



Basic Electrical tools

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Tools

- ☐ Test light (un-powered) ■
 - ☐ Test light (self-powered) ■
 - ☐ Logic tester (power ground tester) ■
 - ☐ VOM Volt Ohm Meter (analog) ■
 - ☐ DVOM Digital Volt Ohm Meter (digital) ■
 - ☐ Oscilloscope (analog) ■
 - ☐ DSO Digital Storage Oscilloscope ■
(digital)
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Test Light (un-powered)



- ☐ Quickest tool in your arsenal
 - ☐ Checks for power or ground
 - ☐ Simply completes a circuit and lights an internal lamp in the presence of amperage.
 - ☐ One of the best methods for checking fuse integrity
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Test light (self-powered)

- ☐ Used for checking circuit continuity
 - ☐ The battery within the tool uses the circuit in question to complete the circuit to light it's lamp
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Logic tester (power ground test)



- ❑ Used for identifying power and ground circuits.
- ❑ Most models have two LED lamps. One illuminates red for power and the other illuminates green for ground.
- ❑ Does not indicate voltage level. (LED's are on or off)



VOM (analog)

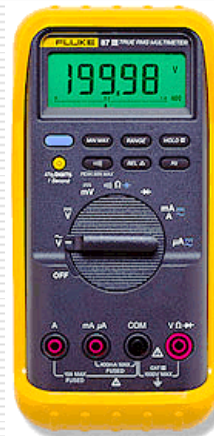
- ❑ Measures volts, ohms, and amps
- ❑ Analog meters have a spring loaded needle that moves along a scale in relation to the value being measured.
- ❑ Judgment on the part of the user is required to determine the value displayed on the meter, since the scale may be used for more than one range.





DVOM

- ☐ Measures
 - volts
 - Ohms
 - Amps
 - Optional (frequency, diode test, pulse width, continuity tests)
- ☐ Display
 - number of digits
 - units indicator
- ☐ Range Selection
 - auto-ranging
 - manual operation
- ☐ Test Lead Connection




Digital vs. Analog

- | | |
|---|---|
| <input type="checkbox"/> Easy digital readout | <input type="checkbox"/> Needle sweep requires interpretation |
| <input type="checkbox"/> Digital accuracy | <input type="checkbox"/> Low impedance |
| <input type="checkbox"/> High impedance | <input type="checkbox"/> Observable needle movement. Best for wiggle tests. |
| <input type="checkbox"/> Quick sample rate | <input type="checkbox"/> Retrieve codes from pre-OBDII vehicles |
| <input type="checkbox"/> Optional functions (min/max, hold, smooth) | |
| <input type="checkbox"/> Auto-ranging available | |



Impedance (high/low)

- ❑ Impedance is a measure of resistance to electrical current flow when a voltage is moved across it.
- ❑ Impedance is measured in ohms and is the ratio of voltage to the flow of current allowed.
- ❑ Low impedance VOM's (analog) will actually load the circuit with a resistance or a voltage. (The voltage applied for resistance measurements can cause damage to electronics and deploy airbags)

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Oscilloscope (analog)

- ❑ Real-time graphic representation of an electrical signal.
- ❑ Virtually instant screen refresh rate.
- ❑ Easy to use
- ❑ Limited ability





DSO (digital)

- ❑ Digital means of monitoring an electrical signal.
 - ❑ The signal is first monitored by the computer then output on the screen. Not in real-time.
 - ❑ Screen refresh rates are important for human interpretation. The faster the better.
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