

Mathematical verification:

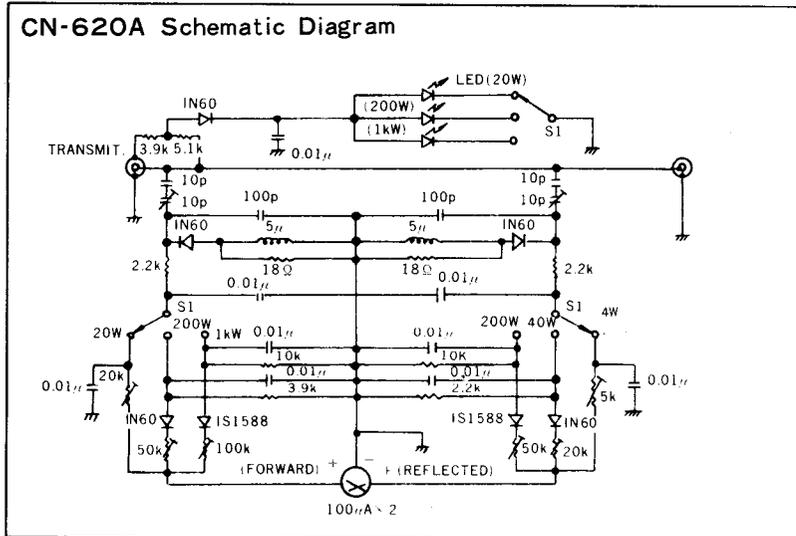
$$SWR = \frac{\sqrt{P_f} + \sqrt{P_r}}{\sqrt{P_f} - \sqrt{P_r}} \quad \begin{array}{l} P_f: \text{Forward Power} \\ P_r: \text{Reflected Power} \end{array}$$

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

- 9) Range indicators.
 LEDs are located on the front panel indicating the power range the instrument is set for. Minimum power required to activate the light is a half the maximum power of each range.

CAUTION :

- * The meter movements are highly sensitive. Prevent mechanical shock and vibration.
- * When not in use, set the power selector to OFF (1kW) position.
- * Measuring power with a poorly matched antenna or disconnecting the output of the bridge while operating may damage the meter.



INSTRUCTION MANUAL

SWR & POWER METER

- MODEL CN-620A**
- MODEL CN-630**
- MODEL CN-650**



DAIWA INDUSTRY CO., LTD.

The CN-620A/630/650 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.

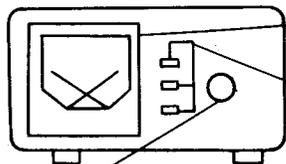
SPECIFICATIONS :

CN-620A	
Frequency:	1.8—150 MHz
Input/output impedance:	50 ohms
Ratio of Forward vs. Reflected power:	5 : 1
Power range:	Forward 20W/200W/1kW Reflected 4W/40W/200W
Tolerance:	±10% at full scale
SWR measurement:	1 : 1—1 : ∞
SWR detection sensitivity:	4W min.
Input/output connectors:	S0-239
Dimensions:	180W×85H×120D mm

SPECIFICATIONS :

	CN-630	CN-650
Frequency:	140—450 MHz	1.2—2.5 GHz
Input/output impedance:	50 ohms	50 ohms
Ratio of Forward vs. Reflected power:	5 : 1	5 : 1
Power range:	Forward 20W/200W Reflected 4W/40W	2W/20W 0.4W/4W
Tolerance:	±10% at full scale	±15% at full scale
SWR measurement:	1 : 1—1 : ∞	1 : 1—1 : ∞
SWR detection sensitivity:	4W min.	0.4W min.
Input/output connectors:	S0-239	N-J
Dimensions:	180W×85H×120D mm	180W×85H×120D mm

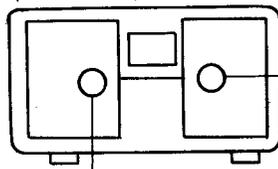
(Front view)



Meter (Cross needles type):
Indicating SWR.
Forward & Reflected Power.
Range indicator:
LED lights up indicating power range.

Power Range Selector:
Set to required power range.

(Rear view)



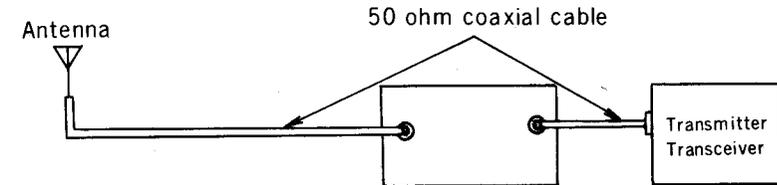
TRANSMITTER (Input connector):
Connect with 50 ohms coaxial cable to Transmitter or Transceiver.

ANTENNA or DUMMY (Output connectors):

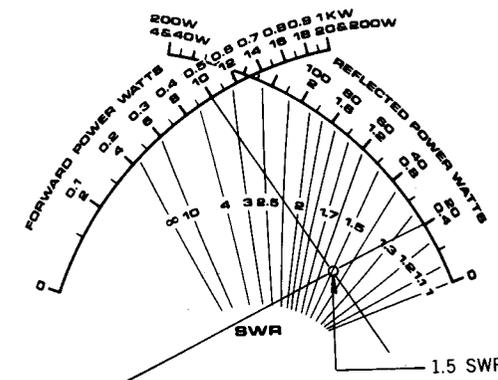
Change from antenna to dummy load or second antenna.

OPERATION :

- 1) Do not use CN-620A beyond frequency range of 1.8—150 MHz. (CN-630.140-450MHz, CN-650.1.2-2.5GHz) Insertion loss will increase beyond these frequencies and accuracy of the meter will be impaired.
- 2) Use only 50 ohm coax line for connections. This will maintain the accuracy of the meter.
- 3) For accurate power measurements, use 50 ohm pure resistance dummy load.
- 4) Set slide switch on rear of instrument to desired operating mode.



- 5) "Forward Power Watts," scale indicates Forward Power.
- 6) "Reflected Power Watts," scale indicates Reflected Power.
- 7) Effective Radiated Power
To measure effective radiated power, subtract Reflected power from Forward Power. (Apparent loss is only produced by impedance mismatch and dose not include cable losses.)
- 8) SWR.



This scale indicates 200W power range.

Figure 1. The CN-620A meter scale.

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