

# VA1 RX VECTOR ANALYST



The pocket-sized VA1 is designed to check and adjust antennas, feedlines, and RF networks. It includes a microprocessor, A/D converters, and a low-power "transmitter" with 4 digit frequency readout, continuously variable from 0.5 to 32 MHz in 6 bands. Like its little brother, the RF1, it measures RF values of true impedance (0-1000 ohms), SWR (1 to 15:1), C (0-

9999pF) and L (less than 0.04 to 300 uH).

The VA1 adds a true SIGNED RF PHASE DETECTOR to give you the antenna or load R and **signed X** components, plus all the functions below.

Is your load inductive or capacitive? The VA1 tells you instantly. It even tells you the value of series coil(uH) or capacitor(pF) to add to eliminate series reactance and yield lowest SWR. Readout of equivalent parallel R and X yields the parallel X value needed to yield lowest SWR. (All of this is described in the instructions.)

The VA1 is not limited to 50 ohm lines. You can select SWR readout on over 10 common feedline impedances from 25 to 450 ohms.

The VA1 can even calculate the (series) R and X components of your antenna when measured at the far end of the feedline. So you know the impedance of your antenna even if it's 100 feet in the air. No 1/2 wave line required. Just measure or calculate the feedline length using the VA1. As you can see, the VA1 makes noise bridges obsolete, and does much more than expensive network analyzers.

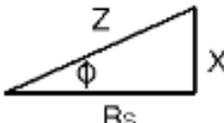
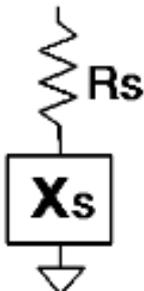
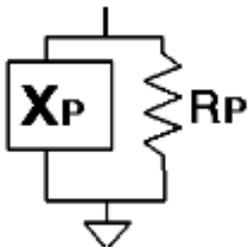
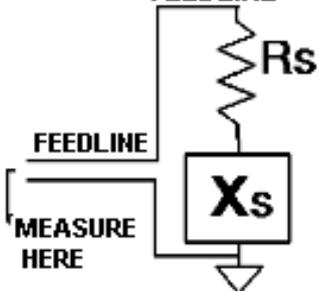
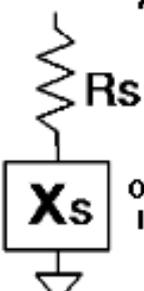
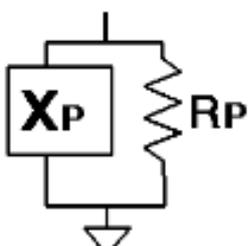
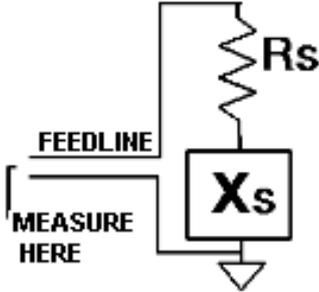
Don't be fooled. Other meters *claim* to be advanced and measure X, but *they don't tell you the sign of X!* They can't even tell a capacitor from a coil. In contrast, the VA1 instantly displays the sign of X.

All parameters are read out digitally for highest accuracy. The VA1 is extremely easy to use. Its large 1/2" LCD display is not washed out in sunlight..it loves sunlight. And it can cycle between several measured values so you can watch them together.

L and C are measured at the RF frequency of interest, not at 1 KHz or 100 KHz as on other meters. So the effects of stray capacitance, toroid parameters, and other frequency-dependent factors are taken into account. The VA1 can even measure the inductance of less than 1/2" (1 cm) of straight wire!

The VA1 is truly pocket size. 4.5 x 2.5 x 1.5 in. The battery pack on other units is actually larger than the entire VA1! The VA1 runs off a single 9 volt battery in a real battery compartment on the back with a pushoff cover...similar to a TV remote control.A

standard 9 V alkaline battery has a life of about 5 hours, and can be replaced in seconds. In addition, the unit turns itself off after about 20 minutes if no buttons are pushed. (The auto-off feature can be disabled if desired.)

<p><b>SWR</b> STANDING WAVE RATIO RELATIVE TO 50 OHMS. TO CHANGE FEEDLINE TYPE HOLD DOWN SWR BUTTON FOR 2 SECS, RELEASE, AND SELECT NEW FEEDLINE TYPE. FEEDLINES OF 25, 50, 52, 54, 73, 75, 93, 95, 112, 150, 300, &amp; 450 OHMS CAN BE SELECTED.</p>	<p><b>Z</b> MAGNITUDE OF LOAD IMPEDANCE <math display="block">Z = \sqrt{R_s^2 + X_s^2}</math></p>	<p><b>Φ</b> PHASE ANGLE (DEG.)  A MINUS SIGN MEANS NEGATIVE PHASE &amp; X, AND A CAPACITIVE LOAD. OTHERWISE THE LOAD IS INDUCTIVE.</p>	<p><b>F<sub>1/4</sub></b> THE FREQUENCY WHERE THE FEEDLINE IS 1/4 WAVE LONG. EASILY MEASURED AND DIALED IN BY THE USER. USED TO CALCULATE R<sub>s</sub> AND X<sub>s</sub> ANT, BELOW. FEEDLINES CAN BE ANY LENGTH BETWEEN 6 FEET AND 324 FEET.</p>
<p><b>R<sub>s</sub></b> LOAD SERIES RESISTANCE (OHMS) </p>	<p><b>L</b> INDUCTANCE, uH (MICROHENRYS) EITHER: 1. VALUE OF ISOLATED INDUCTOR (COIL), OR 2. WHEN MEASURING AN ANTENNA, THE VALUE OF X<sub>s</sub> CONVERTED TO AN INDUCTANCE. IF L READS (-), ANT. IS CAPACITIVE SO THIS IS THE L NEEDED TO CANCEL THE CAPACITANCE.</p>	<p><b>R<sub>p</sub></b> LOAD PARALLEL RESISTANCE (OHMS) </p>	<p><b>R<sub>s</sub> ANT</b> RESISTANCE OF ANTENNA CALCULATED MEASURING AT FAR END OF FEEDLINE </p>
<p><b>X<sub>s</sub></b> LOAD SERIES REACTANCE (OHMS) A MINUS SIGN APPEARS IN THE UPPER LEFT DIGIT IF X IS CAPACITIVE OTHERWISE, X IS INDUCTIVE. </p>	<p><b>C</b> CAPACITANCE (pF) (PICOFARADS) EITHER: 1. VALUE OF ISOLATED CAPACITOR, OR 2. WHEN MEASURING AN ANTENNA, THE VALUE OF X<sub>s</sub> CONVERTED TO A CAPACITANCE. IF C READS (-), ANT. IS INDUCTIVE SO THIS IS THE C NEEDED TO CANCEL THE INDUCTANCE.</p>	<p><b>X<sub>p</sub></b> LOAD PARALLEL REACTANCE (OHMS) A NEGATIVE SIGN MEANS CAPACITIVE. </p>	<p><b>X<sub>s</sub> ANT</b> REACTANCE OF ANTENNA CALCULATED MEASURING AT FAR END OF FEEDLINE </p>