

# Experiment Quick Start

## Experiments to get you started with the Portable DataLab and the HP 48G+/48GX/49G Companion software

Following are brief instructions for four simple experiments that will help you get started using the Portable DataLab with your HP graphing calculator. All you will need are the DataLab, the calculator, the included sensors and commonly found items such as an electric light, a bell, a paper towel, lemon juice, and small pieces of metal. *(Please note that these are not comprehensive classroom activities. Basic knowledge of the science and math concepts being demonstrated is required.)*



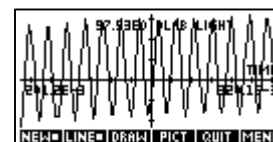
To access these experiments, go to SELECT STORED EXP on the Main

Menu.

### DLAB LIGHT

**Experiment purpose:** Measure the impact of alternating current on an electrical light source using the built-in light sensor (LUX).

- **Select** DLAB LIGHT from the Stored Experiments list.
- **Set** the QTY and INTERVAL values to 120 and .001 respectively. (See sample screen to the right.)
- **Press** the GRAPH menu key to select the graph view option.
- **Press** OK.
- **Turn** the electric light source on.
- **Position** the DataLab so the light sensor (LUX) faces the light source.
- **Press** the START menu key.

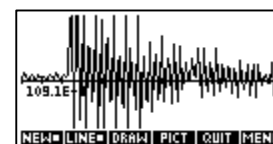


The light sensor will take readings, which are displayed in a graph. (See sample data set in the graph above.) Results vary due to factors such as the distance between the DataLab and the light source, the light type, the power source, and the brightness of the light.

### DLAB MIC

**Experiment purpose:** Show the attenuation of a bell ring using the built-in microphone.

- **Select** DLAB MIC from the Stored Experiments list.
- **Set** the QTY and INTERVAL values to 500 and .005 respectively. (See sample screen to the right.)
- **Press** the GRAPH menu key to select the graph view option.
- **Press** OK.
- **Position** a bell a few inches from the MIC sensor built into the DataLab.
- **Press** the START menu key.
- **Strike** the bell once.

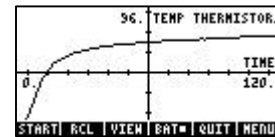
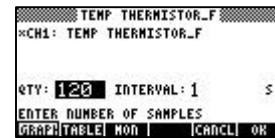


The DataLab microphone will take readings, which are then displayed in graph. (See sample data set in the graph above.) Results vary due to factors such as the distance between the DataLab and the microphone, and the timing and duration of the ring.

## TEMP THERMISTOR\_F

**Experiment purpose:** Demonstrate the heat produced in the palm of your hand using the thermistor probe.

- **Connect** the thermistor probe to Channel 1 (CH 1).
- **Select** TEMP THERMISTOR\_F from the Stored Experiments list.
- **Set** the QTY and INTERVAL values to 120 and 1 respectively. (See sample screen to the right.)
- **Press** the GRAPH menu key to select the graph view option.
- **Press** OK.
- **Press** the START menu key.
- **Grasp** the thermistor probe in the palm of your hand.
- **Continue** to grasp the probe until data collection is completed (approximately 2 minutes).



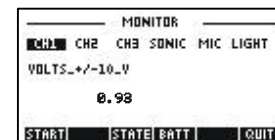
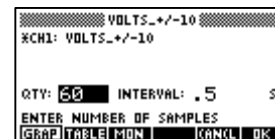
The thermistor probe will take readings, which are displayed in a graph. (See sample data set in the graph above.) Results vary due to factors such as ambient room temperature, beginning probe temperature and the tightness of the grip.

**Note:** To use a linear temperature probe, edit the probe selection in the stored experiment.

## Volts\_+/-10

**Experiment purpose:** Measure the voltage of a wet-cell battery constructed with a piece of zinc, a copper coin, a paper towel and lemon juice.

- **Connect** the voltage probe to Channel 1 (CH 1).
- **Select** Volts\_+/-10 from the Stored Experiments list.
- **Press** the MON menu key to switch to Monitor display mode, which displays the current numeric reading of the selected channel.
- **Wet** the paper towel with lemon juice and lay the towel out on a non-conductive surface such as a wood or plastic tabletop.
- **Position** the two pieces of metal on the dampened area of paper towel so that the pieces of metal do not come in contact with each other.
- **Touch** the positive lead of the voltage probe to the zinc and simultaneously touch the negative lead to the copper.
- **Note** the voltage reading displayed on the monitor. (See first sample Monitor screen to the right.)
- **Switch** polarity by touching the positive lead to the copper and the negative lead to the zinc.
- **Note** the voltage reading displayed on the monitor. (See second sample Monitor screen on the right.)



Results vary due to factors such as towel dampness, lemon juice concentration and metal purity.

**Note:** Disregard the value displayed on the Monitor when the voltage probe leads are not in use. To display a reading with the value of zero, touch the positive and negative leads together.