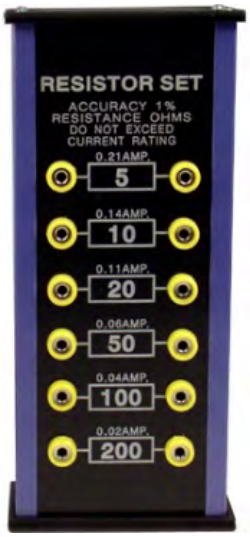
615-4090 Resistor Set



Introduction: One of the many properties of electricity is *resistance*. Resistance refers to the opposition a material has to conducting a current. The discovery is credited with Georg Ohm in 1820. An object of uniform cross section will have a resistance proportional to its length and inversely proportional to its cross-sectional area, and proportional to the resistivity of the material.
Not all materials have the same resistivity of course. Lead cooled to less than 4K will have no resistance at all, where as teflon will resisit any current applied to it. Resistance is the bane of many electrical applications. In power transmission over many miles, voltages have to be very high, usually many thousands, to overcome the resistance of the wires.
There are some useful applications of resistance, however. Toaster oven use high resistance wires to generate heat.

Description: Your resistor set is designed to accommodate banana plugs or other leads. It is capable of generating six different resistances, listed below.

Note: each resistor has maximum amperage it can withstand. Exceeding this value may cause damage to your unit.

Resistance is measured in ohms, symbol Ω ·

5 Ω max 0.21pasm
10 Ω max 0.14amps
20 Ω max 0.11 amps
50 Ω max 0.06 amps
100 Ω max 0.04 amps
200 Ω max 0.02 amps.

To use your resistor set, you will require a source of current. Batteries are a good supply, considering their low amperages. Nine volt batteries are especially good, since they have exposed terminals that can easily be fitted with a wire. If you prefer, you can use a low voltage power supply, but this method may not work due to the high amperages these units can generate. The first experiment is simple. Apply a voltage to one terminal, and a multimeter to another. Set the multimeter to display ohms. If you do not have a multimeter capable of this, use an ohmmeter. The resistor set is designed to have an accuracy of 1%. You can use this unit to verify this value.

Another experiment is to calculate the current. For this, you will need the formula: $R = \frac{V}{I}$

where:

R=, resistivity, measured in ohms
V= voltage potential
I= current, measured in amperes

Thus, since you know the resistivity of each resistor, and know the voltage being applied, it ispossible to determine the final current. This calculation is very useful in power transmission applications, since there needs to be a certain current that reaches the destination, despite losses from resistance.

Warranty and Parts:
We replace all defective or missing parts free of charge. Additional replacement parts may be ordered toll-free. We accept MasterCard, Visa, checks and School P.O.s. All products warranted to be free from defect for 90 days. Does not apply to accident, misuse or normal wear and tear. Intended for children 13 years of age and up. This item is not a toy. It may contain lead or small parts that can be choking hazards. Adult supervision is required.