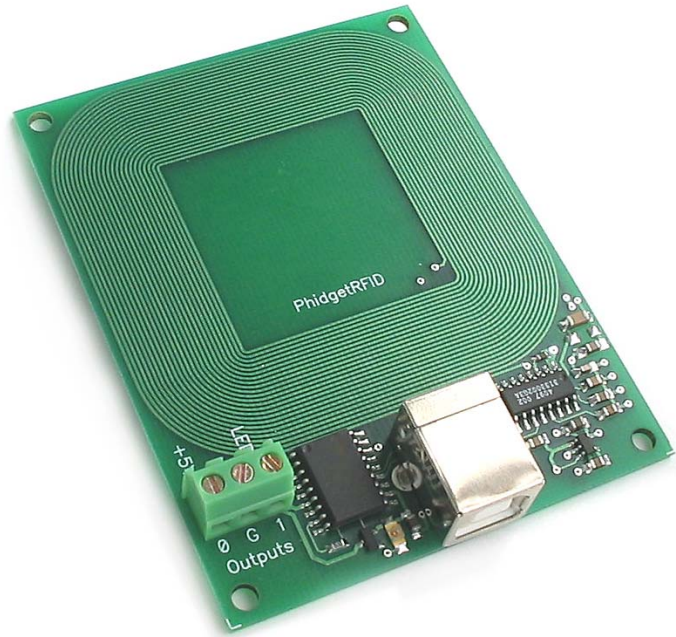


PhidgetRFID

For Board Revision 0

Phidgets are the most user-friendly system available for controlling and sensing the environment from your computer. People with absolutely no hardware knowledge or experience can include Radio Frequency Identification (RFID) tags into their projects. It is just a matter of plugging your reader into the USB port on your computer. After that, you can use the simple to program Phidgets software libraries to access your reader.



The PhidgetRFID boards are one of our simplest Phidgets to use. They can read any of the three types of RFID tag available from Phidgets that are brought within 3 inches of the reader. When a RFID tag is read, the board returns the unique number contained in the RFID tag.

The PhidgetRFID board can be controlled from Windows, Linux, and Mac OS X. High-level programming interfaces are available for Visual Basic, C, C++, Flash, .NET, Java, LabVIEW, etc.

What Can the PhidgetRFID Do?

RFID tags can be attached to things you have lots of and, when read, tell you where that particular thing is. Attach them to model railway engines, and automatically operate points to send goods trains one way and passenger trains another. Attach them to students – real live students – and display their next class when they wave their tag in front of your computer.

The tag does not have to be visible to be read. No other power is required; the USB bus supplies all the power. Every tag purchased from Phidgets is guaranteed unique.

Getting Started on Windows 2000 / XP

The PhidgetRFID board can be controlled from a variety of Software Development Environments. In Visual Basic the PhidgetRFID software component provide a high-level programmer interface. Here is how to get started under Windows 2000 or Windows XP.

Step 1. What you need to have ready

- Your PhidgetRFID reader.
- A compatible RFID tag.
- A USB cable.
- A computer running Windows 2000 or Windows XP.
- An Internet connection and a Web browser.

Step 2. Assemble your hardware

- Plug the square end of the USB cable into the USB input connector on the PhidgetRFID.
- Plug the rectangular end of the USB cable into the USB connector on your computer (you can do this at any time).

Step 3. Install the software

Phidgets use a library installed on your computer. This only has to be installed once no matter how many different types of Phidgets you have.

- Have you previously installed the Phidget library? If so, you can skip this step.
- To install the library go to www.phidgets.com >> Downloads >> Release.
- Select the PHIDGET.msi file.
- A dialog box will appear asking if you would like to open the file or save it to your computer. You can do either, but if you are unsure just select "Open" and follow the instructions.
- Do you want to update a previously installed Phidget library? If so, you must remove the old library when prompted to do so.

Step 4. Download the sample programs

- Go to www.phidgets.com >> Downloads >> Release.
- Select the Examples.zip file.
- Save the zip file to a place of your choosing, and then uncompress it.
- You will find many executables in the Visual Basic folder, and their source in the sub-folders.
- PhidgetMonitor.exe will show you what Phidgets are plugged in. If you have followed Step 2 and Step 3, a PhidgetRFID should be displayed in the list, along with its serial number. The source for this .exe is in the PhidgetManagerExamples folder.
- All PhidgetRFID samples have a "rfid" prefix. Try them! All source code can be found in the PhidgetRFIDExamples folder.

Step 5. Try Programming a Phidget

- Go to www.phidgets.com >> Documentation.
- Read the documentation for the PhidgetManager, the IPhidget, and read the documentation under the PhidgetRFID heading.
- Based on this documentation, we recommend you examine the source of the sample programs mentioned in Step 4.
- Now try modifying the samples. Or code your own from scratch.

Step 6. Learning more ...

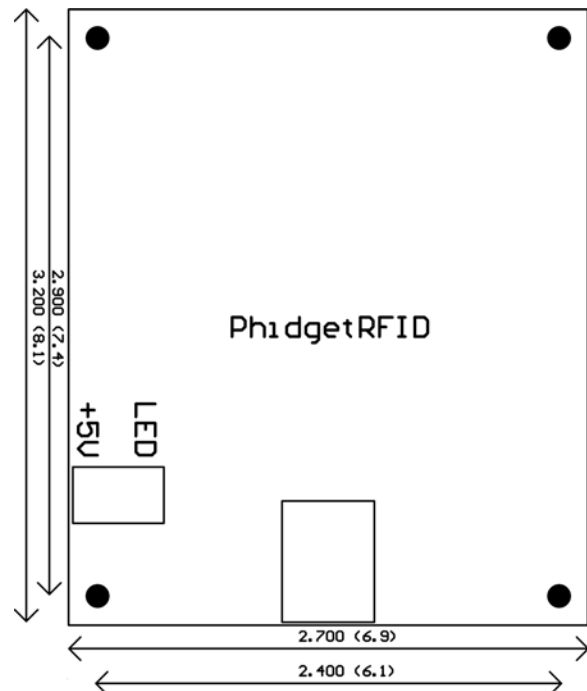
- Explore www.phidgets.com. We recommend you visit Projects and Examples to see what other people have done. For new applications or other programming languages visit the Forums.

Step 7. Read the license agreement

Go to www.phidgets.com >> Documentation and select the License link. Note that the term Phidget™ is trademarked, and that the name PhidgetRFID is synonymous with Phidget™.

Hardware Description

The PhidgetRFID reads RFID tags that use the EM Marrin protocol, EM4102. This is a 125kHz read-only protocol. Other styles of tags will work if they use the EM4102 protocol. The reader returns a 40-bit read-only unique ID number contained in the tag. There is no capability for anti-collision or read/write. If two tags are in the read field at the same time, the reader will not read either tag. If two readers are brought to close together, while enabled, neither will function. However, an individual reader can be disabled from software, allowing a collection of PhidgetRFID boards to be polled sequentially.



Outputs

The PhidgetRFID has four outputs. Two outputs are available for the user and two outputs are used on the board itself. Output 0 is a + 5 V source from the USB bus (through a P Channel MOSFET with less than one ohm impedance). This can be used to switch any TTL device, or it can be used to drive a relay such as the Aromat JS1-5V. When driving a relay it is important to use a fast clamping diode across the drive pins of the relay, otherwise the PhidgetRFID board can be damaged. Output 1 is an LED drive output, with 5 V at 20 mA (250 ohm CMOS output). Output 2 controls an on board surface mounted LED. Output 3 controls the RF portion of the reader and allows the reader to be enabled or disabled. This feature allows a collection of readers to be polled sequentially without them interfering with each other.

| Output | Function | Connection |
|---------|--------------------|----------------|
| 0 | 5 V source | Terminal Block |
| 1 | External LED drive | Terminal Block |
| LED | Internal LED | Internal only |
| Antenna | RF Enable | Internal only |

Read Distance

Read distance can be affected by the PC power supply, RFID tag shape and size, materials used in proximity to the reader, and orientation to the reader. Generally speaking the size of the RFID tag has the greatest effect on read distance. If the coil inside the tag is small then it will need to be closer to the reader.

Device Specification

| | |
|-------------------------|---------------|
| Read Update Rate | Approx. 30 Hz |
| USB Current Consumption | 100 mA |