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› Diamond SX400 VHF-UHF SWR & Power Meter Instruction Manual

Diamond Antenna SX400

Diamond SX400 VHF-UHF SWR & Power Meter Instruction Manual

Model: SX400 | Brand: Diamond Antenna

1. INTRODUCTION

The Diamond SX400 is a precision measurement instrument designed for radio enthusiasts and professionals operating on VHF and UHF frequencies (140-525 MHz). It accurately measures Standing Wave Ratio (SWR), forward power, and reflected power, enabling optimal antenna performance and protecting your transceiver.



Image: The compact Diamond SX400 SWR and Power Meter shown in a hand, illustrating its portable size.

Key Features

- **Precise SWR and Power Measurement:** For VHF/UHF equipment.
- **Wide Frequency Coverage:** 140 to 525 MHz, suitable for various radio applications.
- **Triple Power Scale:** Selectable ranges of 5W, 20W, and 200W.
- **Equipment Protection:** Helps prevent damage to transmitters by monitoring reflected power.
- **Clear Readability:** Large analog meter with optional 13.8V DC backlight.
- **Durable Construction:** Compact design with a robust metal chassis.

2. SAFETY INFORMATION

Read all instructions carefully before operating the device. Failure to follow these guidelines may result in damage to the unit, connected equipment, or personal injury.

- Do not expose the unit to moisture or extreme temperatures.
- Ensure proper ventilation to prevent overheating.
- Use only the specified 13.8V DC power supply for the backlight function.
- Always connect the antenna and radio correctly before transmitting. Incorrect connections can lead to high SWR and damage to your radio.
- Avoid touching antenna connections during transmission.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- Diamond SX400 SWR & Power Meter
- DC Power Cable (for backlight)

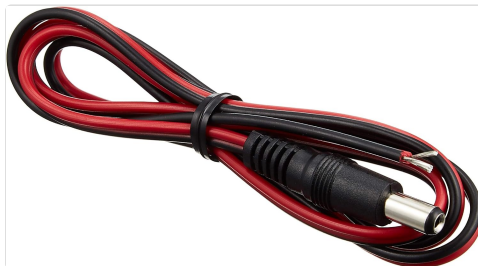


Image: The included DC power cable, typically red and black wires with a barrel connector for the meter and bare ends for power supply connection.

4. PRODUCT OVERVIEW

Front Panel

The front panel features the analog meter display, power range selector, function switch, and backlight power button.



Image: Front view of the Diamond SX400, showing the large analog meter, power range (5W, 20W, 200W) switch, function (FWD, REF, SWR) switch, and backlight power button.

Rear Panel

The rear panel includes the antenna and transceiver connectors, and the DC input for the backlight.



Image: Rear view of the Diamond SX400, displaying two SO-239 (UHF Female) connectors labeled 'ANT' for antenna and 'TX' for transceiver, along with the 13.8V DC input for the backlight.

5. SETUP

1. **Power Connection (for Backlight):** Connect the supplied DC power cable to a 13.8V DC power source. The barrel connector plugs into the "DC 13.8V" input on the rear panel. This connection is only for the meter's backlight.
2. **Transceiver Connection:** Connect your radio's antenna output to the "TX" (Transceiver) connector on the rear panel of the SX400 using a suitable 50 Ohm coaxial cable.
3. **Antenna Connection:** Connect your antenna to the "ANT" (Antenna) connector on the rear panel of the SX400 using a suitable 50 Ohm coaxial cable.
4. **Initial Checks:** Ensure all connections are secure. Do not transmit until the setup is complete and verified.

6. OPERATING INSTRUCTIONS

Powering On/Off (Backlight)

Press the "POWER" button on the front panel to turn the backlight on or off. The meter itself does not require external power for SWR and power measurement.

Selecting Power Range

Use the "RANGE" switch on the front panel to select the appropriate power scale:

- **5W:** For low power measurements (up to 5 Watts).
- **20W:** For medium power measurements (up to 20 Watts).
- **200W:** For high power measurements (up to 200 Watts).

Always select a range higher than your expected transmit power to avoid damaging the meter.

Measuring Forward Power (FWD)

1. Set the "FUNCTION" switch to "FWD".
2. Transmit a continuous carrier (e.g., by pressing the PTT button on your microphone).
3. Read the forward power directly from the meter's scale corresponding to your selected power range.

Measuring Reflected Power (REF)

1. Set the "FUNCTION" switch to "REF".
2. Transmit a continuous carrier.
3. Read the reflected power from the meter's scale. High reflected power indicates a mismatch between your radio and antenna.

Measuring Standing Wave Ratio (SWR)

1. Set the "FUNCTION" switch to "FWD".
2. Transmit a continuous carrier.
3. Adjust the "CAL" knob (if present, or note the FWD reading).
4. Switch the "FUNCTION" to "SWR".
5. Read the SWR value directly from the SWR scale on the meter. An SWR of 1.5:1 or lower is generally considered good.

Note: The minimum power required for accurate SWR measurement is 1 Watt.

7. MAINTENANCE

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the unit. Do not use abrasive cleaners or solvents.
- **Storage:** Store the meter in a dry, dust-free environment when not in use.
- **Inspection:** Periodically check all cables and connectors for signs of wear or damage.

8. TROUBLESHOOTING

No Backlight

- Ensure the 13.8V DC power cable is securely connected to both the meter and the power source.
- Verify the 13.8V DC power source is active.
- Check the "POWER" button on the front panel.

No Meter Movement / Incorrect Readings

- Verify all coaxial cable connections between the radio, meter, and antenna are secure.
- Ensure the radio is transmitting power.
- Check that the "RANGE" switch is set to an appropriate power scale (higher than transmit power).
- For SWR measurement, ensure transmit power is at least 1 Watt.
- Confirm the "FUNCTION" switch is set correctly (FWD, REF, or SWR).

High SWR Readings

- This indicates a mismatch between your antenna and radio. Check your antenna system for proper tuning, damage, or incorrect length.
- Inspect coaxial cables for damage or short circuits.
- Ensure the antenna is designed for the operating frequency.

9. SPECIFICATIONS

Feature	Specification
Brand	Diamond Antenna
Model Number	SX400
Frequency Range	140 - 525 MHz
Power Scales	5W / 20W / 200W
Minimum Power for SWR	1W
Impedance	50 Ohms
Connectors	SO-239 (UHF Female)
Backlight Power	13.8V DC
Dimensions (D x W x H)	10.3 x 15.5 x 15.5 cm
Weight	699 Grams
Color	Black with yellow display
Water Resistance	Not waterproof

10. WARRANTY AND SUPPORT

Warranty Information

The Diamond SX400 SWR & Power Meter comes with a 2-year limited warranty from the date of purchase. This warranty covers defects in materials and workmanship under normal use. It does not cover damage caused by misuse, accident, unauthorized modification, or improper installation.

Customer Support

For technical assistance, troubleshooting, or warranty claims, please contact your authorized Diamond Antenna dealer or visit the official Diamond Antenna website for support resources.