true bearing and distance on a Lambert Conformal Conic projection of the United States (USAF GNC Series) gave Zn 275°, distance 890 nautical miles.

For those interested in the origin of this solution; it is common to the practice of celestial navigation. The astronomical triangle determined by the observer's assumed zenith, the observed body, and the north celestial pole is assumed to be on the surface of the earth. With the introduction of an auxiliary right angle, the unknown true position of the observer is determined from the known true azimuth and altitude of the body. Range and bearing from one point to another on the earth's surface is simply a different solution of the astronomical triangle. Now, point your beam in the right direction, and good luck.

73

Refer to: American Practical Navigator, H.O. No. 9.
Antenna Systems, AF Manual 52-19.
Handbook of Electronic Tables and Formulas, Howard Sams.

A S Meter For Your Sixer

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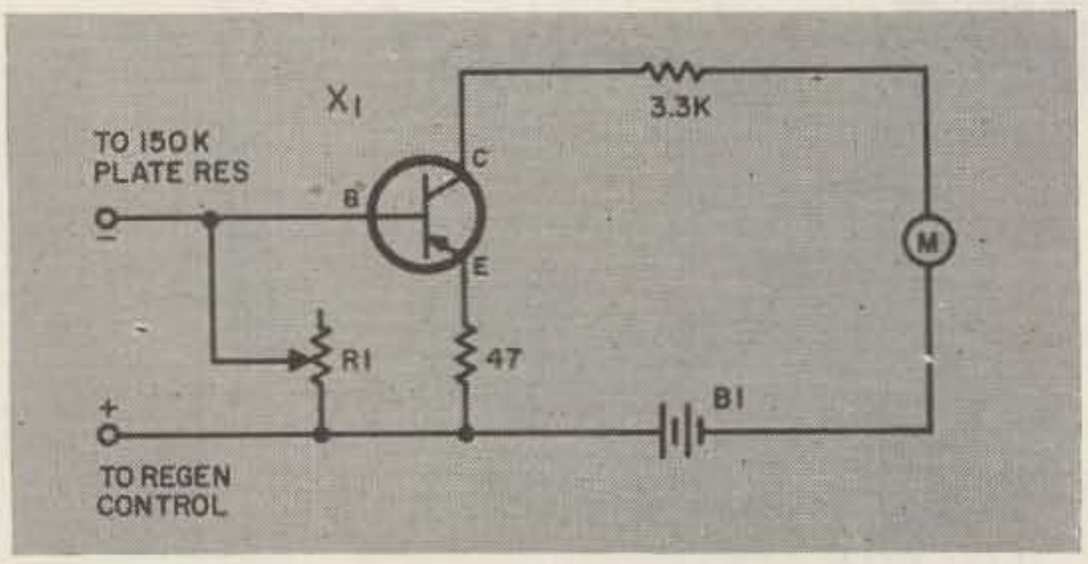


DUE to the increased activity of six meter hidden transmitter hunts and the influx of the popular Heathkit "Sixer," an "S" meter circuit was developed at K5VMC/M to allow the use of a "Sixer" on local hunts. The circuit is applicable to the "Tenner" and "Twoer" as well.

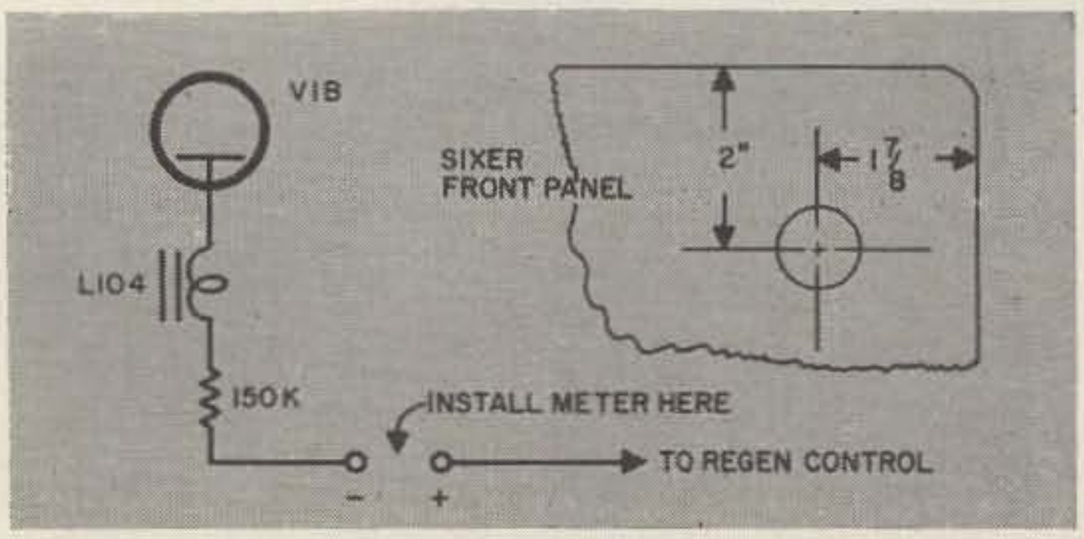
The unit consists of an inexpensive O-1 ma. meter and a single transistor meter amplifier. Half scale deflection is obtained on a signal strong enough to quiet the background hiss as compared to approximately one fourth to one third scale on a 20,000 ohms per volt meter or a VTVM reading the voltage drop across the plate dropping resistor.

When the detector is operating under no signal conditions, it draws less than one mil. A strong signal causes the detector to draw just slightly more. Measurement of the voltage drop across the 150K plate dropping resistor produced approximately a seven volt drop which was not enough to give an accurate indication. A transistorized meter amplifier was built that would give 100 microamp sensitivity to a O-1 ma. meter. The input was shunted to give approximately full scale reading with no signal. Application of a weak signal produced about half scale deflection which proved to be ample for hunts as well as relative indications in a fixed station use.

In operation, the meter functions as a transistor volt meter which measures the voltage drop across the input shunt. The shunt is adjusted so that the meter pointer just begins to deflect downscale with no signal input. This is the most sensitive setting and will give the best results.

The meter circuit here was built into a minibox just large enough to accommodate the meter on one end. A socket was used for the transistor but the leads can be soldered if extreme care is used to keep any heat from reaching the transistor. No special layout is necessary and lead lengths are not critical. The only precaution will be that the leads from the "Sixer" to the "S" meter should be hooked exactly as shown and that battery polarity is exactly as shown; otherwise the transistor will be damaged. To dress up the appearance a miniature imported "S" meter was used but any O-1 ma. meter will work just as well.

In the HW-29 and the new HW-29A, the unit may be mounted permanently as shown in Fig. 2. The old HW-29 with the 8 mc modification kit can incorporate the "S" meter circuitry by installing two banana jacks on the rear apron and using an insulated shorting bar when the "S" meter is not in use. The meter in no way affects operation of the unit.



Using a conventional electrostatically shielded loop, a deflection of one tenth mil was obtained fifty feet from a sixty watt transmitter and a three tenth mil deflection at six miles from a twenty watt transmitter.

One meter, one transistor, three resistors, a battery, and you have an "S" meter which will give better fluctuation indication than the meter on the Gonset Communicator III.

Happy hunting! . . . K5VMC