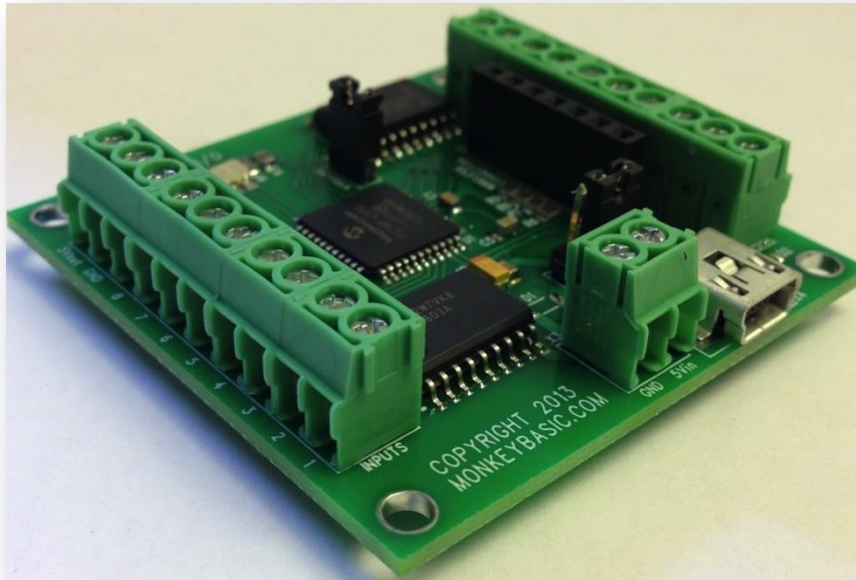


GateKeeper I/O User Guide v1.0

By Nelson Bairos (MonkeyBasic)



The GateKeeper I/O board is a purpose built control board for MonkeyBasic's Helmsman software. In the past few years I have been reliant on third party suppliers for control boards. These board have always required compromises to be made or re-work modifications.

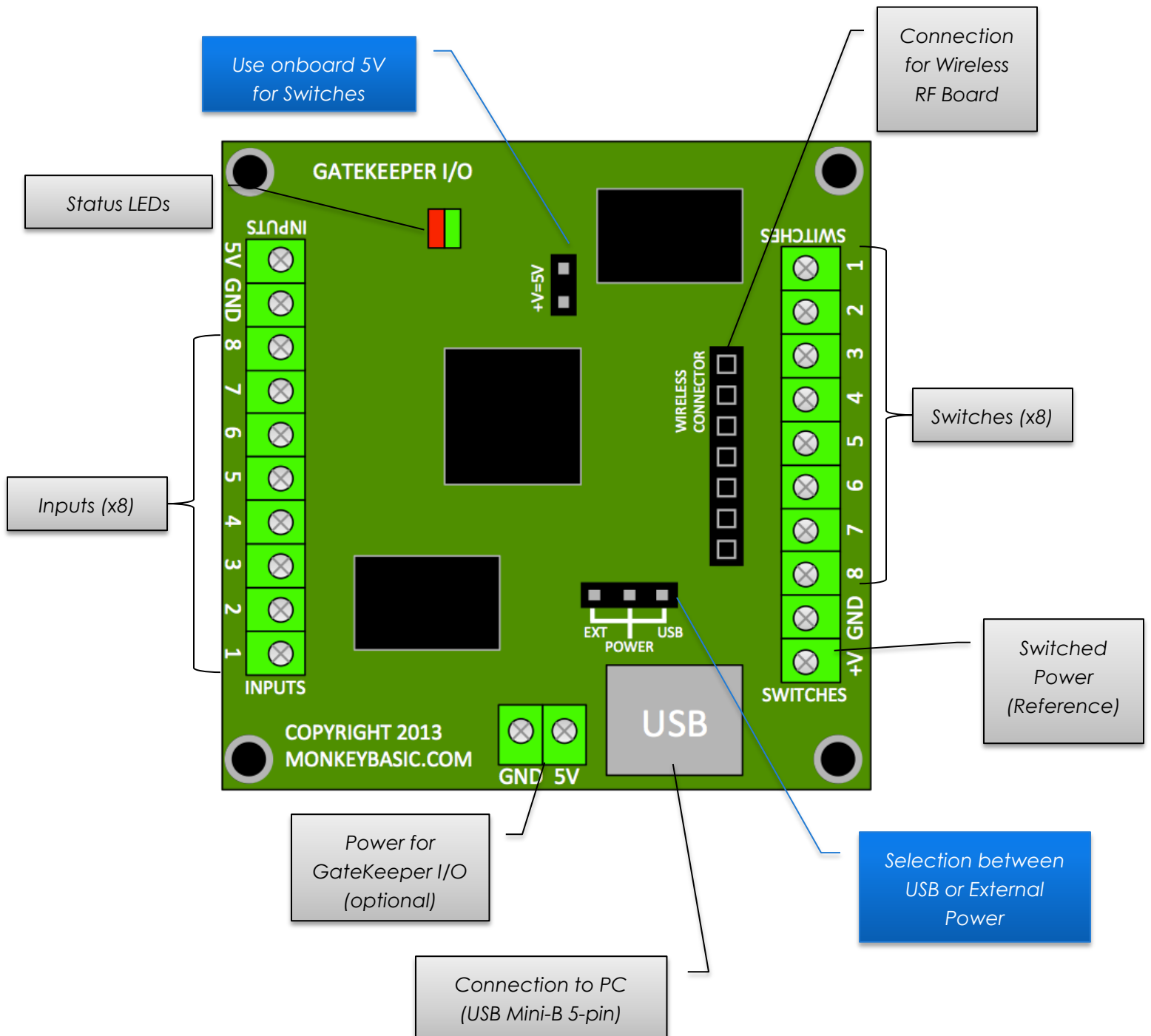
GateKeeper I/O has the ability to receive eight separate digital inputs as well as switch eight outputs up to 50V. An add-on Wireless RF board can be plugged into GateKeeper I/O to allow for 4 wireless triggers.

I always welcome suggestions and/or questions at nelson@monkeybasic.com. Enjoy!

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Overview



Specifications

Electrical

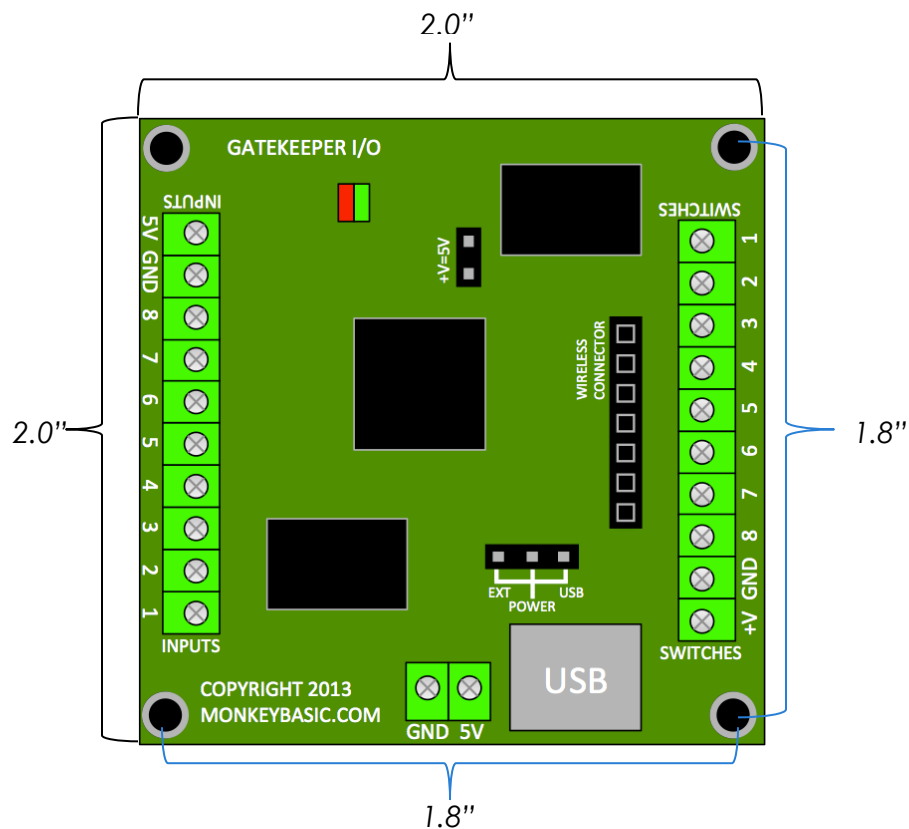
Power: 5VDC via USB or External Source
50mA at idle

Input (Triggers): 8 total
Active High (Voltages from 3 to 30VDC will enable a trigger)
4 push button triggers via Wireless RF card (Optional)

Switches: 8 total
Up to 50VDC @ 500mA (Single)
Up to 50VDC @ 200mA each (Multiple)

Connections:
Wire Terminal Blocks: 26 to 16 Wire Gauge
USB Type: mini-B 5-pin

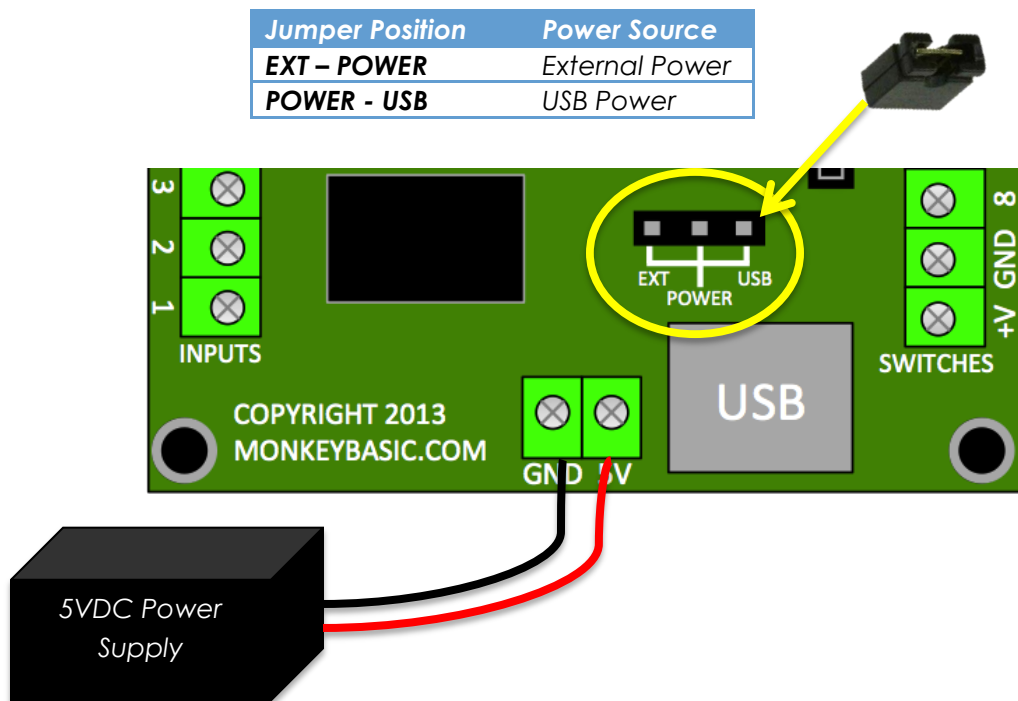
Physical



Power

The Gatekeeper I/O board requires 5VDC; by default this is provided by the USB connection. For simple triggering and limited switches, the power provided by the USB connection should be adequate. (Typically up to 500mA can be supplied via USB)

However, if additional power is required, an external terminal block is provided (located to the left of the USB connector). You will also need to move the JUMPER (X5) located above the USB connector.



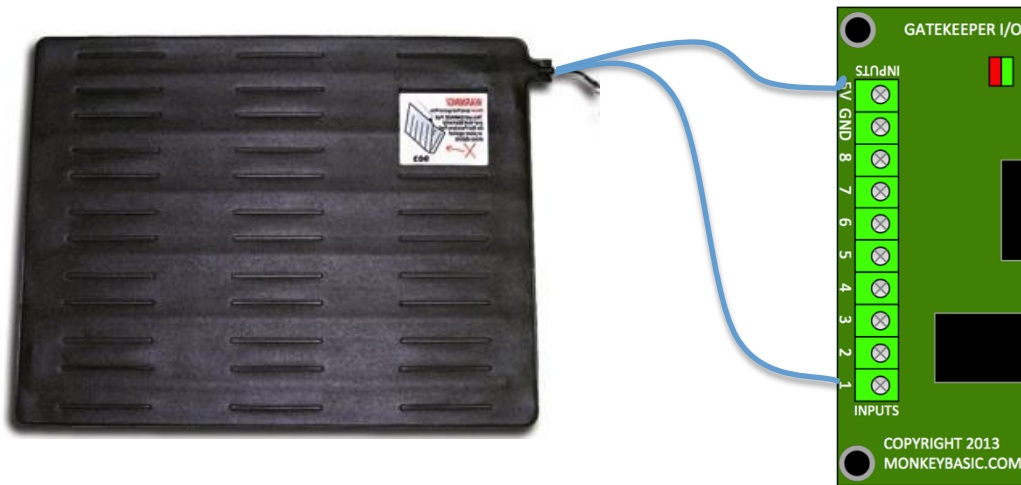
Note: Be sure to check the polarity of your power supply and connect it properly. Otherwise, you risk damaging the Board and/or Power Supply.

Inputs (Triggers)

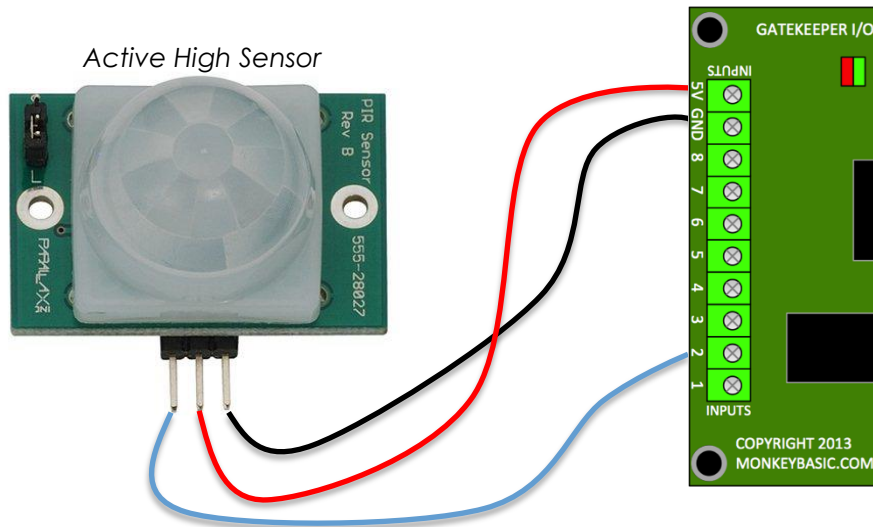
Inputs on the GateKeeper I/O board are considered Active High connections. When at least 3VDC is applied to Input 1 thru 8, a message is sent via USB to the PC that a trigger has occurred. Below are examples on how to connect different types of trigger devices.

Examples

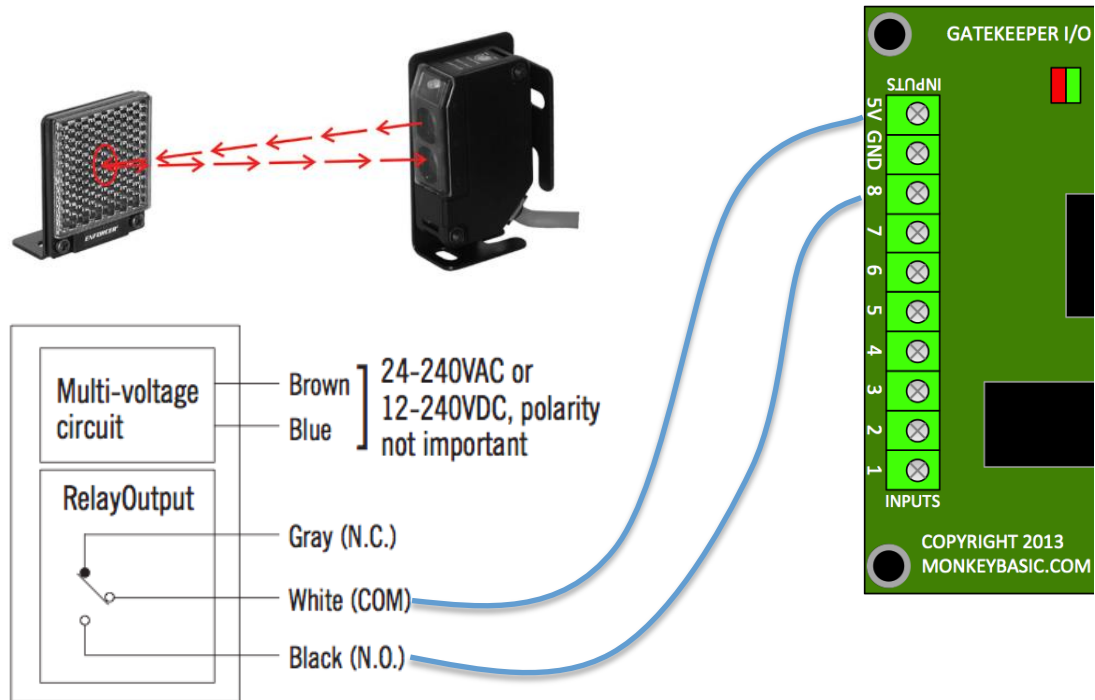
Pressure Mat (Connected to Input 1):



PIR Sensor (Connected to Input 2):



Beam Sensor (Connected to Input 8):

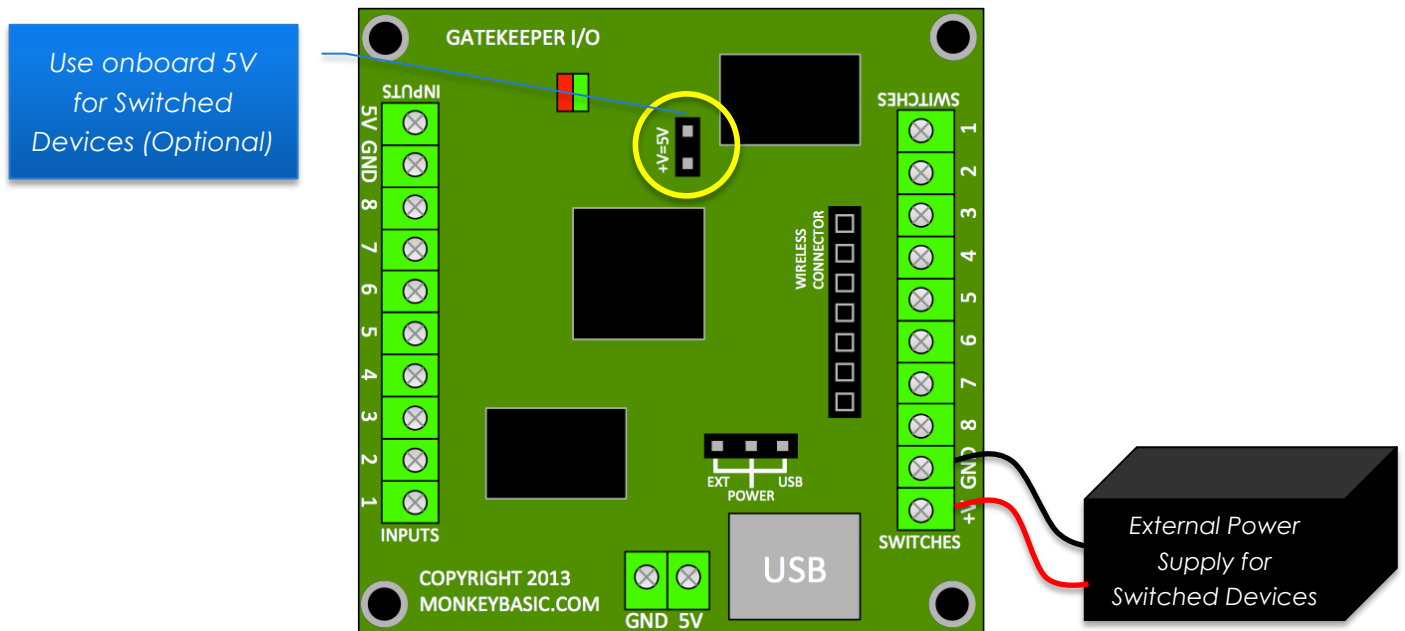


Switched Devices

The GateKeeper I/O board is capable of switching 8 independent devices. These switches are based on the ULN2803 IC which allows up to 50VDC @ 500mA with a single device connected or 50VDC @ 200mA when multiple devices are connected. Below are examples on how to connect different types of devices.

Power source

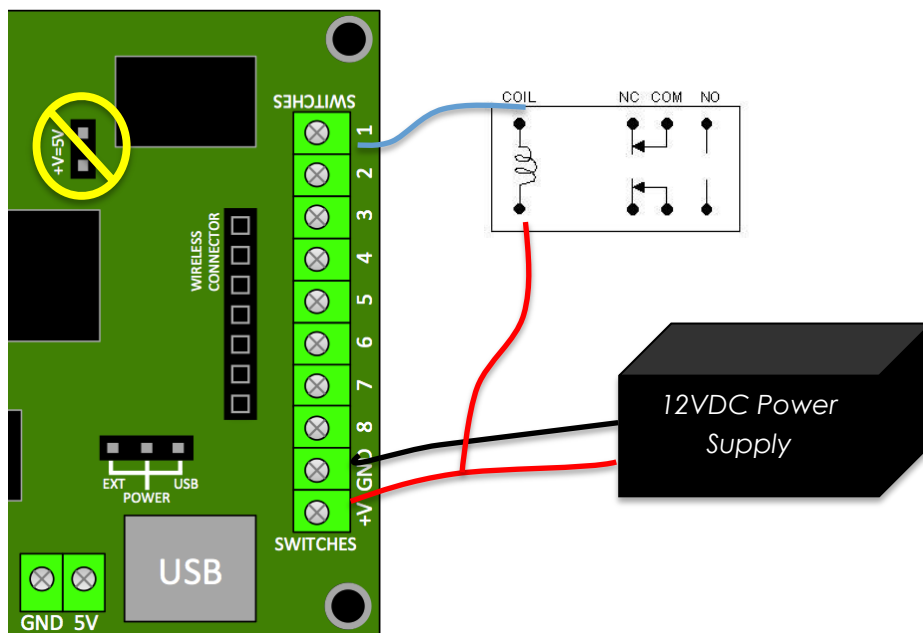
Typically you will need to connect an external power supply (as shown in the example with a 12V relay). However, there is also an option to use the onboard 5V for low current devices. To use the onboard 5V supply, insert a JUMPER on X8 (+V=5V) located near the status LED.



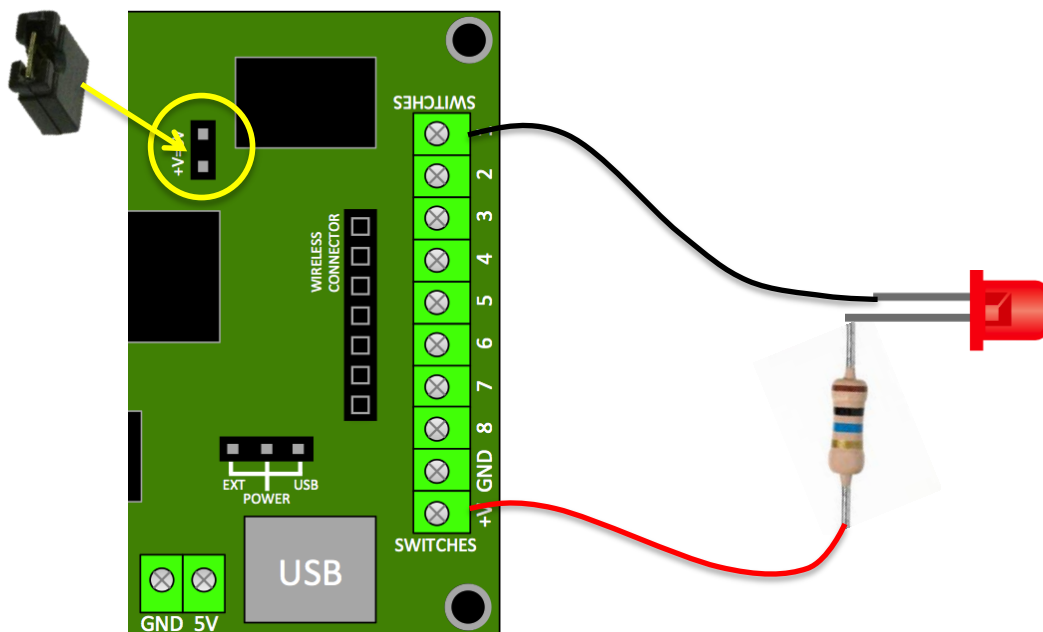
WARNING: Never have the JUMPER installed on X8 when having an external power supply connected to V+!!!

Examples

Relay (with External Power Supply)

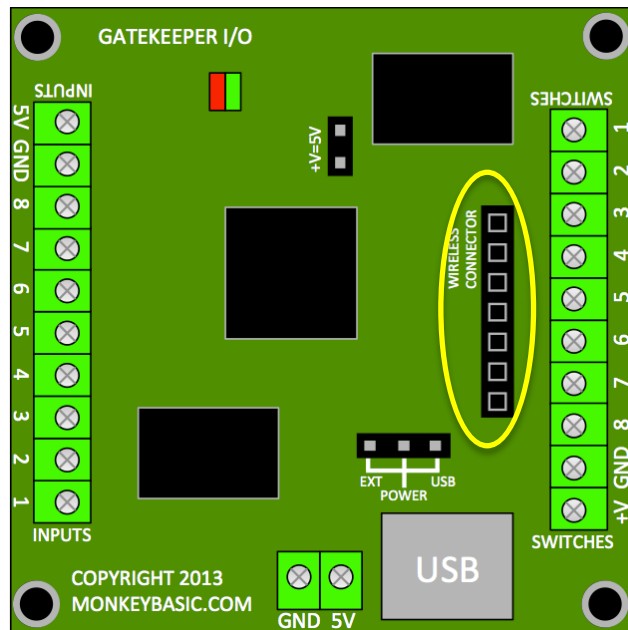


LED (with onboard 5V supply)

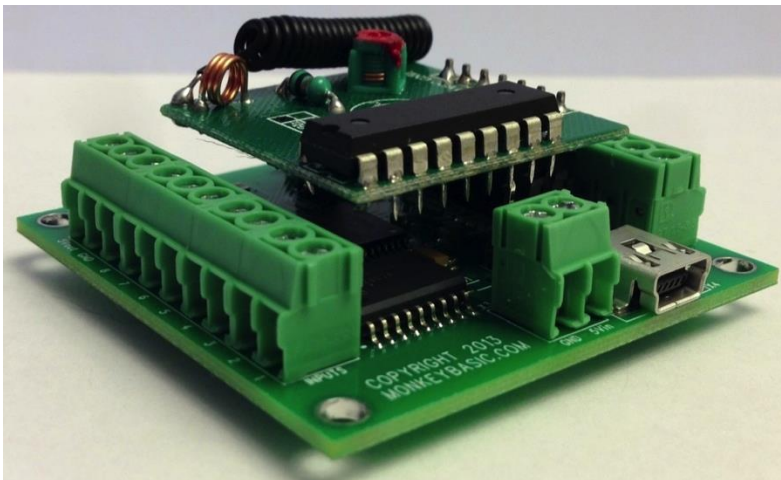


Wireless Remote Add-Ons

As an option, the GateKeeper I/O accepts a Wireless RF receiver board. This board comes with a 4-channel remote control, which can be used to trigger 4 separate events.



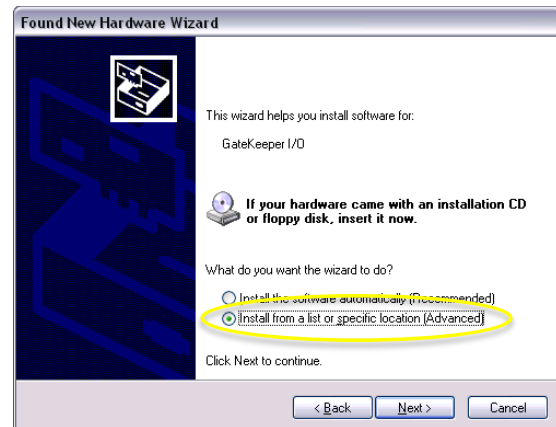
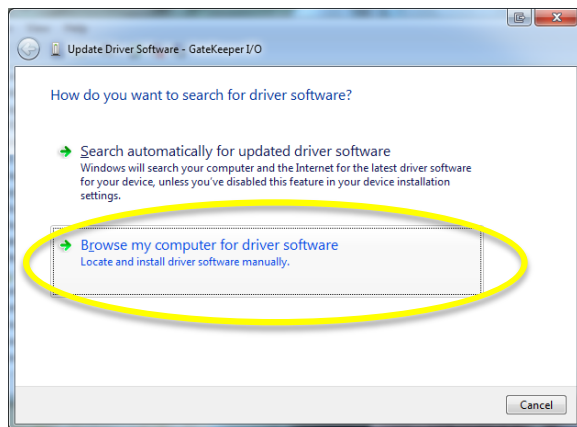
The Wireless RF receiver board plugs into the 7-pin connector and sits above the middle of the GateKeeper I/O board (as shown below).



Driver Installation

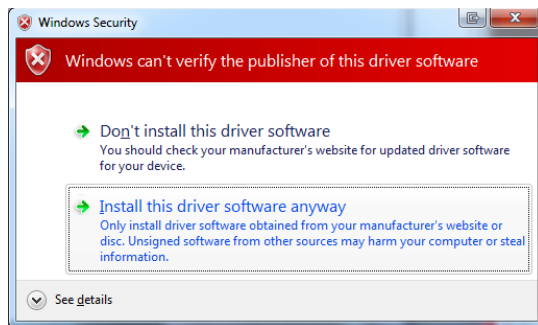
Download the following ZIP file, containing a driver file [GateKeeperIO.inf] from here:
<http://www.monkeybasic.com/GateKeeperIO.zip>

Connect the GateKeeper I/O board to the PC via the supplied USB cable.



When prompted, you will need to locate and select the [GateKeeperIO.inf] file that you downloaded.

NOTE: If you are not prompted, please follow these **Manual Installation** steps below.



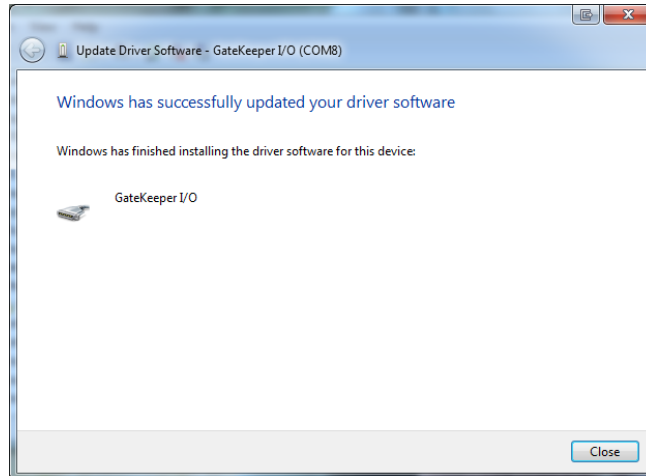
Windows 7



Windows XP

Windows Security is very tight these days, so you will be prompted to allow the Driver to be installed.

Select "Install this driver software anyways" (Win7) / "Continue Anyways" (WinXP) to complete the installation.

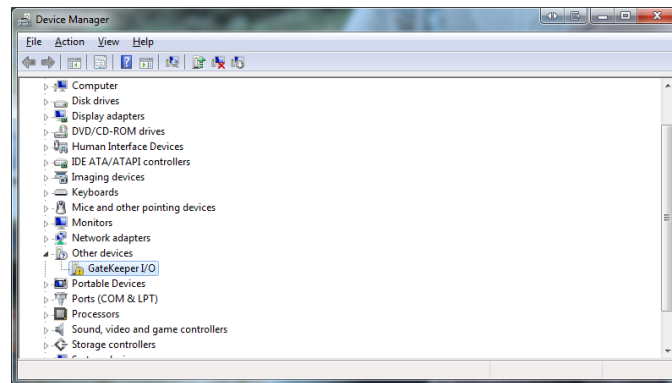


This message is confirmation that the installation is complete and the GateKeeper I/O board is ready to be used.

Make sure to take note of the COM Port after installation. This can be found listed in the Ports (COM & LPT) section of Device Manager

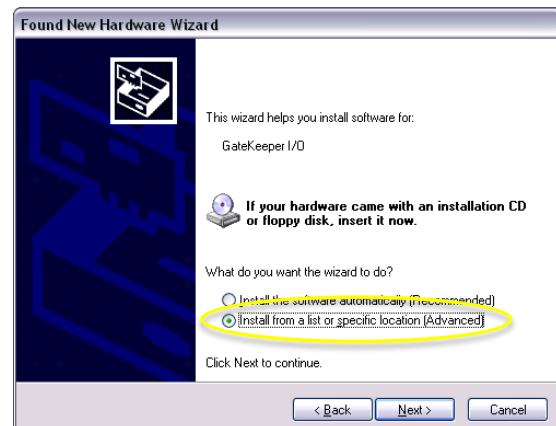
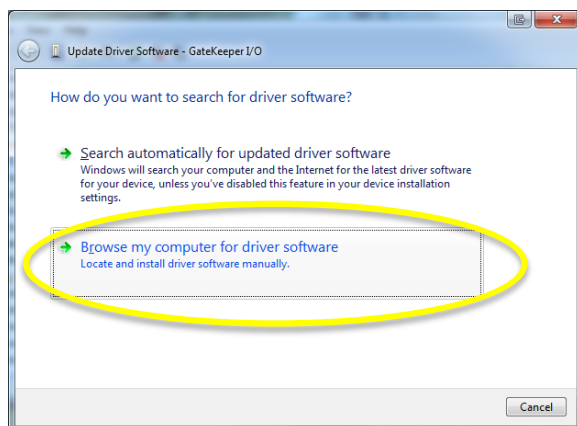
Manual Installation

Goto Start -> Run and type in "devmgmt.msc" and hit enter.

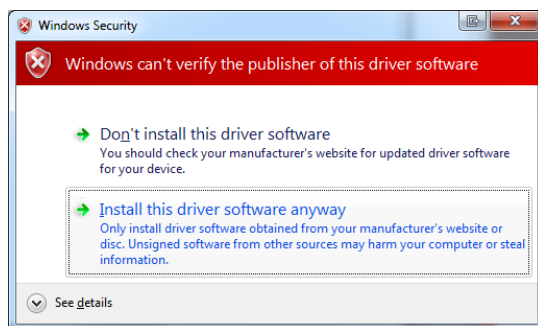


Under "Other Devices", the GateKeeper I/O should be listed with a yellow exclamation mark.

Right Click on it and select "Update Driver Software"(Win7) / "Update Driver..."(WinXP)



When prompted, you will need to locate and select the [GateKeeperIO.inf] file that you downloaded.



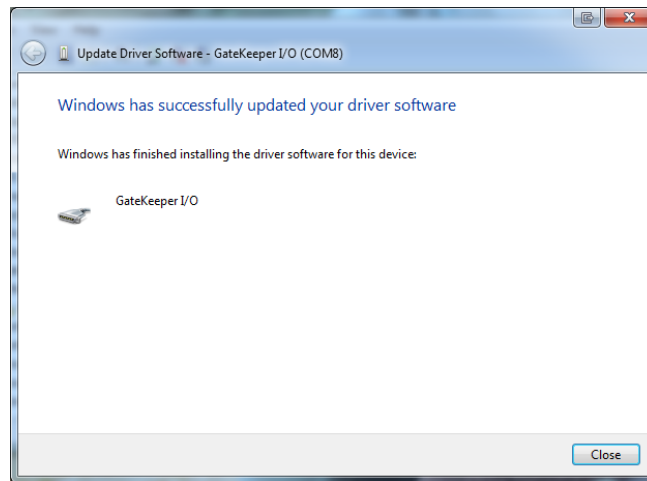
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LED Indicator

Flashing RED (Fast) = Not connected, No Drivers installed

Alternating RED & GREEN (Fast) = Power applied, no USB connection

Alternating RED & GREEN (Slow) = Normal Operation