



FRONT PANEL

REAR PANEL

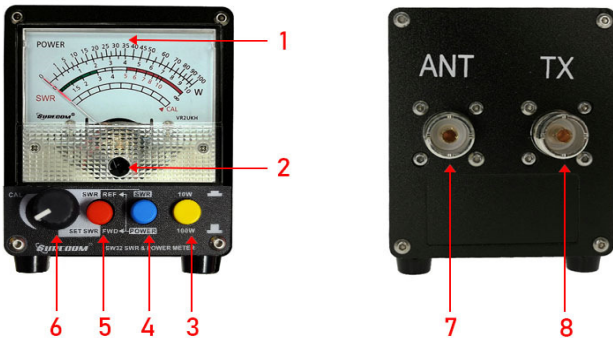
SWR & Power Meter Instruction Manual

This SWR & Power meter is a highly accurate RF meter for measuring Forward Power, Reflected Power, and VSWR.

Main Features:

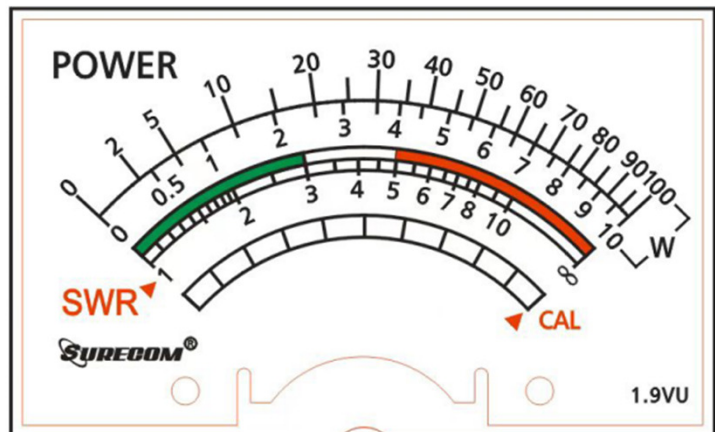
- Large meter display for easy reading.
- Forward RF power readings, switchable to indicate either average power
- Reflected RF power readings.
- VSWR ratios.
- Convenient control for easy operation.

MODEL	SW-32 HF	SW-32 UV
Frequency Range	1.8 -60MHz	125-525MHz
Power Range	0.2W to 100W	
Power Scale	10W,100W	
Maximum Power	100W	
Accuracy 10W Range	+/- 5% (AVG)	
Accuracy 100W Range	+/- 5% (AVG)	
VSWR	Min Power required = 1 Watt for F.S.D.	
Input/Output Impedance	50 Ohms	
Input/Output Connectors	SO-239	TYPE-N / SO239
Size	76(W)x100 (H) x10.5 (D)	
Weight	406g	
Accessories	Instruction Manual	



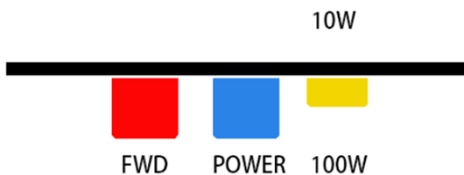
Explanation of Features:

- 1.Meter Display: Indicates Forward/Reflected Power in Watts and SWR ratio
- 2.Meter Zero adjust: Mechanical zero adjustment for meter needle
- 3.Range Switch: Selects RF Power Ranges of 10W and 100W
- 4.Blue Switch 1: Selects POWER , SWR
- 5.Red Switch 2: POWER of (REF/ FWD) , SWR of (set SWR / SWR)
- 6.SWR SET Control Knob: Sets full scale deflection when measuring VSWR.
- 7.ANT Connector : Coax connector to 50 Ohm antenna system.
- 8.TX Connector : Coax connector to transmitter 50 Ohm RF output.



FORWARD POWER MEASUREMENT

1. Set the Blue button to the 'POWER' position. Set the Red button, 'FWD' position.
2. Set the Radio transceiver to transmit and read the scale corresponding to the Power range selected yellow button (10W, or 100W)





REFLECTED POWER MEASUREMENT

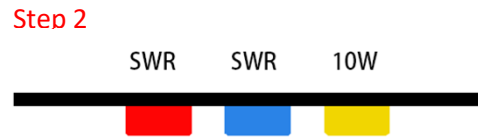
1. Set the Blue button switch to the 'POWER' position. Set the Red button, 'REW' position.
2. Set the radio transceiver to transmit and read the scale corresponding to the Power range selected (10W, or 100W)



VSWR MEASUREMENT

Step 1

1. Set the Blue button switch to the 'SWR set' position. Set the Red switch to the 'SET SWR' position.
2. Set the radio transceiver to transmit mode.
3. Slowly turn the CAL Control Knob clockwise until the meter point is at the 'CAL' position. This should be full scale.



Step 2

Set the Red button switch to the 'SWR' position while transmitting. The meter will now indicate the SWR ratio.

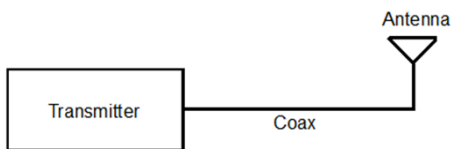
CAUTION

1. Since the meter movement is very sensitive, avoid excessive vibration or mechanical shock to the unit.
2. The absolute maximum power that should be applied to the meter is 100W. Also observe maximum power inputs of 10W when using the lower ranges.
3. The transceiver and antenna connections to the meter must never be reversed. Always observe the correct connections to the transmitter and the antenna as shown.
4. The meter has been carefully calibrated at the factory. Tampering with any of the internal circuitry or sensors may cause damage and will degrade the accuracy of the meter.
5. Do not expose the meter to excessive temperatures, high humidity, or strong magnetic fields.

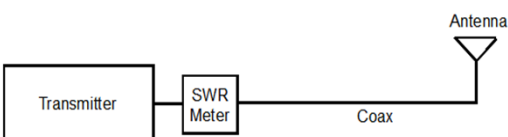
Understanding SWR Meters

An SWR (Standing Wave Ratio) meter is an instrument used to measure the amount of reflected power (power coming back from the antenna and/or transmission cable) to the transmitter. For a transmitter to provide all the power to an antenna, the antenna needs to be resonant and the transmission cable (coax) has to introduce minimum loss. In a perfect scenario, in an efficient antenna system, all the power outputted from the transmitter makes it into the atmosphere. Both the coax and the antenna, if not tuned right will induce losses. These losses will not make it out to the air but come back to the transmitter in the form of "standing waves".

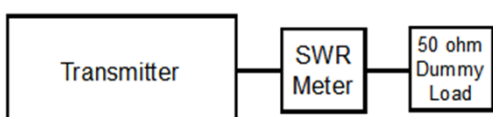
SWR is the ratio of the forward power vs the reflected power. A perfect antenna system will show 100% forward power and 0% reflected power and is referred to as 1.0:1 which is hard to maintain. Typically a 1.1:1 is ideal and 1.2:1 is average. Anything over 1.5:1 is suspect and needs troubleshooting or tuning. 2:1 is unacceptable and could damage the transmitter if it doesn't have reflected power protection (foldback) circuitry. A 1.0:1 is 100% efficiency to the atmosphere. A 1.1:1 is 0.2366% loss, a 1.2:1 is 0.826% loss, a 1.5:1 is 4% loss, and a 2:1 is 11.1% loss of power.



Typically, an SWR meter is placed between the transmitter and the antenna usually at the output of the transmitter as shown below.



Unfortunately you cannot tell if a problem is in the antenna or coax (transmission line) if it is placed at the output of the transmitter shown above. Placing the SWR meter at the output of the transmitter may not necessarily show accurate reflected power since losses in the coax can show up as a decrease in reflected power. Also if there is high SWR, it can show a high false reading of output power from the transmitter.



To accurately measure output power of transmitter you must place the SWR meter between a good 50 ohm purely resistive "dummy" load and the transmitter as shown below. Accurately note the power out first. Be aware that some SWR meters cannot accurately measure power output. Just relative output for indicating reflected power.