



Using a Multimeter

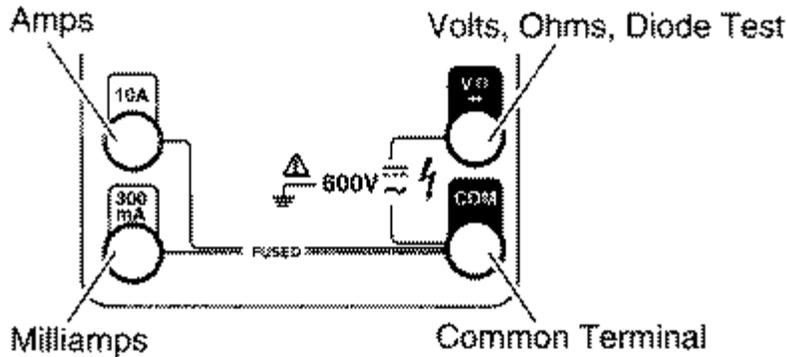
A multimeter is used to make various electrical measurements, such as AC and DC voltage, AC and DC current, and resistance. It is called a *multimeter* because it combines the functions of a voltmeter, ammeter, and ohmmeter. Multimeters may also have other functions, such as diode and continuity tests. The descriptions and pictures that follow are specific to the Fluke 73 Series III Multimeter, but other multimeters are similar.

Important note: The most common mistake when using a multimeter is not switching the test leads when switching between current sensing and any other type of sensing (voltage, resistance). It is critical that the test leads be in the proper jacks for the measurement you are making.

Safety Information

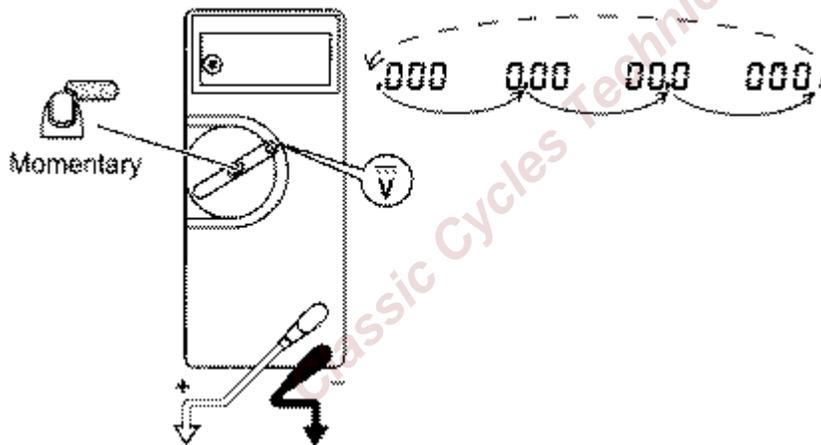
- Be sure the test leads and rotary switch are in the correct position for the desired measurement.
 - Never use the meter if the meter or the test leads look damaged.
 - Never measure resistance in a circuit when power is applied.
 - Never touch the probes to a voltage source when a test lead is plugged into the 10 A or 300 mA input jack.
 - To avoid damage or injury, never use the meter on circuits that exceed 4800 watts.
 - Never apply more than the rated voltage between any input jack and earth ground (600 V for the Fluke 73).
 - Be careful when working with voltages above 60 V DC or 30 V AC rms. Such voltages pose a shock hazard.
 - Keep your fingers behind the finger guards on the test probes when making measurements.
 - To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator appears.
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Input Jacks



The black lead is always plugged into the common terminal. The red lead is plugged into the 10 A jack when measuring currents greater than 300 mA, the 300 mA jack when measuring currents less than 300 mA, and the remaining jack (V-ohms-diode) for all other measurements.

Range



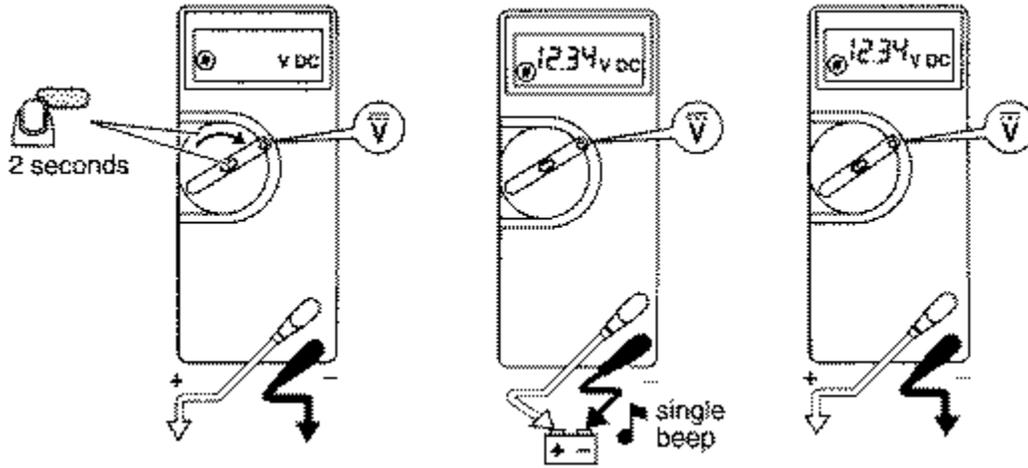
The meter defaults to autorange when first turned on. You can choose a manual range in V AC, V DC, A AC, and A DC by pressing the button in the middle of the rotary dial. To return to autorange, press the button for one second.

Automatic Touch Hold Mode

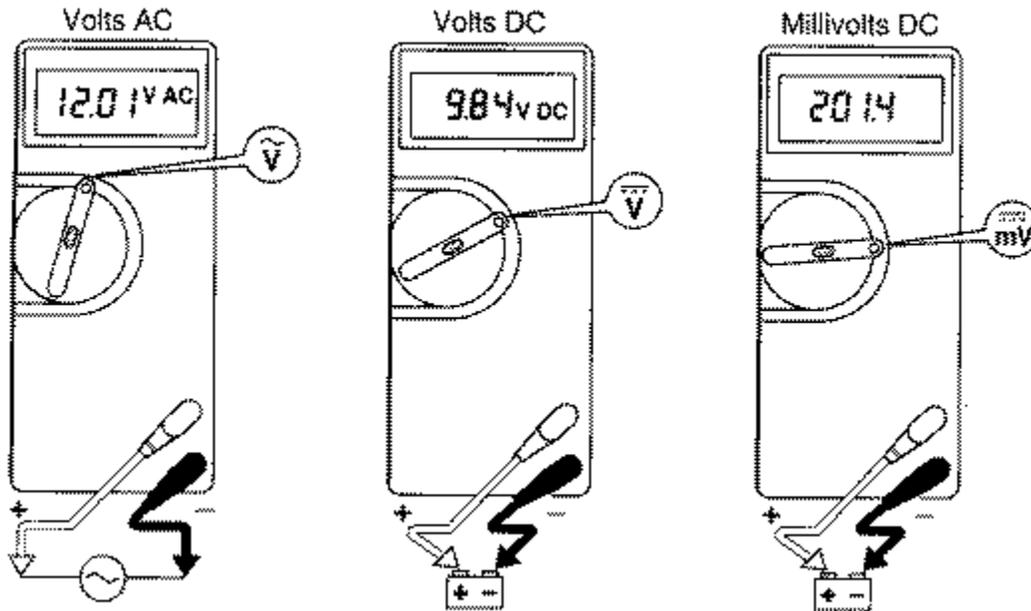
The Touch Hold mode automatically captures and displays stable readings. Press the button in the center of the dial for 2 seconds while turning the meter on. When the meter captures a new input, it beeps and a new reading is displayed. To manually force a new measurement to be held, press the center button. To exit the Touch Hold mode, turn the meter off.

Note: stray voltages can produce a new reading.

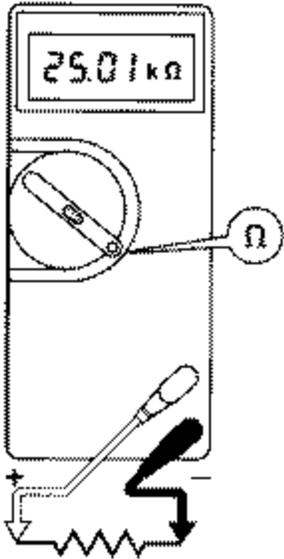
Warning: To avoid electric shock, do not use the Touch Hold to determine if a circuit with high voltage is dead. The Touch Hold mode will not capture unstable or noisy readings.



AC and DC Voltage



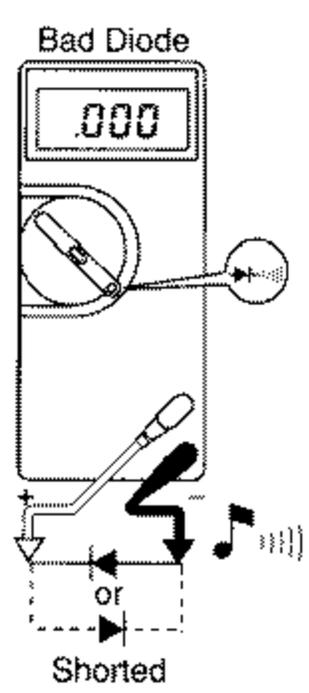
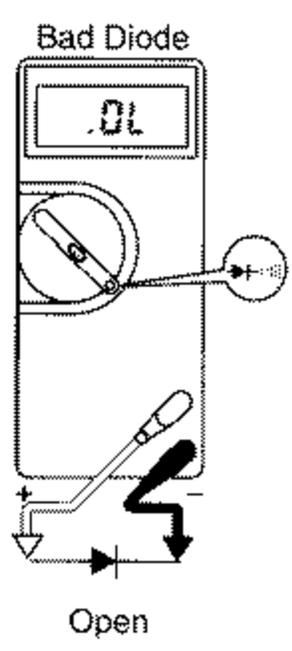
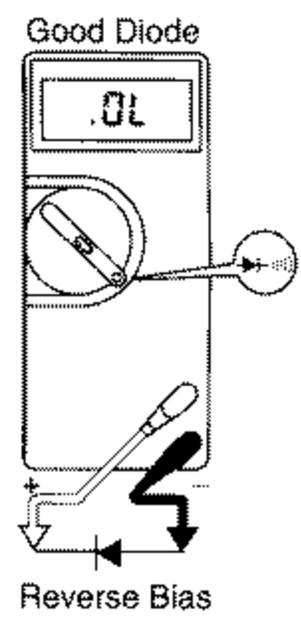
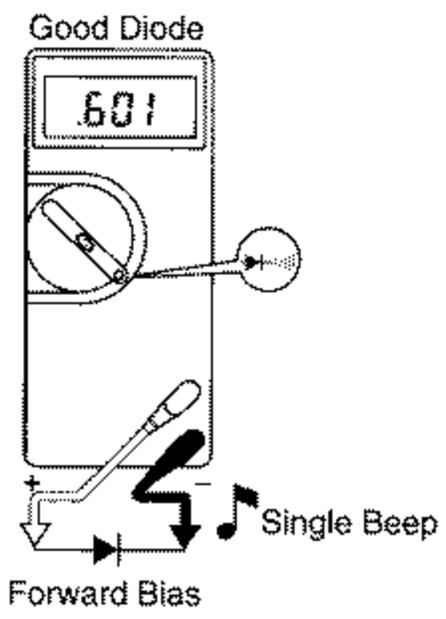
Resistance



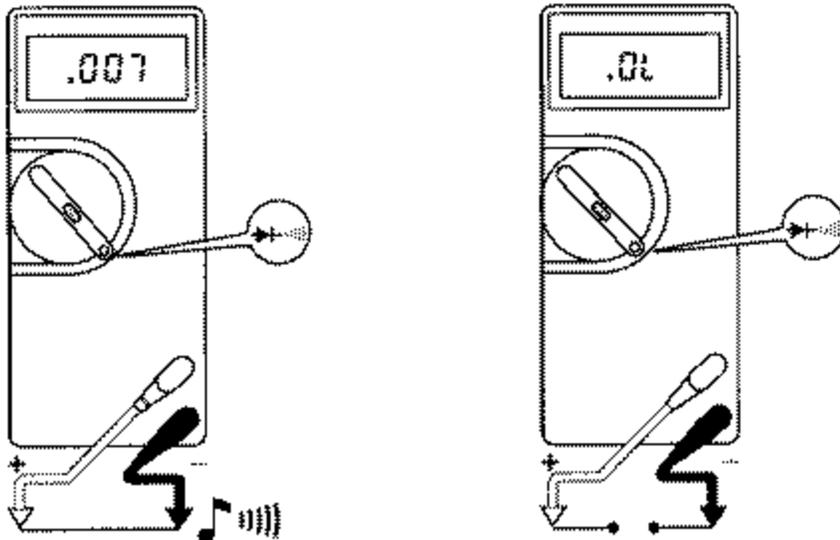
Turn off the power and discharge all capacitors. An external voltage across a component will give invalid resistance readings.

Diode Test

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Continuity Test



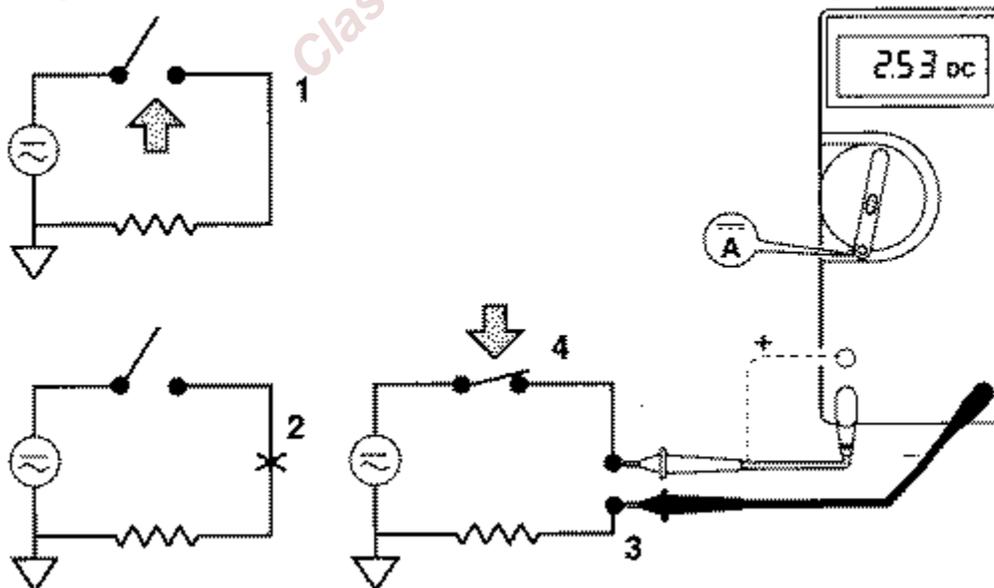
This mode is used to check if two points are electrically connected. It is often used to verify connectors. If continuity exists (resistance less than 210 ohms), the beeper sounds continuously. The meter beeps twice if it is in the Touch Hold mode.

Current

Warning: To avoid injury, do not attempt a current measurement if the open circuit voltage is above the rated voltage of the meter.

To avoid blowing an input fuse, use the 10 A jack until you are sure that the current is less than 300 mA.

Turn off power to the circuit. Break the circuit. (For circuits of more than 10 amps, use a current clamp.) Put the meter in series with the circuit as shown and turn power on.



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