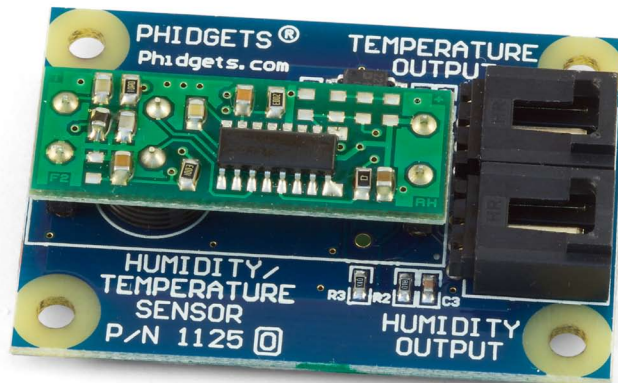


Humidity/Temperature Sensor



Product Features

- Measures Relative Humidity from 10% to 95%
- Operates over 0% to 100% Relative Humidity
- Accurately measures ambient temperatures from -40°C to +100°C (-40°F to 212°F) with a typical error of ± 0.75 degrees Celsius in the 0°C to 100°C range
- The sensor is Ratiometric.

Designed to be used with:

- 1018 PhidgetInterfaceKit 8/8/8
- 1202/1203 PhidgetTextLCD with InterfaceKit 8/8/8

Getting Started

Installing the Hardware

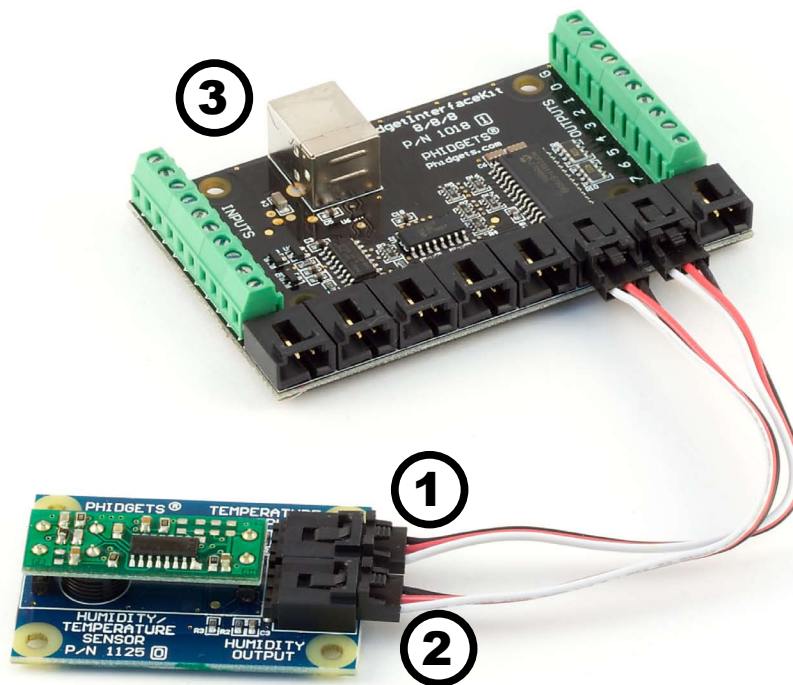
The Kit contains:

- A Humidity/Temperature Sensor
- Two Sensor Cables

You will also need:

- A PhidgetInterfaceKit 8/8/8 or a PhidgetTextLCD
- A USB Cable

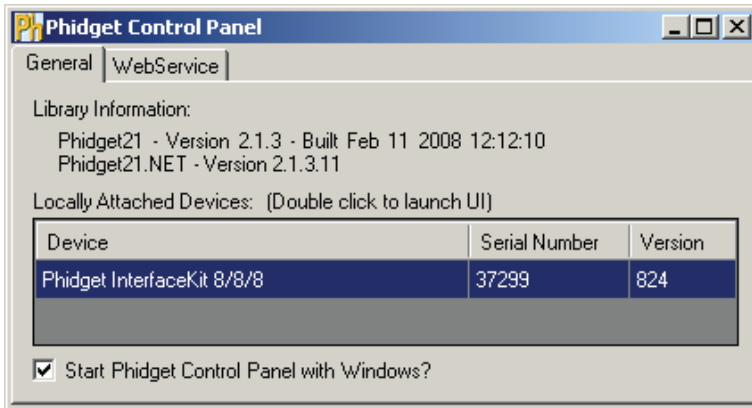
Connecting all the pieces




1. Connect the Sensor's Temperature Output to an Analog Input on the PhidgetInterfaceKit 8/8/8 using one of the sensor cable.
2. Connect the Sensor's Humidity Output to an Analog Input on the PhidgetInterfaceKit 8/8/8 using the second sensor cable.
3. Connect the InterfaceKit 8/8/8 to your PC using a USB cable.

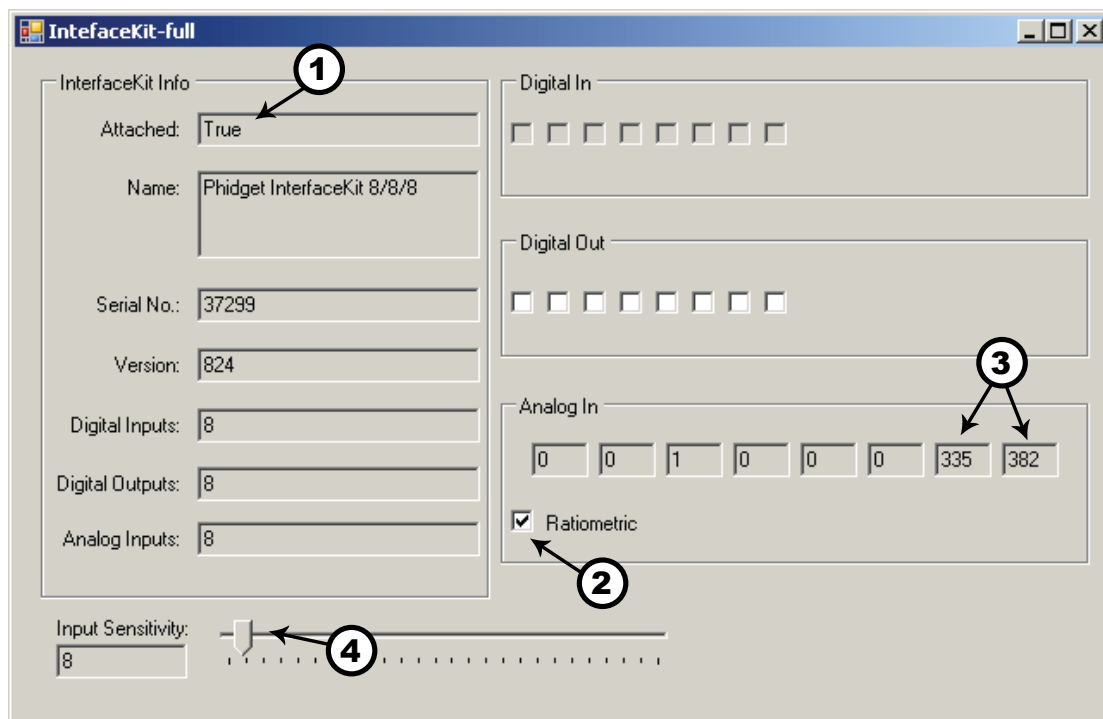
Testing the Humidity/Temperature Sensor connected to an InterfaceKit 8/8/8

Using Windows 2000/XP/Vista



Double Click on the  icon to activate the Phidget Control Panel and make sure that **InterfaceKit 8/8/8** is properly attached to your PC.

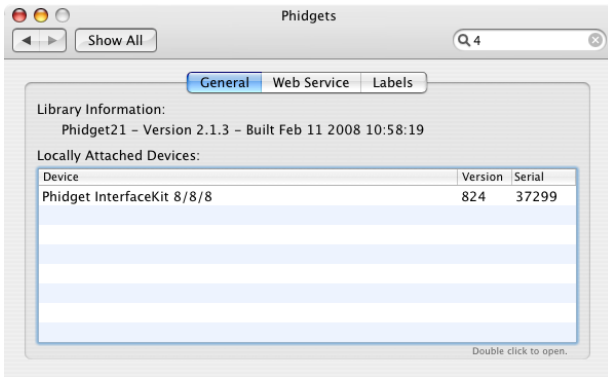
1. Double Click on Phidget InterfaceKit 8/8/8 in the Phidget Control Panel to bring up InterfaceKit-full and check that the box labelled Attached contains the word True.



2. Make sure that the Ratiometric box is Ticked.
3. Check the values in the Analog In boxes. The humidity value of 335, for example, is equal to 22.8% relative humidity and the temperature value of 382 is equal to 23,8 degrees Celsius.
4. You can adjust the input sensitivity by moving the slider pointer.

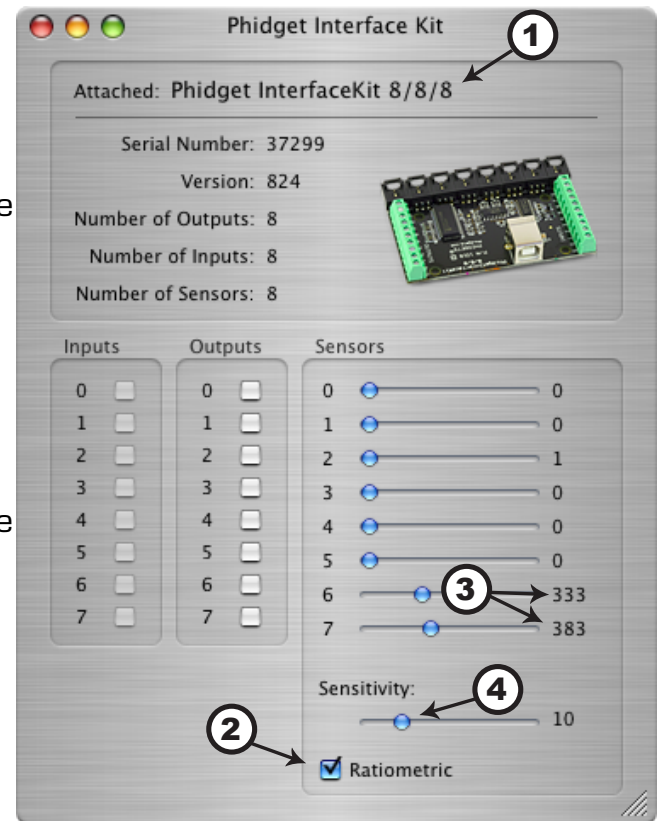
Testing the Humidity/Temperature Sensor connected to an InterfaceKit 8/8/8

Using Mac OS X



Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane. Make sure that the Phidget InterfaceKit 8/8/8 is properly attached.

1. Double Click on Phidget InterfaceKit 8/8/8 in the Phidget Preference Pane to bring up the Phidget Interface Kit Example and check that the Phidget InterfaceKit 8/8/8 is attached.
2. Make sure that the Ratiometric box is Ticked.
3. Check the values in the Sensors boxes. The humidity value of 333, for example, is equal to 22.8% relative humidity and the temperature value of 383 is equal to 23,8 degrees Celsius.
4. You can adjust the input sensitivity by moving the slider pointer.



Technical Information

Relative Humidity

The sensor measures the relative humidity of the environment around the sensor. Built in temperature compensation produces a linear output ranging from 10% to 95% relative humidity. Values outside of this range may be usable but will have increased error.

Formulas

The Formula to translate SensorValue into Relative Humidity is:

$$\text{RH (\%)} = [(\text{SensorValue}/1000) \times 190.6] - 40.2$$

To translate RawSensorValue into Relative Humidity:

$$\text{RH (\%)} = [(\text{RawSensorValue}/4095) \times 190.6] - 40.2$$

If you are using a generic Analog to Digital Converter (not a Phidget device):

$$\text{RH (\%)} = \{[\text{Measured Value} / (\text{Max ADC Range} - 1)] \times 190.6\} - 40.2$$

Temperature

The sensor also measures ambient temperature from -40 to +100 degrees Celsius. This device is a precision temperature to voltage converter that outputs a voltage that is directly proportional to temperature.

Formulas

The Formula to translate SensorValue into Temperature is:

$$\text{Temperature (}^\circ\text{C)} = [(\text{SensorValue}/1000) \times 222.22] - 61.11$$

To translate RawSensorValue into Temperature:

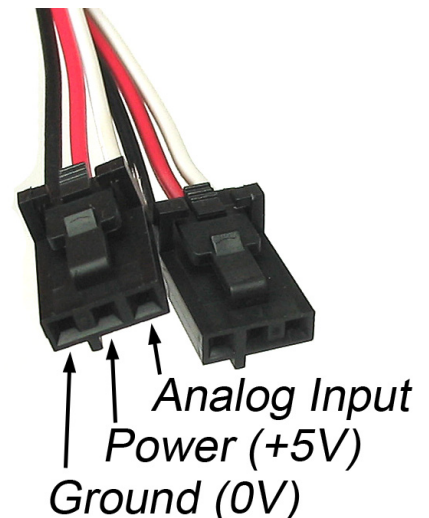
$$\text{Temperature (}^\circ\text{C)} = [(\text{RawSensorValue}/4095) \times 222.22] - 61.11$$

If you are using a generic Analog to Digital Converter (not a Phidget device):

$$\text{Temperature (}^\circ\text{C)} = \{[\text{Measured Value} / (\text{Max ADC Range} - 1)] \times 222.22\} - 61.11$$

Analog Input Cable Connectors

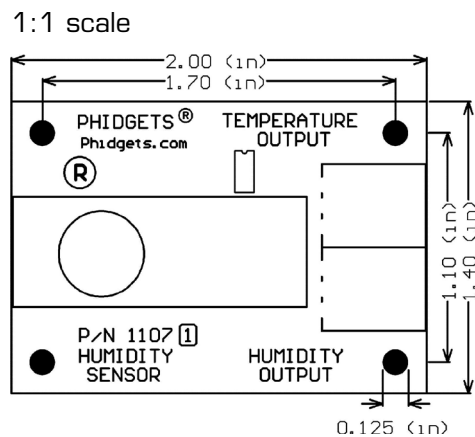
Each Analog Input uses a 3-pin, 0.100 inch pitch locking connector. Pictured here is a plug with the connections labeled. The connectors are commonly available - refer to the Table below for manufacturer part numbers.



Cable Connectors		
Manufacturer	Part Number	Description
Molex	50-57-9403	3 Position Cable Connector
Molex	16-02-0102	Wire Crimp Insert for Cable Connector
Molex	70543-0002	3 Position Vertical PCB Connector
Molex	70553-0002	3 Position Right-Angle PCB Connector (Gold)
Molex	70553-0037	3 Position Right-Angle PCB Connector (Tin)
Molex	15-91-2035	3 Position Right-Angle PCB Connector - Surface Mount

Note: Most of the above components can be bought at www.digikey.com

Mechanical Drawing



Device Specifications	
Humidity Sensor	
Current Consumption	3.6mA
Output Impedance	1K ohms
Accuracy	±2% RH @ 55% RH
Accuracy over 10% to 95% RH	±3% Typical, ±5% Maximum
Reaction Time for humidity	10 seconds
Minimum / Maximum Voltage	4.75VDC - 5.25VDC
Operating temperature range	-40C to 100C
Temperature Sensor	
Current Consumption	300uA
Output Impedance	1K ohms
Accuracy	1 Degree Celsius
Minimum/Maximum Voltage	4.75VDC - 5.25VDC
Range of Operation	-50C to 150C

Product History

Date	Product Revision	Comment
May 2008	n/a	Product Release