

ZS6KMD Mini SWR Meter



An SWR bridge works by sampling the amount of power flowing in each direction along the aerial feeder wire (coaxial cable). This is achieved by the use of a Maxwell bridge transmission line coupler as shown in the diagram below. The reactive arms of the bridge are formed by the distributed capacitance and mutual inductance of the coupled lines. The two sampling lines (L1 & L2) shown in the circuit are coupled to the main feeder and respectively terminated at opposite ends by 100 ohm resistors (R1 & R2), thus providing two outputs which are proportional to the forward and reflected signals present. Diodes (D1 & D2) and capacitors (C1 & C2) convert the sampled signals to DC for measurement on a conventional meter (M1). Potentiometer (VR1) adjusts the sensitivity of the circuit. The ferrite beads prevent stray RF pick up in the wiring. It is important to keep the placement of components as symmetrical as possible as it will influence the electrical balance of the meter.

NOTE: The coaxial sampling line is made up of a 100mm section of RG58 coax. The outer PVC is carefully removed and the braid "bunched" to allow the two sampling lines (L1 & L2) to be of equal length and should run inside the braid, do not bend, cross or kink these sampling lines and keep them close together.

Parts:

R1 & R2 100 Ohm 1/2W

C1, C2 & C3 1nf

D1 & D2 OA 91 or OA 90 Germanium Diodes

VR1 47K Ohm

M1 100mA

2 x SO239 sockets

1 x metal case

1 x 2way switch

I have tested this on various power settings ranging from 10W up to 150W, all worked fine and deflection of the meter was well within what was expected from my professionally built one.

Operation:

Set the switch to fwd position, go to key down (PTT) and set for max deflection or expected wattage out (scale built as per existing meter I had) switch to rev and check deflected reading... On my scale at 1:1 it does not move at all

and at 1.5:1 it is at 1 at 2:1 it is at 2 etc... Works very well and for a field device or spare while working away from the shack it is indispensable...

