

NISSEI DG-103MAX

NISSEI DG-103MAX Digital HF Wattmeter User Manual

Model: DG-103MAX

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1. INTRODUCTION

Thank you for choosing the NISSEI DG-103MAX Digital HF Wattmeter. This manual provides essential information for the safe and efficient operation of your device. Please read it thoroughly before use and keep it for future reference. The DG-103MAX is designed for accurate measurement of forward power, reflected power, and Standing Wave Ratio (SWR) in the 1.6-60 MHz frequency range, catering to both amateur radio enthusiasts and professionals.

2. SAFETY INFORMATION

- **Power Supply:** Use only the provided 12V DC power cable. Ensure the power source matches the specified voltage.
- **Environmental Conditions:** Do not expose the device to extreme temperatures, humidity, or direct sunlight. The device is *not waterproof*.
- **Connections:** Ensure all connections (antenna, radio, power) are secure and correct before powering on the device. Incorrect connections can damage the wattmeter or connected equipment.
- **High Power:** This device handles up to 1200W. Exercise caution when transmitting at high power levels.
- **Ventilation:** Ensure adequate ventilation around the device to prevent overheating.
- **Servicing:** Do not attempt to open or repair the device yourself. Refer all servicing to qualified personnel.

3. PRODUCT OVERVIEW

The NISSEI DG-103MAX is a compact and precise digital wattmeter featuring a large, easy-to-read display. It provides real-time measurements of your radio system's performance.

3.1 Main Features

- Frequency Range: 1.6 - 60 MHz
- Power Measurement: CW, FM, FDMA, AM, SSB (PeP)

- Power Scales: 300 mW - 300 W and 300 W - 1200 W (selectable)
- Simultaneous display of Forward Power (FWD), Reflected Power (REF), and SWR
- Large 3-inch digital display with LED backlight
- Low insertion loss: less than 0.1 dB
- SO-239 connectors for input and output

3.2 Components



Figure 1: Front view of the NISSEI DG-103MAX Digital HF Wattmeter. The image shows the main digital display, control buttons, and input/output connectors.

The device typically includes:

- NISSEI DG-103MAX Unit
- 12V DC Power Cable
- User Manual

4. SETUP

Follow these steps for initial setup:

1. **Power Connection:** Connect the supplied 12V DC power cable to the power input jack on the rear of the DG-103MAX.

Connect the other end to a suitable 12V DC power source.

2. **Radio Connection:** Connect your radio's antenna output to the **TX** (or IN) SO-239 connector on the DG-103MAX using a 50 Ohm coaxial cable.
3. **Antenna Connection:** Connect your antenna to the **ANT** (or OUT) SO-239 connector on the DG-103MAX using a 50 Ohm coaxial cable.
4. **Power On:** Once all connections are secure, power on the DG-103MAX. The display should illuminate.

Ensure all coaxial cables are rated for the power levels you intend to use.

5. OPERATING INSTRUCTIONS

The DG-103MAX is designed for straightforward operation.

5.1 Display Readings

The large digital display simultaneously shows:

- **FWD (Forward Power):** The power transmitted from your radio.
- **REF (Reflected Power):** The power reflected back from the antenna system.
- **SWR (Standing Wave Ratio):** An indication of the impedance match between your radio and antenna. A lower SWR (ideally 1.0:1) indicates a better match.

5.2 Power Scale Selection

The DG-103MAX offers two power scales for optimal accuracy:

- **Scale 1:** 300 mW - 300 W
- **Scale 2:** 300 W - 1200 W

Use the designated button (refer to the device's front panel for exact labeling) to switch between these scales. Select the scale that best suits your current transmission power for the most accurate readings.

5.3 Measurement Modes

The device supports various modulation types:

- **CW (Continuous Wave)**
- **FM (Frequency Modulation)**
- **FDMA (Frequency Division Multiple Access)**
- **AM (Amplitude Modulation)**
- **SSB (Single Sideband) PeP (Peak Envelope Power)**

The DG-103MAX automatically detects the signal type for accurate power measurement, especially for SSB PeP readings.

5.4 Taking Measurements

1. Ensure the DG-103MAX is correctly connected between your radio and antenna.
2. Select the appropriate power scale.
3. Transmit a signal from your radio. The FWD, REF, and SWR values will be displayed instantly.
4. Adjust your antenna tuner (if applicable) to achieve the lowest possible SWR for optimal performance and to protect your radio.

6. MAINTENANCE

The NISSEI DG-103MAX requires minimal maintenance.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Do not use liquid cleaners or solvents.
- **Storage:** When not in use, store the device in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Connections:** Periodically check all cable connections for wear or damage.

No user-serviceable parts are inside. Do not open the casing.

7. TROUBLESHOOTING

If you encounter issues with your DG-103MAX, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No display/Device not powering on	No power, faulty cable, incorrect voltage	Check 12V DC power connection. Ensure power source is active. Verify cable integrity.
No FWD/REF/SWR readings	Incorrect connections, no transmission, faulty cables	Verify radio to TX and ANT to antenna connections. Ensure radio is transmitting. Check coaxial cables.
Inaccurate readings	Incorrect power scale, out of frequency range, faulty cables	Select the correct power scale. Ensure operation within 1.6-60 MHz. Check cable quality.
High SWR reading	Antenna mismatch, faulty antenna, faulty cable	Check antenna tuning. Inspect antenna for damage. Verify coaxial cable integrity.

If the problem persists after trying these solutions, contact customer support.

8. SPECIFICATIONS

Feature	Specification
Model	DG-103MAX
Frequency Range	1.6 - 60 MHz
Power Measurement Modes	CW, FM, FDMA, AM, SSB (PeP)
Power Scales	1. 300 mW - 300 W 2. 300 W - 1200 W
Power Accuracy	+/- 5% (1.6 - 30 MHz)
Minimum Power for SWR	300 mW
Insertion Loss	Less than 0.1 dB

Feature	Specification
Input/Output Impedance	50 Ohm
Connectors	SO-239
Power Supply	12V DC
Dimensions (L x H x D)	140 x 84 x 122 mm
Weight (Net)	750 g
IP Rating	IP67 (Note: Product description states 'Non étanche' for water resistance, but IP67 for international protection. Follow 'Non étanche' for water resistance.)
Special Features	Digital display, Variable power scale, Power measurement accuracy

9. WARRANTY AND SUPPORT

NISSEI products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. Please refer to your purchase documentation for specific warranty terms and duration.

9.1 Customer Support

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact your authorized NISSEI dealer or the point of purchase. Keep your proof of purchase handy when contacting support.

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ASK A QUESTION ABOUT THIS MANUAL

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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