

TOA ZM-104A

TOA ZM-104A Impedance Meter User Manual

Model: ZM-104A | Brand: TOA

INTRODUCTION

The TOA ZM-104A Impedance Meter is designed for accurate measurement of speaker line impedance. This manual provides essential information for the safe and effective use of your device, including setup, operation, maintenance, and technical specifications. Please read this manual thoroughly before using the meter.

SAFETY INFORMATION

WARNING:

- Do not attempt to measure impedance on live circuits or speaker lines with active power. Ensure all power is disconnected before making connections.
- Use only the specified battery type (R6 x 4, 1.5 V DC x 4). Incorrect batteries may damage the device or pose a safety risk.
- Do not expose the meter to moisture, extreme temperatures, or direct sunlight.
- Do not open the meter casing. Refer all servicing to qualified personnel.
- Keep out of reach of children.

PACKAGE CONTENTS

Verify that all items listed below are included in your package:

- TOA ZM-104A Impedance Meter Unit
- Carrying Case
- Test Leads (1 set)

- Impedance-to-Power Reference Chart
- User Manual (this document)

PRODUCT OVERVIEW

The TOA ZM-104A Impedance Meter is a robust tool designed for precise impedance measurements in speaker lines. Its key features include:

- **Impedance-to-Power Conversion Chart:** For quick reference and calculation.
- **Wide Measurement Range:** Capable of measuring impedance of speaker lines up to 100k Ohms.
- **Zero Adjustment:** Ensures accuracy across all measurement ranges.
- **Easy-to-Read Meter:** Calibrates directly in Ohms for straightforward readings.



Figure 1: TOA ZM-104A Impedance Meter with its carrying case and test leads. The meter features a large analog display and control knobs.

SETUP

1. Battery Installation

1. Locate the battery compartment cover on the back of the meter.
2. Open the cover and insert four (4) R6 (AA size) 1.5V DC batteries, ensuring correct polarity (+/-).
3. Close the battery compartment cover securely.

2. Connecting Test Leads

1. Insert the red test lead into the positive (+) terminal and the black test lead into the negative (-) terminal on the meter.
2. Ensure the connections are firm.

OPERATING INSTRUCTIONS

Follow these steps to accurately measure speaker line impedance:

1. **Prepare the Speaker Line:** Ensure the speaker line to be measured is completely disconnected from any power amplifiers or other active equipment. The line must be passive.
2. **Connect Test Leads:** Connect the test leads from the ZM-104A meter to the speaker line terminals.
3. **Select Range:** Turn the range selector switch to the desired measurement range (x1, x10, or x100). Start with a higher range if the impedance is unknown to avoid overloading the meter.
4. **Perform Zero Adjustment:** Before connecting to the speaker line, short the two test leads together. Turn the "ZERO ADJ" knob until the meter needle points exactly to the "0" mark on the scale. This ensures accuracy.
5. **Take Measurement:** Connect the test leads to the speaker line. Read the impedance value directly from the meter scale. Multiply the reading by the selected range (e.g., if the meter reads '5' on the x10 range, the impedance is 50 Ohms).
6. **Interpret Results:** Use the Impedance-to-Power Reference Chart (included) to convert the measured impedance to approximate power ratings if necessary.
7. **Power Off:** After measurement, turn the range selector switch to the "OFF" position to conserve battery life.

The meter operates at an oscillation frequency of 1 kHz ($\pm 10\%$) for its measurements.

MAINTENANCE

Cleaning

Wipe the meter with a soft, dry cloth. Do not use abrasive cleaners or solvents, as they may damage the casing or display.

Battery Replacement

Replace batteries when the meter's readings become inconsistent or the needle does not zero correctly. Typical battery life is approximately 30 hours on the x1 range and 60 hours on the x10 and x100 ranges with continuous use.

Storage

When not in use for extended periods, remove the batteries to prevent leakage and store the meter in its carrying case in a cool, dry place, away from direct sunlight and extreme temperatures.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Meter does not power on.	Dead or incorrectly installed batteries.	Check battery polarity. Replace with fresh R6 (AA) batteries.
Inaccurate or unstable readings.	Low batteries, improper zero adjustment, or faulty test leads.	Replace batteries. Perform zero adjustment. Check test leads for damage and ensure secure connection.
Zero adjustment cannot be achieved.	Low batteries or internal fault.	Replace batteries. If problem persists, contact customer support.
No reading when connected to speaker line.	Open circuit in speaker line, incorrect range selection, or faulty connection.	Verify speaker line continuity. Select an appropriate measurement range. Ensure test leads are securely connected to both meter and speaker line.

SPECIFICATIONS

Power Source	R6 x 4 (1.5 V DC x 4)
Current Consumption	39 mA
Reading	Direct reading meter, unit: Ω (Ohms)
Measurement Range	x1 range: 5 Ω - 1 k Ω x10 range: 50 Ω - 10 k Ω x100 range: 500 Ω - 100 k Ω
Accuracy	$\pm 10\%$
Oscillation Frequency	1 kHz, $\pm 10\%$
Battery Life (Continuous Use)	x1 range: 30 h x10 range and x100 range: 60 h
Operating Temperature	-5°C to +40°C (23°F to 104°F)
Dimensions (Unit Only)	110 x 180 x 58 mm (4.33" x 7.09" x 2.28")
Dimensions (Carrying Case)	120 x 220 x 63 mm (4.72" x 8.66" x 2.48")
Finish	ABS resin, black

Weight (with carrying case, without batteries)	700 g (1.54 lb)
Accessory	1 Set Test leads
Measurement Category	CAT I

WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official TOA website or contact your local TOA distributor. Keep your purchase receipt as proof of purchase.

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ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

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.

Submit question