



Battery Testing Application with DC Electronic loads

Introduction:

For most electronic applications today, using energy efficient and reliable power sources is critical. For this reason, it is important to have a test instrument that can accurately portray results that define the performance of the power sources used to provide electricity for devices such as electrical vehicles, computer power supplies, 3G cellular phones, and even consumer standard household batteries. Programmable DC Electronic loads are one such instrument that will aid in testing various settings, configurations, schemes, and methodologies. The following information emphasizes details for testing batteries using DC electronic loads. Description of the procedures are also provided for convenience.

Overview:

When designing and testing a battery for powering a device, a great deal of attention reflects on energy efficiency and lifetime. For this reason, a standard performance test consists of analyzing discharge curves that characterize the behavior of the battery. By observing these curves, the battery life can be measured, and its efficiency can be computed. Some DC loads provide this feature to allow battery discharge measurement, in which the total charge is provided in Ah (ampere*hour) to a specified voltage. B&K Precision's 8500 DC load series all provide this useful built-in function for quick setup and testing. The following describes the discharge test setup for a consumer "AA" size battery. Similar setups can also be used for other types of batteries.

Setup

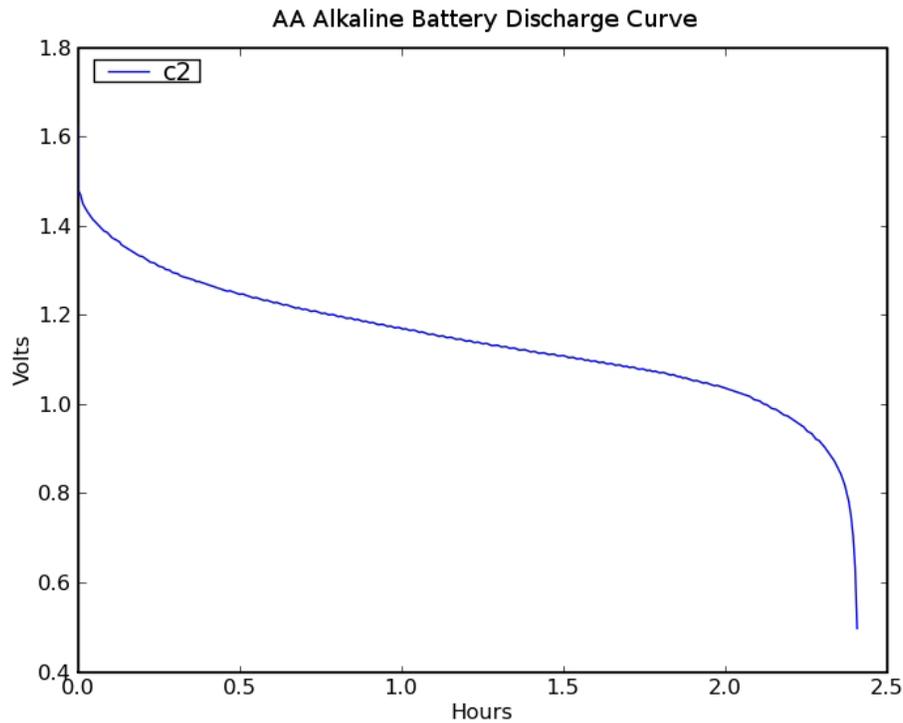
Connect the battery to the DC load. You can either solder wires to the battery or use a battery holder. Use the provided software or write a custom program using our certified LabVIEW drivers or python library to save the data points in real time when test starts. Ensure you have correct connection to the PC using the RS232 port in the unit.

DC Load Setup

The setup is controlled by the program, but be sure to manually set the voltage and current range prior to running the test program. If the current is reasonably large, you might also want to suggest they use the remote voltage sensing feature of the DC load.

Results

Provided as an example is a plot shown below of the battery discharge curve for the AA Alkaline battery tested with the setup. This was done in constant current mode with 0.5 A and a cut off voltage of 0.5 V. By looking at this discharge curve, you can analyze the behavior of the battery and its capacity under certain loading conditions. Additional and more complex characteristics can be also tested and data logged when controlling remotely.



You can obtain additional information about battery testing using DC loads by downloading our [DC Electronic Load Application Note](#) from the B&K Precision website. This application note also describes how to characterize power supplies using DC loads.