

Measuring Electrical Resistance With Test Equipment

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Test Equipment such as a multimeter is essential for any electrical engineer, electrician, or electronics hobbyist. It's also a standard stock tool for several other professions like construction work, automobile repair, and more. It is even a common piece of equipment found in many household garages, although many times household members do not know what it is for or how to use it. What is a multimeter and how do you use it? It measures various things having to do with the flow of electricity in a system. One thing that is usually measured by a multimeter is electrical resistance.

What is electrical resistance?

Whenever electrical current travels through a medium, there is some resistance to the flow of the current. The reason for this is that the negatively charged electrons are attracted to the positively charged nuclei in the atoms of the conducting material. The greater this attraction, the greater the electrical resistance.

How is resistance measured?

Electrical Resistance is measured in ohms, named after Georg Ohm, a German physicist. One volt applied across one ohm of resistance results in one amp of current. This is now the standard way that test equipment measures resistance in a conductor.

Why measure electrical resistance?

A byproduct of electrical resistance is heat energy; as electrons are pushed through the medium of a conductor, they lose some energy as heat. Sometimes the waste heat is a

problem, but in other cases it can be beneficial, such as in the heating elements used to make consumer electrical appliances. Being able to measure the resistance of a material with test equipment can help an electrical engineer predict the amount of heat that will be put into a system if the particular material is used. This can be helpful for computers and other electronic devices that can be especially sensitive to heat.

It is also important to know the amount of resistance of a material because some operations are dependent upon how easily and quickly current is able to flow through the conductor. If the current flows too easily, it can disturb the function of the system. On the other hand, if the current has too much resistance, it may make it impossible to do the electrical work that is needed.

Another reason that **measuring electrical resistance** can be helpful is to check the accuracy of the voltage and amperage readings. Because of the numeric relationship between resistance, current, and voltage, doing a bit of simple math can affirm the accuracy of the numbers.

Conclusion

Multimeter test equipment is useful for many, many applications. In addition to measuring resistance they can usually measure continuity, voltage, and current.

Source: <http://www.testinstrumentsafrica.com/wordpress/measuring-electrical-resistance-with-test-equipment/>