IR Distance Sensor

Product Features

- Uses the 1101 - IR Distance Adapter to interface the Sharp GP2D12 sensor to the PhidgetInterfaceKit 8/8/8 or the PhidgetTextLCD.

- Measures distances from 10 cm to 80 cm.

- The Adapter 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:

- An IR Distance Adapter

- A 60cm Sensor Cable

- An Interface Cable for connecting the GP2D12 sensor to the Adapter

- A Sharp GP2D12 Distance Sensor

You will also need:

- A PhidgetInterfaceKit 8/8/8 or a PhidgetTextLCD

- A USB Cable

Connecting all the pieces
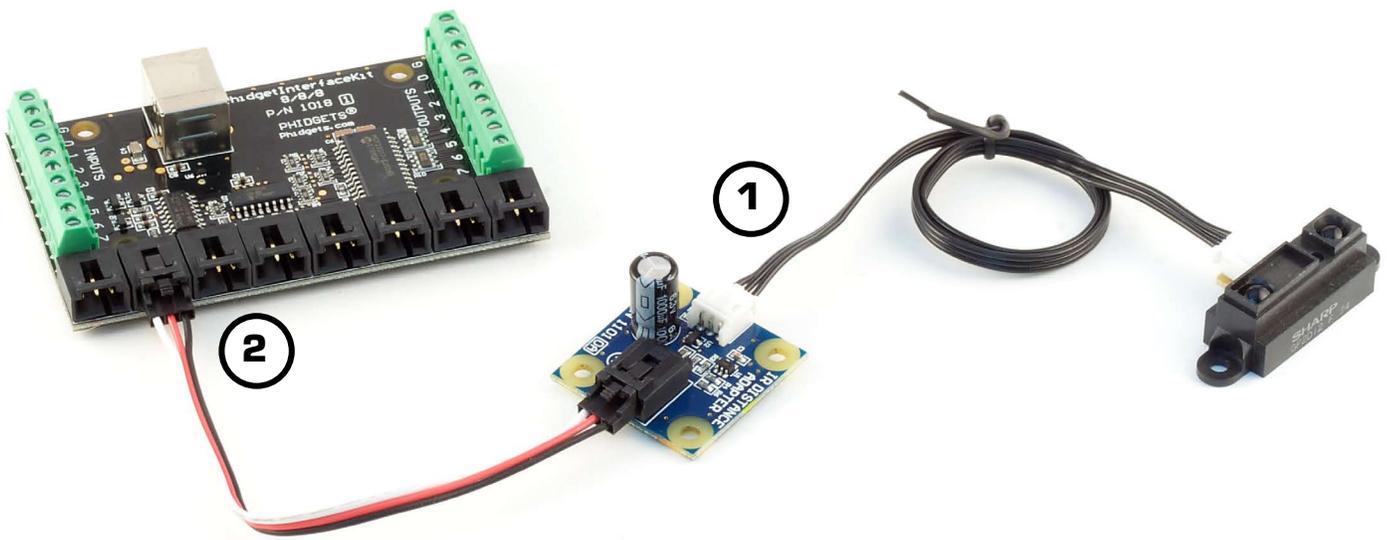
1. Connect the GP2D12 to the Distance Adapter Board using the GP2D12 interface cable.

2. Connect the Distance Adapter Board to an Analog Input on the PhidgetInterfaceKit 8/8/8 board using the sensor cable.

Testing the IR Distance Sensor connected to an InterfaceKit 8/8/8

Using Windows 2000/XP/Vista
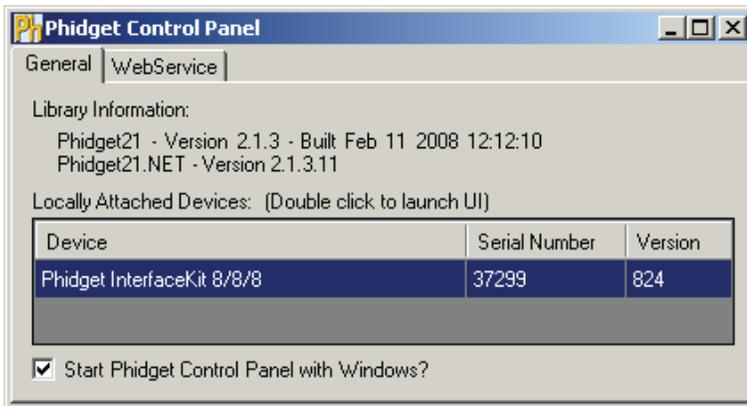
Double Click on the Ph icon to activate the Phidget Control Panel and make sure that the **Phidget InterfaceKit 8/8/8** is properly attached to your PC.

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.
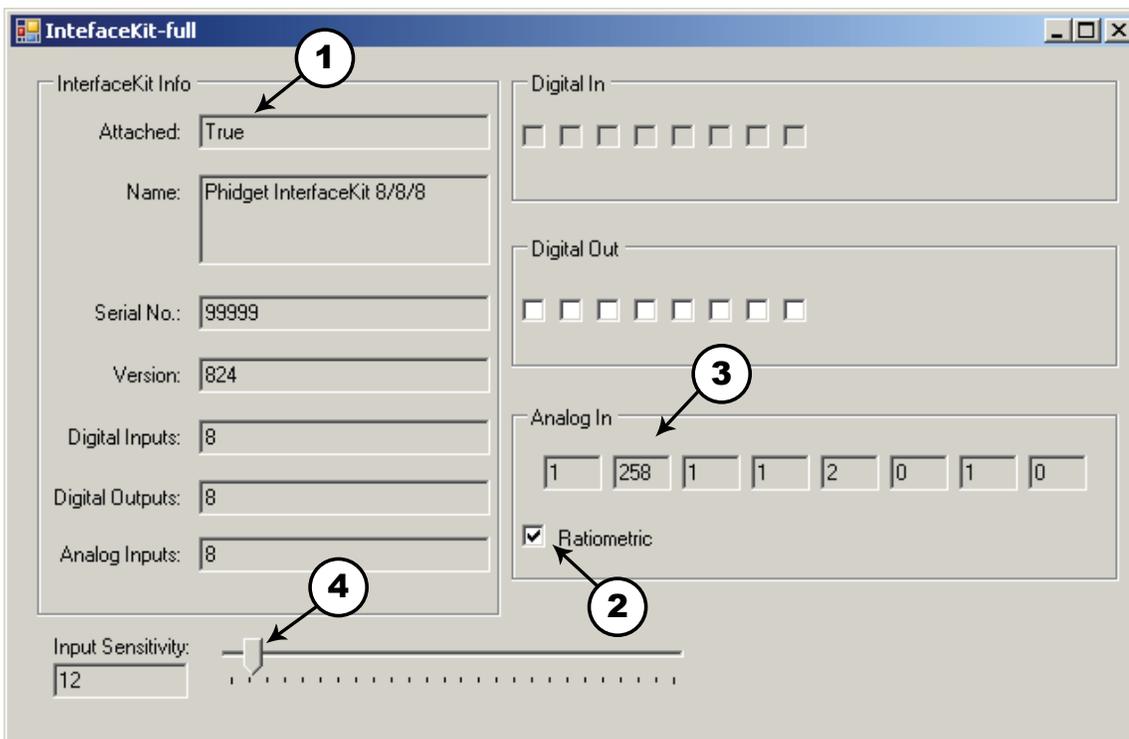
2. Make sure that the Ratiometric box is Ticked.

3. Put an object in front of the IR Sensor (the sensor measures distances from 10 to 80cm) and check that you get a number between 0 (at 10cm) and 500 (at 80cm).

4. You can adjust the input sensitivity by moving the slider pointer.

Testing the IR Distance Sensor connected to an InterfaceKit 8/8/8.

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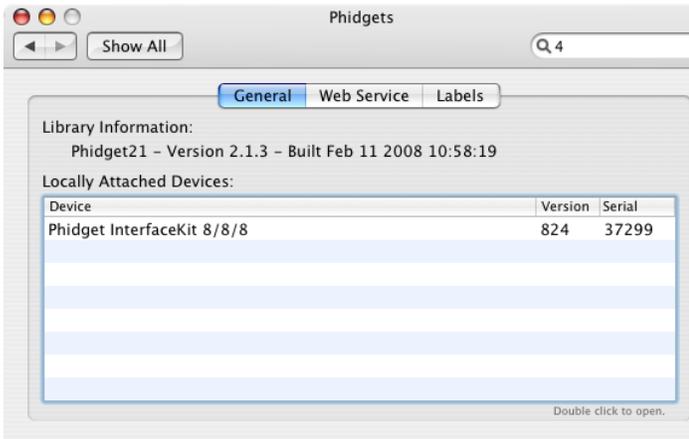
Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane. Make sure that the Phidget InterfaceKit 8/8/8 is properly attached.

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. Put an object in front of the IR Sensor (the sensor measures distances from 10 to 80cm)and check that you get a number between 0 (at 10cm) and 500 (at 80cm).

4. You can adjust the input sensitivity by moving the slider pointer.
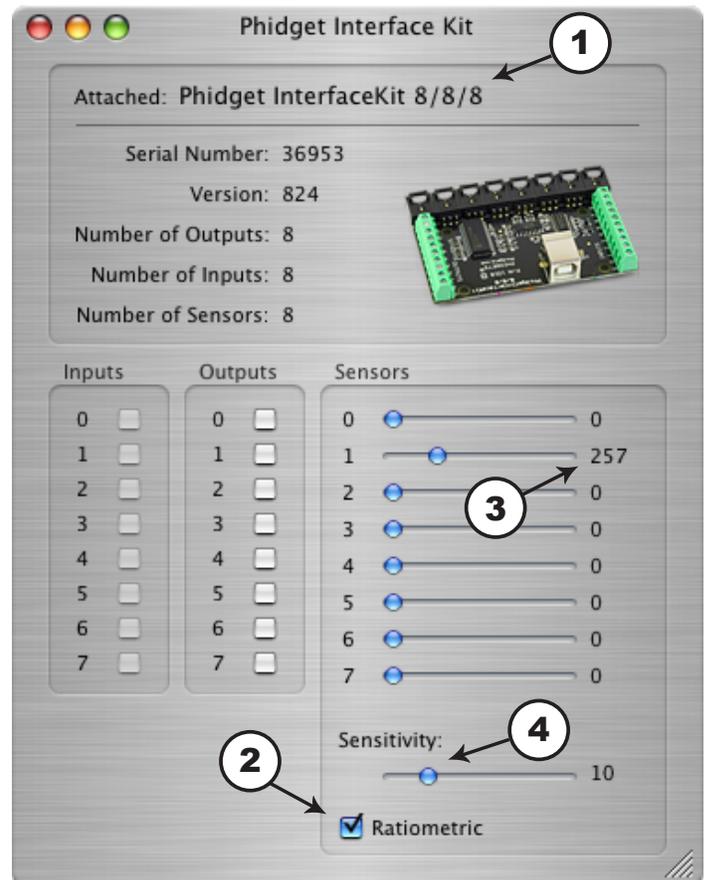
Technical Information

The Sharp GP2D12 sensor measures distances from 10 cm to 80 cm. Sensor values from 80 to approximately 500 are produced, the output being approximately inversely proportional to the distance.

The function of the IR Distance Adapter Board is to regulate the power requirement of the GP2D12. Although the specified current consumption of the GP2D12 is only 30mA, the sensor draws up to 300mA for short periods of time during its measuring state. If two or more sensors are connected directly to the analog inputs of a PhidgetInterfaceKit (which can source a maximum of 500mA current total) the InterfaceKit may potentially experience an overload. Up to eight Sharp GP2D12 sensors can safely be attached to the PhidgetInterfaceKit 8/8/8 at the same time using IR Distance Adapter Boards, which prevents the possibility of overcurrent.

Formulas

The Formula to translate SensorValue into Distance is:

Distance (cm) = 4800/(SensorValue - 20)

This formula is only valid over the range 80-500 SensorValue.

Other Interfacing Alternatives

If you want maximum accuracy, you can use the RawSensorValue property. To modify the formula, substitute (SensorValue) with (RawSensorValue / 4.095)

If the sensor is being interfaced to your own Analog to Digital Converter (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.

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.

Analog Input
Power (+5V)
Ground (0V)
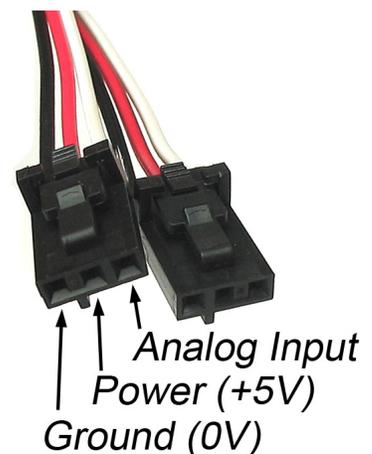
Cable Connectors		
Manufacturer	Part Number	Description
Molex	50-57-9403	3 Position Cable Connector
Molex	16-02-0102	Wire Crimp Insert for Cable Connector
Molex	70543-0002	3 Position Vertical PCB Connector
Molex	70553-0002	3 Position Right-Angle PCB Connector (Gold)
Molex	70553-0037	3 Position Right-Angle 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 of the Adapter

1:1 scale
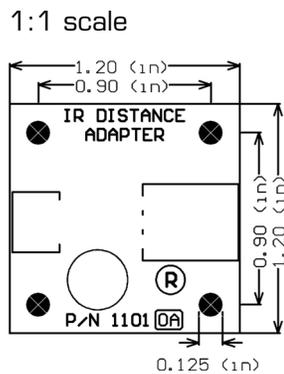
Device Specifications

Current Consumption	35mA
Output Impedance	1K ohms
Supply Voltage	4.75VDC to 5.25VDC

Product History

Date	Product Revision	Comment
October 2005	n/a	Product Release
May 2008	Board Revision OA	