Autek - RF1 RF ANALYST

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Welcome to our home page
Thank you for helping us celebrate our 34th year in business!

Autek Research makes three models of RF Analysts. In brief, our Analysts are extremely portable pocket-size RF measuring instruments which greatly simply adjustment of short-wave antennas by measuring antenna SWR and impedance. They can also measure transmission line parameters such as loss, impedance and electrical length. Some analysts also measure capacitance and inductance, R and X components of impedance, parallel R and X, and impedance at the far end of a feedline.

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Nuevo! Información en español

FOR INFORMATION ABOUT EACH ANALYST CLICK BELOW:

RF1 RF Analyst
(1.2 - 35 MHz)
SWR
True Impedance
RF Inductance & Capacitance

RF5 VHF Analyst
(35 - 75 & 138 - 500+ MHz)
SWR
True Impedance (Z)
Automatically Finds Minimum SWR or Z

VA1 Vector RX Analyst
(0.5 - 32 MHz)
SWR
True Impedance
R and X Components

Series and Parallel
SIGN of X
RF Inductance and Capacitance
Other Advanced Features

VA1 Vector RX Analyst
Set to cycle between Frequency and SWR
(All analysts can cycle between up to four functions.)
All analysts are palm-sized, as shown.

Click here for more discussion of applications

We also make the WM1 Automatic Computing SWR/Wattmeter, Model WM1. This instument is truly is in a class by itself.

WM1 Computing Deluxe Power/SWR Meter
1.8 to 50 MHZ
Automatically Computes SWR
No Adjustments or Cross Needles
Peak or Average
1 watt to 2000 watts

TO ORDER:

DETAILED PRICES AND ORDERING INFORMATION
DISTRIBUTORS OUTSIDE USA
ORDERING MANUALS FOR OUR PRODUCTS

E mail us (mail @ autekresearch.com)
Please! Only brief,plain-text, E mail. No pictures, graphs, or special formats.

This is a new Web site and it takes time to be listed in directories. We'd appreciate you adding our Web address (http://www.autekresearch.com) to any lists you know of.Thank you!

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Autek Research, PO Box 7556, Wesley Chapel, FL 33544 USA.
(813) 994-2199
www.autekresearch.comRF1 RF ANALYST
The pocket-sized RF1 is designed to check and adjust antennas,feedlines, and RF networks. It includes a microprocessor,A/D coverters, and a low-power "transmitter" with 4 digit frequency readout, continuously variable from 1.2 to 35 MHz in 5 bands.

It measures RF values of true impedance (0-2000 ohms),SWR (1 to 15:1), C(0-9999 pF), and L (less than 0.04 to 300 uH).

All parameters are read out digitally for highest accuracy. The RF1 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 RF1 can even measure the inductance of less than 1/2" (1 cm) of straight wire!

The RF1 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 RF1! The RF1 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 5-10 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.)

The illustrated instruction manual discusses many applications in detail, not just instrument operation. Whether you're an expert or novice, the manual will show you many of the things you can do with the unit.

Besides its use by Amateur Radio operators, this unit is in use all over the world at antenna manufacturers, production lines, and laboratories.

Click here for more discussion of applications

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Autek Research, PO Box 7556, Wesley Chapel, FL 33544 USA.
(813) 994-2199
www.autekresearch.comVA1 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 of 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 5-10 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.)

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The pocket-sized RF5 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.
The RF5 goes beyond the frequency range of the RF1 to cover all remaining ham bands to the 440 MHz band beyond, plus most frequencies in between. Frequency coverage is 35 to 75 MHz and 138 to 500+ Mhz continuously . This is in three bands of approximately 35-75, 138-290, and 275-500 MHz. It measures RF values of true impedance (0-600 ohms), SWR (1 to 6:1).

(Available on special order for an extra $20 is continuous coverage of 70 to 500 MHz in 3 bands, but no coverage below 70 Mhz. For example, RF5's with this coverage are currently used by the FAA to adjust airport antennas.)

As with all analysts, the RF5 has a standard UHF coax connector. The screw you see near the coax connector is an alternate coax ground connection, or can be used to attach the safety cord in our (optional) carrying case. (You must obtain an adaptor if you need to use N connectors. Sorry, we do not have adaptors, or have a model with N connectors.)

The unit is tuned up or down in frequency by holding down the "UP" or "DOWN" buttons, and with a fine tuning knob. In addition the RF5 includes an INSTANT SWR mode which finds the frquency of lowest SWR or Z automatically. Simply hold down the UP/DOWN buttons together. The RF5 microprocessor scans across the entire band and finds the lowest SWR in about 5 seconds, then tunes the unit to this frequency.

The RF5 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 RF5! The RF5 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 5-10 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 feuture can be disabled if desired.)

All parameters are read out digitally for highest accuracy. The RF5 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.

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Autek Research, PO Box 7556, Wesley Chapel, FL 33544 USA.
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www.autekresearch.comWM1 DELUXE COMPUTING SWR/WATTMETERCOMPUTING SWR
The WM1 Meter doesn't make you stare at crossed needles or make adjustments or do any calculations to read SWR. Instead, like magic, it shows SWR instantly and continuously. So it's a snap to do SWR plots, adjust antenna tuners, or just glance at the SWR occasionally to see that it's still low.

Even when you vary power drastically, such as when adjusting a tuner, the SWR reading virtually ignores the power changes. Just tap the key on CW, or say a word into the mike and you see your SWR instantly in the peak mode. You can easily adjust a tuner while talking on SSB using the the peak mode.AVERAGE OR PEP
The extensive electronics in the WM1 incorporates true peak detectors accurate to 0.1% using op-amps. In contrast, other meters often use just diodes with significant variable voltage drop and less accuracy. Switching to the AVERAGE position yields average power. However, the peak decay is sufficient to follow most power changes, and many leave the meter in the peak position at all times.LOW POWER(QRP) OR HIGH
The meter has 3 full-scale ranges of 20 , 200 and 2000 watts. Half scale on each range is 5 , 100 , and 1000 watts. So the meter is ideal for 5 watt CB or QRP,normal 100 to 150 watt ham rigs, or 1500 watt high power. Just select the proper range. The meter is also quite usable at 1 watt for super-QRP, except that SWR will read a little low. Range switching is done with 1% resistors, so when the meter is calibrated at, say, 100 watts, it will be within 2% in power at 10 watts and 1000 watts.
The meter will not be damaged by overloads. For example, applying 2000 watts on the 20 watt scale will peg the power meter, but the electronics limit current into the meter, so there is no damage. Remember, when you buy a WM1 you're buying a unit that has been "field tested" for over a decade, and it is NOT easy to damage!

REMOTE RF HEADVirtually all other meters put the coax connectors on the back of the meter itself. Although this is less expensive, the heavy coax tends to drag the meter across the table when moved. With the WM1, you connect the coax to the remote head which is wired through a 4 ft. flexible wire to the main unit. Most people simply drop the coax behind the operating table, eliminating an eyesore also. You'll appreciate the remote head.

ACCURATE
Its accuracy compares with a $300+ lab standard at full or half scale, and includes a meter scale specifically designed for its frequency and power range, not a compromise for various "slugs." So, it's much more accurate at the low end of each scale. And, of course, its total cost is comparable to the cost of just one slug!RUGGED. A CLASSIC DESIGNIts case is made of a special rustproof steel, welded at stress points, and so strong you can stand on it! The meters are large.. 2-3/8 inches across. It's designed to last for decades.

The WM1 was originally designed in 1986.In the Autek tradition, we took the time and did it right the first time, and there have only been minor changes since. In 1991, we compensated the RF head to make it usable to 54 MHz. Lately, we made the peak power decay a little faster in response to requests. Lastly, we added lighting on both meters in 1999. Thousands of WM1's are in use worldwide. It's time tested and the most popular unit of its type. We may be biased, but we really don't think it has any competition. You can pay a lot more and still not get computing SWR or any better accuracy. Many have told us it's the favorite piece of equipment in their station!

OTHER CHARACTERISTICSPower accuracy 5% of full scale; 10% of reading down to 0.2 full scale. Typically usable even at 1 watt or less on the 20 watt scale.Indicated SWR drops a little at low power, but typically less than 10% at 10 watts and 3:1 SWR. Frequency range is 1.5 - 30 Mhz for full accuracy, and usable to 54 MHz.(The SWR may read a little high at 54 MHz.. up to 1.3 or so.) Negligible insertion loss. Inline meter is left in line at all times. The unit runs from 8 to 18 VDC at approx. 100-200 ma, most current being drawn by the meter lights. A 115 VAC AC adaptor (wall transformer) is included free. Handsome light-dark grey styling. 6-3/8 x 3-3/4 x 3 inches deep. See the excellent review in Nov. 1989 QST. (We cannot send you the review due to copyright laws. QST sells them.)COMMENTS ABOUT MODIFICATIONSMany owners have lengthened the 4 foot remote cable to as long as 30 feet or more. Since the cable carries little current this works fine. However there is a danger of RF being picked up on the cable. This makes the readings inaccurate, and is usually obvious. (The power meter might move backwards, for example.) Although the unit is heavily bypassed,and the cable is shielded, a lengthened remote-head cable may need RF chokes or beads on each wire, including the ground wires in the cable.
This modification is especially popular with those using an amplifier mounted near a tunable antenna, e.g. in the rear of a vehicle. By extending the cable, the RF head can be mounted between the amplifier and antenna, and the main unit mounted at the drivers position to observe SWR. Because the cable is near the grounded vehicle metal chassis in this situation, owners usually have no RF pickup problems.

Some have also asked about extending the range to 3000 watts. This can be done by adjusting the power calibration pot (see WM1 instructions supplied with the unit.) so the unit reads 2/3 of the true reading. However, long key down periods and high SWR's should be avoided since the 1/2 watt 33 ohm resistors in the RF head will be overheated. (We have never seen a case of high power causing a failure of the WM-1 RF head, but 3000 watts is pushing the envelope.)

DISCLAIMER We are providing this information as an aid to owners, but wish to emphasisize that we in no way warrant the results. Specifically, if, in our opinion,any modifications cause the unit to fail, the warranty is not valid. We also cannot do any modifications at the factory.
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