ELOG
ARIANNA

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Overview

This week, Manuel and I collected temperature data for Station 31 when placed in a box that is insulated with fiber glass. There were three different runs completed: one 12 hour run, one 48 hour run, and one 32.5 hour run with a resistor load. The results showed that the station increased in temperature while running off the 4 cell Lithium battery. The first two runs without the resistor load seemed to be plateauing at 35°C starting from room temperature*. The last run completed drained the batteries and the final temperature recorded was 60°C. Below is a more careful description of each run.

12 Hour Run

* The temperature of the station did not start at room temperature since the run began immediately after charging the battery. This helps explain the dip at the start. We assumed the starting temperature would not affect the equilibrium temperature. The setup was collecting temperature data every minute. The temperature graph is below.

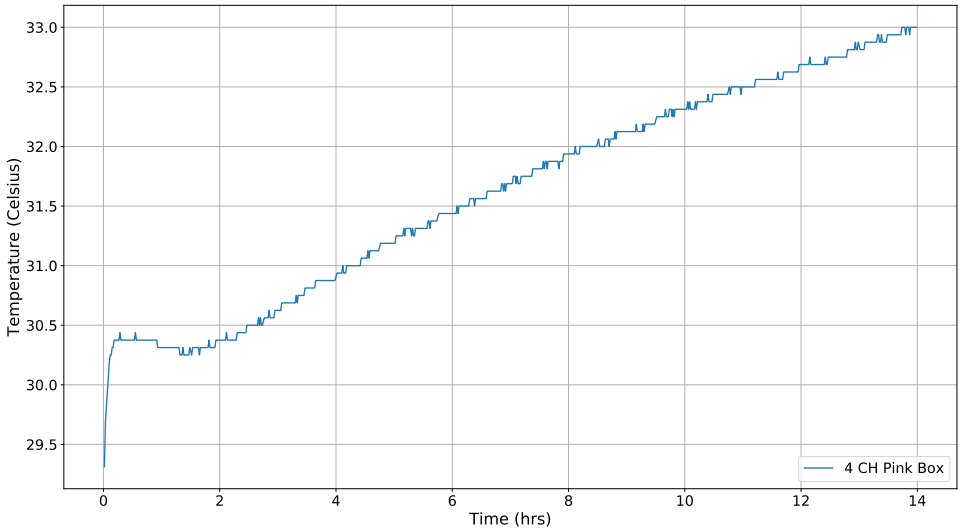


Figure 1: 12 Hour run on Station 31

48 Hour Run

In contrast of the last run, the battery was charged and was left to reach equilibrium with the room temperature to better see how much the temperature of the station would change. This setup was also collecting temperature data every minute. The temperature graph is below.

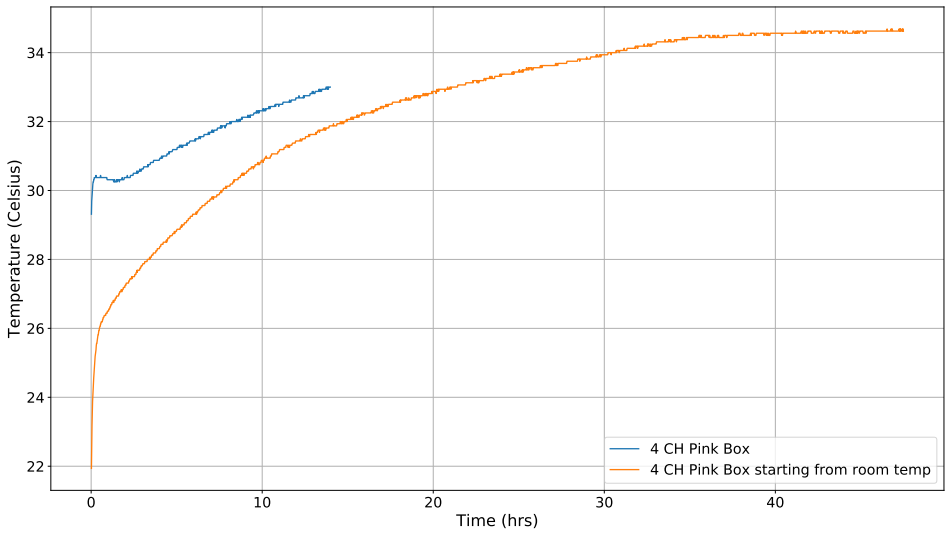


Figure 2: 48 Hour run on Station 31

Temperature Test with Load Resistor

This setup was collecting 15 temperature data points every file every 15 minutes. It was also collecting data on the input voltage 8 times every file made every 15 minutes. The temperature graph is below.

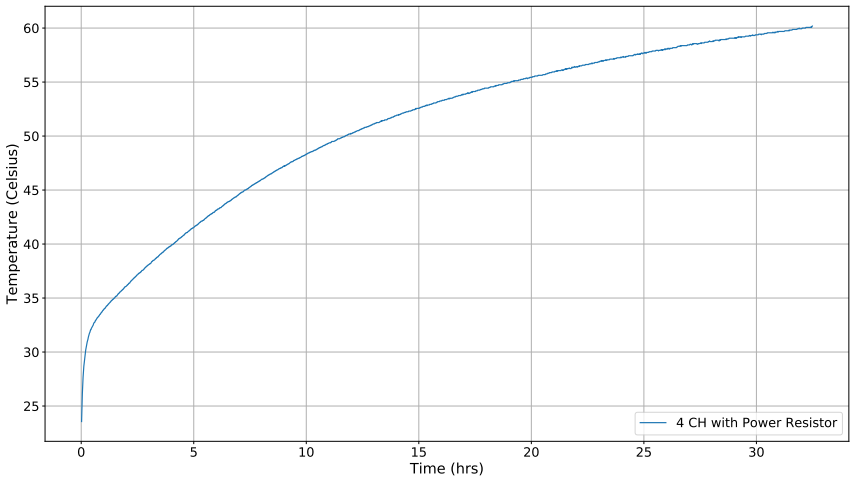


Figure 3: Resistor Load run on Station 31

The temperature of this configuration did not plateau since the battery was fully discharged. Below is a graph of the input voltage over time showing that the battery discharged completely after roughly 32 hours.

This setup was also collecting temperature data every minute. The temperature graph is below.

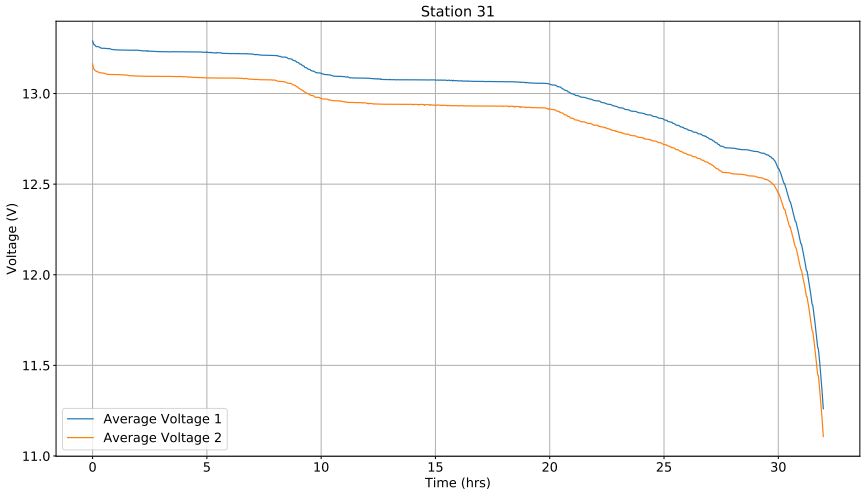
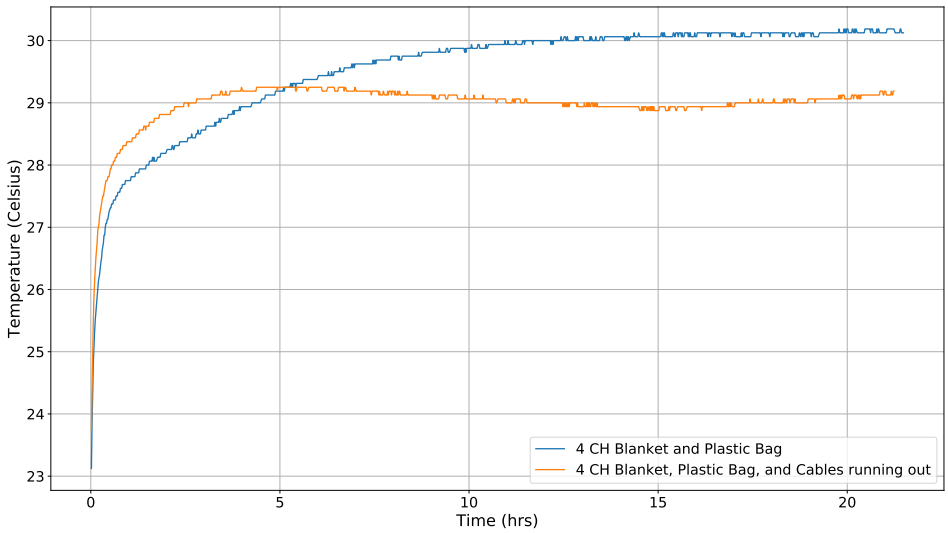


Figure 4: Input Voltage of Station 31

Updates

Further Temperature Testing was performed on the 4CH board. The first configuration was wrapping the station with a blanket and placing it inside a plastic bag. The second was the same as the former, however, it had 4 coax cables running out from the station to the room at 22°C.



8 Channel Board Temp Tests

8 CH station was placed in a black plastic box with foam cut out to the station's dimensions. The temperature increased from 22°C to approx. 45° C.