Cross-Needle Type SWR Power Meter
SX240C

DIAMOND ANTENNA

Operation instruction

Please read through this operating instruction care fully and follow the instruction to prevent from abuse or misuse. This instruction must be kept in good condition to refer any time in need.

General

SX240C Cross-Needle Power Meter combines a couple of meters indicating forward and reflected power respectively. It provides the direct read out of the SWR value from the crossing of two pointers.
Two sensors are applied so the unit covers from HF band to UHF band. Measurable power range is up to 3kW at HF band.

Specification

Frequency range: 1.8-54MHz (Sensor 1) / 140-470MHz (sensor 2)
Input Impedance: 50 ohms
Power range: 30W/300W/3kW (HF band only)
※Note: 74% of the full scale for 220MHz band.
Power reading: Direct read out
※Note: For 220MHz band, it should be calibrated by 74% of the direct read out.
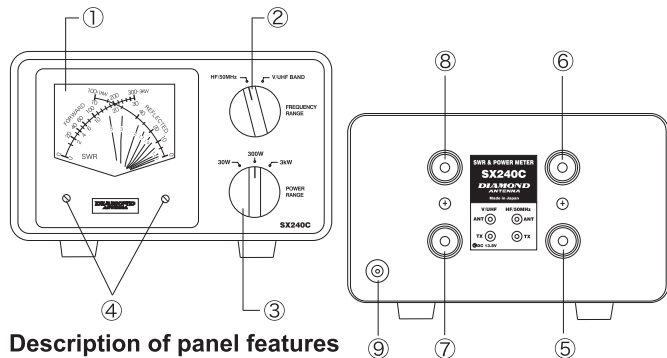Power accuracy: 10% at full scale
Min. power requirement: 3W
Input/output connector: UHF
Dimensions: 170Wx115Hx150Dmm
Weight: 1350g
Accessory: Power supply code for illumination

Description of panel features

1.Meter
Displays forward RF power, reflected RF power and SWR at the same time. The left side is forward scale and the right side is reflected scale. As to SWR, read the red scale at the center.

2.Frequency range (Band switch knob)
The switch that selects the sensor to measure frequency
HF/50Mhz: 1.8-54MHz, V/UHF BAND: 140-470MHz

3.Power range
The switch that selects the measurement power range

4.Meter ZERO adjustment screw
Adjusts the meter indicator to zero position with regular screwdriver if the indicator is far from zero position when the unit is not in use.

5.Transceiver (for S1)
RF power input from a radio equipment which is to be connected with UHF connector.
(for 1.8-54MHz measurement)

6.Antenna (for S1)
RF power output from to an antenna or dummy load which is connected with UHF connector.
(for 1.8-54MHz measurement)

7. Transceiver (for S2)
RF power input from a radio equipment which is to be connected with UHF connector.
(for 140-470MHz measurement)

8.Antenna (for S2)
RF power output from to an antenna or dummy load which is connected with UHF connector.
(for 140-470MHz measurement)

9. DC 13.8V
DC power source for meter illumination. Acceptable DC voltage range is from 11VDC to 15VDC. Connect red line for positive and black line for negative polarities. (Use the power cable which is included)

Setting up

Connect the TX output of the transceiver to the "TX" connector and the antenna or dummy load to the "ANT" connector both located on the rear panel of the unit. (The sensors are different depending on the frequency.) Use 50 ohms coaxial cable for the connections.

Precautions

①No mechanical shock to be given to the unit as it employs precision meters.
②Do not transmit with an antenna out of tuned or open condition as it may burn out the meter by high voltage.
③The unit can be measured up to 3kW at HF band but the unit can be measure up to 300W on more than 50MHz. The continuous transmission should be avoided at 3kW.

Operation

Set up the frequency range (Band switch knob) to the measurement frequency and set up the power range to the measurement power range. If the measurement power range is unknown, set up the 3kW (HF) or 300W (V/UHF).
・Forward power
Set up the power range (30W/300W/3kW), follow the forward scale and read it out.
・Reflected power
Set up the power range (10W/100W/1kW), follow the forward scale and read it out.
Read 10W at 30W, 100W at 300W and 1kW at 3kW.
・SWR
Follow the SWR corresponding scale from the point of pointers crossing and read it out.
Refer to the below showing SWR1.5 as an example.

Note: In case of 220MHz band measurement, both forward and reflected power to be converted with following formula.
Direct read out in the scale x 0.74 =Actual power.
(EX) When direct read out shows 10w, it should be 10w x0.74=7.4W.

example
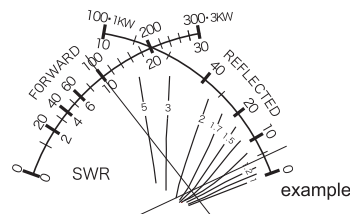
The scale of the unit has temperature characteristics.
Celsius(℃)
True value = readout value x (1-(temperature (℃)-20)x0.0022)
Fahrenheit(°F)
True value=readout value×(1 ― (temperature(°F) ― 68)×0.0022)

Fig.1
Pf:Forward Power
Pr:Reflected Power

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

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

If there is something wrong

Isn't it SSB mode?　Radio wave isn't transmitted at the SSB mode without input the sound/voice to microphone. The central conductor of UHF could be enlarged and there may be loose connection.

Though these products purchased are manufactured under strict quality control, if damage is caused by transporting, ask your dealer promptly.

Design and specifications of these products will be changed for future improvement without advance notice.