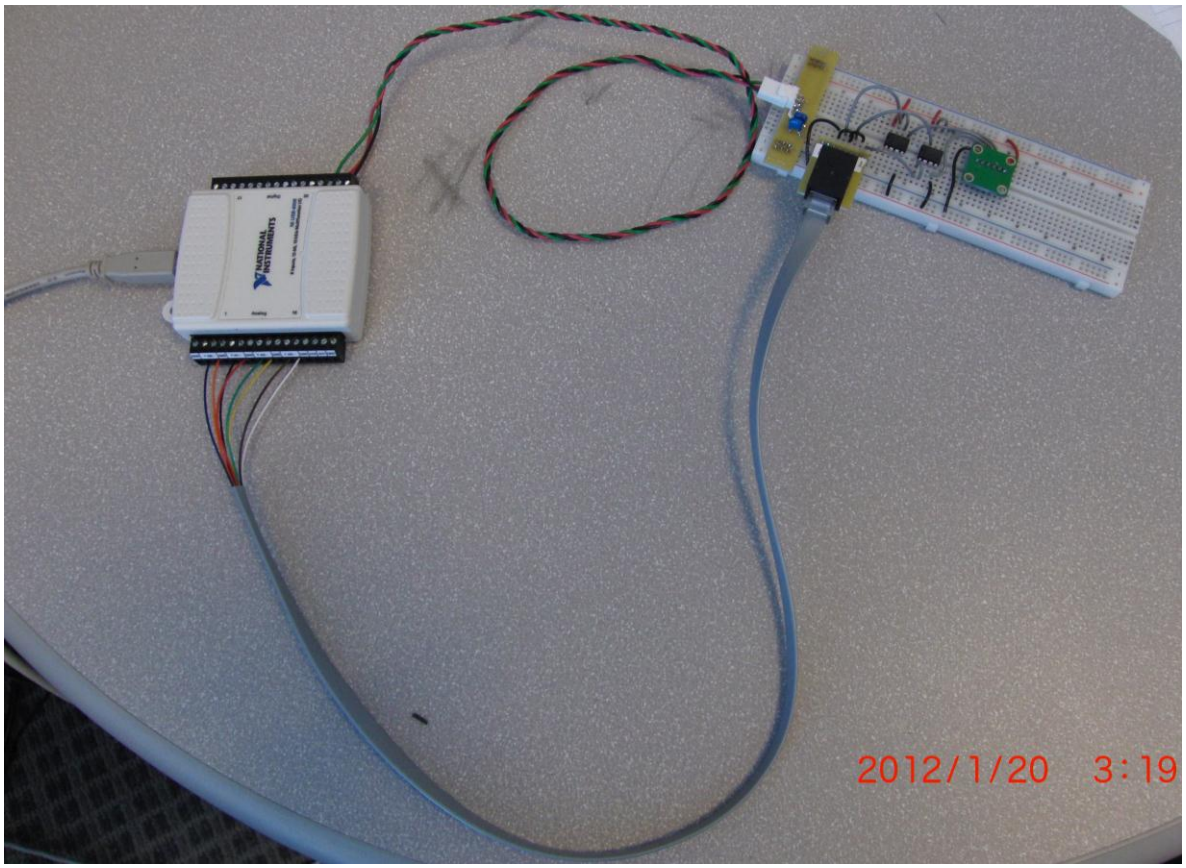
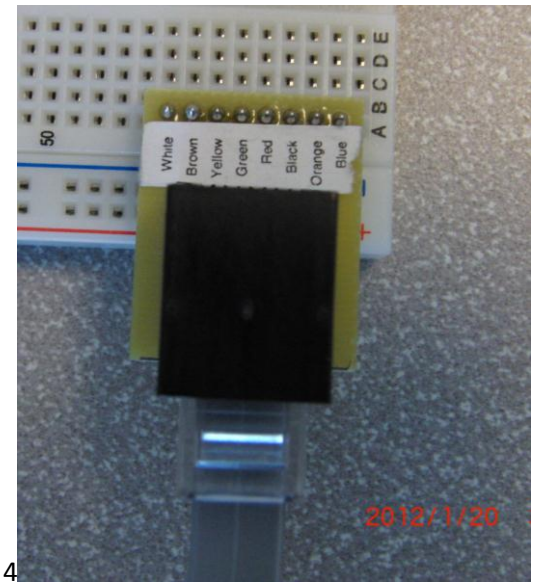
This is what a typical experiment will look like. On the left is the National Instruments USB 6009 (DAQ). This device allows for collection of voltage data. On the right is a typical circuit, built on a solderless breadboard. The red, black, greed twisted wire going from the DAQ to the breadboard is the power connection for active circuits. This connector provides 5 V, 2.5 V and ground to the power rails of the breadboard. The power is coming through the USB connection to the computer. The grey cable is the data cable. The cable has 8 wires which we use (typically) for up to 4 differential voltage measurements.



Here is a close up of the breadboard connector for the data. The pins go straight to the breadboard and the label tells you the color of the wire that the pin is connected to. You will run a wire from your circuit to this connector in order to measure the voltage.



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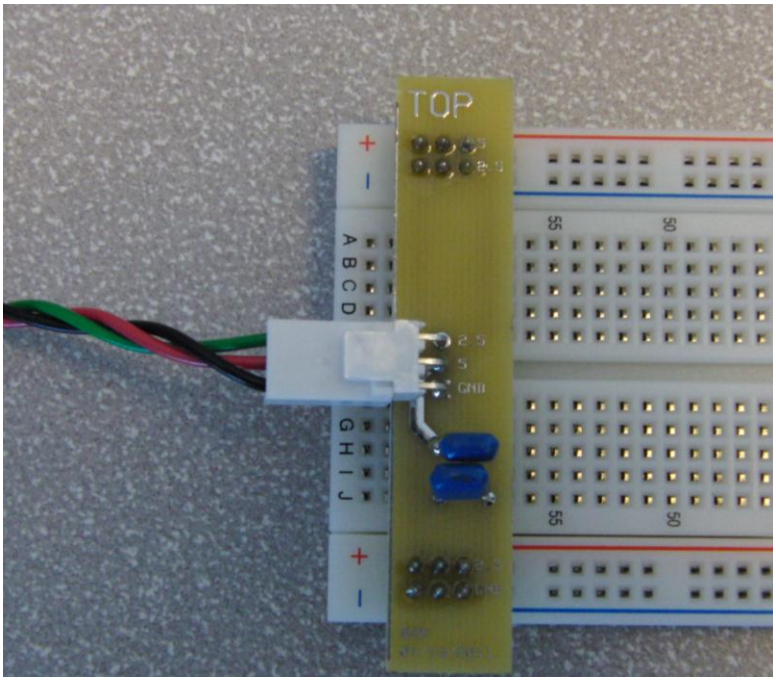
On the DAQ, the wires inside the grey cable are color coded and screwed into the 4 analog input channels; AI0, AI1, AI2, and AI3. By default we will connect the 8 wires to the four input channels, but some weeks we may not use all input channels. By default we will place the wires in the order shown here; blue, orange, black, red, green, yellow, brown and white. A common problem is that the wires in the screw terminals shear off and break –or- the wire is screwed down with the insulation not stripped off. Always check the quality of the connection before starting.

Below is a close up of the power connector for the bread board. From top to bottom, the upper two voltage rails are +5 V and 2.5 V. The lower two rails are 2.5 V and ground.



On the DAQ, the black, green, and red wires are connected to Ground, +5V and +2.5 V. Again it is common for these wires to shear off, so it is good to check the quality of the connection before starting.

After each lab, leave everything but your breadboard behind, as shown below.