



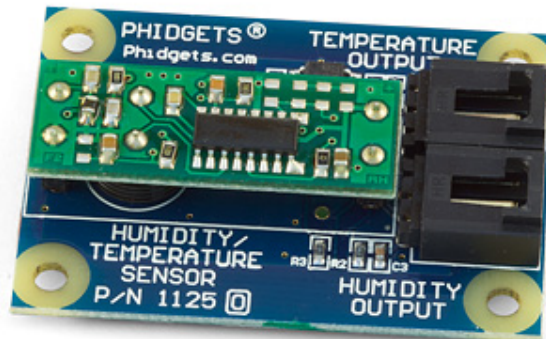
Products for USB Sensing and Control

1125 User Guide

From Phidgets Support

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Go to this device's product page (http://www.phidgets.com/products.php?product_id=1125)

Getting Started

Checking the Contents

You should have received:

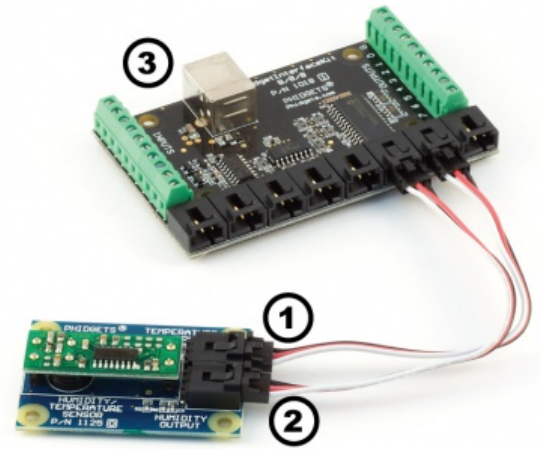
- A humidity/temperature sensor
- Two sensor cables

In order to test your new Phidget you will also need:

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


Connecting 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 Using Windows 2000 / XP / Vista / 7

Make sure you have the current version of the Phidget library installed on your PC. If you don't, follow these steps:

1. Go to the Quick Downloads section on the Windows page
2. Download and run the Phidget21 Installer (32-bit, or 64-bit, depending on your system)
3. You should see the  icon on the right hand corner of the Task Bar.

Running Phidgets Sample Program

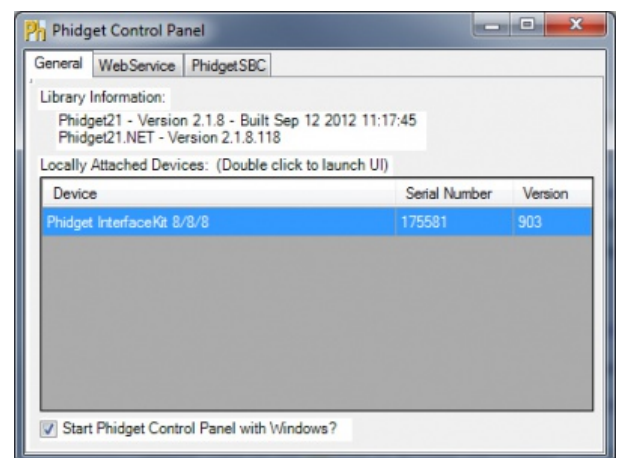
Double clicking on the  icon loads the Phidget Control Panel; we will use this program to ensure that your new Phidget works properly.

The source code for the **InterfaceKit-full** sample program can be found in the quick downloads section on the C# Language Page. If you'd like to see examples in other languages, you can visit our Languages page.

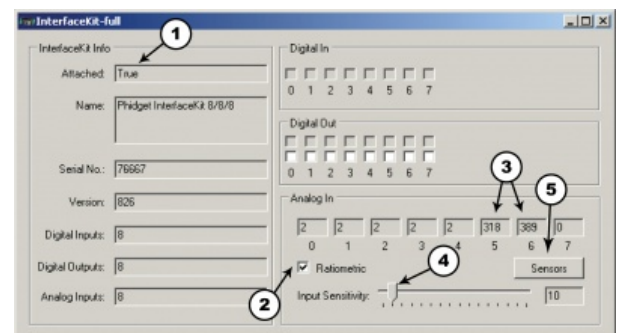
Updating Device Firmware

If an entry in this list is red, it means the firmware for that device is out of date. Double click on the entry to be given the option of updating the firmware. If you choose not to update the firmware, you can still run the example for that device after refusing.

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



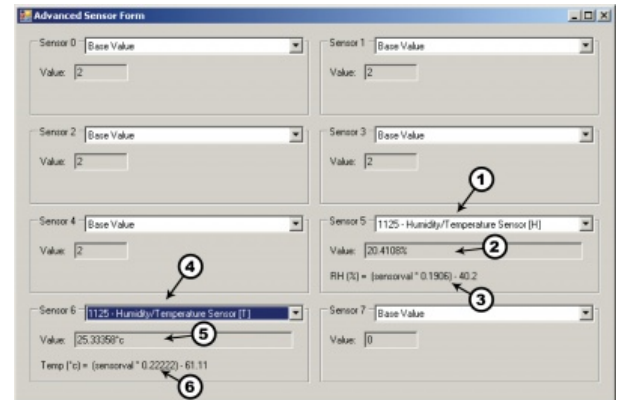
1. Double Click on **Phidget InterfaceKit 8/8/8** in the Phidget Control Panel to bring up InterfaceKit-full and check that the box labelled Attached contains the word True.
2. Make sure that the Ratiometric box is Ticked.
3. Check the values in the Analog In boxes. The humidity value of 318, for example, is equal to 22% relative humidity and the temperature value of 389 is equal to 23 degrees Celsius.
4. You can adjust the input sensitivity by moving the slider pointer. Note that the default sensitivity is 10 in this example program, which corresponds to a 2.22°C threshold when using the 1125. This means that the temperature value won't update unless it's changed by 2.22 degrees or more (unless you choose a lower sensitivity



value).

5. Click on the Sensors button to bring up the Advanced Sensor Form.

1. In the Advanced Sensor Form, select the 1125 - Humidity/Temperature Sensor [H] from the drop down menu to get a display for the humidity sensor functionality.
2. The measured relative humidity.
3. Formula used to convert the analog input SensorValue into relative humidity.
4. Select the 1125 - Humidity/Temperature Sensor [T] from the drop down menu to get a display for the temperature sensor functionality.
5. The measured ambient temperature.
6. Formula used to convert the analog input SensorValue into temperature.



Testing Using Mac OS X

1. Go to the Quick Downloads section on the Mac OS X page
2. Download and run the Phidget OS X Installer
3. Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane
4. Make sure that the is properly attached.
5. Double Click on in the Phidget Preference Pane to bring up the Sample program. This program will function in a similar way as the Windows version.

Using Linux

For a step-by-step guide on getting Phidgets running on Linux, check the Linux page.

Using Windows Mobile / CE 5.0 / CE 6.0

For a step-by-step guide on getting Phidgets running on Windows CE, check the Windows CE page.

Technical Details

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:

$$\text{RH (\%)} = (\text{SensorValue} \times 0.1906) - 40.2$$

Temperature

This device is a precision temperature to voltage converter that outputs a voltage that is directly proportional to temperature. The temperature sensor component is rated at -40°C to +100°C, but the other components on the board, the connector and the cable are rated at -30°C to +80°C. In a fast prototyping environment the temperature sensor board can be pushed to the ratings of the sensor component, but you should use the lower temperature ratings if you plan to use the 1124 in a commercial application.

Formulas

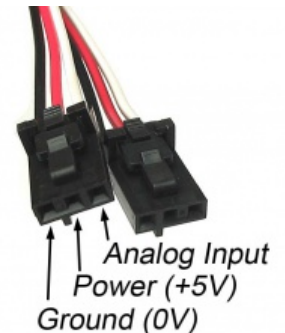
The Formula to translate SensorValue into Temperature is:

$$\text{Temperature (C)} = (\text{SensorValue} \times 0.22222) - 61.11$$

Other Interfacing Alternatives

If you want maximum accuracy, you can use the `RawSensorValue` property from the `PhidgetInterfaceKit`. To adjust a formula, substitute `(SensorValue)` with `(RawSensorValue / 4.095)`. If the sensor is being interfaced to your own Analog to Digital Converter and not a Phidget device, our formulas can be modified by replacing `(SensorValue)` with `(Vin * 200)`. It is important to consider the voltage reference and input voltage range of your ADC for full accuracy and range.

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



API

Phidget analog sensors do not have their own API- they simply output a voltage that is converted to a digital value and accessed through the "Sensor" properties and events on the `PhidgetInterfaceKit` API. It is not possible to programmatically identify which sensor is attached to the Analog Input. To an `InterfaceKit`, every sensor looks the same. Your application will need to apply formulas from this manual to the **SensorValue** (an integer that ranges from 0 to 1000) to convert it into the units of the quantity being measured. For example, this is how you would use a temperature sensor in a C# program:

```
// set up the interfacekit object
InterfaceKit IFK = new InterfaceKit();

// Link the new interfacekit object to the connected board
IFK.open("localhost", 5001);

// Get sensorvalue from analog input zero
int sensorvalue = IFK.sensors[0].Value;

// Convert sensorvalue into temperature in degrees Celsius
double roomtemp = Math.Round(((sensorvalue * 0.22222) - 61.11), 1);
```

See the `PhidgetInterfaceKit` User Guide for more information on the API and a description of our architecture.

For more code samples, find your preferred language on the [Languages](#) page.

Product History

Date	Board Revision	Device Version	Comment
May 2008	0	N/A	Product Release

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