TDR Test Modes

Abstract

Tempo's Time Domain Reflectometer (TDR) cable testers offer several operating modes. Each of these is suited to helping to diagnose cable trouble or to compare earlier results to current ones.

By

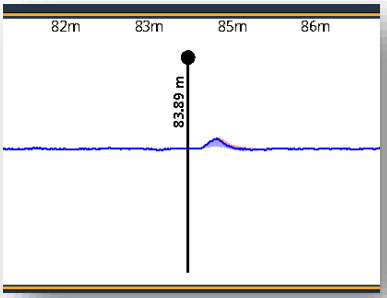
Mark Govier, March 2025

Live

This is the normal operating mode where one trace is shown on screen. This trace is "live", so all results shown are updating continually as conditions change. For most cable tests, you will connect the TDR to the cable using a suitable "patch cord" and clips or adaptors as necessary and simply take readings along the displayed trace as once connected, the conditions do not change rapidly.

Intermittent

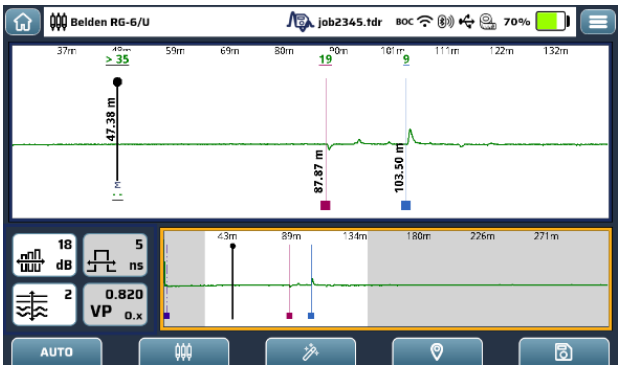
So what if a fault is present only for short periods at random times? How might you narrow down the area where trouble is happening as quickly as possible? For most of the length of the cable nothing is changing and the trace will be stable, but where a fault is happening occasionally, and beyond the fault due to the return loss, the trace will be changing. This mode can help emphasise it by building up a shaded highlight. See the trace alongside where part of the line is "thickened" by a highlight in blue and red.



All functions available in "live" mode are also available in "intermittent" mode, such as adding markers and measuring "return loss" etc.

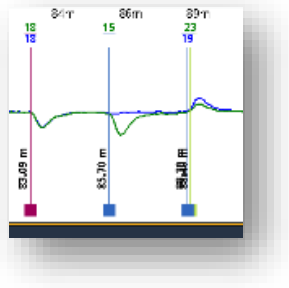
Saved

This allows you to bring up on the screen of the TDR a trace taken earlier. Once loaded you can add markers and analyse the trace as if live. The name of the loaded trace is present on the status bar.



Live & Saved*

Now we're getting interesting. For some cables the traces can be very "messy", particularly for those which are not so "impedance controlled". Therefor the trace of even a "good" cable can be difficult to interpret due to the presence of several splices or even parallel connections. In this case it can prove to be effective to take a trace when the cable is first installed and store this for reference. Later, should "trouble" be suspected then this "saved" trace can be loaded into the trace buffer and compared directly against the "live" trace that is also running. Differences between the quality of the cable can be spotted in this mode.



Invoicing/Job Completion

Another use for this mode can be where technicians are being sent to the field to correct specific faults that may have already been diagnosed; having that trace on the screen while testing "live" can prove to them that the job has been completed successfully. The same information may be needed to support a sub-contractor's invoice.

Cable Verification

A further use for this mode is “cable verification”. Perhaps you are receiving drums of drop-cable into your warehouse and want to pre-qualify each drum. Starting with a known good example a “reference” trace can be stored on a TDR, then when batches of equivalent items are received, each can be compared to the original looking for any significant differences in indicated length or “wiggles” in the trace that may indicate variable dielectric density or wetness.

Live & Saved & Difference*

This mode is the same as the above but emphasises the differences by highlighting the area between the "saved" and "live" traces. So the differences are shaded blue or pink.

* Note that the modes allowing direct comparison of "saved" and "live" traces are only available in the TV220E and TV220EX versions of our TDRs. The simpler CS90/TV90E variant does not offer these complex modes.

Tempo Communications

Tempo Communications Inc. is a privately held company based in Vista, California, who offer a complete line of innovative and industry-leading test & measurement solutions for the communications industry world-wide.

Our expertise and innovative solutions address all stages of network deployment enabling the development, installation and maintenance of xDSL, Fibre, and COAX Cable networks. Through our strategic acquisitions in Fibre & Ethernet segments, Tempo has emerged as the leading provider of next generation test & measurement solutions in the global communications industry.