

# Instructions:



**SWITCH**

**FOR MICRO:BIT**

**v1A**



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## WARNING

**This product must NOT be used to switch high voltage AC. The maximum voltage for this product is 16V!**

# INTRODUCTION

The MonkMakes Switch for micro:bit is a transistor switch that allows an output of a micro:bit to turn things on and off.

A micro:bit can turn an LED on and off directly, but anything more powerful requires something like a relay or a transistor. Using a transistor to switch something on and off requires a shared ground connection with the micro:bit and a knowledge of electronics that you or your students may not be ready for. The MonkMakes Switch for micro:bit is much easier to use, acting like a simple micro:bit controlled switch.

This board can be used to switch low voltage devices such as light bulbs, a motor, a small heating element or even a string of 12V LED lighting. The voltage needs to be kept under 16V, but the switch will automatically protect itself against too much current, but can't protect itself against too much voltage.

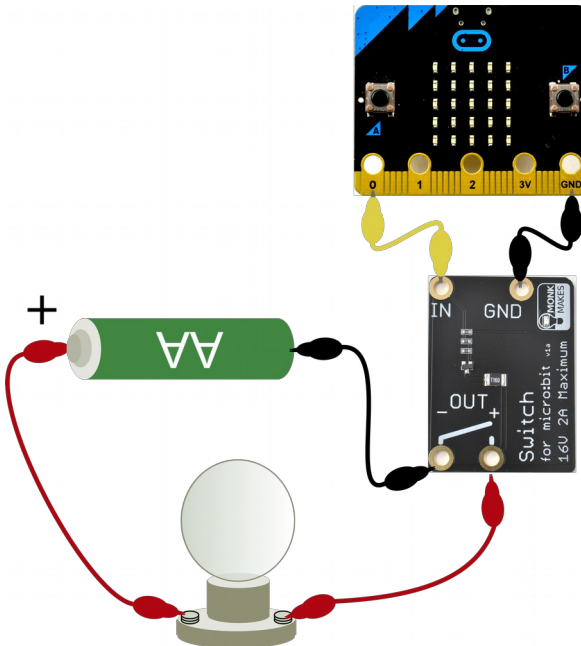
- Up to 1 Amp continuous, 2A for short periods less than a minute
- Low voltage (< 16V) DC only
- Active LED indicator
- Resettable 'polyfuse' to protect against over-current

## CONNECTING YOUR MICRO:BIT

The Relay requires just two connections to the micro:bit. One to GND (ground) and one to whatever pin is to be used to control the relay's switching action.

When attaching the alligator clips to the micro:bit, make sure that the clips are perpendicular to the board so that they are not touching any of the neighbouring connectors on the micro:bit edge connector.

Here's an example of how you could wire up a MonkMakes Relay for micro:bit to turn an old fashioned light bulb on and off.

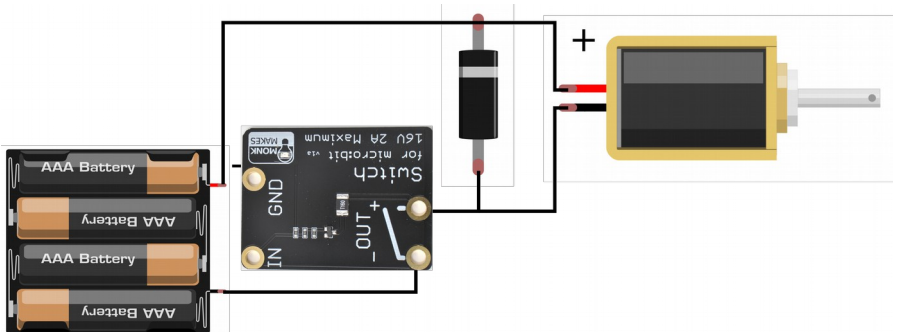


Note that unlike the similar product the MonkMakes *Relay for micro:bit*, the Switch for micro:bit must be connected the right way around with the more positive voltage at the + connection. The switch uses a type of transistor called an n-channel MOSFET and this type of switching is called low-side switching because when the MOSFET turns on, the load is connected to GND (the low side).

## SWITCHING INDUCTIVE LOADS

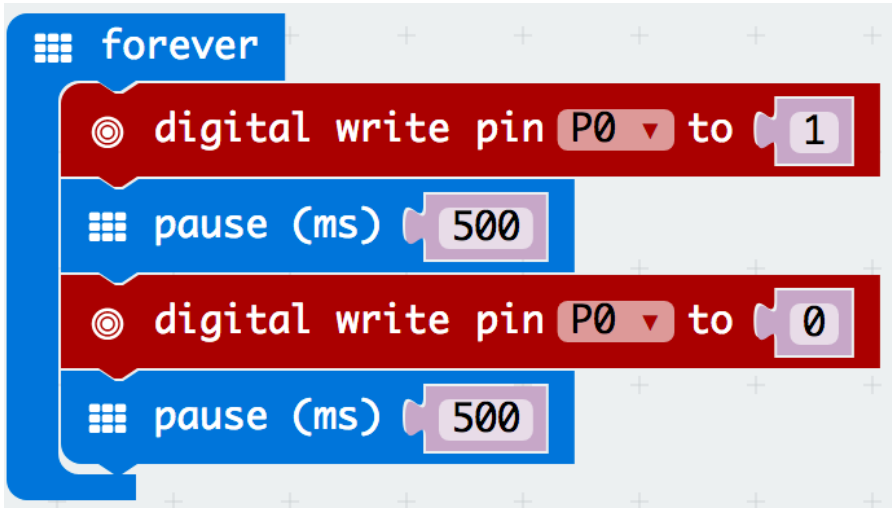
If you plan to use your relay to switch inductive loads, such as solenoids or motors, then there is a risk that 'back EMF' voltage spikes may damage the Relay for micro:bit.

When driving inductive loads, a 'flyback' or 'kickback' diode across the terminals of the solenoid or motor, as shown below.



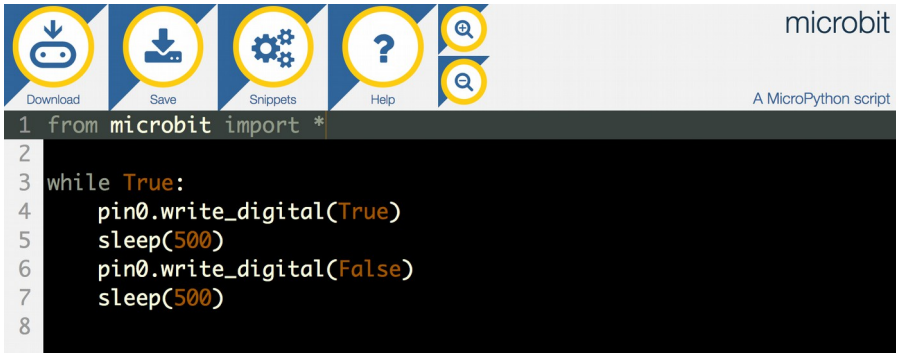
## BLOCKS EXAMPLE

To control things with the Switch for micro:bit you need to turn the GPIO pin of the micro:bit using code like this. This example turns the relay on for half a second, off for half a second and then repeats.



# MICROPYTHON EXAMPLE

Here's how you would do the same thing in MicroPython.



The screenshot shows the MicroPython IDE interface. At the top, there is a navigation bar with icons for Download, Save, Snippets, Help, and Search. The text "microbit" and "A MicroPython script" are visible in the top right corner. The main area is a code editor with a dark background, displaying the following Python code:

```
1 from microbit import *
2
3 while True:
4     pin0.write_digital(True)
5     sleep(500)
6     pin0.write_digital(False)
7     sleep(500)
8
```

# SUPPORT

You can find the Product's information page here:

[https://monkmakes.com/mb\\_switch](https://monkmakes.com/mb_switch) and if you need further support, please email [support@monkmakes.com](mailto:support@monkmakes.com).



# MONKMAKES

As well as this kit, MonkMakes makes all sorts of kits and gadgets to help with your micro:bit and Raspberry Pi projects. Find out more, as well as where to buy here: <https://monkmakes.com> you can also follow MonkMakes on Twitter @monkmakes.

