allsun EM480B

ALLOSUN EM480B Audio Impedance Tester User Manual

Model: EM480B | Brand: allsun

1. Introduction

The ALLOSUN EM480B is a versatile digital meter designed for accurate measurement of audio impedance, insulation resistance, AC voltage, and continuity. It is an essential tool for professionals working with speaker systems, PA systems, transformers, motors, cables, and electrical appliances. This manual provides detailed instructions for the safe and effective operation, setup, and maintenance of your EM480B tester.

Image 1.1: The ALLOSUN EM480B Audio Impedance Tester, including test leads, carrying case, and strap.

2. Safety Information

Please read and understand all safety instructions before operating the EM480B tester. Failure to follow these instructions may result in electric shock, fire, or damage to the instrument.

- Always ensure the instrument is in good working condition before use.
- Do not use the tester if it appears damaged or if the test leads are frayed.

- Observe all local and national safety codes.
- Avoid working alone when performing high-voltage tests.
- Do not apply voltage to the input terminals that exceeds the maximum rated voltage for the instrument.
- Replace batteries promptly when the low battery indicator appears to ensure accurate readings.
- Always disconnect the test leads from the circuit before changing functions or ranges.

3. Product Overview

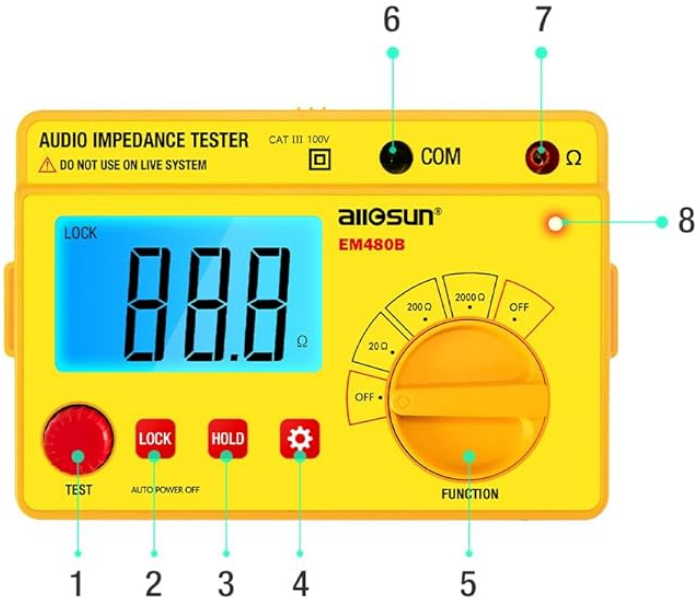
3.1 Key Features

- True measurement of speaker system impedance at 1kHz.
- Three impedance test ranges: 20Ω, 200Ω, and 2000Ω.
- Insulation resistance test with selectable voltages: 250V, 500V, 1000V.
- Measures AC voltage and resistance (less than 200Ω).
- Continuity test function.
- Large LCD 3 1/2 digits (2000 counts) display with backlight.
- Data Hold function to freeze readings.
- Timer function for easier operation during tests (approx. 30 seconds after TEST button press).
- Automatic power-off after approximately 15 minutes of inactivity.
- Low battery indication.
- Protection circuit to prevent damage from discharge voltage.
- Comes with a carrying case and belt for portability.

3.2 Panel Layout

Familiarize yourself with the controls and indicators on the front panel of the EM480B tester.

PANEL INSTRUCTION



1. TEST button
This button can be used to enable or disable test function after you switch on this unit. After you press this button, the unit enter test mode, meanwhile LED lights. about 30 seconds later, the unit automatically exit test mode and LED turns off. If you want to disable the test function ahead of time, just press this button again.

2. LOCK key (for continuous measurement)
After you press this key with the unit in test mode, "LOCK" appears on the display, meanwhile the test mode is locked, it means that the unit stays in test mode unless you press TEST button again.

3. HOLD key
This key can be used to hold the present reading. To exit data-hold mode, press again.

4. BACKLIGHT key
This key can be used to enable or disable the backlight function.

5. RANGE / FUNCTION switch
This switch can be used to turn on/off the unit as well as to select desired range.

6. COM jack
Plug-in jack for black test lead.

7. Ω jack
Plug-in jack for red test lead.

Image 3.1: Front Panel of the EM480B Tester.

1. **TEST button:** Activates the test function. Pressing this button initiates a test, and the unit enters test mode for approximately 30 seconds. Press again to exit test mode.
2. **LOCK key:** For continuous measurement. Press this key while in test mode to lock the unit in test mode. The "LOCK" symbol appears on the display. Press TEST button again to unlock.
3. **HOLD key:** Freezes the current reading on the display. Press again to exit data-hold mode.
4. **BACKLIGHT key:** Toggles the LCD backlight on or off for improved visibility in low-light conditions.
5. **RANGE / FUNCTION switch:** Rotary switch to turn the unit on/off and select the desired measurement function and range (e.g., 20Ω, 200Ω, 2000Ω, OFF).

6. **COM jack:** Input jack for the black test lead.
7. **Ω jack:** Input jack for the red test lead.
8. **High Voltage Indicator LED:** Illuminates when high voltage is present during insulation resistance tests.

4. Setup

4.1 Battery Installation

The EM480B requires six (6) 1.5V AA batteries for operation. Batteries are not included with the unit.

1. Ensure the unit is turned OFF.
2. Carefully remove the four screws on the back cover of the tester.
3. Gently open the back cover to access the battery compartment.
4. Insert six 1.5V AA batteries, observing the correct polarity (+/-) as indicated inside the compartment.
5. Replace the back cover and secure it with the four screws. Do not overtighten.

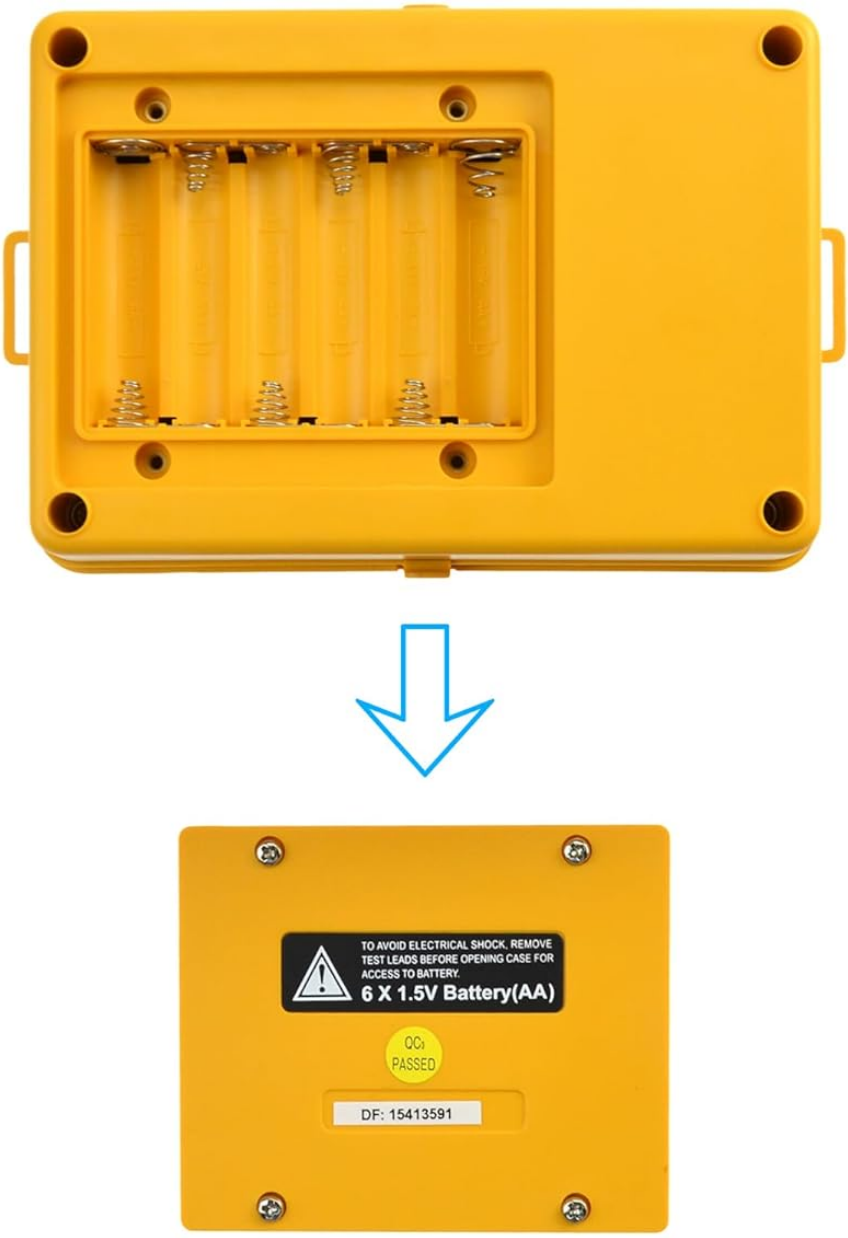


Image 4.1: Battery compartment with slots for six AA batteries.

Image 4.2: Illustration of removing the back cover for battery access.

4.2 Connecting Test Leads

Insert the black test lead into the **COM** jack and the red test lead into the **Ω** jack for impedance, resistance, ACV, and continuity measurements. For insulation resistance tests, refer to specific instructions in the operating section.

5. Operating Instructions

5.1 Powering On/Off

To power on the unit, rotate the **RANGE** / **FUNCTION** switch from the **OFF** position to any desired measurement range (e.g., 20Ω). To power off, rotate the switch back to the **OFF** position. The unit also features an auto power-off function after approximately 15 minutes of inactivity to conserve battery life.

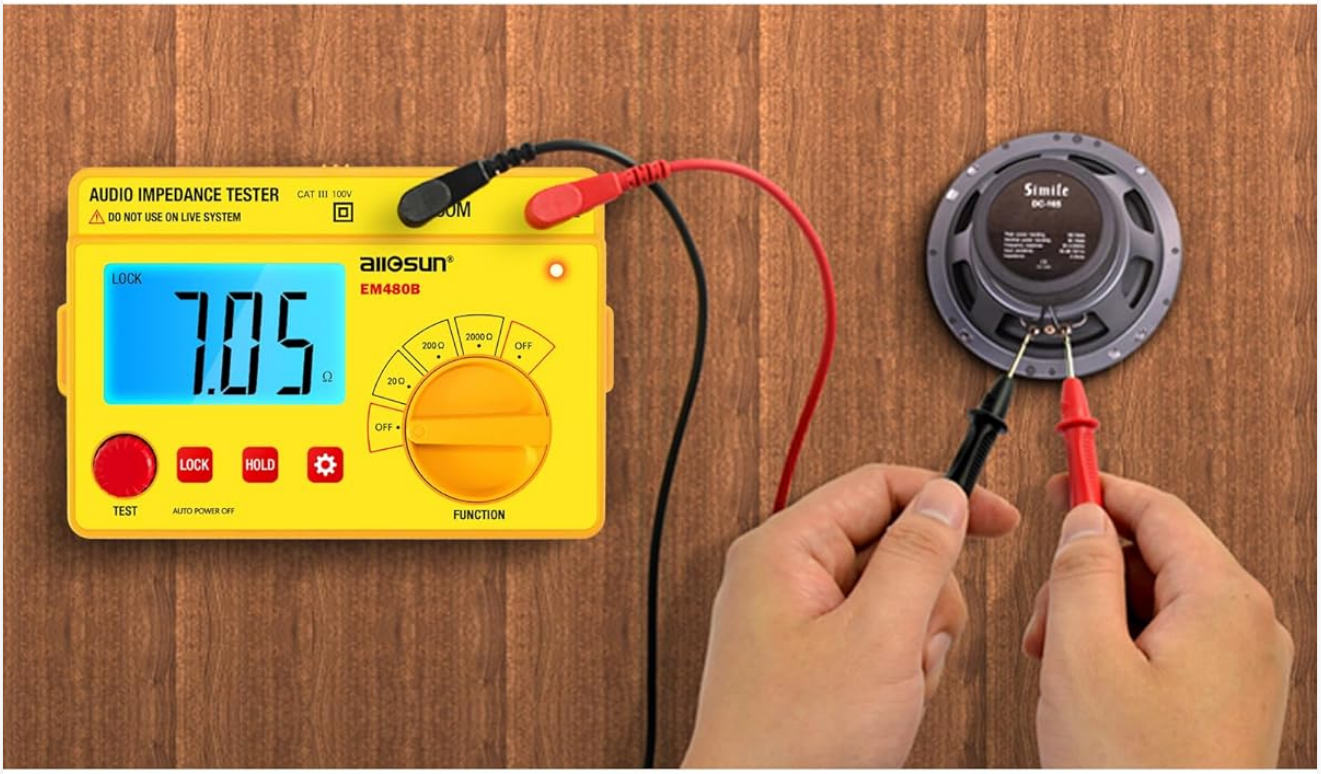
5.2 Performing Audio Impedance Tests

The EM480B measures the actual impedance of speaker systems at 1kHz.

1. Ensure the speaker system or individual speaker is disconnected from any power source or amplifier.
2. Connect the black test lead to the **COM** jack and the red test lead to the **Ω** jack.
3. Rotate the **RANGE** / **FUNCTION** switch to the appropriate impedance range (20Ω, 200Ω, or 2000Ω). For typical speakers (2Ω to 16Ω), use the 20Ω range. For higher impedance speakers or systems, use 200Ω or 2000Ω.
4. Connect the test leads across the terminals of the speaker or speaker system.
5. Press the **TEST** button. The reading will appear on the LCD. The unit will remain in test mode for about 30 seconds. For continuous measurement, press the **LOCK** key after pressing **TEST**.

CHECKING A SPEAKER

Speakers are general from 2Ω to 16Ω, use 20Ω range or for higher impedance speaker, use 200Ω or 2000Ω range.



Loudspeaker

Public-address System

Home Theater

Commercial Audio System

Image 5.1: Measuring the impedance of a single speaker.

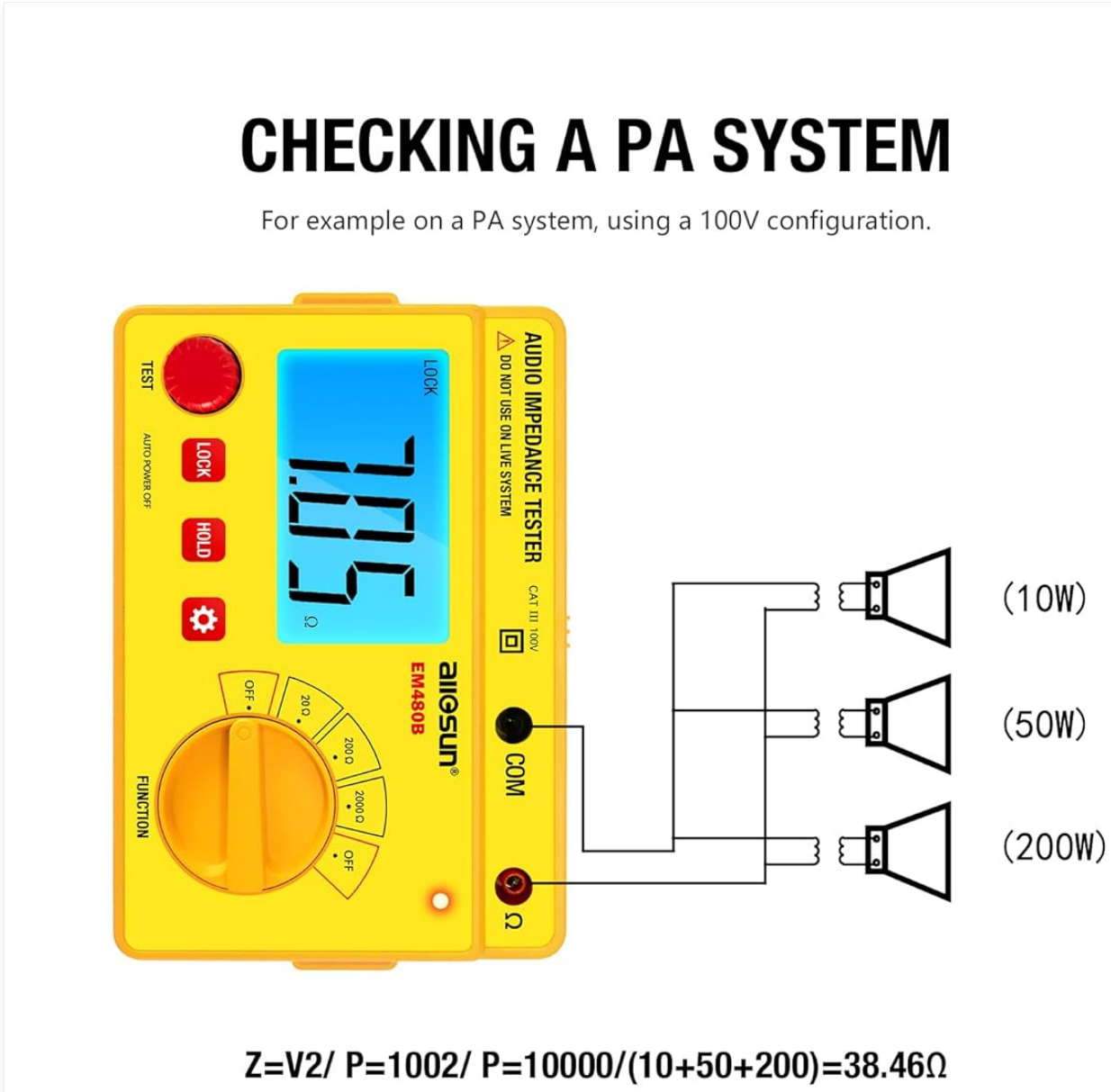


Image 5.2: Measuring the impedance of a Public Address (PA) system.

Troubleshooting Impedance Readings in PA Systems:

- If the measured impedance is lower than expected, check for short-circuited wires or faulty speakers/transformers.
- If the measured impedance is higher than expected, check for wiring issues or faulty components (speakers, transformers, or connections).

5.3 Performing Insulation Resistance Tests

The EM480B can test insulation resistance at 250V, 500V, and 1000V. This function is used to check the integrity of insulation in electrical systems and components.

1. Ensure the circuit or device under test is completely de-energized and safely isolated.
2. Connect the black test lead to the **COM** jack and the red test lead to the **Ω** jack.
3. Rotate the **RANGE** / **FUNCTION** switch to the desired insulation test voltage (250V, 500V, or 1000V).
4. Connect the test leads to the points where insulation resistance is to be measured.
5. Press the **TEST** button. The High Voltage Indicator LED will illuminate, and the insulation resistance reading will be displayed.
6. Exercise extreme caution during high-voltage tests.

5.4 Data Hold Function

To freeze the current reading on the display, press the **HOLD** key. The "H" symbol will appear on the LCD. Press the **HOLD** key again to release the reading and return to live measurement.

5.5 Backlight Function

To activate the LCD backlight for better visibility in dimly lit environments, press the **BACKLIGHT** key. Press it again to turn the backlight off.

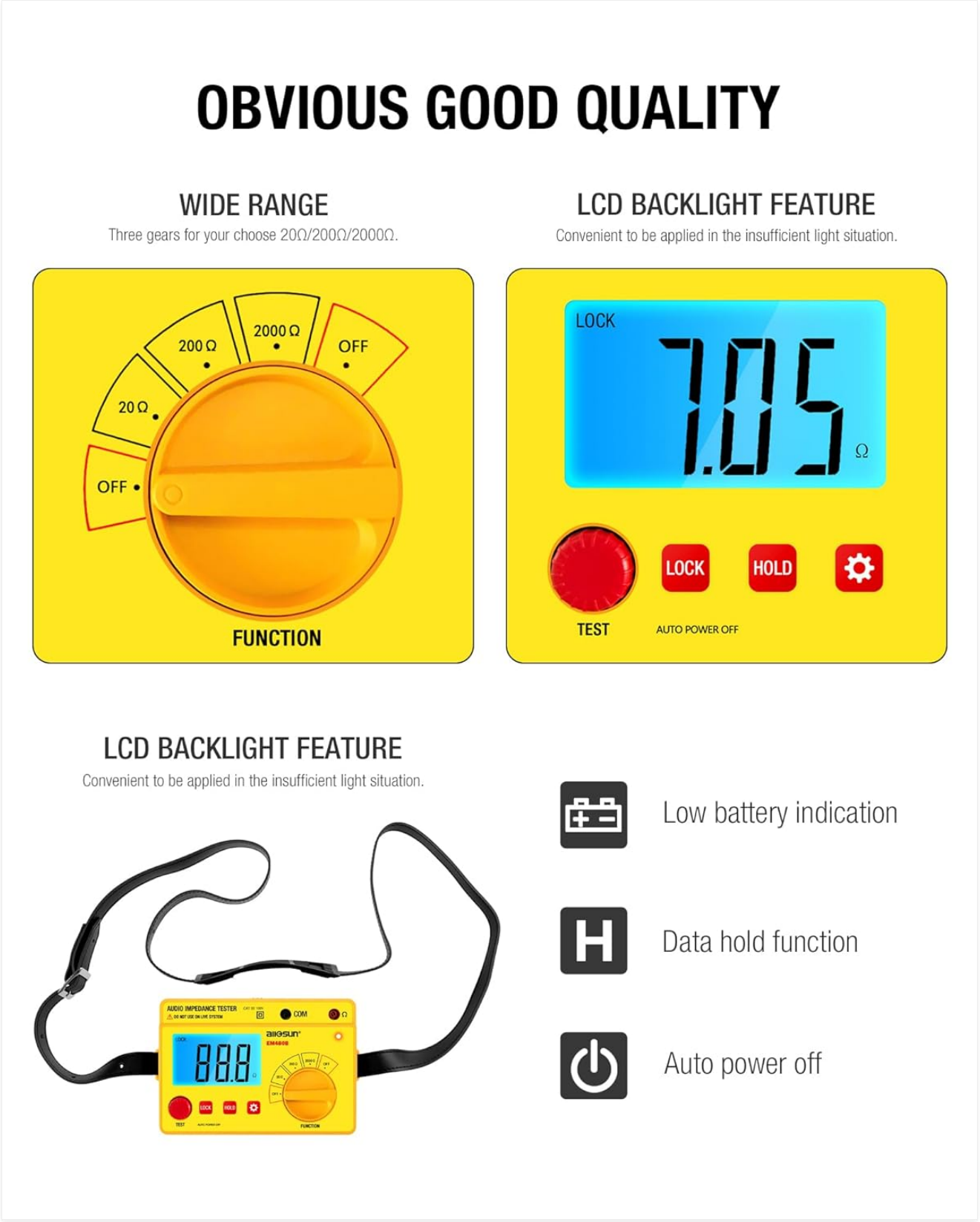


Image 5.3: Display and function dial showing backlight and range options.

6. Maintenance

6.1 Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in Section 4.1. Always use fresh 1.5V AA batteries. Remove batteries if the unit will not be used for an extended period to prevent leakage.

6.2 Cleaning

Wipe the unit with a dry, soft cloth. Do not use abrasive cleaners or solvents. Ensure no moisture enters the casing.

6.3 Storage

Store the EM480B in its protective carrying case in a cool, dry place, away from direct sunlight and extreme temperatures. Remove batteries if storing for long periods.

Image 6.1: The EM480B tester stored in its protective carrying case.

7. Troubleshooting

If you encounter issues with your EM480B tester, consider the following common troubleshooting steps:

- **No Display/Unit Not Powering On:** Check battery installation and ensure batteries are fresh. Verify the **RANGE** / **FUNCTION** switch is not in the **OFF** position.
- **Inaccurate Readings:** Ensure test leads are properly connected and not damaged. Verify the correct measurement range is selected. Replace batteries if the low battery indicator is on.
- **"H" Symbol Stuck:** If the "H" symbol for Data Hold is stuck, press the **HOLD** key again.
- **Test Mode Not Exiting:** If the unit remains in test mode, press the **TEST** button again. If the **LOCK** key was pressed, press **TEST** to unlock.
- **Low Battery Indication:** Replace all six 1.5V AA batteries immediately.

For issues not resolved by these steps, please contact customer support.

8. Specifications

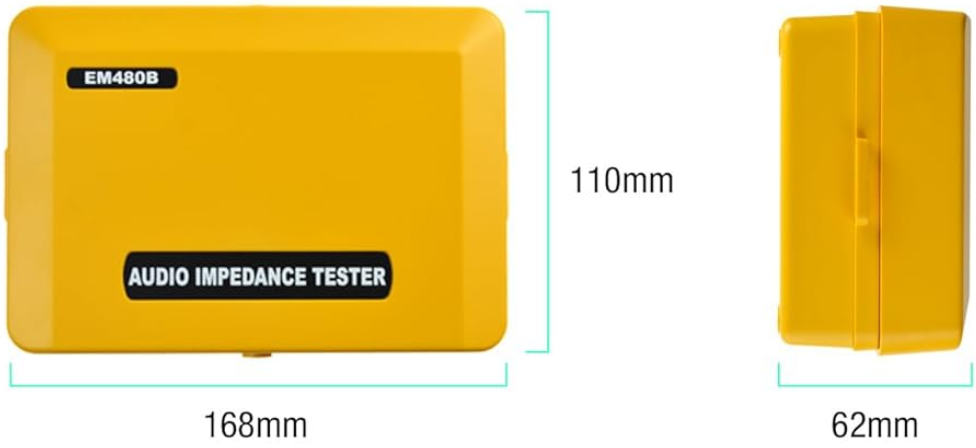
The ALLOSUN EM480B Audio Impedance Tester meets IEC 1010 (EN61010) standards and is rated for Installation CAT III 100V.

- **Display:** LCD 3 1/2 digits (2000 counts), with unit indication.
- **Data Hold Indication:** "H" symbol appears on the display.
- **Power Supply:** 9V DC (6 x 1.5V AA batteries).
- **Auto Power Off:** Approximately 15 minutes of non-use.
- **Operating Temperature:** 0°C to 40°C (32°F to 104°F).
- **Storage Temperature:** -10°C to 50°C (14°F to 122°F).
- **Dimensions:** 17 cm (L) x 6.5 cm (W) x 11 cm (H).
- **Weight:** Approximately 500g (including batteries).

8.1 Impedance Measurement

Range	Resolution	Accuracy	Test Frequency
20Ω	10mΩ	± (2% + 2) or ± 0.1Ω	1kHz
200Ω	100mΩ	± (2% + 2)	
2000Ω	1Ω	± (2% + 2)	

SPECIFICATIONS



Meets IEC-1010 (EN61010). Installation CAT III 100V

Display: LCD 3 1/2 digits (2000 counts), with unit.

Data Hold Indication: " H " Symbol appears on the display.

Power supply: 9V DC (6×1.5V "AA" batteries).

RANGE	RESOLUTION	ACCURACY	TEST FREQUENCY
20Ω	10mΩ	±(2% + 2)(or ±0.1Ω)	1kHz
200Ω	100mΩ	±(2% + 2)	
2000Ω	1Ω		

Image 8.1: Dimensions and detailed specifications table.

8.2 Insulation Resistance Measurement

- **Test Voltages:** 250V, 500V, 1000V.
- **Accuracy:** Specified for a period of one year after calibration and at 18°C to 28°C, with relative humidity. Accuracy specifications take the form of: ±([% of Reading] + [number of Least Significant Digits]).

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the seller/manufacturer directly. Keep your purchase receipt as proof of purchase.

Manufacturer: Zhangzhou Eastern Intelligent Meter Co., Ltd