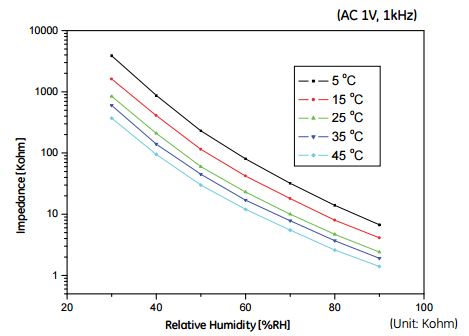
[HS12SP](http://www.digikey.ca/product-detail/en/amphenol-advanced-sensors/HS12SP/HS12SP-ND/4780894): Thermometric Relative Humidity Sensor

*Polymer based relative humidity sensor for humidity monitors and controllers, air conditioners, humidifiers and dehumidifiers, automatic ventilation.*

|  |  |  |
| --- | --- | --- |
| **Rated Working Voltage** | **Rated Power** | **Nominal Impedance** |
| *AC 1 V (50 Hz ~ 1 kHz)* | *0.3 mW* | *60 kΩ ± 30 kΩ* |

# *Typical Humidity Curve*

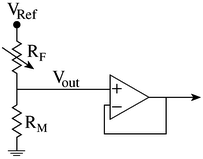


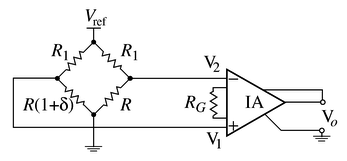
# *Signal Conditioning*

Need to design a circuit that will transform the impedance across the sensor into voltage levels that the ADC will recognize.

The relationship between *relative humidity* and *impedance* is logarithmic:

Taking the log of the dependent variable (Impedance), yields a relatively linearized relationship:

The first part of the circuit will have to convert the sensor impedance to a voltage signal. This could be done with a voltage divider circuit. This circuit will amplify the entire voltage measured across the sensor.

Another option would be to measure only the change in the voltage (due to change in resistance) of the sensor. This could be done with a bridge and a differential amplifier (instrumentation amplifier).

An op-amp log amplifier diode circuit could be used to convert the voltage to a linear relationship which the ADC could interpret.

