

1002 User Guide



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Getting Started

Checking the Contents

You should have received:

- A PhidgetAnalog 4-Output
- A Mini-USB cable
- A Hardware Mounting Kit

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

- A device requiring a 0 to 10V signal
- A multimeter could also be used to monitor the output voltage


Connecting the Pieces

1. Connect your device to the PhidgetAnalog board using one of the terminal blocks.
2. Connect the PhidgetAnalog 4-Output to your computer using the Mini-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.

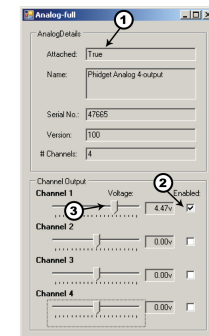
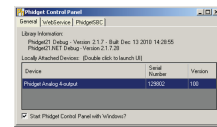
The source code for the Analog-full sample program can be found in the quick downloads section on the C# Language Page. If you'd like to see examples in other languages, you can visit our Languages page.

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If an entry in this list is red, it means the firmware for that device is out of date.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 Analog 4-output** is properly attached to your PC.

1. Double click on **Phidget Analog 4-output** in the Phidget Control Panel to bring up Analog-full and check that the box labelled Attached contains the word True.
2. Enable the Channel to which your device is connected.
3. Use the slider to set the voltage. Your device should react according to the set voltage. If you are using a multimeter, it should display the voltage as set by the slider.



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 PhidgetAnalog 4-Output is properly attached.
5. Double Click on PhidgetAnalog 4-Output in the Phidget Preference Pane to bring up the Analog-full 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.

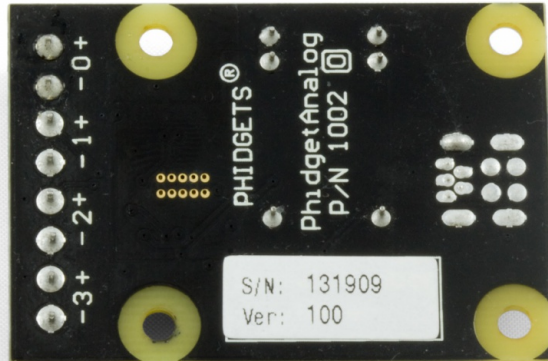
Technical Details

General

Produces a voltage over -10V to +10V. This voltage will be asserted up to +-20mA (short-circuit). An error will be reported when this current is exceeded, and the voltage the customer is getting is no longer accurate. The voltage is produced with 12 bit resolution (4.8mV). The update rate or frequency of the outputs is dependant on the speed of your system.

Connections

The terminal blocks on this board are labelled on the underside to save space:



Isolation

The 1002 is not isolated. All 4 channels use the same ground.

Current

The PhidgetAnalog board will limit the available current per channel at approximately 20mA. For reliable results, don't approach this limit, as it will vary from channel to channel. For maximum accuracy, limit the current to 5mA. If more than +- 20mA of current is drawn, the device goes into a constant current supply mode. When this happens, the current will be held constant at it's maximum value, and the output voltage will depend on the value of the load that the device is trying to drive.

If your application requires a larger current source / sink, the analog output can be used as an input to a larger external amplifier circuit.

All the power is supplied by the USB bus.

Further Reading

For more information on analog outputs, see the Analog Output Primer.

API

We document API Calls specific to this product in this section. Functions common to all Phidgets and functions not applicable to this device are not covered here. This section is deliberately generic. For calling conventions under a specific language, refer to the associated API manual in the Quick Downloads section for that language. For exact values, refer to the device specifications.

Functions

int OutputCount() [get]

Gets the number of analog outputs supported by the PhidgetAnalog.

double Voltage(int OutputIndex) [get, set]

Gets or sets the current voltage output setting for an analog output, in Volts. The range is VoltageMinVoltageMax. Voltage is not actually applied until Enabled is set to true.

double VoltageMin(int OutputIndex) [get]

Gets the minimum supported output voltage, for an output, in Volts.

double VoltageMax(int OutputIndex) [get]

Gets the maximum supported output voltage, for an output, in Volts.

bool Enabled(int OutputIndex) [get, set]

Gets the enabled state for an output. When enabled, the output drives at the set Voltage, up to 20mA. When disabled, the output is tied to ground via a 4K pull-down.

Events

OnError(int ErrorCode, String ErrorDescription)

The PhidgetAnalog will throw error events under certain circumstances:

- **ErrorCode = EEPHIDGET_OVERCURRENT**

An overcurrent condition has occurred on an output. Under this condition, the output is clamped to 20mA.

- **ErrorCode = EEPHIDGET_OVERTEMP**

A Thermal Shutdown state has occurred. The outputs will be shut down under this condition.

When overcurrent or overtemperature state have ended, there will be an error event with the **EEPHIDGET_OK** code. See the ErrorDescription string for specific error details.

Product History

Date	Board Revision	Device Version	Comment
March 2011	0	100	Product Release, requires phidget21 2.1.8 or newer

References

[1] http://www.phidgets.com/products.php?product_id=1002

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