

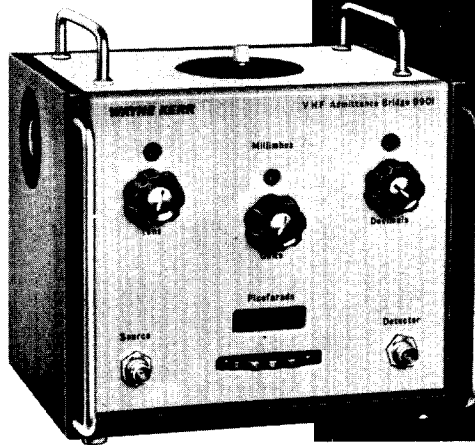


Wayne Kerr CORPORATION

22 Frink Street, Montclair, New Jersey 07042 • (201) 746-2438

Innovations in Instrumentation ■ Measurement ■ Analysis ■ Synthesis ■ Control

B901 VHF Admittance Bridge



- **Versatile Measurement Capability:**
Conductance 0 — 100 millimhos
Capacitance ± 0.5 to ± 75 picofarads
- **High Accuracy at Very High Frequencies:**
 $\pm 2\%$ Over Major Portion of Range From 50 to 250 Megacycles
- **Simultaneous Display of Real and Imaginary Components of an Admittance, Without Interaction**
- **Compact, Portable, Easy to Operate**

The Wayne Kerr Model 901 VHF Admittance Bridge is an instrument of advanced design, employing the transformer-ratio-arm technique, offering a wide range of admittance measurements at unusually high accuracy in the 50 to 250 megacycle frequency spectrum. Careful electro-mechanical design has reduced all extraneous reactances to a minimum, to sustain reliability of measurement over the entire range.

The instrument is extremely simple to operate and read accurately. Three conductance controls provide a range from 0 to 100 millimhos in steps of 0.1 mmho. Digital readout of the setting of each switch offers a direct indication of the conductance of the unknown, at balance. Reactive components of the measurement are provided by means of a calibrated non-inductive variable capacitor, which is half-engaged at the central zero setting of the thumbwheel-operated dial on the panel. The bridge is balanced at this setting (at the selected measurement frequency) before being connected to the unknown impedance; consequently, both positive and negative capacitances can be measured when the unknown is connected, without the need for resetting the instrument. No multiplying factors are used, and no range changes are made, during operation of the bridge; thus, all values are read directly from the panel dials, without the possibility of misinterpretation or ambiguity.

The B901 is a compact, light-weight unit, readily transportable to remote locations for on-site measurements on antennas and transmission lines. With ordinary care in handling, its original laboratory accuracy will be maintained over long periods of time, even when used regularly on field duty.

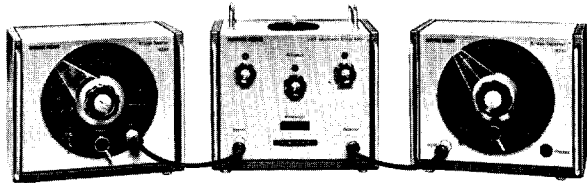


Figure 1

The Wayne Kerr Model S261 Source is designed specifically as an excitation source for use with the B901, and has an operating range of 50-250 megacycles per second, with a calibration accuracy of $\pm 1\%$. The output is amplitude modulated at 1000 cps, and varies from 300 millivolts to 1.2 volts RMS according to the range in use; this output (fixed for each range) is internally adjusted to provide an optimum signal level to compensate for the changing insertion loss of the bridge. The Wayne Kerr Model R261 Detector, designed for operation with the B901 bridge, has a 50 to 250 megacycle operating range, and may be operated with headphones or a VTVM plugged into the output jack. Used in conjunction with the S261 Source and the B901 bridge, adequate discrimination of 0.1 millimho is obtained. Figure 1 shows the three instruments.

Applications

The B901 is particularly useful in performing unbalanced measurements on antennas and transmission lines in the VHF range. Three adaptors are furnished with the instrument, enabling connection of a wide variety of cable terminations, leads, and connectors. Where it becomes necessary to connect the unknown to the bridge through a cable of appreciable length, the

admittance of the unknown can be transferred to the local connection by modified transmission line equations. These as well as equations for conversion of parallel components to series equivalents, are furnished with the instrument manual.

The admittance measured by the bridge, at balance, is clearly displayed in terms of conductance and positive or negative capacitance. It is suitable for convenient, precise measurement of inductors, capacitors, and resistors, for measurement of receiver input admittance, and similar applications.

SPECIFICATIONS

Measurement Ranges Conductance:
0 to 100 millimhos

Capacitance:
0.1 to 75 picofarads, positive or negative

Operating Frequency Range:
50 to 250 megacycles

Accuracy:

- Capacitance: $\pm 2\%$ ± 0.5 pF up to 200 mc
 $\pm 5\%$ ± 0.5 pF from 200 to 250 mc
- Conductance:
 - 0-50 mmhos:
 - $\pm 2\%$ ± 0.1 mmho up to 200 mc
 - $\pm 5\%$ ± 0.1 mmho from 200 to 250 mc
 - 50-100 mmhos:
 - $\pm 5\%$ up to 200 mc
 - $\pm 10\%$ from 200 to 250 mc

Excitation Required:
100 millivolts RMS, 50 — 250 mc range

Detector Required:
Bridge Detector, or receiver, with sensitivity of 20 microvolts at 50 mc, 2 microvolts at 250 mc, for 0.1 mmho discrimination

Dimensions:

- Width: 9 inches (23 cm)
- Height: 8½ inches (21 cm)
- Depth: 7½ inches (19 cm)

Weight:
12 pounds (5.4 kilograms)

Wayne Kerr
CORPORATION

22 FRINK STREET, MONTCLAIR,
NEW JERSEY 07042 • (201) 746-2438

