

Clippable Detector Board for the BBC micro:bit

www.kitronik.co.uk/5678

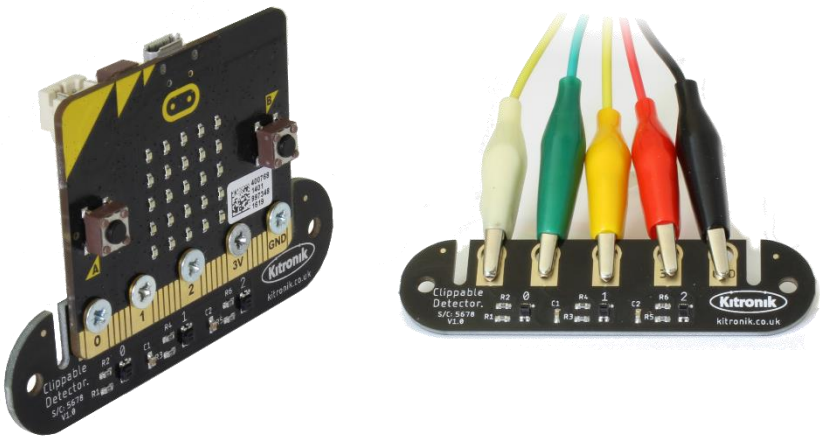


Introduction:

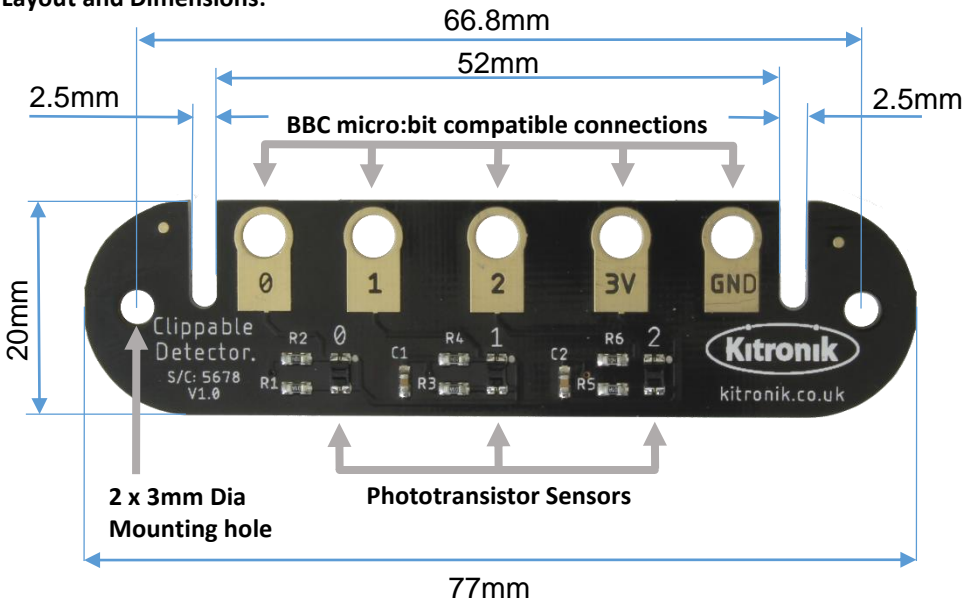
The Clippable Detector board for the BBC micro:bit gives the ability to detect light and object, and to follow lines. The board works by using phototransistors to detect the reflectiveness of different surfaces. The board is compatible directly with the BBC micro:bit or other Kitronik boards such as the Klip Motor Board (www.kitronik.co.uk/5655).

The Clippable Detector board has 3 phototransistor sensors evenly spaced out from each other. The sensors provide an analogue voltage to the BBC micro:bit.

Five connections are required for full operation. These connections match those on a BBC micro:bit and can be attached using either bolts or croc-clip leads.



Layout and Dimensions:



Clippable Detector Board for the BBC micro:bit

www.kitronik.co.uk/5678



Example Code

The example code uses the custom extensions for the Clippable Detector board and the Klip Motor (www.kitronik.co.uk/5655) for making a line following buggy.

MakeCode Blocks:

Make sure to import the extension into MakeCode by searching "Kitronik".

The on start code will setup the sensors for detecting a line. This block has a drop down selection for other choices as well.

In the forever loop, each if statement will check if the sensor on the allocated pin has detected a dark line. If it has, it will stop the motor on the same side. If not, then the motor will continue to drive forwards.

Python Code:

The on start will take a reference analogue reading of each pin, this will be used in a calculation for detection of the line.

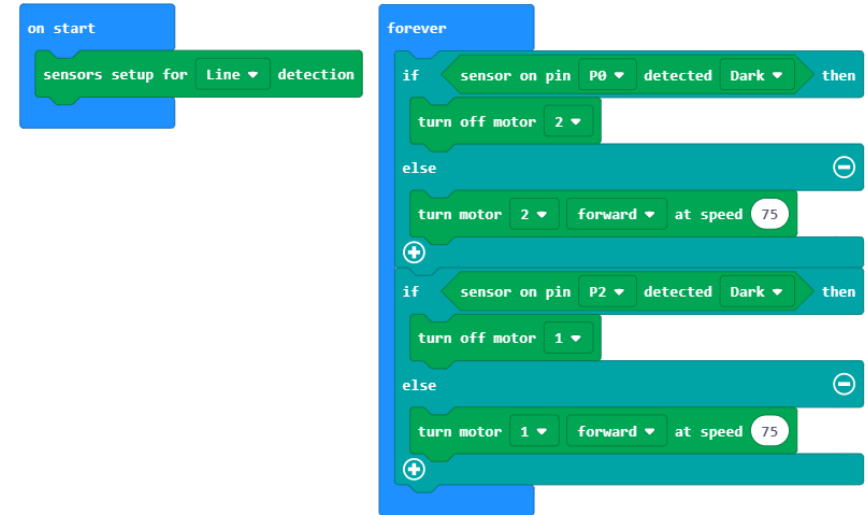
For making the comparison if a object has been detected, a current analogue reading is taken. Depending on whether a light or dark line is being detected, an additional DETECTIONLEVEL is either added or subtracted to the reference reading. In the example code it is added on to the reference.

The current analogue reading is then compared to our reference with DETECTIONLEVEL included. Depending on the outcome of the comparison, the display will show a character of each sensor has been detected.

This can be changed to give a Boolean true or false return depending on the required coding. It can be used to control the turning on and off of a motor.

For the MicroPython example code visit our GitHub page:

www.github.com/KitronikLtd/micropython-microbit-kitronik-clipdetector



```
from microbit import pin0
from microbit import pin1
from microbit import pin2
from microbit import display
```

```
sensorLeftRef = pin0.read_analog()
sensorCentreRef = pin1.read_analog()
sensorRightRef = pin2.read_analog()
detectionLevel = 45
```

```
while True:
    if (pin0.read_analog() >= (sensorLeftRef + detectionLevel)):
        display.show("L")
    elif (pin1.read_analog() >= (sensorCentreRef + detectionLevel)):
        display.show("C")
    elif (pin2.read_analog() >= (sensorRightRef + detectionLevel)):
        display.show("R")
    else:
        display.clear()
```