≥ 2.0 V p-p	≥ 2.0 V p-p	≥ 2.0 V p-p
Resolution Pulse TDR	≤ 6 mm (50 ps)	≤ 2.5 mm (20 ps)	≤ 2.5 mm (20 ps)
Range	2.5 cm - 15KM	2.5 cm - 15KM	2.5 cm - 15KM
Standard Measurements	Distance to Fault (DTF) Reflection Coefficient (p)	Distance to Fault (DTF) Reflection Coefficient (p)	Distance to Fault (DTF) Reflection Coefficient (p)
Advanced Measurements	N/A	Return Loss (RL), Impedance (Zo), VSWR, Velocity factor (Vf), Line loss dB/100ft/100MHz	Return Loss (RL), Impedance (Zo), VSWR, Velocity factor (Vf), Line loss dB/100ft/100MHz
Option 1 VZ500 terminator	Optional	Standard	Standard
Option 2 Advanced measurements	Optional	Standard	Standard
Option 3 Ni-MH 800 mAh Rechargeable Battery (4 hours operation)	Optional	Optional	Standard
Option 4 NIST Calibration (See www.preciserf.com “Calibration” page for more info)	Optional	Optional	Standard
Option 5 200 MHz DSO Hameg Oscilloscope	Optional	Optional	Standard
Power Consumption	160 mA	160 mA	160 mA
Physical	width 6” height 3.5” depth 7” 1.5 lb.	width 6” height 3.5” depth 7” 1.5 lb.	width 6” height 3.5” depth 7” 1.5 lb.

See www.preciseRF “Calibration” page for more info. Specifications and prices subject to change without notice file: Data Sheet CableScout

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