TESMEN TOE-100BMAX, TSM-522S

TESMEN TOE-100BMAX GFCI Outlet Tester & TSM-522S Smart Multimeter User Manual

Model: TOE-100BMAX, TSM-522S
Brand: TESMEN

1. Introduction

This manual provides detailed instructions for the safe and effective use of the TESMEN TOE-100BMAX GFCI Outlet Tester and the TESMEN TSM-522S Smart Digital Multimeter. This kit is designed to assist in electrical outlet safety checks and comprehensive electrical troubleshooting for both household and professional applications. Please read this manual thoroughly before operation and retain it for future reference.

Image 1.1: The TESMEN TOE-100BMAX GFCI Outlet Tester and TSM-522S Smart Multimeter, showing both devices and their included test leads.

2. Safety Information

Electrical testing can be hazardous. Always follow basic safety precautions to reduce the risk of fire, electric shock, and personal injury. This section outlines critical safety guidelines.

- **Read Instructions:** Always read and understand all instructions and safety information before using the devices.

- **Personal Protective Equipment:** Wear appropriate personal protective equipment (PPE), such as safety glasses and insulated gloves, when working with electricity.
- **Inspect Devices:** Before each use, inspect both the TOE-100BMAX and TSM-522S for any damage, cracks, or exposed wiring. Do not use damaged equipment.
- **Voltage Limits:** Do not exceed the maximum voltage ratings specified for each device.
- **GFCI Testing:** When performing GFCI trip tests, ensure that the circuit is not powering critical equipment that could be affected by a temporary power interruption.
- **Live Circuits:** Assume all circuits are live until proven otherwise. Use non-contact voltage detection (NCV) or other appropriate methods to verify de-energization.
- **Proper Connection:** Ensure test leads are securely connected to the multimeter and the circuit under test.
- **Environmental Conditions:** Do not use the devices in wet conditions or explosive atmospheres.
- **Battery Safety:** Replace batteries promptly when the low battery indicator appears. Do not mix old and new batteries or different types of batteries.

3. Product Overview

3.1 TESMEN TOE-100BMAX GFCI Outlet Tester

The TOE-100BMAX is designed for quick and accurate verification of outlet wiring status and GFCI functionality. It features a clear backlit display for easy reading of results.

- **Wiring Status Detection:** Identifies common wiring faults such as open ground, open neutral, open hot, hot/ground reverse, hot/neutral reverse, and correct wiring.
- **Voltage Measurement:** Displays line voltage.
- **GFCI Trip Test:** Tests the functionality of Ground Fault Circuit Interrupters.
- **Backlit Display:** Ensures visibility in various lighting conditions.
- **Data Hold:** Keeps readings on-screen for comparison.

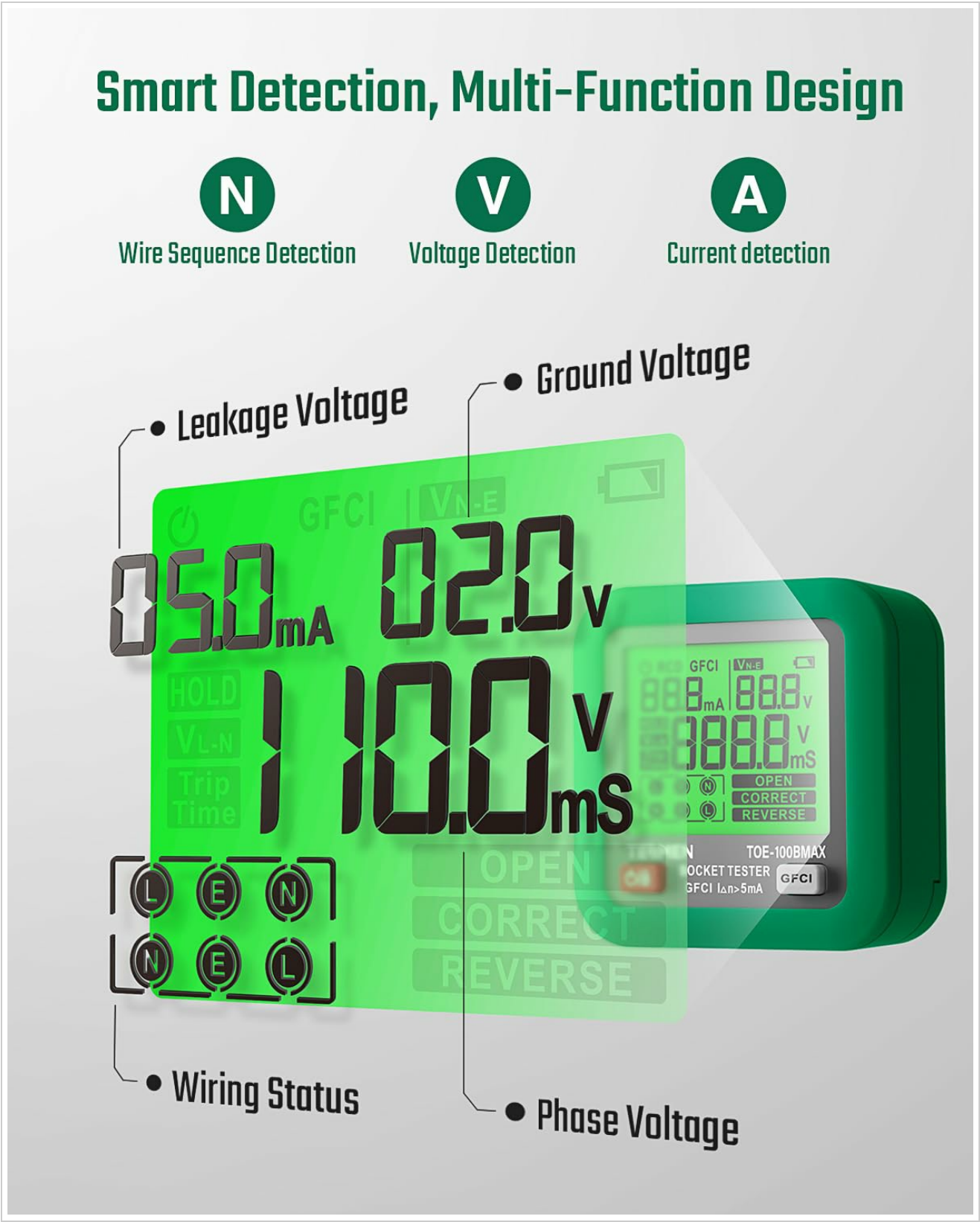


Image 3.1: The TOE-100BMAX display, illustrating its smart detection capabilities for wire sequence, voltage, and current, along with wiring status indicators.

3.2 TESMEN TSM-522S Smart Digital Multimeter

The TSM-522S is a versatile digital multimeter offering both auto and manual ranging modes for a wide array of electrical measurements. It is suitable for home maintenance and electronic repairs.

- **Measurement Functions:** AC/DC Voltage, Resistance, Capacitance, Continuity, Frequency, Diode.
- **Non-Contact Voltage (NCV):** Detects AC voltage without direct contact.
- **Live Wire Detection:** Identifies live conductors.

- **True RMS:** Provides accurate readings for non-sinusoidal waveforms.
- **Backlit Color Display:** Large, intuitive 2.56-inch screen for clear data presentation.
- **Auto Shut-off:** Conserves battery life.
- **Flashlight:** Integrated for working in dimly lit areas.

Image 3.2: The TSM-522S Multimeter, showcasing its True RMS feature and icons for AC/DC Voltage, Diode, Capacitance, Resistance, Continuity, Frequency, NCV, Live Wire detection, and Flashlight.

4. Setup

4.1 TESMEN TOE-100BMAX GFCI Outlet Tester

1. **Battery Installation:** The TOE-100BMAX is typically powered by internal batteries. Ensure batteries are correctly installed according to the polarity markings in the battery compartment (usually located on the back or side).
2. **Power On:** Insert the tester into a standard 3-prong electrical outlet. The display should illuminate, indicating it is powered on and ready for use.

4.2 TESMEN TSM-522S Smart Digital Multimeter

1. **Battery Installation:** Open the battery compartment (usually on the back) and insert the required batteries, observing correct polarity. Close the compartment securely.
2. **Connect Test Leads:**
    - Insert the black test lead into the "COM" (Common) input jack.
    - Insert the red test lead into the "INPUT" jack for most voltage, resistance, continuity, capacitance, and frequency measurements.
3. **Power On:** Press the power button to turn on the multimeter. The display will illuminate.

5. Operating Instructions

5.1 TESMEN TOE-100BMAX GFCI Outlet Tester

1. **Wiring Status Check:**
    - Plug the TOE-100BMAX into the outlet to be tested.
    - Observe the display. The tester will automatically detect and display the wiring status (e.g., "CORRECT", "OPEN GROUND", "REVERSE").
    - The display will also show the measured voltage (V) and potentially leakage current (mA) or trip time (ms) if applicable.
2. **GFCI Trip Test:**
    - After checking the wiring status, press the "GFCI" button on the tester.
    - A functional GFCI outlet should trip (power off) within a specified time (typically 10-1000ms). The tester will indicate the trip time.
    - If the GFCI does not trip, it indicates a fault, and the outlet should be serviced by a qualified electrician.
    - Reset the GFCI outlet after the test.

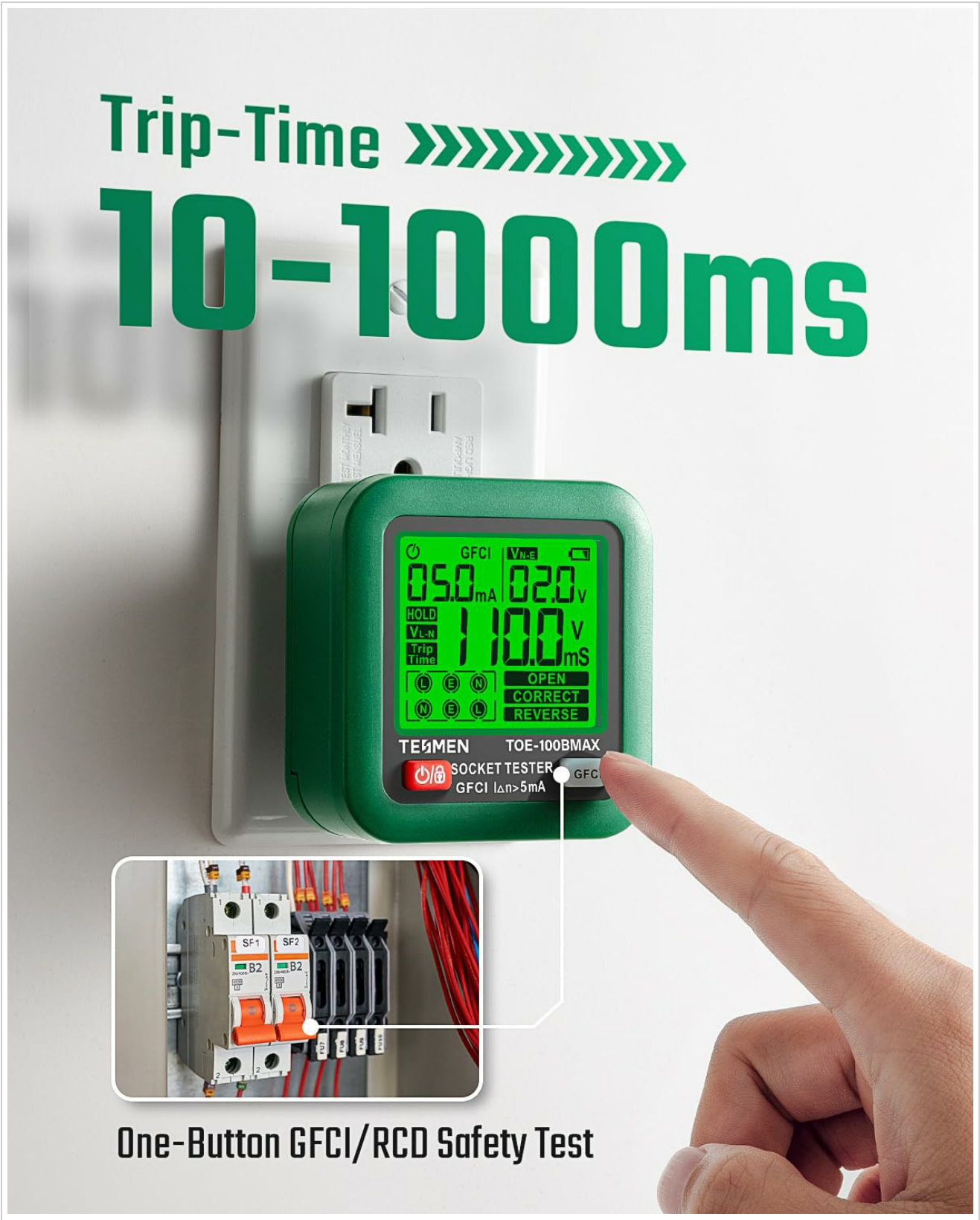


Image 5.1: The TOE-100BMAX performing a one-button GFCI/RCD safety test, showing the trip time measurement on its display.

5.2 TESMEN TSM-522S Smart Digital Multimeter

The TSM-522S operates in both auto and manual modes. In auto mode, it intelligently selects the measurement type. Use the "FUNC" button to cycle through specific functions if needed.

1. **Voltage Measurement (AC/DC):**
    - Connect the test leads as described in Section 4.2.
    - Touch the red and black test probes to the points where voltage is to be measured (e.g., across a battery, across an outlet's hot and neutral slots).

- The multimeter will automatically detect AC or DC voltage and display the reading.

2. **Resistance Measurement:**
    - Ensure the circuit or component is de-energized before measuring resistance.
    - Connect the test leads to the component.
    - The multimeter will display the resistance in Ohms (Ω).
3. **Continuity Test:**
    - Ensure the circuit or component is de-energized.
    - Connect the test leads across the points to be tested for continuity.
    - A continuous beep and a low resistance reading indicate continuity. No beep or a high resistance reading indicates an open circuit.
4. **Non-Contact Voltage (NCV) Detection:**
    - Select the NCV function (if not in auto mode).
    - Bring the top end of the multimeter (NCV sensing area) close to the conductor or outlet.
    - The device will indicate the presence of AC voltage through audible beeps and/or visual indicators (e.g., LED lights, display segments).
5. **Live Wire Detection:**
    - Select the Live Wire function.
    - Insert the red test probe into the suspected live slot of an outlet or touch it to a conductor.
    - The multimeter will indicate if the wire is live.

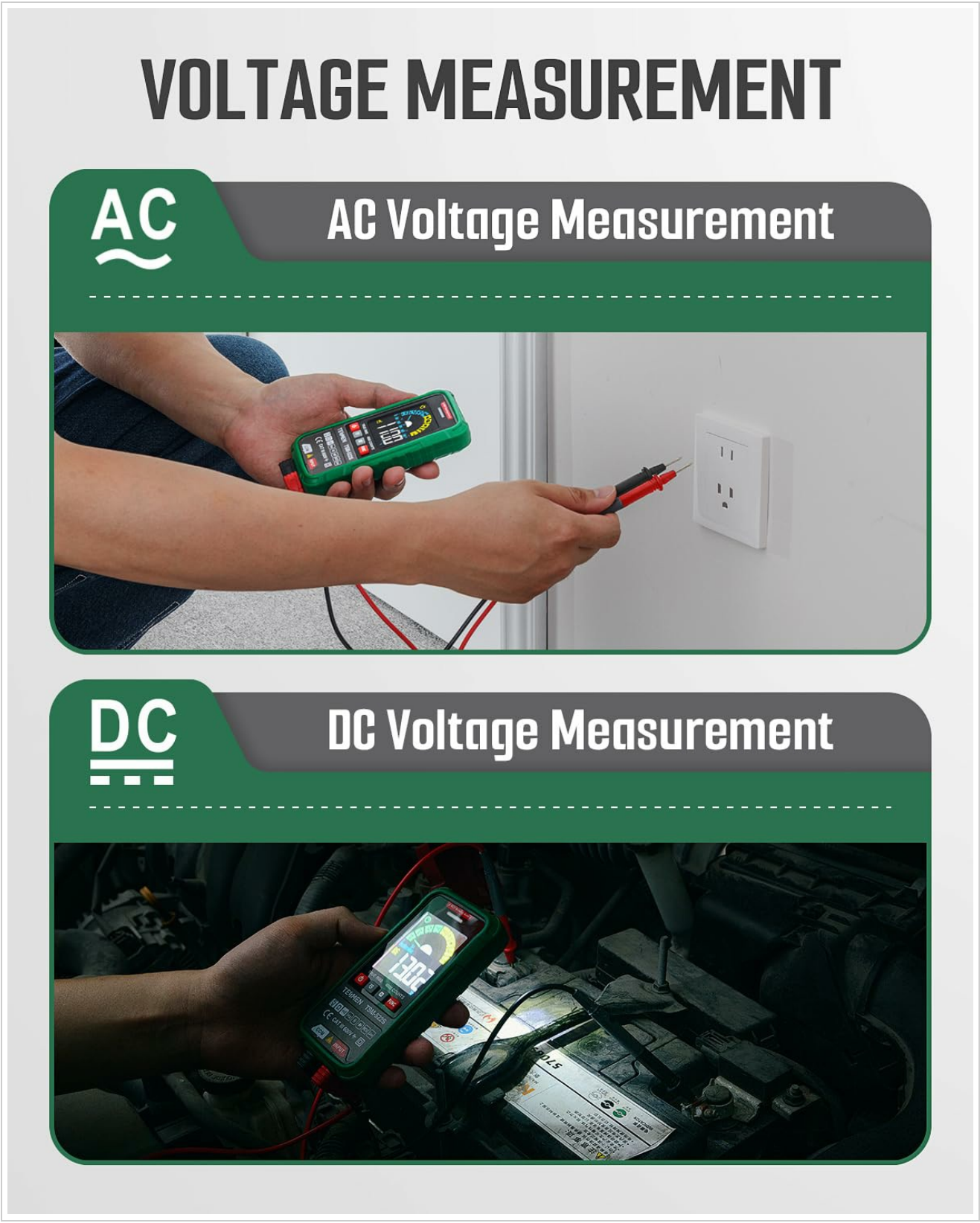


Image 5.2: The TSM-522S Multimeter demonstrating AC voltage measurement in a wall outlet and DC voltage measurement on a car battery.

Image 5.3: The TSM-522S Multimeter using its NCV function to detect voltage near an outlet, indicating low or high voltage without direct contact.

6. Maintenance

- **Cleaning:** Wipe the devices with a dry, soft cloth. Do not use abrasive cleaners or solvents.
- **Battery Replacement:** Replace batteries when the low battery indicator appears on the display. Refer to Section 4 for battery installation instructions.
- **Storage:** Store the devices in a cool, dry place, away from direct sunlight and extreme temperatures. If storing

for extended periods, remove the batteries to prevent leakage.

- **Test Lead Inspection:** Regularly inspect test leads for cuts, cracks, or damaged insulation. Replace damaged leads immediately.

7. Troubleshooting

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Replace batteries, ensuring correct polarity.
TOE-100BMAX shows "OPEN GROUND" or other wiring fault.	Actual wiring fault in the outlet.	Consult a qualified electrician to inspect and repair the outlet wiring.
TOE-100BMAX GFCI test does not trip the outlet.	Faulty GFCI outlet or incorrect wiring.	Do not use the outlet. Have a qualified electrician inspect and replace the GFCI outlet if necessary.
TSM-522S shows "OL" (Overload) or no reading.	Measurement range exceeded, or poor test lead contact.	Ensure test leads are firmly connected. Verify the measurement is within the device's specified range.
TSM-522S NCV function is inconsistent.	External interference or weak signal.	Ensure the NCV sensing area is close to the conductor. Minimize external electrical noise.

8. Specifications

8.1 TESMEN TOE-100BMAX GFCI Outlet Tester

- **Operating Voltage:** 90-130V AC
- **Frequency:** 50/60 Hz
- **GFCI Trip Current:** 5mA
- **GFCI Trip Time:** 10-1000ms
- **Wiring Indications:** Correct, Open Ground, Open Neutral, Open Hot, Hot/Ground Reverse, Hot/Neutral Reverse
- **Display:** Backlit LCD

8.2 TESMEN TSM-522S Smart Digital Multimeter

- **Display:** 4000 Counts, 2.56-inch Color Smart Screen
- **AC Voltage:** Range up to 600V
- **DC Voltage:** Range up to 600V
- **Resistance:** Range up to 40MΩ
- **Capacitance:** Range up to 40mF
- **Frequency:** Range up to 4MHz
- **Continuity:** Audible indication
- **Diode Test:** Yes
- **NCV:** Yes

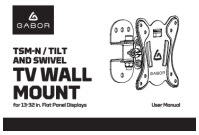
- **Live Wire Detection:** Yes
- **True RMS:** Yes
- **Safety Rating:** CAT III 600V
- **Features:** Auto/Manual Ranging, Data Hold, Auto Shut-off, Flashlight

9. Warranty and Support

TESMEN products are manufactured to high-quality standards. For warranty information, technical support, or service inquiries, please refer to the contact information provided with your product packaging or visit the official TESMEN website. Please have your model numbers (TOE-100BMAX, TSM-522S) and purchase date available when contacting support.

Online Resources: For additional support and product information, visit theTESMEN Store on Amazon.

Related Documents - TOE-100BMAX, TSM-522S

	TESMEN TSM-599 Smart Digital Multimeter User Manual Comprehensive user manual for the TESMEN TSM-599 Smart Digital Multimeter, covering safety instructions, specifications, operation, measurement functions, and maintenance. Includes detailed guides for various electrical measurements.
	Tesmen TBF-200 Brake Fluid Tester User Manual User manual for the Tesmen TBF-200 Brake Fluid Liquid Tester, providing instructions on operation, safety, technical specifications, and maintenance.
	Gabor TSM-N Tilting TV Wall Mount Installation Guide Comprehensive guide for installing the Gabor TSM-N tilting TV wall mount for 32-inch displays. Includes safety instructions, parts list, and step-by-step assembly.
	Nightstick TSM Series Weapon-Mounted Light with Green Laser - Instruction Manual Comprehensive instruction manual for the Nightstick TSM Series Weapon-Mounted Light with Green Laser, covering installation, operation, safety, and warranty information.