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20/20 TDR version 3.7 and higher Quick Start Guide

This is a generalized Quick Start Guide and is applicable to all versions of the 20/20 TDR.

AEA technology's 20/20 TDR is a "Step" Time Domain Reflectometer. All TDRs transmit signals and listen for reflections. However, a Pulse TDR transmits individual pulses and listens for reflections between the pulses. A Step TDR emits a constant energy, while simultaneously listening for reflections. The advantages of Step technology are zero "blind spots" or "dead zones," more test information (distance, impedance, return loss, and SWR), and reduced degradation of the received signal that provides a clearer picture of the cable's quality.

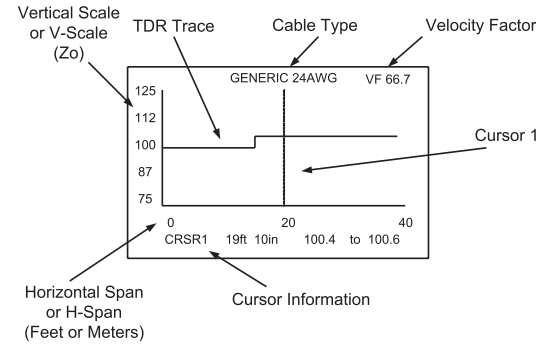
Before You Start

1. Determine whether the 20/20 TDR will be operated using batteries or AC Power. The 20/20 uses 8 "AA" size batteries, alkaline or rechargeable. The battery compartment is accessible by lifting the "meter stand" on the back of the 20/20 TDR and removing the two cover screws.
2. Identify the cable type to be tested.
3. Determine whether test leads and/or extension lead cable is required.
4. Understand as much as possible about the cable/pair under test. See "Sample Cable" section to help resolve unknowns.

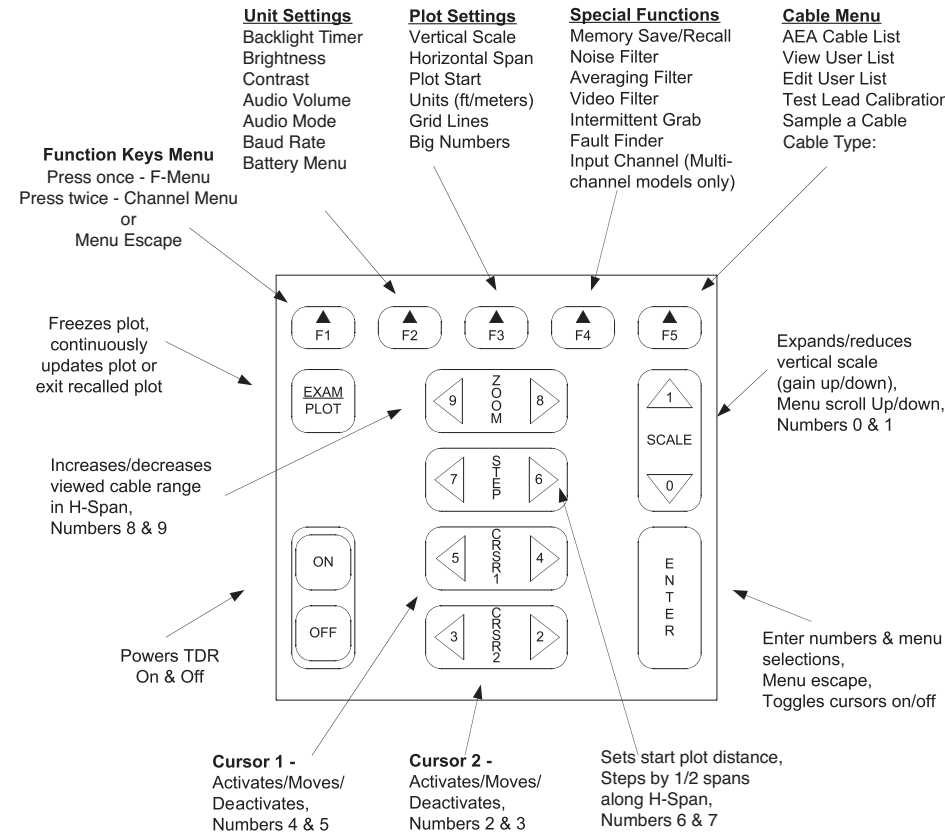
This Quick Start Guide provides the most direct path to using the 20/20 TDR. See the Operating Manual for a more detailed explanation of the functions and features of this TDR. See the Theory and Application Notes for more background on faults.

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20/20TDR Display



20/20TDR Keypad



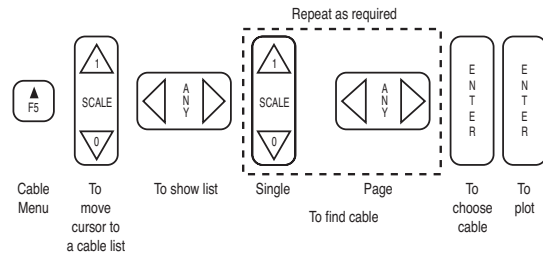
Input Connection Translation Table (Multi-channel models only)

To select an input channel, press F4 & select Input Channel, use any ◀ ▶ key to select a test channel. Use test leads supplied or standard patch cables per wire map schemes below.

Wire Map Scheme	20/20TDR Test Channel
*=Supplied Test Lead	
Coaxial Connector	Coax
Red/Black Clips*	RJ45 CH A
Green/Black Clips*	RJ45 CH B
Red/Black & Green/Black Clips*	RJ45 CH A Δ B
T-568A Pair 1	RJ45 CH A
T-568A Pair 2	RJ45 CH B
T-568A Pair 3	RJ45 CH C
T-568A Pair 4	RJ45 CH D
T-568A Δ Pairs 1 & 2	RJ45 CH A Δ B
T-568A Δ Pairs 1 & 3	RJ45 CH A Δ C
T-568A Δ Pairs 1 & 4	RJ45 CH A Δ D
T-568A Δ Pairs 2 & 3	RJ45 CH B Δ C
T-568A Δ Pairs 2 & 4	RJ45 CH B Δ D
T-568A Δ Pairs 3 & 4	RJ45 CH C Δ D
T-568B Pair 1	RJ45 CH A
T-568B Pair 2	RJ45 CH C
T-568B Pair 3	RJ45 CH B
T-568B Pair 4	RJ45 CH D
T-568B Δ Pairs 1 & 3	RJ45 CH A Δ C
T-568B Δ Pairs 1 & 2	RJ45 CH A Δ B
T-568B Δ Pairs 1 & 4	RJ45 CH A Δ D
T-568B Δ Pairs 2 & 3	RJ45 CH B Δ C
T-568B Δ Pairs 3 & 4	RJ45 CH B Δ D
T-568B Δ Pairs 2 & 4	RJ45 CH C Δ D
USOC Pair 1	RJ45 CH A
USOC Pair 2	RJ45 CH B
USOC Δ Pairs 1 & 2	RJ45 CH A Δ B
10BASE-T Tx	RJ45 CH C
10BASE-T Rx	RJ45 CH B
10BASE-T Δ Tx & Rx	RJ45 CH B Δ C
TP-PMD Tx	RJ45 CH C
TP-PMD Rx	RJ45 CH D
TP-PMD Δ Tx & Rx	RJ45 CH C Δ D
Token Ring Tx	RJ45 CH B
Token Ring Rx	RJ45 CH A
Token Ring Δ Tx & Rx	RJ45 CH A Δ B

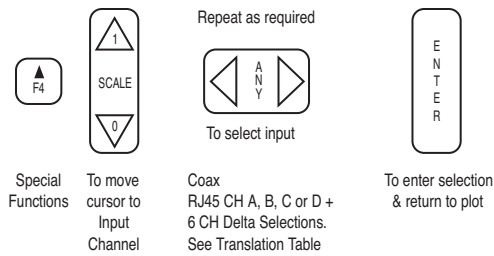
Ten Steps to Testing

1. Select the **Cable Type** and **Velocity Factor (VF)**. The 20/20 TDR has two cable lists, AEA Cable List and User List. It is recommended to start in the User List to find the cable type to be tested.

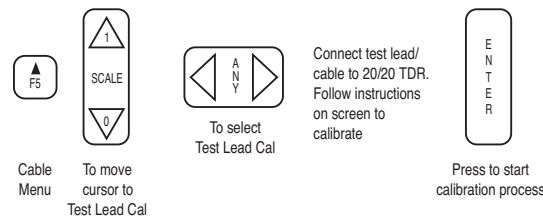


"ANY" refers to ZOOM, STEP, CRSR1 or CRSR2 ◀ ▶ keys.

2. Select an **Input Channel** (Multi-channel models only). This allows the Network/Telco users to select the cable connector and/or pair to be tested.



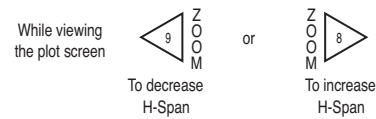
3. **Test Lead Calibrate**. This function will zero out the test leads or the test cable that may be needed to connect the 20/20 TDR to the cable/pair under test. It moves the measurement starting point from the TDR's connector to end of the test lead/cable.



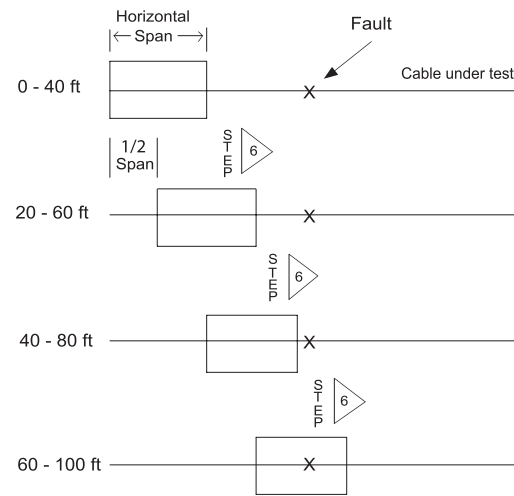
4. **Connect** the 20/20 TDR to the cable/pair to be tested.

5. **ZOOM** sets the Horizontal Span (H-Span), the length of the cable displayed on the screen. The shorter the H-Span, the higher the resolution will be. The Horizontal Span has a list of preset values that are automatically selected when using the ZOOM key.

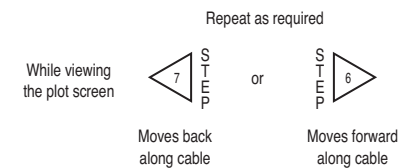
Setting Horizontal Span using ZOOM key.



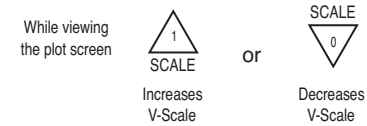
6. **STEP** moves the Start Distance (plot display window) along the cable in 1/2 H-Span intervals. If the H-Span is at 40 ft, and Start Distance is at 0, then 0 to 40 feet is displayed. Push the STEP key's right arrow button once, and 20 to 60 feet is now displayed. The display window will move in 1/2 H-Span steps, left or right, with each press of STEP ◀ ▶. Start distance can also be set numerically in the F3 menu at Plot Start.



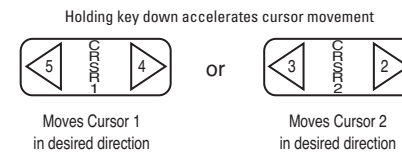
Setting the Start Distance of the plot using the STEP key.



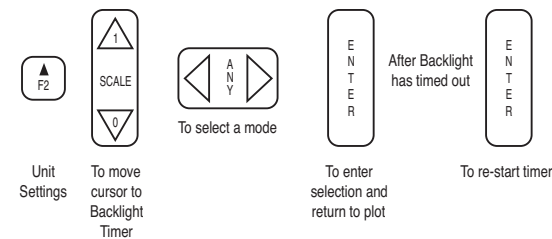
7. **SCALE** changes the vertical scale, and acts a gain control while viewing the plot. The SCALE up key flattens the waveform out. The SCALE down key effectively increases the gain, and allows for greater resolution of the waveform. To change vertical scale/gain use the SCALE key.



8. **Cursor 1** and **Cursor 2** move the cursors displayed on the screen. Distance and impedance measurements are displayed for each cursor plus the delta distance and delta Zo between the two cursors. Cursors activate on first ▶ press and de-activate by moving left off the plot with repeated ◀ presses. When viewing the Plot, pressing the ENTER key will hide or unhide the Cursors.



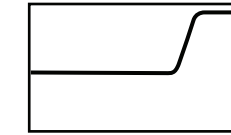
9. The **Backlight Timer** has five modes: Off, 10 Sweeps, 20 Sweeps, 50 Sweeps, and Continuous. The 10, 20, and 50 Sweep modes will time out/turn off the backlight in approximately 20 seconds, 45 seconds, and 2 minutes, respectively. The Continuous mode will keep the backlight on until it is switched to a different mode.



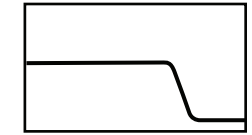
10. **OFF** will power the 20/20 TDR off. By using this mode the current setup (VF, H-Span, Start Distance, etc.) will be saved. The 20/20 TDR will automatically return to those settings on the next power up.

Example Step TDR Reflections

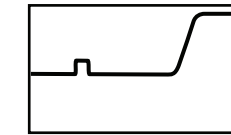
Open



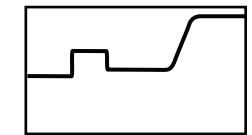
Short



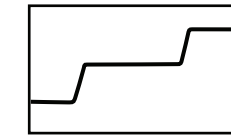
Good Splice



Poor Splice



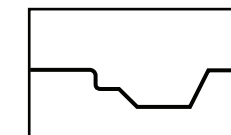
Mixed Impedances



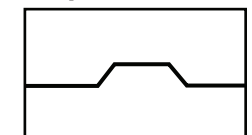
Bridged Tap



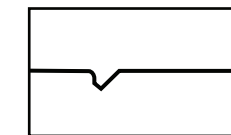
Wet Cable



Split Pair that Resplits



Pinched Coax



Poor Quality Coax



Recommend reviewing the Theory and Application Notes for a more detailed view of good traces and sample cable faults.