

Site Analyzer

Version 1.10

Quick Start Guide

This Quick Start Guide is applicable to both the SWR Site Analyzer and the VNA Site Analyzer.

SWR Site Analyzer

This model has both SWR & Return Loss meters and a Frequency Domain Reflectometer (FDR).

General

Frequency range 100KHz to 1.5GHz, user customizable color LCD, powered by 8AA NIMH rechargeable cells, has both Broadband Calibration and Frequency Specific Calibration Processes. 50 memory slots for saving test results or setups(calibrations), and works with our Site Analyzer PC Vision™ software.

Power and Charging

SWR Site Analyzer comes with 8AA NIMH cells installed and pre-conditioned. New they will operate the instrument for 3.5 to 4.0 hours continuously between charges. The instrument can also be powered and recharging at the same time using the AC Charger/Adapter.



Power LED is lit indicating the instrument is ON. Charging LED indicators are as follows:

OFF – No charging power in or charger aborted due to charging error; cells to hot or cold to take a charge.

▲ **SEE MANUAL**

Slow, Short blink - Battery check mode. The charger is 'PINGING' the batteries to check chargeability status.

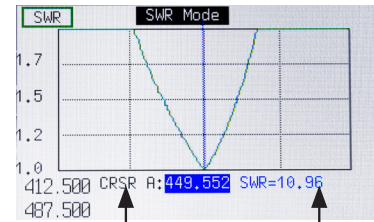
Slow, Long blink - Charger is in slow charge. If the unit is ON, this is the highest rate it will charge.

Double blink - Charger is in rapid charge mode. (around 700mA at 15v).

ON solid - Batteries are 90%plus charged. Unit is ready for use.

SWR or RL Screen

Use SWR/RL Key to switch between SWR & Return Loss & Scale Key to change SWR or Return Loss ranges

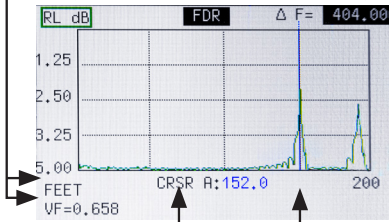


Use CRSR Key to activate Cursor's frequency & data. Use Left/Right Arrows to position them

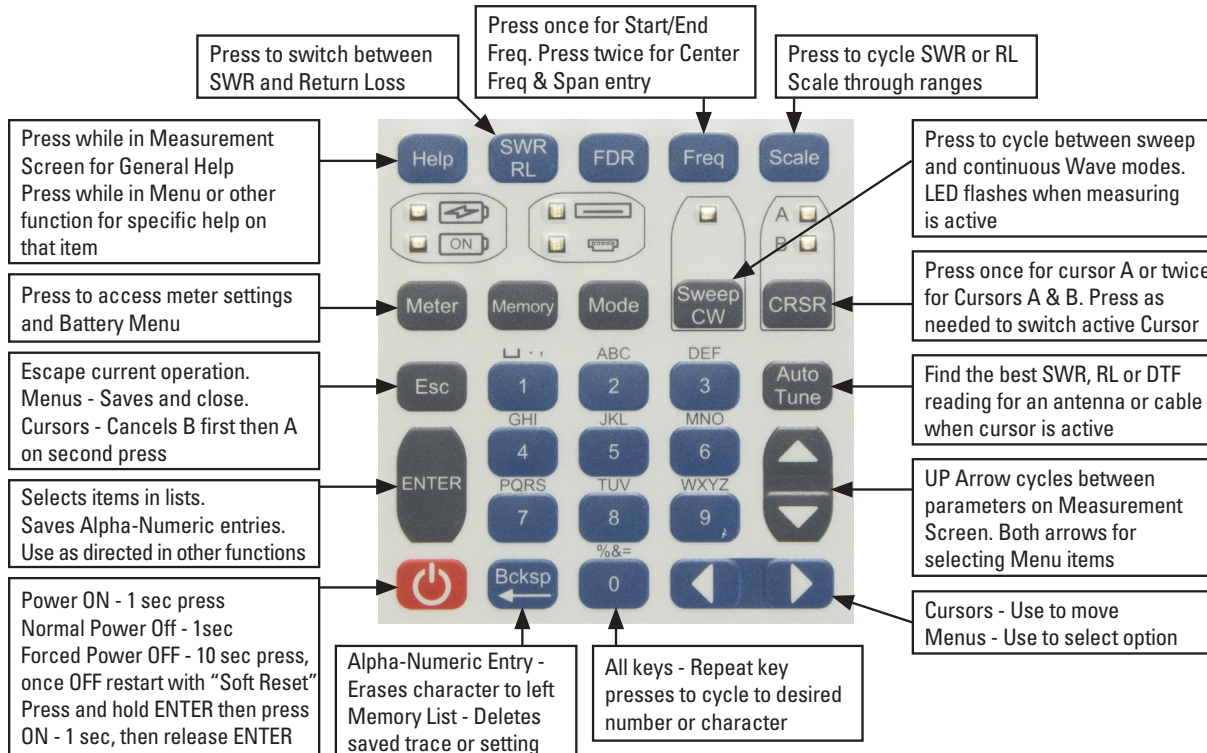
FDR Screen

190 ft cable with fault at 162 ft

Use Up Arrow key to select parameter to change and ENTER to make changes. Use SCALE Key to change SWR or Return Loss ranges

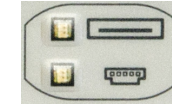


Use CRSR Key to activate Cursor's distance & reflection readings. Use Left/Right Arrows to position them



Other Keypad Functions

FDR – Frequency Domain Reflectometer



Memory and USB Port LEDs: Top – LED ON indicates writing to or recalling data from Site Analyzer's memory. Bottom – PC comms LED

Memory – Press to Name and Save or Recall saved test results or instrument settings

Mode – For selecting: Cable Null, Limit lines and Sweep time.

About Limit Lines: Set Pass/Fail limits for SWR, RL or FDR Screen to get a graphical indication of when your measurement are within limits that you specified.

About Calibration Selection

There are two types of calibrations: "Broadband Calibration" and "Frequency-Specific Calibration."

Broadband Calibration

This is a calibration of the instrument's full frequency range that can be saved and used for any testing frequency band selected. If you desire to have this calibration available, you need to perform the cal with or without a test lead.

See Operating Manual for instructions.

Frequency-Specific Calibration

(More accurate than Broadband)

Step 1 Press Mode key and select CALIBRATIONS, Use left/right arrow keys to select FREQ SPECIFIC option. Press ESC key to save and exit.

Step 2 From measurement screen, press the FREQ Key. Press once for Start-End Frequency entry or twice for Center Frequency-Span entry.

Step 3 Enter the desired frequencies.

Step 4 Press ENTER key to begin the Frequency-Specific Calibration process.

Frequency Specific Calibration (Cont.)

When prompted for OPEN, attach test lead and/or adapter (if any) that will be used with all measurements, (Use of OPEN terminator is optional with frequencies below 700MHz) and press ENTER.

Step 5 When prompted, attach the short, then 50 Ω terminators at the end of the test lead or at N connector. Press ENTER after each terminator is attached.

Step 6 At the end of the calibration process, the instrument is ready for use.

Step 7 (optional) This frequency-specific calibration can be saved to the instrument's memory for future recall: Press MEMORY Key and select SAVE SETTINGS and press ENTER.

Step 8 Enter the name you wish to save and press ENTER to save the settings

Start Measurement Process

SWR or Return Loss Measuring

1. Connect the test lead and/or adapter, if they are to be removed from the measurements.
2. Press the SWR/RL key to select desired measurement.
3. Either select Broadband Calibration or perform the "Frequency Specific Calibration" (instructions on this guide's Front Right panel).
4. When calibration is complete connect the antenna or other device to be tested (aka DUT).
5. Use the Scale key to adjust the SWR or Return Loss scale for the best plot presentation.
6. Press the Cursor key to select Cursor A or A & B with Δ reading. Use the Autotune for the cursor to seek to the lowest SWR or RL reading. Or use Left/Right Arrow keys to adjust Cursor positions manually as desired.
7. If Broadband Calibration was used, the frequency band can be adjusted without recalibration.

(cont. on next column).

Measurement Process (cont.)

8. If Frequency Specific Calibration was used you will need to disconnect the DUT from the test lead and/or adapter, or N connector, press Freq key, select new frequency range and perform the Frequency Specific Calibration with the new frequency range.
9. SWR/RL key will switch between those two measurements with no recalibration. Use the Scale key to cycle the scale to the best plot presentation.
10. (Optional) To save the plot press the MEMORY key and use alpha numeric keys to enter a name, then press ENTER to save.

FDR Measurements

NOTE: FDR has its own Calibration process as part of the measurement procedure. It can NOT use the Broadband Calibration.

1. Press the FDR key to select FDR Measurement Screen.
2. Attach any test lead only if one is to be used. Do NOT attach the cable to be tested at this time.
3. First, if the VF= is not highlighted use the UP Arrow key to highlight and press ENTER.
4. Enter the cable's VF then press ENTER or press the FDR key, select a cable from the cable list, press ENTER, then press ENTER to save and exit
5. NOTE: Steps 3 & 4 must be completed before Steps 6 & 7 to correctly compute the ΔF .
6. Select ΔF in the upper right corner, with the up arrow. press ENTER.
7. In the Distance & Frequency Dialog box, enter the approximate cable length (plus about 10-15%), and the frequency at which to measure the antenna return loss (if there is no antenna, or if you don't desire to make this measurement, leave the $F_0 = 0$). Press ENTER to save and exit

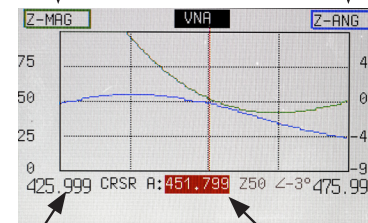
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FDR Measurements (cont.)

8. The instrument will now proceed to the calibration cycle. apply the open, load and short in turn as prompted
9. At the Measurement Screen use the UP Arrow key to highlight the SWR or RL parameter. Use ENTER to switch to desired parameter: SWR or RL and Scale key to adjust the scale so the cable's trace is visible.
10. Use the Cursors to mark any high readings as potential faults. The AUTO TUNE key can be used to find the highest peak. NOTE: end of cable reading should be the last high reading at the cable's end distance.
11. (Optional) Press MEMORY key to name and save the trace.

VNA Site Analyzer Functions

Use UP arrow to select either the left or right scale. Then press ENTER to select the kind of measurement. Press Scale to select the range.



Set the start and end frequencies by pressing FREQ.

Enable the cursor with the CRSR key

From the mode menu Select VNA PLOT

1. Connect the test lead and/or adapter, if they are to be removed from the measurements.
2. Either select Broadband Calibration or perform the "Frequency Specific Calibration" (instructions on this guide's Front Right panel).

3. When calibration is complete connect the antenna or other device to be tested (aka DUT).
4. Use the UP arrow to select the left or right scales.
5. With a scale selected, <ENTER> to select the desired measurement for that side: Z-Mag ($|S_{11}|$ in Ω), Z-Ang (S11 phase angle in degrees), RS, Xs, Rho, Theta.
6. Press Scale key to adjust the VNA scale for the best plot presentation.
7. Press the CRSR to select Cursor A or A & B with Δ reading. Use Left/Right Arrow keys to adjust Cursor positions.

Points to Remember:

- a. If Broadband Calibration was used, the frequency band can be adjusted without recalibration.
- b. If Frequency Specific Calibration was used you will need to disconnect the DUT from the test lead and/or adapter, or N connector, press Freq key, select new frequency range and perform the Frequency Specific Calibration with the new frequency range.
- c. (Optional) To save the plot press the MEMORY key and use alpha numeric keys to enter a name, then press ENTER to save.

S21 Plot:

Switch between S21 Gain or TRACKING by pressing **ENTER** when selected.

When in GAIN mode, the phase trace can be turned on and off by selecting this side, and pressing **ENTER**

Set frequency span with the **FREQ** key.

The cursor will give you both Gain and Phase response for standard S21 Insertion loss measurement: I.L. only for TRACKING

Standard S21 Measurement Procedure:

From Mode Menu select S21 PLOT

1. Connect the test lead and/or adapter, if they are to be removed from the measurements.
2. Either select Broadband Calibration or perform the "Frequency Specific Calibration" (instructions on this guide's Front Right panel).
3. Once the Open-Short-Load part of the calibration is completed (assuming you're using frequency-specific calibrations), attach all of the cabling that will be used between the S11 & S21 ports and press <ENTER> to calibrate the THROUGH. This will compensate for any losses in the test leads. The magnitude should now show a FLAT trace at 0dB, and a FLAT phase trace at close to 0°.
4. Attach the test leads to your DUT, and adjust the scales to best view the traces. Depending on what type of device you're measuring, you should get a result similar to the above photograph. If you don't need the PHASE trace, use the UP arrow to select the PHASE scale, and press <ENTER> to turn it off.
5. Press the Cursor key to select Cursor A or A & B with Δ reading. Use Left/Right Arrow keys to adjust Cursor positions.

Tracking S21 Screen:

Tracking ON (Select and press **ENTER**)

Phase always OFF

Select between High and Low range by pressing **ENTER** (Low Scale Shown)

Tracking Generator Feature:

From the mode menu Select S21 PLOT

1. Use the up arrow and select the left scale
2. Press <ENTER> to select tracking
3. Press <FREQ>, and enter the frequency range desired. No calibration will be required.
4. Attach the cabling you will be using between the S11 & S21 ports.
5. Press the <SCALE> key to bring up the high range (0 to -40dB). The resulting base line should be fairly close to zero.
6. Attach the DUT. If you've chosen the correct frequency range for the device, you will be able to tune your device to put the notch on the desired frequency.
7. Press the Cursor key to select Cursor A or A & B with Δ reading use Left/Right Arrow keys to adjust cursor positions manually as desired.
8. Press Scale to set the instrument to LOW range. The bottom of the notch should now be visible, making it possible to fine tune your notches.

Note to remember:

The levels displayed on the tracking generator feature are relative, and doesn't account for cable losses. To get actual passband insertion loss, use the standard S21 gain measurement.

Spectrum Analyzer:

REF Level

SPAN

Center Frequency

Resolution BW

Spectrum Analyzer:

From the mode menu Select SPEC ANALYZER

1. Use the UP arrow to select each field on the screen in turn: frequency, Resolution Band Width (RBW), reference level setting, and SPAN.
2. With the center frequency field selected press <ENTER> to enter a new center frequency or span. Press <ENTER> again to save. Pressing the <FREQ> key will allow frequency entry also.
3. With the RBW field selected, press the <ENTER> key to switch the RBW settings 10Khz, 30khz, bandwidths.
4. With the REF Level field selected, press <ENTER> to change the reference level, in 10dB increments, from +20dBm to -70dBm top of scale. Also, the REF Level can be switched any time by pressing <SCALE>.
5. Press the UP arrow to select SPAN, set the SPAN by pressing <ENTER>.

In Case of Difficulty

Need Help - If your Site Analyzer does not appear to be performing correctly or responding to key commands try a Soft Reset

Step 1 Turn the Site Analyzer OFF. If a 1 second press of the ON/OFF key does not respond, press and hold the ON/OFF key for 10 seconds then release to force a shutdown.

Step 2 Press and hold the ENTER key

Step 3 Press ON/OFF to power up the Site Analyzer

Step 4 A second later, release ENTER key

Step 5 At the prompt, press ENTER again to reset

NOTE: Default "Factory Settings" will be restored and firmware reset to correct any issues.

If you are still having an issue, please contact our Technical Support at 800-258-7805 US & Canada or +1-760-931-8979 M-F 800am-4:30pm US Pacific Time, or Email: techsupport@aeatechnology.com



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