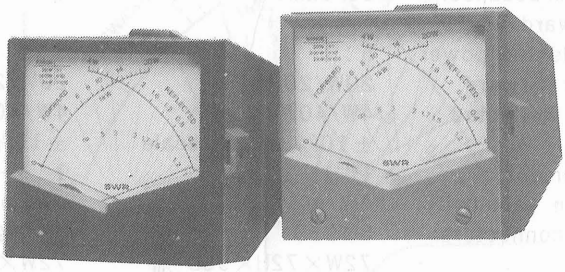
HOBBY ELECTRONICS

INSTRUCTION MANUAL

SWR & POWER METER

MODEL **CN-510**
MODEL **CN-520**
MODEL **CN-540**
MODEL **CN-550**



DAIWA INDUSTRY CO., LTD.

The CN-510/520/540/550 is a high quality instrument with a unique feature which makes tedious measurements of SWR and Power during antenna tests, matching and tuning of transmitters a breeze.

SWR and power indicators are installed in one meter unit. One scale will indicate Forward Power. another scale Reflected Power and SWR is indicated at the crossing point of the 2 needles. This unique feature makes it possible to read Forward Power. Reflected Power and SWR all at the same time.

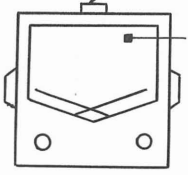
SPECIFICATIONS :

	CN-510	CN-520
Frequency:	1.8—60MHz	1.8—60MHz
Input/output impedance:	50 ohms	50 ohms
Ratio of Forward vs. Reflected power:	5 : 1	5 : 1
Power range: Forward	20W/200W	200W/2kW
Reflected	4W/40W	40W/400W
Tolerance:	±10% at full scale	±10% at full scale
SWR measurement:	1 : 1—1 : ∞	1 : 1—1 : ∞
SWR detection sensitivity:	4W min.	40W min.
Input/output connectors:	SO-239	SO-239
Dimensions:	72W×72H×96D m/m	72W×72H×96D m/m

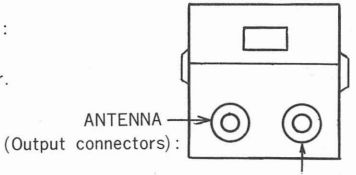
SPECIFICATIONS :

	CN-540	CN-550
Frequency:	50—150MHz	140—250MHz
Input/output impedance:	50 ohms	50 ohms
Ratio of Forward vs. Reflected power:	5 : 1	5 : 1
Power range: Forward	20W/200W	20W/200W
Reflected	4W/40W	4W/40W
Tolerance:	±10% at full scale	±10% at full scale
SWR measurement:	1 : 1—1 : ∞	1 : 1—1 : ∞
SWR detection sensitivity:	4W min.	4W min.
Input/output connectors:	SO-239	SO-239
Dimensions:	72W×72H×96D m/m	72W×72H×96D m/m

(Front view)



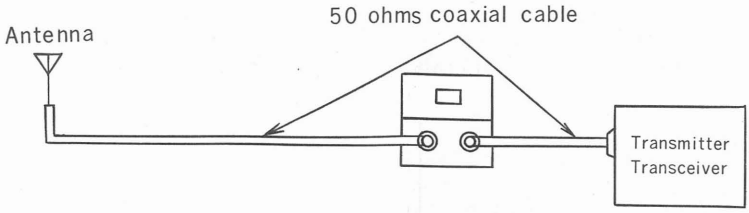
(Rear view)



OPERATION :

1) Use only 50 ohm coax line for connections. This will maintain the accuracy of the meter.

2) For accurate power measurements, use 50 ohms pure resistance dummy load.

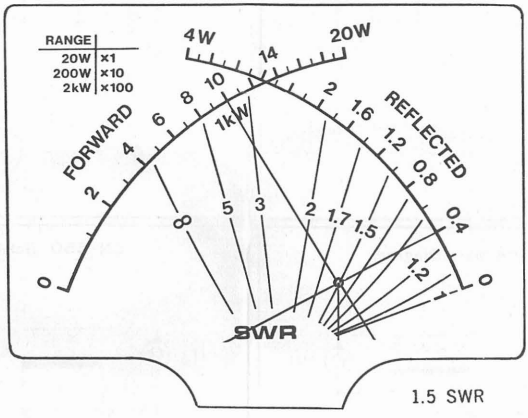


3) "Forward„ scale indicates Forward Power.

4) "Reflected„ scale indicates Reflected Power.

5) Effective Radiated Power.
To measure effective radiated power, subtract Reflected power from Forward Power. (Apparent loss is only produced by impedance mismatch and does not include cable losses.)

6) SWR.



See figure 1. The meter indicates Forwerd power 100W and Reflected Power 4W. At the crossing point of the two meter needles the indication is SWR 1.5.

Mathematical verification:

$$SWR = \frac{\sqrt{Pf} + \sqrt{Pr}}{\sqrt{Pf} - \sqrt{Pr}}$$

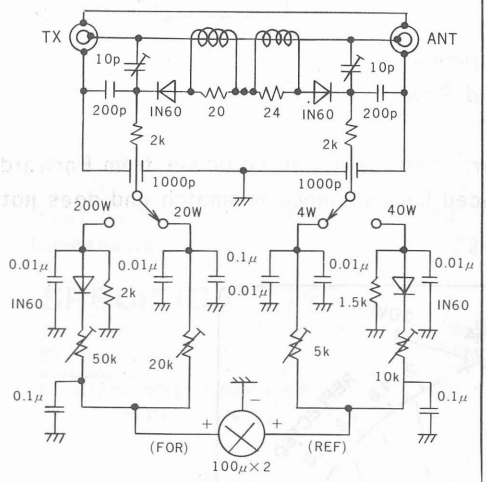
Pf: Forward Power
Pr: Reflected Power

$$SWR = \frac{\sqrt{100} + \sqrt{4}}{\sqrt{100} - \sqrt{4}} = \frac{10+2}{10-2} = \frac{12}{8} = 1.5$$

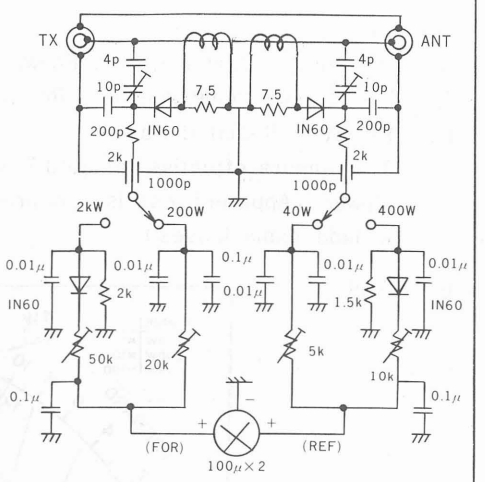
CAUTION :

* The meter movements are highly sensitive. Prevent mechanical shock and vibration.
* Measuring power with a poorly matched antenna or disconnecting the output of the bridge while operating may damage the meter.

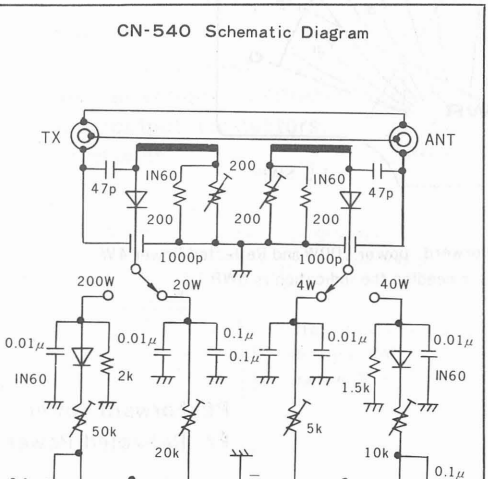
CN-510 Schematic Diagram



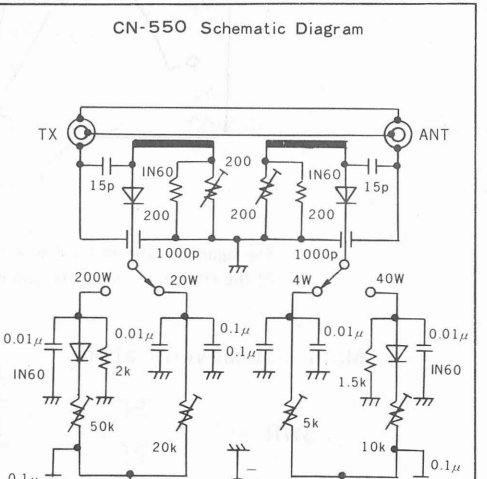
CN-520 Schematic Diagram



CN-540 Schematic Diagram



CN-550 Schematic Diagram



Circuits or specifications might be changed for improvement without notice