

# 1132 User Guide

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Go to this device's product page <sup>[1]</sup>

## Getting Started

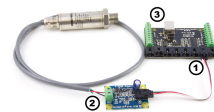
### Checking the Contents

**You should have received:**    **In order to test your new Phidget you will also need:**

- A 4-20mA adapter
- A sensor cable
- A PhidgetInterfaceKit 8/8/8 or PhidgetTextLCD
- A USB cable
- A 4-20mA sensor


### Connecting the Pieces

1. Connect the 4-20mA Adapter to the Analog Input 6 on the PhidgetInterfaceKit 8/8/8 using the sensor cable.
2. Attach a 4-20 mA sensor to the terminal block of the Adapter.
3. Connect the PhidgetInterfaceKit to your PC using the 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

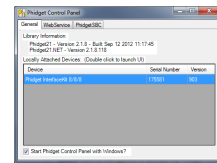
Double clicking on the  icon loads the Phidget Control Panel; we will use this program to ensure that your new Phidget works properly.

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.

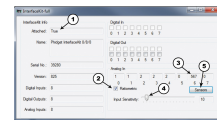
## Updating Device Firmware

If an entry in this list is red, it means the firmware for that device is out of date.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.

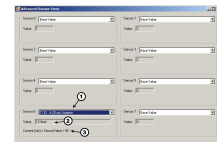
Double Click on the  icon to activate the Phidget Control Panel and make sure that the **Phidget InterfaceKit 8/8/8** is properly attached to your PC.



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 NOT Ticked.
3. At a current consumption of 4 mA, the value in the Analog-In box will be approximately 180. At 20 mA, the Analog-In box will display a value of 900.
4. You can adjust the input sensitivity by moving the slider pointer.
5. Click on the Sensors button to bring up the Advanced Sensor Form.



1. In the Sensor 6 box, select the 1132 - 4-20mA Adapter from the drop down menu.
2. The current measured by the sensor is shown here.
3. Formula used to convert the analog input SensorValue into current (mA).



## 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

Sensors can be connected to and powered by the provided terminals on the 4-20mA Adapter board. The Phidget will measure the current passing through the attached sensor and convert it to a voltage, where it can be displayed as a SensorValue by an Interfacekit. The adapter board is a non-ratiometric device, so make sure to set ratiometric to false when using an Interfacekit. If the formula gives a range below 4mA (a SensorValue less than 180), then this indicates that the sensor is "open". The 4-20 mA Adapter board internally produces +15V from the Phidget InterfaceKit's input analog voltage. This supply rail is used to power the connected sensor, eliminating the need for other external power supplies. If the Adapter board is being used in very noisy environments, place a ferrite bead on the sensor current loop close to where it is attached to the 1132. This helps prevent energy coupled into long runs of wiring from causing computer problems.

## Formulas

The Formula to translate SensorValue into current consumed is:

$$\text{Current (mA)} = \frac{\text{SensorValue}}{45}$$

## Selecting a 4-20mA Sensor

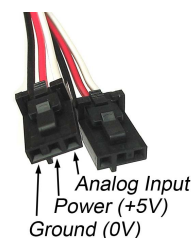
Review the datasheet for the 4-20 mA sensor that you have selected to be certain that it complies with the specifications of the Adapter Board. Mostly you want to make sure that the sensor you want to use does not require more than 15V and that its capacitive load is equal to or less than 1.5μF. The following sensor has been successfully tested with the 1132.

Manufacturer	Part Number	Description
Honeywell	SPTmA0015PG5W02	Stainless Steel 0-15 psi Pressure Sensor

## 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 2010	0	N/A	Product Release

## References

[1] [http://www.phidgets.com/products.php?product\\_id=1132](http://www.phidgets.com/products.php?product_id=1132)

# Article Sources and Contributors

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