Humidity Sensor Test Program

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2022-09

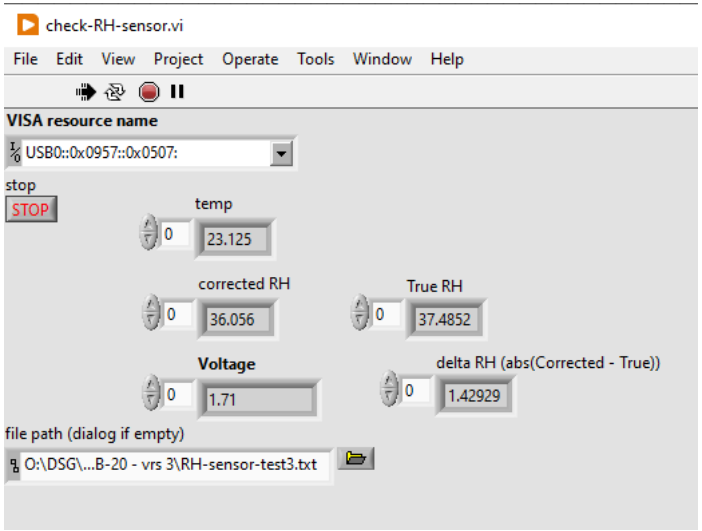
Humidity Sensor Test Program

For testing the Ohmic Instruments SC-600 relative humidity sensors chosen to be used in the Hall C Neutral Particle Spectrometer a LabVIEW program is being developed to read back sensor values from the Keysight mainframe.

The SC-600 relative humidity sensor is connected to the Keysight terminal block. In order to calculate the relative humidity a temperature is required, so to that end, a 4-wire RTD is connected to an additional Keysight terminal block. A known good humidity sensor is used as a control to compare the relative humidity values of the SC-600, the Honeywell HIH-4030/31 series relative humidity sensor that was used in the SVT and RICH hardware interlock systems.

A LabVIEW program was developed to readback the relative humidity values from both the control sensor and the SC-600. The LabVIEW program, check-RH-sensor.vi, takes the output voltages from the humidity sensors and applies the appropriate voltage-to-relative-humidity conversion as well as the prescribed temperature compensation (if the temperature is not at a constant 25°C). These values along with the temperature are saved to a .csv file and a Python program is used to plot the values.

- **Developing LabVIEW program to readout relative humidity sensor**
- **Sensor values are saved to a comma separated value file**
- **A Python program is being developed to analyze the accuracy of the humidity sensor**



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The Python program, RH-sensor-test-plot.py, parses the .csv file and plots both of the relative humidity sensor values. The goal is to ensure that the difference between the two sensors remains the same and within the tolerances as dictated within their respective spec sheets.

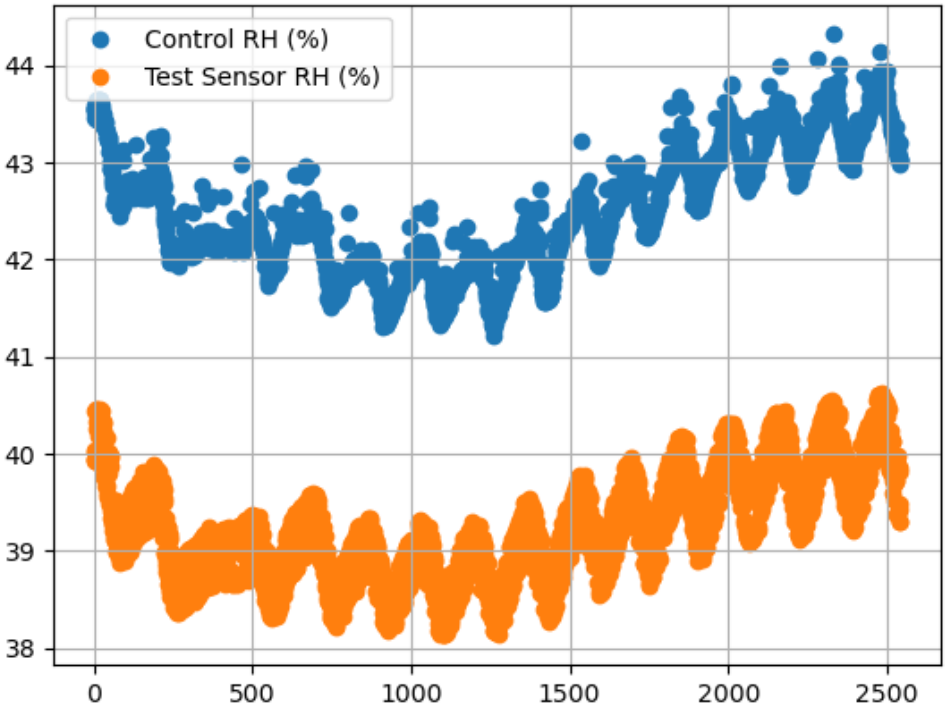

FIG. 2. Plot of control (Honeywell HIH-4030/31 series) and test (Ohmic Instruments SC-600) relative humidity sensors.