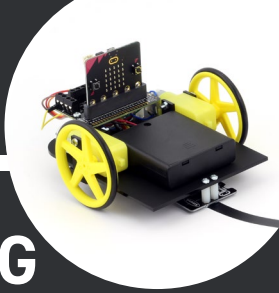
Kitronik



STAY ON TRACK WITH THE

# LINE FOLLOWING BUGGY

## for BBC micro:bit

V4.0

# BUILD INSTRUCTIONS

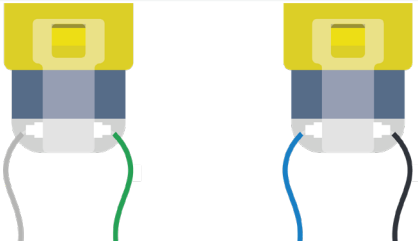
## LIST OF FIXINGS

### M3 NUTS & BOLTS


### SPACERS


**1**

Using the four pieces of wire (white, green, blue and black) supplied with the chassis, strip and solder one end of each wire to each motor terminal (a small copper contact protruding from the end of the motor). This is done by putting the exposed wire through the hole on the contact and soldering into place.



The colours should be as shown in the picture which are:

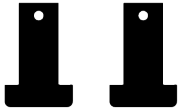
- Wire 1 on Motor 1 = White.
- Wire 2 on Motor 1 = Green.
- Wire 1 on Motor 2 = Blue.
- Wire 2 on Motor 2 = Black.

**2**

Remove the protective backing off the acrylic pieces.

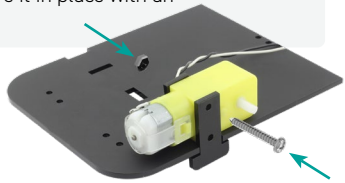
**3**

Take two of the 'T' shape acrylic pieces and push them through the two right hand slots in the base plate as shown below.



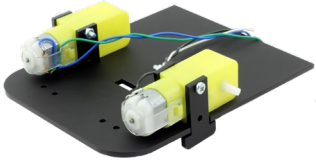
**4**

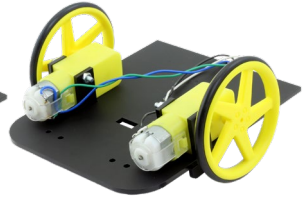
Place Motor 1 (green and white wires) between the two pieces with the motor terminals pointing toward the rounded corners of the buggy and the axle pointing outwards. Ensure that the motor is placed on the side of the board marked TOP. Push an M3 x 30mm screw through the holes in the 'T' pieces and motor then secure it in place with an M3 nut.



**5**

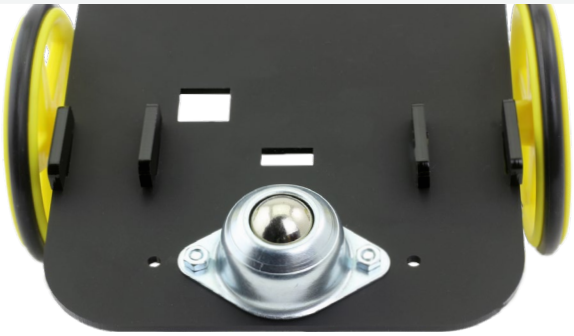
Repeat steps 3 and 4 for Motor 2 (blue and black) on the opposite side of the buggy, then push the wheels onto the motor axles.





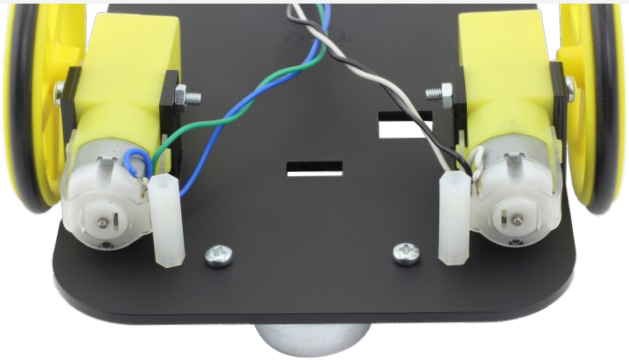
**6**

To attach the caster to the buggy, align it as shown to the underside of the buggy and secure it using two M3 x 6mm screws and two M3 nuts.



**7**

Attach the M3 x 20mm plastic spacers using two of the M3 x 6mm screws from underneath.



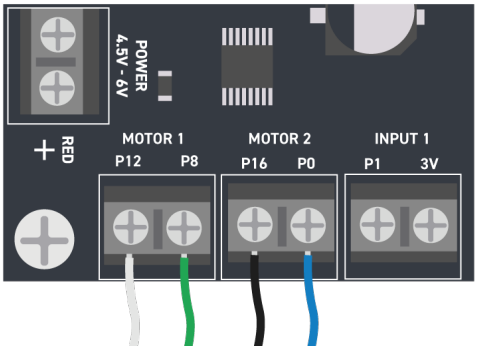
8

Attach the Motor Driver Board to the top of the plastic spacers using two more M3 x 6mm screws. Make sure the terminal blocks are facing the edge of the chassis.

9

Take the wires from the motors and connect them to the terminal blocks on the motor driver board in the following configuration:

- Wire 1 on Motor 1 (White) goes into the 'P12' terminal.
- Wire 2 on Motor 1 (Green) goes into the 'P8' terminal.
- Wire 1 on Motor 2 (Blue) goes into the 'P0' terminal.
- Wire 2 on Motor 2 (Black) goes into the 'P16' terminal.

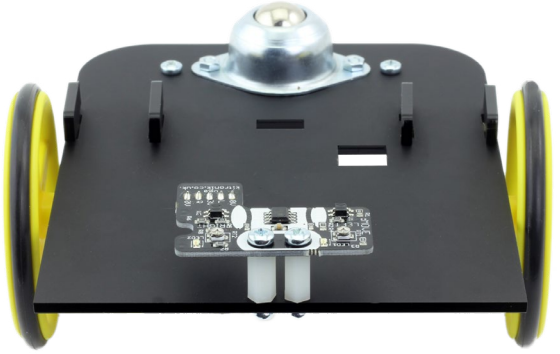


**10**

Using two M3 x 6mm screws, fix the two shorter spacers to the front of the buggy, on the underside as shown below.

**11**

Mount the line following board to the spacers using two M3 x 6mm screws.

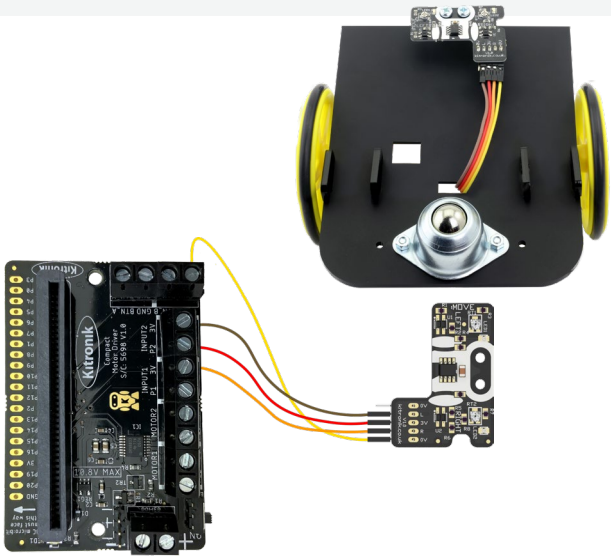


12

a) Split the jumper wires into a group of 4 (brown, red, orange & yellow).
b) Using the wiring diagram below, slot the socket ends of the wires onto the pins on the Line Following Board.

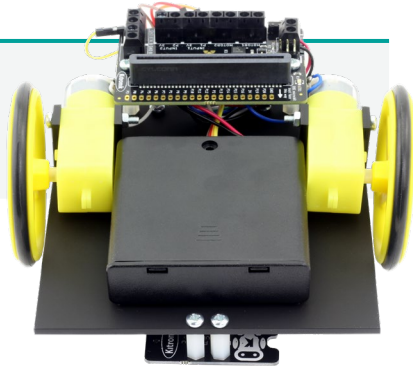
**NOTE:** There are five pins available but only one of the ground pins (0V) is needed.

c) Thread the wires through the central slot in the chassis.
d) Using the wiring diagram below, now insert the pin ends into the terminal blocks on the motor driver board and tighten using a screwdriver.

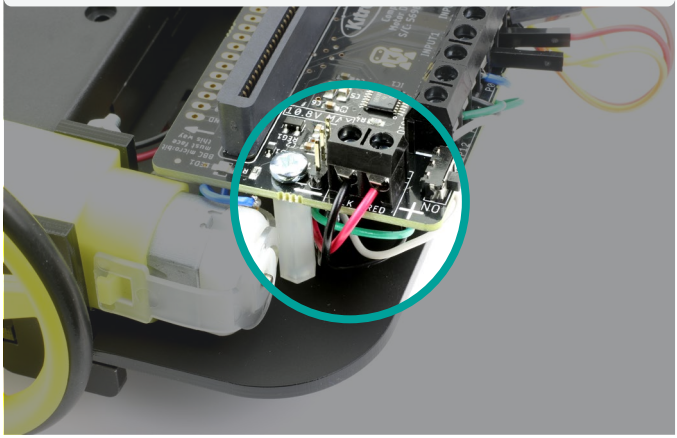
## 13

Using the sticky pad, attach the battery pack to the top of the buggy chassis with the switch poking through the rectangular cut-out.

## 14

Attach the red and black wires in the terminal on the Motor Driver Board labelled 'POWER'. Put the black wire in the left hand side of the terminal labelled 'BLACK' and the red wire in the right hand side of the terminal labelled 'RED'.

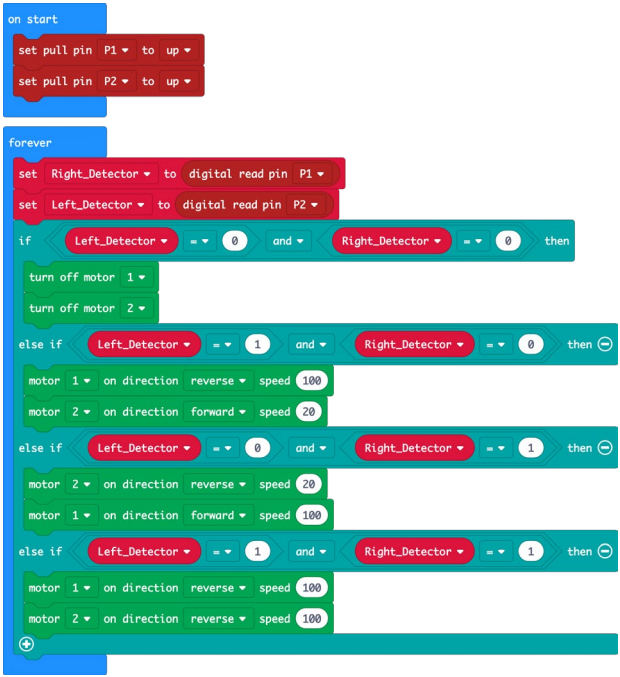


# TEST CODE

1

Download the code here: kitronik.co.uk/5638

Now, let's try the code out! Plug your BBC micro:bit into a USB port and it will show up as a storage device. Simply unzip, then drag and drop the .hex file you just downloaded onto the BBC micro:bit. The file might not show up on the BBC micro:bit in the file explorer but it is there! Once the file has been transferred (the light on the BBC micro:bit will stop blinking rapidly) remove the BBC micro:bit from your computer.



# TRY IT OUT

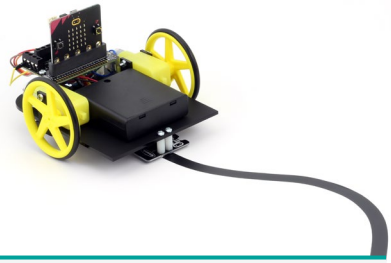
**1**

Mark out your track using coloured tape. Make sure the track is quite thick (roughly 20mm). Or alternatively draw the line on a large piece of paper using a marker pen. The greater the contrast, the easier it is for the buggy to identify the line.

**2**

Insert your coded BBC micro:bit into the connector on the Motor Driver Board (it can be inserted either way around) and switch on the buggy (with batteries in) using the on/off switch on the bottom. Your buggy should now be working.

**NOTE:** The buggy can be programmed to work with a dark coloured line on a light background or a light coloured line on a darker background!



**3**

When one of the sensors on the Line Following Board passes over the line it will cause the buggy to turn back towards the line.
The small LED's on the Line Following Board light up when the corresponding sensor passes over the line and can be used for visual feedback when developing and testing your own code.

**4**

**GET CODING!**
Visit kitronik.co.uk/5638 for help. See the online datasheet for a tuning guide.

Build your own Line Following Buggy with this simple project kit for the BBC micro:bit. It can be configured to follow either dark or light lines, or easily re-purposed for remote control over Bluetooth or radio.

## TOOLS REQUIRED

- Small Phillips screwdriver
- Wire stripper
- Soldering iron and some solder
- Pliers

## KIT REQUIRES

- 1 x BBC micro:bit

## STOCK CODE

5638

## INSTRUCTIONS

This booklet contains build instructions. For more detailed resources please visit our website at www.kitronik.co.uk/5638.

**WARNING:** Contents may inspire creativity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RoHS CE

For more information on RoHs and CE please visit kitronik.co.uk/rohs-ce. Children assembling this product should be supervised by a competent adult. The product contains small parts so should be kept out of reach of children under 3 years old.