

Bulletin BPI 05-05

- Subject:** Digital VOLT-OHM METERS
- Vehicle Involved:** ALL AUTOMOTIVE ELECTRICAL SYSTEMS / ABS INCLUDED
- Condition:** Faulty electronic / electrical circuits or components
- Repair Procedure:** Professional DVOM Testing / Capabilities

The digital volt-ohm meter (DVOM) is an absolute requirement for diagnosing electrical and electronic problems. Although DVOM's measure volts, amps, and ohms there are profound differences between voltmeters.

Professional DVOM's are manufactured with ten mega-ohms of impedance, which means the voltmeter itself is not draining current from the electrical circuit being tested. To illustrate this point an isolation or dump solenoid will energize with a computer generated control voltage of 1 to 2 volts and have a resistance specification of 3 to 5 ohms. An inaccurate reading would mistakenly indicate a computer module replacement to the technician. This would be both costly and ineffectual.

A good professional meter should have a minimum and maximum recording feature, which records the lowest and highest readings in a circuit. The best meters have a "fast" min/max feature that records voltage fluctuations down to 250 millionths of a second which is handy for diagnosing loose electrical connectors and other continuity bad connection type problems. In addition, a professional DVOM should measure on / off duty cycle relationships, electrical frequencies, milli-volts and milli-amps, alternating voltage and current, electrical pulse widths in milli-seconds and have a lighted screen for use under the dash board.

The utility of a DVOM can be greatly enhanced with the addition of a pressure / vacuum transducer, a low current amp probe, a high current amp probe, and perhaps a temperature transducer. The low-current amp probe with a range from ten milliamps to 60 amps is the most useful in electronics diagnostics, since it can be used to measure very low current flows in other electronic circuits.

Without tools capable of minute voltage value changes and accurate resistance measurements it would be impossible to provide anything but a diagnostic guess as a solution.