

# Motor Driver Board for the BBC micro:bit

[www.kitronik.co.uk/5620](http://www.kitronik.co.uk/5620)

**Introduction:** This motor driver board for the BBC micro:bit allows two motors to be driven simultaneously with forward, reverse & stop control, making it ideal for designs such as buggies. It is based on the DRV8833 motor driver IC, which has built in short circuit, over current and thermal protection.

The board includes an integrated Edge Connector slot for your BBC micro:bit to easily slot into. It also features external connections to the button A and button B inputs. This allows additional switches / inputs to be connected to the motor driver board and the state of these can then be read by the BBC micro:bit.

There are 2 additional inputs / outputs. These can be used for connecting a range of parts and can be used in either digital or analogue modes.

The board also produces a **regulated 3V supply** that is fed into the 80 way connector **to power the inserted BBC micro:bit**, removing the need to power the BBC micro:bit directly.

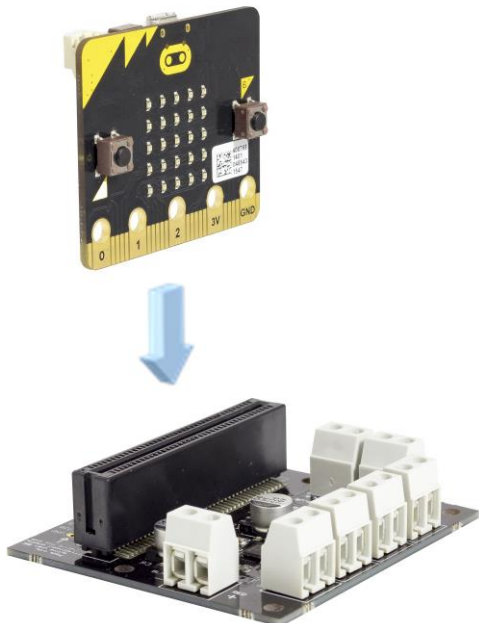
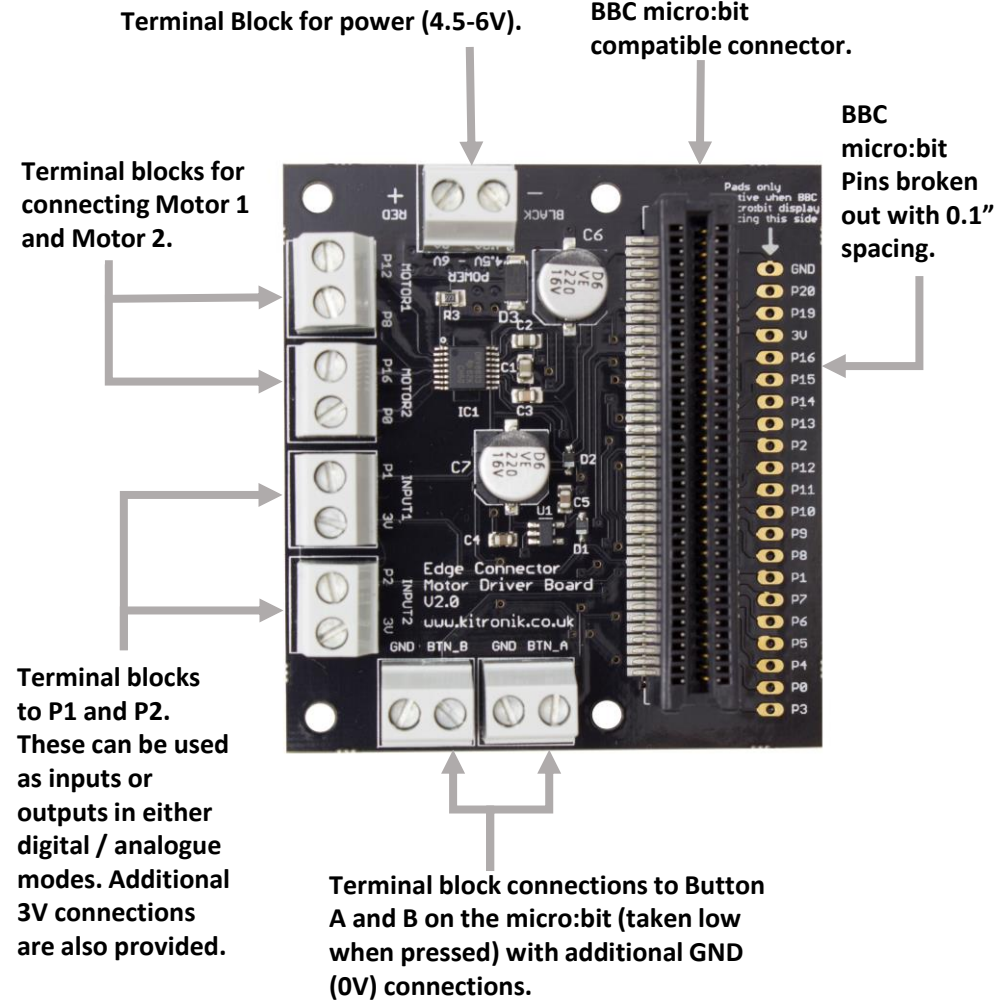
**Inserting a BBC micro:bit:** To use the motor driver board the BBC micro:bit should be inserted firmly into the connector as shown left.

The board has been designed so that the BBC micro:bit can be inserted either way around (facing forward or backwards) however if you wish to use the broken out pins the LED matrix on the BBC micro:bit must be facing them.

**Examples of board in use:** This breakout board is used in our 'BBC micro:bit buggy' example. For more details visit

[www.kitronik.co.uk/microbitbuggy](http://www.kitronik.co.uk/microbitbuggy)

## Layout:



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## Electrical Information

Operating Voltage (Vcc)	4.5V to 6V
Number of motor channels	2 (2 motors with forward + reverse control, controlled by P0, P8, P12 & P16)
Typical motor output Voltage (Vm) @ 1.5A output per channel	$V_m = V_{cc} - 0.3V$
Max Current per motor channel	1.5A
Digital only inputs	2 (button A / B)
Digital or analog input / output pins (P1 & P2)	2 (P1 & P2)
Digital output drive current	5mA

## Motor Control Pins (forward and reverse directions can vary depending on how the motors are connected)

P8	P12	Motor 1 Function
0	0	Coast
1	0	Forward
0	1	Reverse
1	1	Brake

P0	P16	Motor 2 Function
0	0	Coast
1	0	Forward
0	1	Reverse
1	1	Brake

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## Javascript Blocks Editor Code

Kitronik have developed custom block and JavaScript to support the use of the Motor Driver board in the micro:bit JavaScript Block editor (formerly known as PXT). These blocks can be added via the add package function in the editor from: [github.com/KitronikLtd/pxt-kitronik-motor-driver](https://github.com/KitronikLtd/pxt-kitronik-motor-driver)

```
forever
  set Input1 to (digital read pin P1)
  set Input2 to (digital read pin P2)
  set ButtonA to (digital read pin P5)
  set ButtonB to (digital read pin P11)
  if (Input1 = 1)
  then (motor 1 on direction forward speed 50)
  else if (Input2 = 1)
  then (motor 2 on direction forward speed 50)
  else if (ButtonA = 0)
  then (turn off motor 1)
  else if (ButtonB = 0)
  then (turn off motor 2)
```

The image shows a screenshot of the JavaScript Blocks Editor interface. A blue 'forever' loop block contains four 'set' blocks: 'set Input1 to (digital read pin P1)', 'set Input2 to (digital read pin P2)', 'set ButtonA to (digital read pin P5)', and 'set ButtonB to (digital read pin P11)'. Below these are four conditional blocks. The first is an 'if' block with the condition 'Input1 = 1', followed by a 'then' block 'motor 1 on direction forward speed 50'. The second is an 'else if' block with the condition 'Input2 = 1', followed by a 'then' block 'motor 2 on direction forward speed 50'. The third is an 'else if' block with the condition 'ButtonA = 0', followed by a 'then' block 'turn off motor 1'. The fourth is an 'else if' block with the condition 'ButtonB = 0', followed by a 'then' block 'turn off motor 2'.

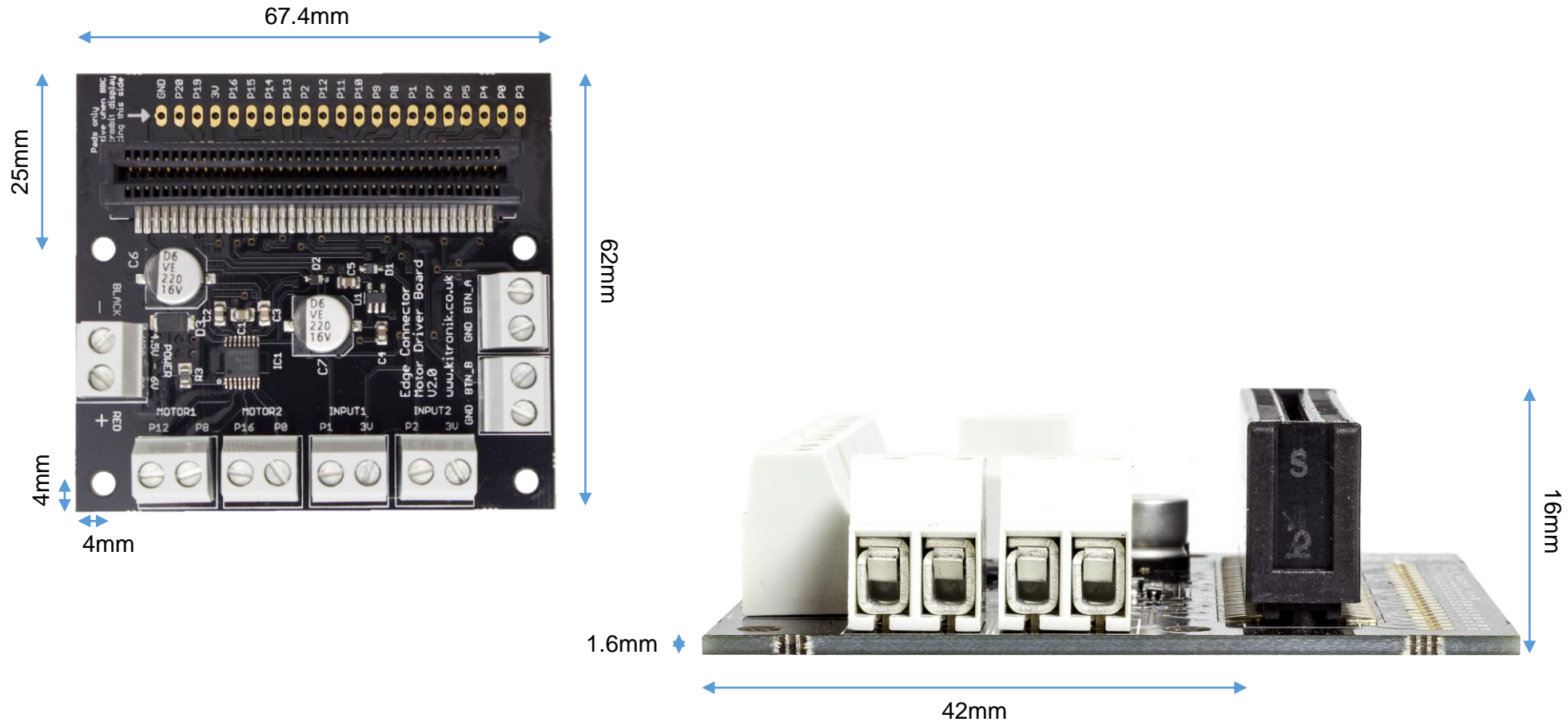
The example blocks (left) cause both motors to move forward with pins 1 and 2, and uses the button inputs at pins 5 and 11 to stop each motor separately.

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## Dimensions



(Dimensions +/- 0.8mm)