

7S12

45 ps TDR or a General Purpose Sampler

6 Plug-In Sampling Heads Available

2 Plug-In Pulse Sources Available

1 Trigger Recognizer Head Available

1 Trigger Countdown Head Available

The 7S12 is a combined vertical-horizontal, double-width plug-in for high resolution TDR or general purpose sampling measurements. As a TDR using the S-6 Sampling Head and S-52 Pulse Generator Head, the 7S12 has a system risetime of 45 ps (return from short-circuit termination) and distance range to 250 feet in any cable. Its vertical scale is calibrated in reflection coefficient (ρ) from 2 mV/div to 500 mV/div and in voltage from 2 mV/div to 500 mV/div. Two-way time or one-way distance to a discontinuity of interest is read directly from tape dial calibrated for time, air, polyethylene, or your choice of dielectrics. As a long line TDR using the S-5 Sampling Head and S-54 Pulse Generator Head, distance calibration extends to 4900 feet (air line) and discontinuities to twice this distance may be viewed. System risetime with this combination is 1.5 ns.

General-purpose measurements may be made by using an S-1, S-2, S-3A, S-4, S-5, or S-6 Sampling Head with an S-53 Trigger Recognizer Head or S-51 Trigger Countdown Head. For dual-trace sampling displays, use a 7S11 Sampling Unit with a 7S12. The addition of a 7M11 Dual Delay Line provides the signal delay necessary to view the triggering event when a pretrigger signal is not available.

CHARACTERISTICS

SYSTEM PERFORMANCE WITH S-6 AND S-52

System Risetime — 35 ps or less for the incident step. 45 ps or less for the displayed reflection from a short-circuited, 1 ns test line.

Time and Distance Ranges — Direct-reading tape dial gives calibrated one-way distance to at least 375 ft (air line). Time range is at least 0.75 μ s round trip. Both ranges are limited by the duration of the pulse from the S-52.

Pulse Amplitude — At least +200 mV into 50 Ω .

Input Characteristics — Nominal 50 Ω , feed-through signal channel (termination supplied). SMA (3 mm) connectors.

Jitter — < 10 ps (without signal averaging).

Aberrations — +7%, -7%, total of 10% p-p within 1.8 ns of step with reference point at 1.8 ns from step; +2%, -2%, total of 4% p-p after first 2.5 ns with reference point at 300 ns from step.

TDR SYSTEM PERFORMANCE WITH S-5 AND S-54

System Risetime — 1.5 ns or less for the displayed reflection from a short-circuited test line.

Time and Distance Ranges — Direct-reading tape dial gives calibrated one-way distances to 4900 ft air line. 3240 ft solid polyethylene. Time range is 20 μ s round trip.

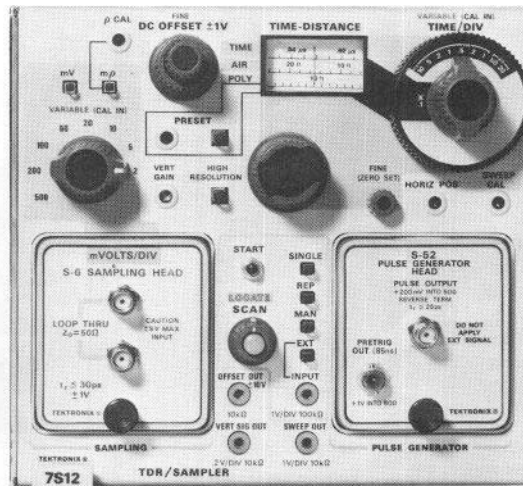
Pulse Amplitude — At least +400 mV into 50 Ω .

Input Characteristics — Nominal 50 Ω test line connection (cable and T supplied). BNC connectors.

Jitter — < 20 ps (without signal averaging).

Aberrations — +4%, -6%, total of 10% p-p within first 17 ns of step; +1.5%, -1.5%, total of 3% thereafter.

7S12



TDR/Sampler

OTHER 7S12 CHARACTERISTICS

Vertical Scale — Calibrated in mV (reflection coefficient 10^{-3}) and mV from 2 to 500 units/div in 8 steps (1-2-5 sequence), accurate within 3%. Uncalibrated Variable is continuous between steps.

Resolution — Reflection coefficients as low as 0.001 may be observed. Signal averaging reduces test-line noise in display.

Dc Offset Range — +1 V to -1 V. Allows open-circuit reflections to be displayed at full sensitivity. Monitor jack provides X10 dc offset through 10 k Ω .

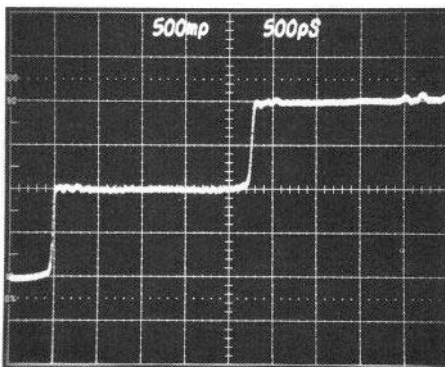
Time/Distance — Tape Dial is Calibrated in Time and Distance: Full-scale ranges of 4900 ft, 490 ft, 49 ft (air dielectric); 3200 ft, 320 ft, 32 ft (polyethylene dielectric); and 10 μ s, 1 μ s, 0.1 μ s (time). Accurate within 1%. Distance calibration may be preset for dielectric having propagation factors from 0.6 to 1.

Time/Div — 20 ps/div to 1 μ s/div (1-2-5 sequence) in three ranges with direct-reading magnifier. Accurate within 3%. Uncalibrated Variable is continuous between steps.

Locate Button — Provides instant return to unmagnified display showing entire full-scale range. Brightened portion of trace indicates time position and duration of magnified display.

Display Modes — Repetitive or single sweep, manual or external scan.

Signal Outputs — Pin jacks provide both vertical signal and sweep outputs.



The 7S12 displays reflection coefficient (ρ) versus distance on a device-under-test. Here the 7S12 measures a reflection caused by a crack (open) in a PCB under test. Distance can be read directly from the 7S12 front panel, or calculated from the time base settings.

NOTE: See 1502 and 1503 Portable TDR Cable Testers on pages 150-151.

With compliments

Helmut Singer Elektronik

www.helmut-singer.de info@helmut-singer.de
fon +49 241 155 315 fax +49 241 152 066
Feldchen 16-24 D-52070 Aachen Germany

INCLUDED ACCESSORIES

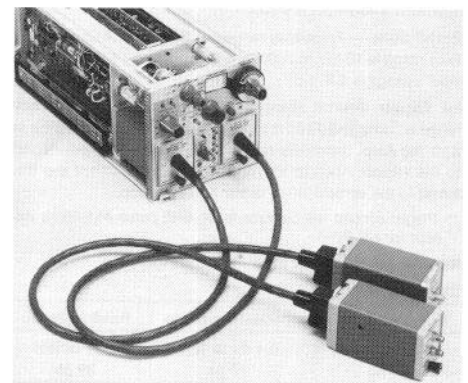
750 ps rigid "U" delay line (015-1017-01); short-circuit termination (015-1021-00); TDR slide rule (003-0700-00); TDR graticule overlay (331-0296-00); TDR graticule overlay (331-0297-00); instruction manual.

ORDERING INFORMATION

7S12 TDR/Sampler without Sampling Heads (Tape Dial in Feet)

Option 03 — Tape Dial Change (Meters)

7603 Mainframe



Extenders allow the user to locate the sampling head directly in a test fixture, avoiding potential signal degradation by cables.

OPTIONAL ACCESSORIES

3 ft Sampling-Head Extender — Order 012-0124-00

6 ft Sampling-Head Extender — Order 012-0125-00