OTC 3505A

OTC 3505A 100 Series Autoranging Automotive Multimeter User Manual

Brand: OTC | Model: 3505A

1. Introduction

The OTC 3505A 100 Series Autoranging Automotive Multimeter is an advanced diagnostic tool designed for automotive electrical system testing. This manual provides detailed instructions for safe and effective operation, maintenance, and troubleshooting.

Key features include:

- Autoranging functionality for simplified measurements.
- Comprehensive resistance, continuity, diode, and capacitance tests.
- Millisecond pulse width and peak volts measurements for fuel injectors.
- Duty cycle and frequency measurements up to 10 MHz.
- RPM measurement, temperature measurement (°F/°C), and O2 cross counts.
- Low resistance measurement to compensate for test lead resistance.
- Data recording with Min/Max for fluctuating measurements and data hold function.
- Direct current measurement up to 10 amperes.
- Auto Power Off feature (can be disabled).

2. Safety Information

Always observe standard safety precautions when using any electrical testing equipment. Failure to do so may result in injury or damage to the meter or equipment being tested.

- **Read the Manual:** Familiarize yourself with all operating procedures and safety warnings before use.
- **Inspect Leads:** Before each use, inspect test leads for damaged insulation or exposed metal. Replace if damaged.
- **Proper Range Selection:** Always select the correct measurement function and range before connecting the

test leads to the circuit.

- **Avoid Live Circuits:** Do not measure current on live circuits exceeding the rated maximum current. Disconnect power before connecting current leads.
- **Capacitor Discharge:** Ensure capacitors are fully discharged before testing capacitance to prevent damage to the meter.
- **Use Correct Input Jacks:** Always use the appropriate input jacks for the selected measurement function.

3. Product Overview

The OTC 3505A Multimeter features a robust design with a clear digital display and intuitive controls. Below is an image illustrating the main components of the device and its accessories.

Figure 1: OTC 3505A Multimeter and included accessories. The image displays the main unit, heavy-duty test leads with removable alligator clips, an inductive RPM clamp, and a temperature probe.

The front panel includes a large LCD display, a rotary switch for function selection, and several push buttons for additional features:

- **FUNC. Button:** Toggles between different measurement modes within a single rotary switch position (e.g., AC/DC voltage, resistance/continuity/diode).
- **HOLD Button:** Freezes the current reading on the display.
- **MAX/MIN Button:** Records the maximum and minimum values during a measurement session.
- **Backlight/Flashlight Button:** Activates the display backlight with a short press, and the top-mounted flashlight with a long press.
- **Input Jacks:** Clearly labeled ports for connecting test leads and probes. The meter features illuminated input jacks that guide the user to the correct connection points based on the selected function.

4. Setup

4.1. Battery Installation

The multimeter requires batteries for operation. To install or replace batteries:

1. Locate the battery compartment on the back of the meter.
2. Unfold the kickstand.
3. Remove the screw securing the battery cover.
4. Carefully remove the cover and insert the new batteries, observing correct polarity.
5. Replace the battery cover and secure it with the screw.

Important: If the meter will not be used for an extended period, remove the batteries to prevent potential corrosion and damage to the device.

4.2. Test Lead Connection

Connect the test leads to the appropriate input jacks based on the desired measurement. The meter's illuminated input jacks will indicate the correct ports for the selected function on the rotary dial.

- The black lead (COM) is typically connected to the common jack.
- The red lead is connected to the VΩHz jack for voltage, resistance, frequency, and diode measurements.
- For current measurements, the red lead is connected to the mA jack (for milliamps) or the 10A jack (for up to 10 amps).

5. Operating Instructions

5.1. Voltage Measurement (DC/AC)

To measure voltage:

1. Turn the rotary switch to the 'V' (Voltage) setting.
2. Press the **FUNC.** button to toggle between DC (direct current) and AC (alternating current) voltage measurement. The display will show 'DC' or 'AC'.
3. Connect the test leads across the circuit or component to be measured.
4. The voltage reading will appear on the display.

5.2. Resistance, Continuity, and Diode Test

To measure resistance, continuity, or test diodes:

1. Turn the rotary switch to the Ω (Ohms) setting.
2. Press the **FUNC.** button to cycle through Resistance (Ω), Continuity (buzzer icon), and Diode Test (diode icon) modes.
3. For resistance, connect the leads across the component. For continuity, touch the leads to both ends of the circuit; a beep indicates continuity. For diode test, connect leads across the diode.

5.3. Capacitance Measurement

To measure capacitance:

1. Turn the rotary switch to the 'F' (Farad) setting.
2. Ensure the capacitor is fully discharged before connecting the test leads to prevent damage to the meter.
3. Connect the test leads to the capacitor terminals.
4. The capacitance value will be displayed.

5.4. Temperature Measurement

To measure temperature:

1. Turn the rotary switch to the °C/°F setting.
2. Insert the temperature probe into the appropriate input jacks (indicated by the illuminated ports).
3. Place the probe tip on the object or area where temperature is to be measured.
4. The temperature will be displayed in Celsius or Fahrenheit. Use the**FUNC.** button to switch between units if necessary.

5.5. Current Measurement (mA/A)

To measure current:

1. Turn the rotary switch to the µA, mA, or A setting, depending on the expected current range.
2. Press the **FUNC.** button to select AC or DC current measurement.
3. **Important:** Disconnect power to the circuit. Connect the meter in series with the circuit under test, then reapply power.
4. The current reading will be displayed.

5.6. Frequency (Hz) and Duty Cycle Measurement

To measure frequency or duty cycle:

1. Turn the rotary switch to the Hz/% setting.
2. Press the **FUNC.** button to switch between frequency (Hz) and duty cycle (%) measurement.
3. Connect the test leads to the signal source.
4. The frequency or duty cycle will be displayed.

5.7. Non-Contact Voltage (NCV) and Live Wire Detection

The NCV function allows for detection of live AC voltage without direct contact. The Live function helps identify live wires in an outlet.

1. Turn the rotary switch to the 'NCV Live' setting.
2. For NCV, bring the top sensor of the meter near the suspected live wire or component. The meter will indicate voltage presence with an audible beep and visual indicator (green for weak, red for strong signal).
3. For Live wire detection in an outlet, insert the red test lead into the right side of the outlet. Bring the meter's NCV sensor near the other slot. The meter will indicate if it's a live wire.

5.8. MAX/MIN and HOLD Functions

- **MAX/MIN:** Press the **MAX/MIN** button to enter Max/Min recording mode. The meter will continuously record the highest and lowest readings. Press again to cycle through Max, Min, and current readings.

- **HOLD:** Press the **HOLD** button to freeze the current display reading. Press again to release.

5.9. Backlight and Flashlight

- **Backlight:** A short press of the backlight button (light bulb icon) will illuminate the display backlight for improved visibility in low-light conditions.
- **Flashlight:** A long press of the backlight button will activate the LED flashlight located at the top of the meter, useful for illuminating the work area.

6. Maintenance

6.1. General Care

- Keep the meter clean and dry. Use a soft, damp cloth for cleaning; do not use abrasives or solvents.
- Store the meter in a protective case when not in use to prevent damage.

6.2. Battery Replacement

Refer to section 4.1 for detailed battery installation and replacement instructions. Always replace depleted batteries promptly to ensure accurate readings and prevent leakage.

6.3. Fuse Replacement

If the current measurement function ceases to work, the internal fuse may need replacement. Refer to the full instruction guide for specific fuse types and replacement procedures.

7. Troubleshooting

If the meter is not functioning as expected, consider the following common issues:

- **No Display/Faint Display:** Check battery charge and ensure they are correctly installed. Replace if necessary.
- **Incorrect Readings:** Verify that the correct function and range are selected. Ensure test leads are properly connected to the meter and the circuit. Check for damaged test leads.
- **No Current Reading:** Check the internal fuse. If blown, replace it with the correct type and rating.
- **Continuity/Diode Test Not Working:** Ensure the correct mode is selected using the **FUNC.** button.

For more complex issues, consult the full instruction guide or contact OTC customer support.

8. Specifications

Feature	Detail
Brand	OTC
Model	3505A
Power Source	Battery Powered
Measurement Type	Multimeter
Item Weight	0.95 Pounds (15.2 ounces)
Product Dimensions	8.4 x 8.4 x 6 inches
Color	Black
Specification Met	CE, UL
UPC	731413548918
First Available	October 10, 2006

9. Official Product Video

Watch the official product video for an overview of OTC tools and equipment, demonstrating the brand's commitment to quality and innovation.

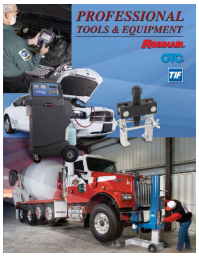
Video 1: "27A - OTC Tools and Equipment Flat Rate V2" - An official video from Automotive Service Solutions LLC, showcasing various OTC tools and their applications in automotive repair.

10. Warranty and Support

OTC products are known for their durability and quality. While specific warranty details for the 3505A model are not provided in this manual, OTC generally offers robust support for its tools. For detailed warranty information and customer support, please refer to the official OTC website or contact their customer service directly.

For additional support or inquiries, visit theOTC Store on Amazon.

Related Documents - 3505A

Preview	[OTC Scanning Suite 4.3 & OTC 3211 Update: Installation and User Guide] Comprehensive guide for installing OTC Scanning Suite 4.3 and updating OTC 3211 Scan Tools. Includes step-by-step instructions for software installation, device updates, and data printing.
	[OTC 3111/3111Pro OBD II & ABS Scan Tool Guide | Vehicle Diagnostics] Comprehensive user manual for the OTC 3111 and 3111Pro OBD II and ABS Scan Tools, covering setup, operation, diagnostics, troubleshooting, and safety precautions for automotive professionals.
	[OTC Professional Tools & Equipment Catalog: Diagnostic and Heavy-Duty Solutions] Discover the comprehensive range of OTC professional tools and equipment, featuring advanced diagnostic scan tools like the Genisys series, heavy-duty solutions, and essential shop equipment designed for automotive technicians and repair facilities.
	[OTC 3211 OBD I & II Scan Tool User Manual] User manual for the OTC 3211 OBD I & II Scan Tool, providing comprehensive guidance on vehicle diagnostics, troubleshooting, and safe operation. Learn to use this automotive diagnostic tool effectively.
	[OTC 7649A Fuel Injector Cleaner User Manual and Parts List] Comprehensive user manual and replacement parts list for the OTC 7649A Fuel Injector Cleaner, including safety precautions, cleaning instructions, and decarbonizing procedures.
	[OTC Specialty Tools & Equipment Catalog] Explore the comprehensive OTC A12000 T&E Product Catalog, featuring a wide range of specialty tools and equipment for automotive engine service, including Ford, GM, and Chrysler applications. Find the right tools for your needs and use them for life.