

[Fluke 8060 Digital Multimeter User Manual](#)



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fluke 8060 digital multimeter user manual provides a comprehensive guide for users of this highly regarded instrument, covering everything from basic operation to advanced features. This article aims to demystify the capabilities of the Fluke 8060, ensuring users can maximize its potential for accurate electrical measurements. We will delve into understanding the multimeter's specifications, exploring its various measurement functions, and explaining how to safely and effectively use its advanced features like capacitance, frequency, and temperature. Furthermore, this resource will offer practical tips for troubleshooting common issues and maintaining the longevity of your Fluke 8060, making it an indispensable companion for electricians, technicians, and hobbyists alike.

Understanding Your Fluke 8060 Digital Multimeter

The Fluke 8060 is a sophisticated digital multimeter designed for precision and reliability in a wide range of electrical testing applications. Its robust construction and advanced features make it a preferred choice for professionals who demand accuracy and durability. Understanding the core components and the overall design philosophy behind the 8060 is the first step to unlocking its full potential.

Fluke 8060 Specifications and Key Features

The Fluke 8060 boasts an impressive array of specifications that set it apart in the market. Its true RMS (Root Mean Square) capability ensures accurate readings on non-sinusoidal waveforms, a crucial

feature for modern electronics and power systems. The high-resolution display provides clear and easy-to-read measurements, even in challenging lighting conditions. Key features include a broad range of voltage, current, and resistance measurements, along with specialized functions that cater to more complex diagnostic needs. The device also offers superior input protection, safeguarding both the instrument and the user from overloads.

Interpreting the Fluke 8060 Display and Controls

Mastering the Fluke 8060 begins with familiarizing yourself with its intuitive interface. The digital display is the primary source of information, showing measured values, units, and active modes. Adjacent to the display are various buttons and a rotary selector switch that control the multimeter's functions. The rotary switch is used to select the primary measurement category, such as AC voltage, DC voltage, resistance, or current. Dedicated buttons often allow for fine-tuning settings, accessing secondary functions, or engaging features like relative mode or data hold. Understanding the symbols and abbreviations displayed is paramount for correct interpretation of readings.

Navigating the Measurement Functions of the Fluke 8060

The Fluke 8060 is engineered to perform a wide variety of electrical measurements with exceptional accuracy. Each function is designed to address specific testing requirements, from basic voltage checks to more intricate capacitance and frequency analyses. Knowing how to select and utilize these functions correctly is essential for obtaining reliable results.

Measuring Voltage (AC and DC) with the Fluke 8060

Voltage measurement is one of the most fundamental uses of any multimeter. The Fluke 8060 offers precise measurement of both Alternating Current (AC) and Direct Current (DC) voltages. To measure DC voltage, the user selects the DCV range on the rotary dial and connects the black test lead to the common (COM) terminal and the red test lead to the VΩmA terminal. The leads are then placed in parallel with the component or circuit being tested. For AC voltage measurements, the ACV range is selected, and the procedure is similar, with the user connecting the leads in parallel. The 8060's true RMS capability ensures accuracy regardless of the waveform's shape.

Measuring Current (AC and DC) with the Fluke 8060

Measuring electrical current requires a different approach, as the multimeter must be placed in series with the circuit. The Fluke 8060 supports both AC and DC current measurements. For low current measurements (typically up to a few hundred milliamps), the red lead is usually inserted into the mA terminal. For higher current measurements, a separate, higher-rated current terminal is used, often labeled A or 10A. The user selects the appropriate DCA or ACA range on the rotary dial. It's critical to ensure the correct current terminal is used to prevent damage to the multimeter or the circuit. Always break the circuit and then insert the multimeter in series to measure current.

Measuring Resistance with the Fluke 8060

Resistance measurement, often performed on de-energized circuits, helps diagnose component integrity and continuity. The Fluke 8060 provides accurate resistance readings across a wide spectrum of values. To measure resistance, the user selects the Ω range on the rotary dial and connects the test leads across the component. It's crucial that the circuit being tested is powered off and discharged to avoid erroneous readings or damage. The 8060's resistance function can also be used to check for open circuits or short circuits.

Continuity Testing and Diode Testing

The Fluke 8060 features dedicated functions for continuity and diode testing, simplifying common diagnostic tasks. Continuity testing, indicated by a audible beep, confirms if a conductive path exists between two points, typically used for checking wires, fuses, or switch contacts. For this, select the continuity symbol on the dial. The diode test function verifies the health of semiconductor diodes by applying a small voltage and measuring the forward voltage drop. This is indicated by a voltage reading, usually around 0.5V to 0.8V for silicon diodes, or a short circuit for faulty diodes. Open diodes will show an open circuit reading.

Advanced Features of the Fluke 8060 Digital Multimeter

Beyond its fundamental measurement capabilities, the Fluke 8060 integrates advanced features that enhance its utility for more complex troubleshooting and analysis. These specialized functions allow users to delve deeper into circuit behavior and component characteristics, making it a versatile tool for a wide range of technical professionals.

Capacitance Measurement

The Fluke 8060 can accurately measure capacitance, a key parameter for evaluating capacitors in electronic circuits. To perform a capacitance measurement, the user selects the capacitance range (often denoted by the Farad symbol, F) on the rotary dial. It is essential to discharge any stored charge in the capacitor before connecting the multimeter to avoid inaccurate readings or potential damage. The test leads are then placed across the capacitor terminals. The Fluke 8060 will display the capacitance value in microfarads (μF), nanofarads (nF), or picofarads (pF).

Frequency Measurement

For applications involving oscillating circuits or signal generation, the frequency measurement function of the Fluke 8060 is invaluable. This feature allows the user to determine the rate at which a periodic signal repeats, measured in Hertz (Hz). The user selects the frequency range on the dial and connects the test leads to the signal source. The 8060 is capable of measuring frequencies generated by various electronic devices, such as oscillators, signal generators, and microcontrollers. The accuracy of frequency measurements often depends on the input signal's amplitude.

Temperature Measurement

Many versions of the Fluke 8060 include a temperature measurement capability, typically requiring a separate thermocouple probe. This feature is useful for monitoring the operating temperature of components, equipment, or environments. To use this function, a compatible temperature probe is connected to the appropriate input terminals, and the temperature mode is selected on the multimeter. The display will then show the temperature in Celsius (°C) or Fahrenheit (°F), depending on the user's selection. This is particularly helpful for diagnosing issues related to overheating.

Data Hold and Relative Mode

The Data Hold feature allows the user to "freeze" a measurement on the display, enabling them to take a reading and then note it down without needing to keep the test leads connected. This is particularly useful when working in awkward or hard-to-reach locations. Pressing the "HOLD" button captures the current reading. The Relative mode, often indicated by a "REL" or "Δ" symbol, allows the user to take a measurement and then use that as a reference point. Subsequent measurements are then displayed as the difference from this initial reference value. This is beneficial for comparing readings or for zeroing out offsets.

Safe Operation and Maintenance of Your Fluke 8060

Ensuring the safe and proper operation of your Fluke 8060 digital multimeter is paramount for both your well-being and the longevity of the instrument. Following established safety guidelines and performing regular maintenance will guarantee reliable and accurate measurements over time.

Safety Precautions When Using the Fluke 8060

When using the Fluke 8060, always adhere to electrical safety standards. This includes wearing appropriate personal protective equipment (PPE) such as safety glasses and insulated gloves when working with live circuits. Never exceed the voltage or current ratings specified for the multimeter or its test leads. Before connecting the multimeter to a circuit, ensure the correct function and range are selected. Avoid touching exposed conductors or terminals while testing. It is also crucial to inspect test leads for any signs of damage before each use. Always disconnect the test leads from the circuit after taking a measurement, starting with the positive lead first.

Understanding Input Impedance and Overload Protection

The Fluke 8060 is designed with high input impedance for voltage measurements, meaning it draws very little current from the circuit under test, thus not significantly affecting the measurement itself. This is a critical factor for accurate voltage readings, especially in high-impedance circuits. The multimeter also incorporates robust overload protection mechanisms, which are designed to protect the internal circuitry from damage in case of accidental overvoltage or overcurrent conditions. However, relying solely on this protection is not advisable; always strive to operate within the instrument's specified limits.

Battery Replacement and Test Lead Care

Proper battery management ensures the Fluke 8060 operates at its full potential. When the battery indicator appears on the display, it's time to replace the batteries. The user manual will specify the type of batteries required and the procedure for replacement, which typically involves removing a battery cover. Test leads are crucial for accurate measurements, and their condition directly impacts performance. Regularly inspect test leads for any cuts, abrasions, or damage to the insulation. Damaged test leads should be replaced immediately to prevent electrical shock or inaccurate readings. Ensure that the connections at the multimeter and the probes are clean and secure.

Calibration and Troubleshooting Common Issues

While the Fluke 8060 is known for its accuracy, periodic calibration may be necessary to maintain its precision, especially if used in critical applications or after significant use. The user manual will provide guidance on calibration intervals or if professional calibration is recommended. If you encounter issues such as intermittent readings, incorrect function behavior, or a blank display, consult the troubleshooting section of the user manual. Common problems can often be resolved by checking battery levels, ensuring proper test lead connections, verifying the selected function and range, or resetting the device if applicable. For more complex issues, contacting Fluke support may be necessary.

Frequently Asked Questions

How do I perform continuity testing with the Fluke 8060 digital multimeter?

To perform continuity testing with the Fluke 8060, set the rotary dial to the continuity symbol (a speaker icon). Connect the test leads to the COM and VΩmA jacks. Touch the test probes to the circuit you want to test. If there is a continuous path, the multimeter will emit an audible beep.

What is the best way to measure AC voltage using the Fluke 8060?

To measure AC voltage with the Fluke 8060, select the AC voltage range (V~). Connect the black test lead to the COM terminal and the red test lead to the VΩmA terminal. Touch the test probes to the points in the circuit where you want to measure the AC voltage. The display will show the measured voltage.

Can the Fluke 8060 measure capacitance, and if so, what are the steps?

Yes, the Fluke 8060 can measure capacitance. Set the rotary dial to the capacitance symbol (a capacitor icon). Ensure the multimeter is off or the circuit being tested is discharged. Connect the test leads to the COM and VΩmA jacks. For component testing, connect the test probes directly to the capacitor leads or use the appropriate adapter. The display will show the capacitance value in Farads.

What troubleshooting tips are available if the Fluke 8060 is not powering on?

If the Fluke 8060 is not powering on, first check that the battery is properly installed and has sufficient charge. Ensure the battery compartment is securely closed. If the issue persists, try replacing the battery with a new one. If it still doesn't power on, consult the advanced troubleshooting section of the user manual or contact Fluke support.

How do I switch between True-RMS and Average-responding modes on the Fluke 8060, if supported?

The Fluke 8060 digital multimeter is designed for True-RMS measurements. It does not have a user-selectable mode to switch between True-RMS and Average-responding. Its design inherently provides accurate RMS readings for both sine and non-sinusoidal waveforms.

Additional Resources

Here are 9 book titles related to the *Fluke 8060 Digital Multimeter User Manual*, with descriptions:

1. *Interpreting Your Fluke 8060 Readings: A Practical Guide*

This book serves as a companion to the 8060 manual, delving deeper into the practical application of the multimeter's measurements. It explains common electrical phenomena and how the 8060 can be used to diagnose them. Readers will learn to identify subtle variations in readings and understand their implications in real-world troubleshooting scenarios.

2. *Understanding Digital Multimeter Principles with the Fluke 8060*

This title focuses on the underlying electronic principles that make digital multimeters like the 8060 function. It breaks down concepts such as Ohm's Law, Kirchhoff's Laws, and basic circuit analysis in an accessible manner. The book then connects these theoretical foundations to how the 8060 measures voltage, current, and resistance, enhancing user comprehension beyond basic operation.

3. *Troubleshooting Common Electrical Problems with Your Fluke 8060*

Designed for both hobbyists and professionals, this book offers step-by-step guidance on using the 8060 to solve everyday electrical issues. It covers a range of common faults in household appliances, automotive systems, and basic electronics projects. The manual emphasizes safe operating procedures and effective diagnostic techniques using the 8060's specific features.

4. *Advanced Measurement Techniques for the Fluke 8060 User*

This resource is for those who have mastered the basics of the 8060 and wish to explore more sophisticated applications. It covers advanced topics like frequency measurement, duty cycle analysis, and diode testing, explaining how to optimize settings for accurate results. The book also introduces techniques for measuring transient signals and performing comparative analysis with the 8060.

5. *Safe Electrical Practices: A Fluke 8060 User's Handbook*

Safety is paramount when working with electricity, and this book prioritizes it. It provides comprehensive guidelines on safe handling of electrical circuits and equipment, emphasizing the importance of understanding the 8060's safety ratings and limitations. The handbook illustrates best

practices for avoiding electrical shock and equipment damage while using the multimeter.

6. Basic Electronics Projects Using Your Fluke 8060

This title bridges the gap between understanding measurements and applying them to hands-on projects. It presents a series of beginner-friendly electronic circuits that can be built and tested using the 8060. Each project includes detailed instructions, schematics, and explanations of how the multimeter is used to verify circuit functionality and troubleshoot any issues.

7. Demystifying Electrical Schematics: A Fluke 8060 Companion

This book aims to make electrical schematics less intimidating for users of the Fluke 8060. It teaches how to read and understand common symbols, component identifiers, and circuit diagrams. The text then shows how to correlate the information on a schematic with the actual measurements taken by the 8060, facilitating easier circuit analysis.

8. The Fluke 8060: From Basics to Benchtop Application

This comprehensive guide starts with a thorough review of the 8060's core functions as detailed in its manual. It then progresses to practical benchtop applications, demonstrating how to integrate the multimeter into various testing and calibration workflows. The book offers insights into setting up a workspace and using the 8060 for precise and reliable electrical work.

9. Everyday Electronics Explained: Tools and Techniques with the Fluke 8060

This accessible book focuses on understanding the electronics found in common devices and appliances. It highlights how the Fluke 8060 can be utilized to diagnose and understand the electrical behavior of these items. The title emphasizes practical troubleshooting and learning about electronics through hands-on interaction with the multimeter.

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